

WRITER-READER RELATIONSHIP AND TECHNICALITY  
OF VOCABULARY IN MULTILINGUAL HEALTH  
INFORMATION WEBSITES IN ENGLISH, SPANISH, AND  
CATALAN

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*In memory of El Espíritu Santi (1962-2019) & Simon Hochberg (2001-2021)*

Dedicated to people with disabilities who started graduate school and did not achieve their goals due to systemic discrimination. People with disabilities need accessibility that is already in place without prior request. To say that doing a PhD as a person with a disability in an ableist world is extremely challenging would be the most obvious understatement.

That the first and the last quotation of this thesis are by people with a disability is not a coincidence. One of them, Stephen Hawking, was known for his genius before he became progressively disabled. Had he been disabled prior to accessing the institution where his discovery was recognized, would our society have benefited from his knowledge? Probably not.



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- Simon, my 20.5-year-old feline companion, who was my constant through most of this PhD process. It was heartbreaking when he passed away one year prior to the completion of this thesis. Simon kept loneliness at bay and held me accountable to accomplish my daily goals. With Simon fast asleep on my lap, there was never another option but to keep working.

Thank you for your interest in this thesis.









## **Abstract**

The purpose of the thesis is to investigate multilingual health information websites in English, Spanish, and Catalan for comprehensibility and cultural adaptation in terms of language. This study questions whether there exist any variations in writer-reader relationship and technicality of vocabulary between the three non-translated language versions as well as between the translated and non-translated texts within each language, and what the key differences are. A comparable corpus is analyzed in a mixed methods approach incorporating two lexical and textual evaluation instruments. The most important variations affecting comprehensibility and cross-cultural adaptation between the three non-translated texts, as well as between the translated and non-translated texts, concern textual multimodality, hedging, relational/engagement and persuasion markers, inclusion words, degree of technicality of the texts, and lexical familiarization. The thesis contributes to knowledge about health communication through multilingual websites. The findings could improve the writing and translation of such materials for culturally diverse environments.

Keywords: Systemic Functional Linguistics, discourse analysis, health communication, translation, cross-cultural competence

## **Resumen**

El objetivo de esta tesis es investigar sitios web multilingües de información sanitaria en inglés, español y catalán para evaluar su comprensibilidad y adaptación cultural en cuanto a la lengua. El objetivo general es identificar la existencia de variaciones en la relación escritor-lector y en el tecnicismo del vocabulario entre las tres versiones no traducidas, así como entre los textos traducidos y no traducidos dentro de cada idioma, e identificar las diferencias clave. Se analiza un corpus comparable con un enfoque de métodos mixtos que incorpora dos instrumentos de evaluación léxica y textual. Las variaciones más importantes que afectan la comprensibilidad y la adaptación cultural entre los textos no traducidos, así como entre los textos traducidos y los no traducidos, son la multimodalidad textual, la atenuación, los marcadores relacionales/de participación y de persuasión, las palabras de inclusión, el grado de

tecnicidad de los textos, y la familiarización léxica. La tesis contribuye al conocimiento sobre la comunicación sanitaria mediante sitios web multilingües. Las conclusiones pueden mejorar la redacción y la traducción de este tipo de materiales para entornos culturalmente diversos.

Palabras clave: Lingüística Funcional Sistémica, análisis del discurso, comunicación sobre salud, traducción, competencia intercultural

## **Resum**

L'objectiu de la tesi és investigar llocs web multilingües d'informació sanitària en anglès, espanyol i català per avaluar la seva comprensibilitat a la comprensió i l'adaptació cultural pel que fa a la llengua. El objectiu en general és identificar la existència de variacions en la relació escriptor-lector i en el tecnicisme del vocabulari entre les tres versions no traduïdes, així com entre els textos traduïts i no traduïts de cada idioma, i determinar les diferències clau. S'analitza un corpus comparable des d'un enfocament de mètodes mixtes que incorpora dos instruments d'avaluació lèxica i textual. Les variacions més importants que afecten la comprensibilitat i l'adaptació cultural entre els tres textos no traduïts, així com entre els textos traduïts i no traduïts, són la multimodalitat textual, l'atenuació, els marcadors relacionals/de participació i de persuasió, les paraules d'inclusió, el grau de tecnicisme dels textos i la familiarització lèxica. La tesi contribueix al coneixement sobre la comunicació sanitària mitjançant els llocs web multilingües. Les conclusions poden millorar la redacció i la traducció d'aquest tipus de materials per a entorns culturalment diversos.

Paraules clau: Lingüística sistèmico-funcional, anàlisi del discurs, comunicació sobre salut, traducció, competència intercultural

## Preface

It is my hope that this thesis will hold your interest and galvanize positive changes that will improve multilingual health communication. Several factors inspired my doctoral thesis topic and motivated me through the research, analysis, and dissertation writing.

As a multilingual deaf person, I was frequently regarded in the United States as a five-headed alien. Not only was I among the minority of Americans who spoke more than one language,<sup>1</sup> people were often dumbfounded that I spoke at all due to the prevailing stereotypical perception of a person with a profound prelingual hearing loss. Some even have gotten angry with me for not knowing American Sign Language – but with whom was I going to use it, if my family and friends did not know it? I rely on lip reading in every spoken language.

Through my childhood, I had multiple ear surgeries. In the hospital, I was surrounded by health care workers who preferred to talk to my parents rather than make an effort to help me overcome the communication barrier. I felt indignant. This also occurred at doctors' clinics, until they heeded my demand to be examined without my mother in the room, which forced them to either speak directly to me or write their words on a piece of paper. To understand to what the doctors and nurses were referring, I looked up medical topics. I became health literate.

Seven months prior to the anticipated graduation with a Doctor of Physical Therapy degree, a long, rigorous course that required maintaining an academic grade point average of at least 3.5 out of a perfect 4.0 – the American equivalence of the Spanish 8.5 out of 10 – discrimination against my deafness among the clinical instructors, all of whom refused to supervise me for the requisite clinical rotations, forced me to withdraw from the program. Without ever having met me, the clinical instructors based their negative decision on their presumption that I would be a liability to their clinic with regard to communication with their patients. The university combined my completed academic work with additional coursework in public health for a master's degree in the latter field.

Improving health communication involves identifying and removing barriers. The above anecdotes demonstrate that, as a multilingual deaf person, the barriers

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<sup>1</sup> By 2017, approximately one-third of U.S.-born Americans speak more than one language. However, the number was lower through the preceding decades. (Zeigler & Camarota, 2018).

were due to communication issues – whether assumed or real – as a result of my profound hearing loss and not due to health literacy issues or language differences. Throughout my yoga therapy career in a hospital as well as in private settings, ensuring that my clients always understood every aspect of the practice was a top priority.

Removing communication barriers improves outcomes and reduces health disparities. When studying and working for large populations, the impact on each individual can easily get overlooked. When one has personally experienced barriers in a health care setting, it is difficult to forget the feelings of disrespect, indignation, and violation.

I did not want this to happen to my Catalan friend, Jaume, who was working as an espresso machine technician in New York City one summer more than twenty years ago. He was fluent in Spanish and Catalan, but his knowledge of English was very limited. One day, a machine part flew into his eye, and he had to go to the emergency room. All the resident Spanish-English interpreters were busy with other patients. Since I was neither a professional interpreter nor an immediate family member, various health care workers attempted to separate us at each point as a matter of procedure in deference to the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule – in triage, in the waiting room, and in the examination room. Although Jaume presented with a serious eye injury, the triage nurse auscultated Jaume's heart and assessed his blood pressure, respiration rate, and oxygen saturation level. The thoroughness of the American health examination left Jaume extremely anxious about what else would be done to him in this foreign hospital. Upon the doctor as well as the nurse's insistence, we reluctantly agreed that I would stand outside the examination room while Jaume's eye was treated. Two minutes later, the nurse frantically ran out and two others returned with her. Twenty minutes later, one nurse informed me that Jaume panicked and fainted. The doctor came outside to explain Jaume's condition to me. I asked him if he had already explained everything to Jaume. Upon his hesitation, I pointed out that Jaume would not have passed out had I been allowed to interpret for them. I insisted on ensuring clarity between the doctor and Jaume while we waited for the discharge papers. This incidence exemplifies the importance of removing language and cultural barriers in health communications.

Over the years, I observed the importance of written health communication to overcome barriers. One example occurred long before I was born, when my great-

grandmother, who had then recently immigrated to the United States from Central Europe,<sup>2</sup> gave birth to her first child just after World War I. A nurse presented a document, along with the baby, to my great-grandparents. The document, printed in English, was utterly foreign to this Yiddish-speaking couple. The birth certificate included the word “Female,” thus my great-grandparents assumed that the given name for their newborn was *fé-ma-le*, whose pronunciation vaguely resembled other Yiddish names. Almost a decade later, the young immigrant couple had saved up enough money to move out of the cramped tenement in New York City’s Lower East Side to Red Bank, New Jersey, where their two daughters had to present their papers to enroll in school. Only then did they realize what had happened regarding their name, which they had to Americanize on the spot. This family story left an impression on me as one of numerous examples of the cultural and linguistic barriers in health communication.

In addition to explaining what motivates me to research techniques to remove the language and cultural barriers, I should answer the question frequently asked throughout my thesis work: why tuberculosis and HIV? Not only were these the top two infectious diseases prior to the COVID-19 pandemic, their ongoing prevalence poses a global danger. In fact, the COVID-19 pandemic not only impeded access to medical care for people with HIV resulting in more patients with serious illnesses such as tuberculosis and increased up to fourfold the risk of death from COVID-19 in this population, but those with untreated advanced HIV infection could end up with a prolonged COVID-19 infection that could give rise to variants of concern (Msomi et al., 2021). This is still hypothetical as of this writing, based on a case study in South Africa (Karim et al., 2021); however, this should call attention on the part of scientists, governments, and other stakeholders to act to eradicate all infectious diseases simultaneously. This includes informing the public about the importance of getting tested for tuberculosis and HIV.

HIV infected several of my friends and killed three of them – two in 1992, and one of them at the end of my second year of thesis research. I am referring to the person named on the dedication page as *El Espíritu Santi*, my term of endearment for

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<sup>2</sup> Although she and my great-grandfather referred to their Old-World country as Poland and due to the lack of more concrete data, as well as the fact that the borders shifted numerous times in the early 1900s, it is most accurate to refer to their place of origin as Central Europe. In any case, the CIA (2019) agrees that Poland forms a part of Central Europe. <https://www.cia.gov/library/publications/resources/the-world-factbook/geos/pl.html>.

him, who shall remain anonymous per his wishes. We met in a language course at The Hebrew University in 1993 and were inseparable during our years in Jerusalem. Like me, he was multilingual; our conversations easily flowed in a mix of Hebrew, English, Spanish, and French. Prior to moving from Spain to Israel, he had tested HIV-positive. Three years after we met, the highly active antiretroviral treatment (HAART) became standard, which extended Santi's life. His death was not the end of my personal experience with HIV; several other friends continue to benefit from HAART.

A few years after moving back to New York City, I had a requisite physical examination prior to a hospital-based job and was found to have a latent tuberculosis infection (LTBI). I underwent six months of supervised treatment. This surprise diagnosis gave me a tiny glimpse of the shock that my HIV-positive friends have experienced: one could feel healthy and be an unwitting carrier of a virus or bacteria, whose treatment could save one's life.

The importance of getting tested cannot be emphasized enough. How do we share this message on a global level, removing all the barriers regarding languages and culture? This thesis will provide ideas about two important aspects of rendering a successful linguistically and culturally adapted multilingual health promotion campaign: technicality of vocabulary and writer-reader relationship.

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# 1. INTRODUCTION

*To understand is essential to progress. – Helen Keller (Keller, H., 1955, as cited in Helen Keller Archive)*

Comprehensible, culturally adapted multilingual websites improve access to health information on HIV and tuberculosis (TB) diagnostic testing. However, there is a need for a quality assessment of both the source language text and its translations that is paramount to their success in controlling two of the world's most prevalent infectious diseases. Analyzing writer-reader relationship and technicality of vocabulary in multilingual health information websites could reveal differences between languages that could contribute to more successful multilingual websites that provide information that everyone can understand in a tone that convinces them to act as recommended to improve public health. This research aims to identify aspects of writer-reader relationship and technicality of vocabulary that could shed light on ways to improve comprehensibility and cross-cultural competence in multilingual health information websites on HIV and TB diagnostic testing by comparing between translated and non-translated English, Spanish, and Catalan. This chapter introduces the study of writer-reader relationship and technicality of vocabulary in multilingual health information websites on HIV and tuberculosis diagnostic testing. Then the background is provided, along with the study's contribution to the fields of Translation and Language Sciences along with Public Health by incorporating a linguistic theory-based methodology to assess writer-reader relationship and technicality of vocabulary. The objectives and research questions are presented, along with the significance and limitations. This chapter concludes with an overview of the thesis.

## 1.1 Background and justification

### 1.1.1 Why websites?

Websites have been acknowledged as a platform for health prevention, disease management, and treatments (Daraz, et al., 2019). They, along with blogs and forums to exemplify two other formats of online health communication, use digital technology and Web 2.0 to distribute health information to the public (Dynel, 2014; Diani, 2019). Such websites are an example of popularized texts formulated by the writers and the organizations that they represent with their

authoritative level (Gotti, 2014). Popularized texts, Calsamiglia and van Dijk (2004) explained, were the result of “the transformation of specialized knowledge into ‘everyday’ or ‘lay’ knowledge” (p. 370) via adaptations from expert language along with linguistic adjustments so that the lay reader may understand the information while being persuaded to heed the health message (Diani, 2019).

People refer to the Internet for health knowledge prior to seeking medical assistance (Cline & Haynes, 2001; Eysenbach & Köhler, 2002; Hesse, et al., 2005; Wang, et al, 2009; Tan & Goonawardene, 2017; Johnson, et al., 2019). Moreover, one could anonymously seek information on sensitive topics, such as sexual health, on the Internet (Rideout, 2002). Online health information is believed to foment behavioral change and reduce risk of diseases (see, for example: Suggs, 2006; Daraz, et al., 2019). The definition of lay knowledge, which refers to the general public within the context of health, is “the expression of personal experience and understanding of illness” (Diani, 2019, p. 14) and includes, in addition to disease management, seeking information online.

The motive behind the online search is to learn about health issues to make an informed decision (Hu & Sundar, 2009) about appropriate testing, preventive measures, and treatment. The lay public wants concise information written in a way that they can understand – with minimal use of technical vocabulary (see, for example: Cavalieri, et al., 2019; Brogger & Zethsen, 2021). Simultaneously, the health care industry has been promoting patient-centered care, which includes communication (see, for example: Dixon-Woods, 2001; Byrd, 2019; Cavalieri, et al., 2019; Brogger & Zethsen, 2021), so that informed collaborative decisions can be made, the patient feels respected and empowered, and is more likely to heed the website’s recommended call to action.

### 1.1.2 Why multilingual?

Health information websites available in only one language exclude people who do not know that language, which puts them at a higher risk of health issues (Flores, 2005). This then increases pressure on the health care system (Flores, 2005). The goal of multilingual health communication is the availability of information for every segment of the global population, including those who lack knowledge of the official language of the country in which they are residing. This necessity became apparent in the first months of the COVID-19 pandemic, when countries closed their borders resulting in stranded travelers. Melissen (2020) emphasizes the importance of the communication and access thereof (including language access) for foreigners, whether they are residing abroad or in the country for a short period. NYC Health, for example, consults census data to determine which languages to include in their outreach campaigns and websites; these languages are “spoken by at least 5 percent or 1 percent of

eligible or active population in NYC” (NYC Health, 2021, p. 14). To compose a quality multilingual website text, the writer and the translator need to know the similarities and differences between the languages when it comes to the specific health communication topic.

While there have not been any studies to date that evaluated the quality of multilingual websites on HIV and tuberculosis diagnostic testing, prior studies, whose details are explicated in Chapter Two, have evaluated translated and non-translated health information texts around the world, with focuses ranging from the quality of the translation process of public information leaflets (PILs) (Jensen, 2013) to that of patient-reported outcome measures (PROMs) (Petkovic, et al., 2015) to health questionnaires (Clerehan, et al., 2016). Other studies have also evaluated the quality of multilingual health information websites (see, for example, Lawrentschuk, et al., 2009; Lawrentschuk, et al., 2012; more details in Section 2.1). However, considering the ongoing health inequity and demographic shifts in developed countries, further research is required to improve multilingual health information websites by ensuring that the translated versions are well executed for the target audiences.

To deliver multilingual health information, the original text is translated using various methods, from an automated machine translation widget embedded into the website (e.g., Google Translate) to professional translators, and a combination thereof (Kusters, et al., 2021). While machine translation is unlikely to affect the tone or the level of technicality of vocabulary in the text, its use runs the risk of omissions of source text information, wrong terminology, and grammatical errors. To prevent these issues in health communication texts, restricting the task to professional translators, who should be the only ones to use machine translation as one of their instruments, would be ideal. Unfortunately, this is not currently the case. Translation of a health communication text by a non-professional incurs the risk of an upward shift, as opposed to an equivalence, in the use of technical medical terms typically used in the industry but not familiar to the public (Jensen, 2013; Askehave & Zethsen, 2014; Montalt, et al., 2018), as well as a tone that would be normal in communication between health professionals but would alienate the public (Askehave & Zethsen, 2002; Jensen, 2013). “In translation, whether human or mechanical,” Halliday (2012/2013, p. 145) noted, “the basic problem for the translator is the problem of choice – as is the decision of a writer whether to prefer this form of expression over that one.”

Such choices of expression influence translating, which is defined by Hatim and Mason (1990) as “a communicative process which takes place within a social context” (p. 3). “Process” is the operative word: while this thesis analyzes the end product, which in this case is multilingual health information website texts, the focus is on the *choices* of the writers and the translators. These decisions in the translation process are influenced by the context of the situation, also referred to as the *register*, which is the variations between language used within a given situation (see, for example, Hatim & Mason, 1990, p. 46). In this case, the context of

situation is the multilingual health information website's objectives to inform the reader about an infectious disease and to persuade them to get tested for it. In addition to the context of situation, the sociocultural background – which includes their language, profession, and personal heritage – influences the writers' and translators' choices. All these deciding factors affect the tone – and its possible variation from that of the source text – in a multilingual health information website.

Translating is “an act of communication which attempts to relay, across cultural and linguistic boundaries, another act of communication (which may have been intended for different purposes and different readers/hearers)” (Hatim & Mason, 2005, p. 1). These “acts of communication” include their *tone*, which the Oxford English Dictionary defines as, “an author's attitude to his subject matter or audience; the distinctive mood created by this” (OED Online, 2022). The reader's perception of the writer's and translator's tone, along with the writer's and translator's expectations of the reader's ability to comprehend the text as reflected in word choices, are influenced by their respective sociocultural background. In multilingual health information websites, one must consider not only the sociocultural and textual aspects of the translation process, but also the pragmatic sense, which is explained in Section 1.1.3.

### 1.1.3 Why “pragmatic”?

The word “pragmatic,”<sup>3</sup> as applied to this study, refers to “the nature of intended meaning” (Hatim & Mason, 1990) that is influenced by “the relationships between language, its users and the contexts in which they operate” (Butler, 1988, p. 83). Suau Jiménez (2001) noted that the pragmatic perspective based on Systemic Functional Linguistics (SFL), the theoretical framework presented in Section 3.2 that is “increasingly recognized as a very useful descriptive and interpretive framework for viewing language as a strategic, meaning-making resource” (Egins, 2004, p. 2), has proven successful for translation professionals to transfer the message from the source text.

However, a translator must be conscientious of any equivalence<sup>4</sup> or shift as regards the usage of technical terminology and the writer's approach to transmitting the message, both of which influence how the reader perceives the writer's tone. Such a tone as perceived by

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<sup>3</sup> Variations in techniques, classifications, and terminology have diverged, rendering impractical any comparison among the prior research in Pragmatics (Aijmer & Simon-Vandenberg, 2011; Fischer, 2006). It should be noted that this thesis operates on the definition selected. This thesis focuses specifically on the effects of the two pragmatic determinants presented in Sections 1.2.1 and 1.2.2 on the quality of multilingual health information website texts about HIV & TB diagnostic testing.

<sup>4</sup> True equivalence between the source text and the translated text, according to Hatim and Mason (1990), is impossible to achieve. They recommend that “equivalence” be considered in relation to adequacy, in terms of the most precisely similar possible translation.



the reader of written discourse pertains to the interpersonal interaction with the writer, e.g., the reader may perceive the text as conversational or as formal, which could reflect the writer's authority level (Yu, et al., 2022). Along with affecting the writer's tone, translation equivalence and shifts influence the readers' ability to correctly interpret the health information text beyond the way a sentence relates to the previous ones, as well as within the context around the writer and the reader (Eggins, 2004). In addition, SFL states that a piece of writing could have ideational meanings and interpersonal meanings (Eggins, 2004). Ideational meanings reflect the way that experience is represented using language, since the topic is either "about something or someone doing something" (Eggins, 2004, p. 12). The upcoming subsection presents interpersonal meaning and the first of the two pragmatic determinants (which are two indices of register) that this thesis focuses on: writer-reader relationship.

#### *1.1.3.1 Writer-reader relationship*

Interpersonal meanings in SFL refer to role relationships, which is referred to in SFL as the *tenor*<sup>5</sup> and which this thesis deals with as writer-reader relationship. The writer is identified as the representative who composed the text. This representative could be an individual author or the organization (Sarangi, 2019) that provides the multilingual health information website. The reader is defined as the individual who reads the health information on the website. In a comprehensible and culturally appropriate text, the writer and the reader are identified clearly, and the dynamics of their relationship are distinctly outlined with appropriate language usage. Within the context of this study, the writer is the expert, whose responsibility is to impart knowledge and advice to the reader, who is the lay person. Writer-reader relationship concerns "their relative status, and the implied relationship (the tenor) [which] is indicated by forms of address" (Morony, et al. 2018). Analyzing this determinant concerns not only the identity of each role player, but the writer's attitude as perceived by the reader. Some examples of attitudes are persuasive, instructional, or collaborative (Clerehan, et al. 2005).

The cultural background of the writer and the reader influences the interaction through the language used in the text. The ideal text for successful health message transmission is culturally adapted, as opposed to solely reflecting the writer's background or exclusively representing the country hosting the website, to meet the reader's expectations based on their cultural differences. The unique characteristics of each language must be considered when rendering different versions of a multilingual health information website. Such characteristics affect the writer's choices of words and grammatical arrangement.

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<sup>5</sup> Tenor, which refers to the people involved, and which forecasts interpersonal meaning, is explained in detail in Section 3.2.

One vital aspect of cross-cultural competence in health information websites is the way the writer addresses the reader, i.e., formally with the writer distancing themselves from the reader, or informally with the writer referring to the reader as a familiar person. For example, in English, the writer could render the text as more formal by referring to a neutral third person instead of using the second-person pronoun, which is equally applied to informal and formal situations.<sup>6</sup> Alternatively, a text rendered in Spanish could be culturally adapted from the English deference to a neutral third person by using the second-person formal pronoun. In Romance languages, there are two different second person pronouns for formal and informal situations (Montero Fleta, et al., 2003; Azevedo, 2005), such as the peninsular Spanish *usted* and *tú*, respectively. Latin American Spanish features even more variations. These important distinctions reflect one example of cultural differences regarding language use. It is vital for the details within a health information website text to remain equal while presented in a culturally appropriate manner for each linguistic group (Petkovic, 2015). Cross-cultural competence is required for the writer to adjust language usage to suitably reflect their attitude, or tone, as perceived by the reader.

Writer-reader relationship regards interpersonal meaning. Ideational meaning figures more in the second of this thesis' two pragmatic determinants: technicality of vocabulary, which is presented in the next subsection.

### 1.1.3.2 *Technicality of vocabulary*

Word choices can be decisive for the writer's connection with the reader. The choice between specialized medical words or layman's terms that the reader is more likely to know reflects the writer's attitude towards the reader. Writer-reader relationship and technicality of vocabulary are correlated in that they lie in the author's assumption of the target audience's reading comprehension and health literacy level (Clerehan et al. 2005).<sup>7</sup> A *term* is defined as "a word or phrase used in a precise sense in a particular subject or field, or by a particular group of people; a technical expression; a piece of jargon" (Oxford English Dictionary, n.d.). Similarly, *terminology* is defined as "the system of terms belonging to any science or subject; technical terms collectively; nomenclature" (Oxford English Dictionary, n.d.).

According to Ha & Hyland (2017), researchers differ on a definition of *technical words* (or *technical vocabulary*) and its features. One definition relates technical vocabulary to the kind of words typically included in text rendered and read within a particular group of

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<sup>6</sup> The English language implements other methods to express the level of formality in the tone. Please see Section 5.2.1 for more examples regarding the differences between languages regarding formal and informal tone.

<sup>7</sup> Details on the correlation between the two pragmatic determinants are provided in Section 3.2.3.

specialists. Such a text features vocabulary that is “domain-specific” and “requires scientific knowledge to understand” (Paquot, 2010, p. 13), and “includes words closely related to a specific sub-field and not frequent in other fields” (Valipouri & Nassaji, 2013, p. 249). For others, the key to a vocabulary’s technicality lies in the fact that such terminology carries a restricted meaning and appears primarily in a particular domain (Mudraya, 2006; Nation & Newton, 1997; Valipouri & Nassaji, 2013; Ha & Hyland, 2017). According to Mudraya (2006, pp. 238-239), such key words possess “no exact synonyms and have a very narrow range of interpretations within a particular field.” Vezzani, Di Nunzio, and Henrot (2018, p. 4369) add to this idea: technical terms are “closely related to the conceptual and practical factors of a given discipline or activity.” Such words possess a *complexity* in the sense of having a complicated and intricate quality (Oxford English Dictionary, n.d.), unlike words that are used by the public – that is, by everyone regardless of their background – on a day-to-day basis. Clerehan et al. (2005) describe technicality of vocabulary as “the degree of complexity of the medical terminology and/or other vocabulary used,” which is the definition adopted for this study. Within the SFL framework, technicality of vocabulary lies under the register parameter or semiotic function called *field*, which is the area of external reality with which the text deals (Clerehan & Buchbinder, 2006; Halliday & Matthiessen, 2014a & 2014b). A high number of terms undermines the readability of health information for the public (Hoste, et al. 2010).

This thesis focuses on the level of specialization of lexis and whether medical terminology appears in multilingual health information websites. No empirical research has analyzed health information website texts, which are an example of the SFL register parameter called *mode*. Mode pertains to the functions given to language within the given scenario and forecasts textual meanings (Halliday & Matthiessen, 2014a & 2014b) regarding technicality of vocabulary and writer-reader relationship. Analyzing these two pragmatic elements can shed light on the interactions between language, its users, and the context in which they all occur in multilingual health information websites. Understanding these interactions can highlight differences in cultural characteristics unique to a particular language. In addition, the findings of this study could provide insight into ways to improve the comprehensibility and readability of multilingual health information websites to improve their readers’ health literacy. The next section presents these three concepts named in the last sentence.

#### 1.1.4 Why comprehensibility, readability, and health literacy?

To understand a multilingual health information website, the audience requires the appropriate reading level, knowledge of the language and any necessary prior knowledge of the subject. In the public health field, quality assessments of multilingual health information websites

overlook critical details in terms of comprehensibility, which is defined as the ability of the text to be understood (Pons, et al., 2021) as related to the target audience's background, "such as native language, reading skills, prior knowledge, or disabilities" (Rossetti, 2019, p. 7). Multilingual health information that is comprehensible educates and empowers its target audience (Dixon-Wood, 2001). Comprehensibility is distinct from readability, which is more visual in terms of perceived difficulty in reading due to the characteristics of the text (Rossetti, 2019; Pons, et al., 2021). Numerous website evaluations, detailed in Section 2.1, find that the readability is too difficult (i.e., the readability score is too high. See, for example: Lindley, et al., 2012; Rew, et al., 2018; Cisu, et al., 2019; Gilbert, et al., 2019; Kecojevic, et al., 2020; Mac, et al., 2021).

The ability to read *and* comprehend information about a medical issue requires health literacy, with which an individual can "obtain, process, and understand basic health information [...] to make appropriate health decisions" (Institute of Medicine, 2004; Rosenbaum, et al., 2016; Parker & Ratzan, 2010, p. 20). Health literacy, in addition to readability and comprehensibility, requires that the reader has some knowledge about health topics. Health literacy varies among a multilingual target audience – for example, in the United States, health literacy is nearly three times more limited for Hispanics (65%) than for white adults (28%) (Howe, et al., 2016). A health information website containing numerous biomedical terms may be less comprehensible, especially if those terms are not accompanied by a definition. For example, a study by Kecojevic, et al., 2020, found an excess of technical terms in online information on an HIV preventive treatment.

Incomprehensible health information website texts are written or translated in a manner that leaves the reader feeling frustrated and anxious due to their inability to understand the text, which leads to failure to receive medical attention as well as noncompliance (Dimatteo, Lepper, & Croghan, 2000; Stairmand, et al., 2015). This results in health disparities (Blasi, et al., 2021), whose definition is provided by the Office of Disease Prevention and Health Promotion [(ODPHP), n.d.]:

A higher burden of illness, injury, disability, and/or mortality that is experienced by one group relative to another due to current or historic disadvantage, oppression, or racism, which is manifested through inequitable social, economic, and environmental systems.

This impact is experienced intersectionally and may compound over time.

This study will contribute to reducing health disparities as well as to health literacy research and practice through analyzing the technicality of vocabulary, as well as the tone set by the writer and the translator.

Failure to adapt the tone of the text according to the culture of the readers with low health literacy could exacerbate health disparities. Culture<sup>8</sup> is defined in this thesis as a set of meanings and values (Halliday and Hasan, 1989, p. 46). Health literacy varies among the different cultural communities – “cultural” in terms of national, religious, sexual, physical, or any other feature – within a city, region, or country, each community living with their own set of meanings and values<sup>9</sup> differently from other communities. Language and culture share common ground regarding the communication process (Vladimirovich, 2021). Culture influences language in terms of the writer’s choice of words and how the reader interprets them. Comprehensibility of a health information website is vital when it is translated and adapted for different cultures (Petkovic, 2015). Inherent cultural differences between communities that speak a different language among the target audience of multilingual health information campaigns, as well as the role that power plays in the dynamics between the writer and the reader, could undermine the prognosis of members of certain populations who defer seeking medical attention until their condition becomes intolerable (Johnson, et al., 2019; Tan & Goonawardene, 2017; DuBard & Gizlice, 2008). The ability to adapt each language version of multilingual health information website texts reflects the writers’ and translators’ cultural sensitivity towards their target audience. Such sensitivity regards cross-cultural competence,<sup>10</sup> whose most frequently used definition (Botelho & Lima, 2020) is that of Leininger (1991):

...refers to those cognitively based assistive, supportive, facilitative, or enabling acts or decisions that are tailor made to fit with individual, group, or institutional cultural values,

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<sup>8</sup> The definition of culture depends upon the field of study. In interdisciplinary research, including several definitions provides clarity. Napier, et al., in their paper on Culture and Health published in *The Lancet*, recommended the following definition: “The shared, overt and covert understandings that constitute conventions and practices, and the ideas, symbols, and concrete artifacts that sustain conventions and practices, and make them meaningful” (2014, p. 1610). Napier, et al. (2014) highlighted the difficulty of recognizing our own culture and that such a concept exists, resulting in *culture* as a vague concept that needs a clearer definition. Health promotion should be studied as a culture (Napier, et al., 2014), interacting with those of the recipients to foment wellness of both the individual and the community. A frequently used definition of culture is *a set of beliefs, practices, norms, and values that are shared by a group* (Inglehart, 1997; Hofstede, 2001; Gutterman, 2010; emphasis mine), although sociologists have differed on its nuances. The following definition of culture – “a way of dividing people up into groups according to some feature of these people which helps us to understand something about them and how they are different from or similar to other people” (Scollon, et al., 2012, p. 3) – allows for variations regarding such nuances.

<sup>9</sup> Halliday and Hasan’s (1989) definition of culture to “cultural communities” may seem simplistic, but it’s on the same plane as the following explanation by Scollon et al. (2012), based on their definition in the previous footnote, that cultural communities can be understood as groups with a common trait that distinguishes them from other people. This explanation of cultural communities, however, can be deceiving, since considering one group – for example, gender – omits others, such as race, sexual orientation, religion, to name a few. It is vital to view culture as multifaceted and avoid “lumping” – assuming people of one “culture” are alike – or “binarism” – assuming people are different due to representing distinct “cultures” (Scollon, 2012, p. 4) to reduce health disparities.

<sup>10</sup> Also known as cultural competence. This is not to be confused with intercultural competence, which is the intermingling of two or more cultures (González, n.d.).

beliefs, and lifeways in order to provide or support meaningful, beneficial, and satisfying healthcare, or well-being services (p. 49).

Cross-cultural competence is an important quality which is frequently overlooked in studies which assess readability and overall quality of health information websites (see for example Rew, et al., 2018), while other studies focus on the visual aspects of the websites rather than the textual contents (see for example Howe, et al., 2016) or use an instrument that can only generalize (see for example Johnson, et al., 2019) so that a lack of cross-cultural competence could be detected without specifying the cause. There is a need to more accurately assess cross-cultural competence within the text of multilingual health information websites.

This study's corpus includes multilingual websites from and/or specifically for the LGBTIQ+ community, which may have been written by representatives from the public health community, some of whom may also represent the former group. Language is among the cultural barriers that contribute to health disparities experienced by people from migrant and immigrant communities of diverse backgrounds, including those who also form a part of the LGBTIQ+ community, are among the high-risk groups. The corpus in this study will be assessed for cross-cultural competence that appeals to the target audience without any offense, particularly regarding potentially stigmatized or taboo subjects such as infectious diseases. This study's trilingual corpus comprises health information about HIV and tuberculosis diagnostic testing.

### 1.1.5 Why HIV and tuberculosis?

Comprehensible multilingual health communication that reflects the writer and translator's cross-cultural competence is necessary in the fight against infectious diseases such as tuberculosis and HIV to reduce their spread and prevent contagion. A systematic review by Batchelor, et al. (2019) found that language needs have been overlooked in HIV/AIDS-related health communication. Quality health information in their own language would reduce health disparities in the community by motivating the public to get tested and, if positive, get treatment to prevent community transmission of the disease. An early HIV diagnosis followed up with early treatment reduces incidence, morbidity, and mortality (Branson, 2019; Branson, et al., 2006; Moyer, V.A., 2013; Qaseem, et al., 2009).

The estimated number of HIV cases in the United States was 1,189,700 by the end of 2019 (CDC, 2021). By 2019, in Catalonia, an estimated 33,700 people are living with HIV (Comite 1 Desembre, 2021), and 56% have reported discrimination due to their HIV status and 87% were discriminated against for reasons including racism and homophobia (Comite 1 Desembre, 2021). In Spain's Balearic Islands, 2,600 live with HIV as of 2018 (Govern Illes

Balears Conselleria Salut i Consum, 2018), and in the autonomous region of Valencia, 14,553 people have been living with HIV as of 2020 (Generalitat Valenciana, 2021). The Secretary of Health and Human Services of Generalitat Valenciana, Ana Barceló, noted the persisting “need to overcome the social stigma and senseless clichés” of HIV (Generalitat Valenciana, 2021), with which multilingual health information websites could help. In all of Spain, approximately 150,000 people are living with the virus as of 2020 (UNAIDS, 2021). In 2019, 46.6% of the newly diagnosed in Spain had immigrated from Latin America and 22.7% from Africa (Unidad de Vigilancia de VIH, ITS y hepatitis, 2020). For the same year in the United States, 42.1% of Blacks and African American people and 21.7% of Hispanic and Latino people were diagnosed with HIV (hiv.gov, 2021). While 80% of people living with HIV live in twenty countries, this infectious disease continues to be a global crisis (Institut de Recerca de la Sida, 2021).

One need not have HIV to be an unwitting tuberculosis carrier and spreader. In addition, one could have a latent tuberculosis infection (LTBI), get infected with HIV, go years without diagnosis and treatment for either, and the HIV or other microbial infection progressively breaks down the body’s immune defense to the point where the tuberculosis infection becomes active. To reduce the risk of morbidity, mortality, and community transmission, there is a need for comprehensible multilingual health messages that inform the public that testing positive for one of these two infectious diseases should be followed by a test for the other. This study contributes to this end through the analysis of writer-reader relationship and technicality of vocabulary in multilingual health information websites on TB and HIV diagnostic testing.

The total incidence of tuberculosis for 2020 was 3,400 (230 of whom had an HIV coinfection) in Spain (World Health Organization, 2021a) and 7,900 (380 of whom had an HIV coinfection) in the United States (World Health Organization, 2021b). In 2018, Catalonia was the Spanish autonomous community with the highest number of cases of tuberculosis at 944 (SEPAR, 2020). The other Spanish autonomous communities whose Catalan-language texts are included in this study are the Balearic Islands with 135 cases and Valencia with 315 cases in 2018. (SEPAR, 2020). In the efforts to diagnose both tuberculosis and HIV early to reduce transmission and prevent progression to debilitating illness and ultimately death, multilingual health information campaigns featuring language that reflect the writer and translator’s cross-cultural competence are crucial.

These two infectious diseases prevail internationally – other countries that host some of the multilingual health information websites in this study’s corpus include England, Ireland, Germany, and Switzerland – and continue to be accompanied by stigma and discrimination on the part of all the key players, be they the writers (Ávila & Gras, 2014) and translators, the readers, or the third-party influencers: health workers, policy makers, the public, and

communities that speak a language other than the region's primary, including immigrants and migrants. Writers and translators of health information websites do not always bear in mind the effects of public health categorization practices and media portrayal in the process of rendering text intended to persuade their target readers to take appropriate action to prevent the spread of infectious diseases. Such disregard of cross-cultural competence places multilingual communities at risk of health disparities resulting from inaccessibility to comprehensible information.

### 1.1.6 A summary of all the why's

Health literacy varies among the different language communities (Howe, et al., 2016) within a city, region, or country, resulting in health disparities (Epstein, 2020). Comprehensibility issues persist in multilingual health information websites due to the prevalence of specialized terms (Hoste, et al., 2010; Kecojevic, et al., 2020; Mac, et al., 2021). There is a risk of an upward shift in technicality of vocabulary in the translated versions of the original language text in multilingual health information websites (Askehave & Zethsen, 2014; Montalt, et al., 2018), as well as a lack of cross-cultural competence on the writers and translators' part to render an appropriate tone for the different target audience groups (Payton & Kiwanuka-Tondo, 2009; Kusters, et al., 2021; O'Callaghan, et al., 2021). To analyze writer-reader relationship and technicality of vocabulary, which affect the comprehensibility and reveal the writers and translators' cross-cultural competence of multilingual health information websites about HIV and TB diagnostic testing in English, Spanish, and Catalan, there is a need for studies using linguistic and translation studies frameworks and methodologies that have established reliability and validity. It is important to fill this gap in research because comprehensible multilingual health information websites reduce health disparities (Epstein, 2020) and may reduce the incidence of HIV and TB. Analyzing writer-reader relationship and technicality of vocabulary using linguistic frameworks and methodology could shed light on ways that writers and translators could improve their cross-cultural competence and render the multilingual health information websites more comprehensible.

## 1.2 Framework: Applying language science knowledge to improve health communication

The most frequently applied health behavior theories lack the guidelines to improve comprehensibility and cultural adaptation in health communication. There is a need for research that incorporates the sociocultural aspects of language in multilingual health information



websites using a well-established linguistic framework. Clerehan et al. (2005) developed an evaluation tool, the Evaluative Linguistic Framework (ELF), based on Halliday's theory of Systemic Functional Linguistics (SFL) (Halliday & Matthiessen, 2014a), which they and other researchers have used to analyze health communications texts, including patient information leaflets (PILs) (Clerehan, et al., 2005; Clerehan & Buchbinder, 2006) and informed consent documents (ICDs) (Sand, et al., 2012). The cross-cultural appropriateness of this tool has been demonstrated on patient questionnaires in multiple languages (Clerehan, et al., 2016; Petkovic, et al. 2015) and most recently in caregiver informative materials (Cavalieri, et al., 2019). Health information websites will be a new type of register to which the ELF will be applied.

The Evaluative Linguistic Framework (ELF) is based on the theory of SFL in terms of language (text) interacting with the context of situation (the three elements of register) that in turn interacts with the context of culture (genre) (Halliday & Matthiessen, 2014a). Genre, which comprises of "the rhetorical features of a text and the semiotic communicative purpose(s) it serves" (Alyousef & Alyahya, 2018), is determined by "social practices, knowledge, and values," (Morony, 2018, p. e2) all of which constitute culture (Halliday & Matthiessen, 2014a). Based on these SFL concepts, the ELF was designed to analyze health communication texts to determine whether the texts are appropriately written so that they positively influence the comprehensibility, which can result in their usefulness for the readers (Morony, 2018).

The ELF incorporates nine determinants, each of which is measured via a questionnaire. The first seven include: overall organizational or generic structure of the text, rhetorical elements, metadiscourse, headings, lexical density, factual content of text, and format. The last two of the determinants are the focus of this study on the quality of health information websites on HIV and tuberculosis diagnostic testing: writer-reader relationship and technicality of vocabulary. The next two subsections explicate these two determinants.

### **1.3 Aim and scope**

This thesis therefore strives to analyze writer-reader relationship and technicality of vocabulary in multilingual health information website texts on HIV and TB diagnostic testing for any differences in comprehensibility and cross-cultural competence between the non-translated and translated versions in English, Spanish, and Catalan. As a whole, this thesis aims to identify any such differences within this study's corpus. This purpose is driven by the desire to improve the writer and translator's ability to adapt each language version of future multilingual health information websites while rendering them easier to understand overall,

i.e., lay-friendlier. To achieve this motivational aim, the differences in terms of the two determinants in question need to be identified.

As of the submission of this thesis, no prior research exists that evaluates comprehensibility or cultural adaptation of multilingual health information websites on HIV or tuberculosis. A knowledge gap exists regarding the comprehensibility and cross-cultural competence differences between the included languages – English, Spanish, and Catalan – in multilingual health information websites that have been evaluated through discourse analysis. This is the first study to apply a methodology based on linguistic frameworks to multilingual health information websites on HIV and TB diagnostic testing. For translation and language sciences researchers and teachers, as well as those in biomedicine, this study will provide an important opportunity to advance the understanding of the cross-cultural and comprehensibility differences between languages in multilingual health communication. The professional stakeholders in industry capacities, such as government public health departments, non-profit organizations, and health care providers, will benefit from the knowledge gained from this study. Such knowledge can be applied to educate current and future professionals about key linguistic elements in written multilingual health communication and their cross-cultural differences according to language. With the new information based on this thesis, health professionals will be better equipped to transmit the message to a multilingual audience to foment a healthier society.

#### **1.4 The objective and the research questions**

The objective of this study is to reveal any differences – between non-translated English, Spanish, and Catalan, and between translated and non-translated texts within each of these three languages – in writer-reader relationship and technicality of vocabulary in multilingual TB and HIV diagnostic testing health information websites. Differences detected between any of the corpora will be evaluated for comprehensibility and cross-cultural competence.

In the evaluation of writer-reader relationship, it is necessary to start with pinpointing the issues of writer-reader relationship in the three non-translated language sub-corpora, i.e., in the English, Spanish, and Catalan sub-corpora. This analysis is followed by a comparison between the non-translated and the translated sub-corpus for each language, e.g., the non-translated English texts with the translated English texts. Therefore, regarding writer-reader relationship, the research questions are as follows:

1. In the health information websites on HIV and TB diagnostic testing in English, Spanish, and Catalan, are there variations regarding writer-reader relationship between:

- a. The non-translated texts?
- b. The non-translated and translated texts?

What are the key cross-linguistic similarities and differences?

Any differences in the writer's tone need to be detected to evaluate *how* the translated and non-translated English, Spanish, and Catalan health information websites on HIV and TB testing vary from one another. The differences in the writer's tone that affect the comprehensibility of the text include any reflection of cross-cultural competence in terms of language usage in the translated texts.

Askehave & Zethsen (2014) and Montalt et al. (2018) noted that translations of a health communication text from the original language increase the technicality of the vocabulary in the target language. As a result, the target language text winds up being more difficult for the public to comprehend. However, a limited number of technical words in a health information website can be introduced in a way that improves the reader's health literacy. Therefore, the following research questions regarding technicality of vocabulary are:

2. How technical is the vocabulary in the websites about HIV and TB diagnostic testing in the translated and non-translated versions of English, Spanish, and Catalan websites on HIV and TB testing?
3. Are there any differences in the treatment of technicality of vocabulary between the translated and non-translated versions of English, Spanish, and Catalan health information websites on HIV and TB testing?

Analyzing technicality of vocabulary and writer-reader relationship could shed light on impediments to the comprehensibility of health information texts due to language and cultural barriers. In both cases, the writer could be a health professional and the reader a citizen with no specialized knowledge of medicine. For instance, will the writer's presumptions regarding the reader's health behavior and decision-making be consistent across all linguistic groups in online HIV and tuberculosis information? The writer's tone as expressed in the text and use of technical words and the reader's reception of the two determinants could either result in a health disparity or promote health equity.

## **1.5 Methodology: a six-step sequence**

The methodology consists of six steps and involves the aforementioned ELF instrument developed by Clerehan, et al. (2005) along with an instrument to classify specialized terminology. The first step involves the construction of the corpus of 73 multilingual health information websites in English, Spanish, and Catalan. It consists of 151 texts of varying lengths. In step two, a list of the extracted words is created for each language in a table format to facilitate the classification of technicality according to the dictionaries. For the third step, three different dictionaries per language are consulted to complete the word lists. The fourth step, the classification of the technicality of vocabulary, is executed in two parts: each word is classified in the word lists, and then the word lists are used for the classification of each word extracted from the pertinent text to assess the technicality of the text. The remaining two steps, which requires the use of a computer assisted qualitative data analysis software (CAQDAS), involves the application of an adapted version of the ELF instrument to analyze technicality of vocabulary and writer-reader relationship in each of the 151 texts.

The ELF questionnaire and the classification instrument (Technicality Analysis Model (TAM) by Ha & Hyland, 2017) are adapted for this study. Together with the evaluation of the overall technicality of the website text, these instruments ascertain whether a website is comprehensible in terms of health literacy and culturally adapted regarding language usage. The data collected via these six steps then undergo statistical analysis to obtain the results that guide the comparison of the sub-corpora to answer the research questions.

## **1.6 Significance and Limitations**

This thesis will contribute to the understanding of comprehensibility and cross-cultural competence in multilingual health information websites, address the shortage of studies in this field, as well as prove useful for public health writers and translators, so that improvements in future website text composition and translation will ultimately reduce the incidence rates of HIV and TB.

The scope of this study is limited to writer-reader relationship and technicality of vocabulary. While the methodology features a mixed-methods approach, there remain the risks for subjectivity presented by the qualitative aspects and the risks for oversimplification presented by the quantitative analyses. Another limitation includes the learning curve of a pre-doctoral researcher in the process of building on their skills set, as well as the imbalanced language sub-corpora (see Section 4.2) due to the smaller Catalan linguistic population. This research focuses on multilingual health information websites on HIV and TB diagnostic testing

in English, Spanish, and Catalan; and therefore, generalizability to other diseases and languages needs to be done with generous caution. In fact, such desire to generalize the outcomes of this study will hopefully foment future research on multilingual health information websites for other diseases and in additional languages.

## **1.7 Thesis structure**

This study follows the two-pillar methodology format of text genre plus the three-phase process (conceptual, empirical, and interpretative) of specialized genre research in translation as proposed by Borja, García Izquierdo, & Montalt (2009). The conceptual phase is outlined in Chapters 2 – which details the prior studies – and 3 – which presents the theoretical frameworks. Chapter 4 introduces the empirical phase, and Chapters 5 and 6 meet the requirements of the interpretative phase.

Chapter 3 explains the theoretical framework on which the methodology is based. It details the relevant aspects of Systemic Functional Linguistics and introduces the Evaluative Linguistic Framework. The two determinants are presented within the framework of Systemic Functional Linguistics and Evaluative Linguistic Framework to outline this study's viewpoint. In a general sense, this perspective is bolstered by Mishler's (1984) *Voice of Medicine* and *Voice of Lifeworld*. This chapter will also present the most frequently applied health behavior theories to show the gap regarding improving comprehensibility and cross-cultural competence of health communication and will conclude with the recommendation to incorporate a linguistic framework to analyze health promotion campaigns, such as a multilingual website that informs about HIV and TB testing.

Chapter 4 outlines the methodology. The inclusion and exclusion criteria are listed for the selection of multilingual health information websites on HIV and TB testing. Pilot tests are described to justify the adaptations of Clerehan and Buchbinder's (2016) ELF-Q instrument to assess writer-reader relationship and technicality of vocabulary in multilingual health information websites. The procedure for the analysis of writer-reader relationship and technicality of vocabulary, along with the statistical analyses, are explicated. The qualitative and quantitative analyses for writer-reader relationship are provided in Chapter 5, and for technicality of vocabulary in Chapter 6. Chapter 7 includes limitations along with implications for future research and practice and closes this thesis with the conclusion.



## 2. LITERATURE REVIEW

***“It’s not what you see that is art. Art is the gap.” (Marcel Duchamp, 1957)***

Twentieth century artist Marcel Duchamp refers to the difference between purpose and fulfillment, what we already have and what we lack; that missing element is the focus. Likewise, in research: this chapter presents a review of relevant prior studies and their gaps, which form the focus of this thesis project. Like medical students who train by studying how the body functions in homeostasis to better understand exactly what happens pathologically, this chapter presents previous research in the quality, and the readability and comprehensibility, of online health information. This chapter reviews prior research relevant to analyzing health information websites in one language and in multiple languages. It also exemplifies scientifically established tools used by researchers to highlight why, in this thesis study, certain frameworks and instruments have been selected over others to answer the research questions. The background of the two instruments used in this study are provided. Regarding writer-reader relationship, the research questions address whether there are any differences and any cross-cultural adaptations in the clarity of the information and the writer’s tone that affect the comprehensibility of the translated and non-translated English, Spanish, and Catalan health information websites on HIV and TB testing. As to the other focus of this study, this research queries how technical the vocabulary is in the websites about HIV and TB diagnostic testing in the translated and non-translated versions of English, Spanish, and Catalan websites on HIV and TB testing, and whether they differ between languages and between translated and non-translated texts within each language.

### **2.1 Testing the comprehensibility and cross-cultural adaptation of health communication websites**

The definitions of comprehensibility and cross-cultural competence were presented in Section 1.1. Cross-cultural adaptation is based on cross-cultural competence. A writer or translator could possess or lack cross-cultural competence, and a text would reflect this; it would either be cross-culturally adapted or not. There exists surface-level (e.g., language) and deep-level adaptations (e.g., preferences, customs, and values) (Cabassa, et al., 2018). Cross cultural adaptation involves consideration about “the local political, religious, and economic context as well as the cultural norms and family practices of country and internal ethnic groups” (Kumpfer,

et al., 2008, p. 229) that should be carefully done under the guidance of evidence-based research and theory (Guillemin, 1995; Kumpfer, et al., 2008).

Guillemin (1995) presented guidelines for cross-culturally adapting health status measures, whose similarity to health information websites is that they are written by health professionals for clinicians along with lay readers. Health status measures such as those that gauge quality of life are questionnaires that are either read aloud by a clinician to a patient or a copy is given to the patient, and in either case, which the patient would respond for the clinician to obtain a measure of the patient's perceptions. Guillemin (1995) describes cross-cultural adaptation as "comprising of translation in standard language plus adjustment of cultural words, idioms and context, possibly involving the complete transformation of some items in order to capture the same concept" (p. 61) and stresses that "the adaptation should keep equivalent the material issued from previous work and preserve all aspects of its validity" (p. 63).

Cross-cultural adaptation is a practice that is worthwhile for multilingual health information website translators to achieve compliance among the readers across all the included language groups. Translators may find that following the cross-cultural adaptation guidelines (Guillemin, 1995; Guillemin, et al., 1993) is time-consuming; however, it is cost-effective and is the result of trials and development by sociologists, psychologists, and researchers specialized in methodology, along with health communication experts (Guillemin, 1995). The first step is translation – producing multiple versions by qualified translators. Each translated version is then back-translated by qualified back-translators to catch any errors. The third step involves a multidisciplinary committee to compare the source and translated texts, using a structured approach to resolve any issues, ensure comprehensibility, and confirm appropriate cross-cultural adaptation. The fourth step is the pre-test to verify equivalence in the source and translated texts, perhaps by recruiting bilingual lay people. The final step, which is not relevant to multilingual health information websites but is indeed relevant for the patient questionnaires that Guillemin (1995) focuses on in the presentation of these guidelines, is the weighting of scores adapted to the cultural context. Following established cross-cultural adaptation guidelines for multilingual health information websites, which as far as could be determined as of the publication of this thesis do not yet exist, would render the text more acceptable by the target readers, who would be more likely to heed the call to action and thus reduce health disparities. However, a big question relevant to this thesis study remains: how can the quality of comprehensibility and cross-cultural adaptation truly be checked? No standardized methods exist to assess the quality of online health information.

Rew, Saenz, and Walker (2018) strove to fill this gap by creating an eight-step methodology. A topic was first selected, and the objective of the evaluation was identified. The third step was to select search keywords and engines, followed by the outlining of inclusion



and exclusion criteria for the website search. Creating the process and instruments to organize the search results was the fifth step. Then the measures of quality were selected, followed by a readability analysis. Finally, the websites were assessed. The trio of researchers demonstrated this methodology with an analysis of online health information about gynecomastia.

This purpose of this research team's analysis was to demonstrate this eight-step methodology, ascertain the readability of the websites, and find the first three Health on the Net (HON)<sup>11</sup> certified websites on each of the three most popular search engines. "Gynecomastia" and "man boobs" were the chosen keywords used on Google, Yahoo, and Bing, a decision that Rew, Saenz, and Walker (2018) based on prior research by Davis, et al. (2017), Fox & Duggan (2013), and Chris (2018). The next step involved including websites comprising of "definitions, diagnostic criteria, and treatments" (Rew, et al., 2018, p. 2223), along with limiting the publishing time to 2015 through 2017. Advertisements and unconfirmed treatments were excluded duplicate websites. The authors recommended establishing a reading ease score cutoff as a criterion to ensure that the resulting websites meet the ideal readability level. Two researchers independently applied the HON and DISCERN (Charnock, et al., 1999) instruments to the included websites, and then met to confirm their findings using a preset table.

DISCERN is a questionnaire with 16 elements. Formulated at Oxford University, this instrument is split into three sections: the first evaluates reliability, the second part examines the details of treatment option information, and finally there is an overall rating about quality. The answers to each question are on a scale from one (very poor) to five (excellent).<sup>12</sup> DISCERN carries high validity and inter-rater reliability, however at least two researchers should perform this subjective website quality test within a study (Rees, Ford, & Sheard, 2002) because there does not exist any protocol for interpretation of its scores (Alioshkin Cheneguín, et al., 2020). The researchers also checked the credential of the website authors, who "had to be a licensed health professional" (Rew, et al., 2018, p. 2224). The Flesch-Kincaid tool (Readability Formulas, n.d.) was applied to assess readability of the websites and found an average rating of 9<sup>th</sup> grade level (higher than the recommended 6<sup>th</sup>-to-8<sup>th</sup> grade level).<sup>13</sup> Finally,

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<sup>11</sup> The Health on the Net (HON) Foundation is a multilingual non-government organization, sponsored by the World Health Organization, whose mission is to accredit human health websites employing the main principles of the "basic ethical standards in the presentation of information." The HON Code is one example of a self-regulatory initiative to promote high ethics and quality in health information websites (Risk & Dzenowagis, 2001).

<sup>12</sup> The DISCERN ratings run on a numerical scale: 1 = very poor, 2 = poor, 3 = moderate, 4 = good, and 5 = excellent (Wiriyakijja, et al., 2016).

<sup>13</sup> Two internationally known health organizations based in the United States – the National Institute of Health and the American Medical Association – recommend sixth grade readability level. Cisu, et al. (2019) analyzed health information websites on hypospadias treatment found readability level at 11<sup>th</sup> to 12<sup>th</sup> grade, which is too difficult for most adults. Other studies have found the readability level too

the researchers assessed the health information websites in general. Out of the sample of six health information websites on gynecomastia, the researchers could recommend two despite the somewhat high readability score. Rew, et al. (2018) acknowledged that the eight-step methodology was time-consuming. This method would be most practical for small samples with the objective of selecting the best health information websites to recommend for the public. Comprehensibility and cross-cultural adaptation are not considered in this study, which only looked at English texts. Even if the corpus were small, it is unknown whether this methodology could be successfully applied to multilingual health information websites.

Risk and Dzenowagis (2001) performed a systematic review at the World Health Organization (WHO) that evaluated, compared, and outlined the issues of self-regulatory initiatives – which included HON and DISCERN as described earlier in this section – for the ethical and quality standards of English health information websites. Issues with these health information quality issues included financing (obtaining funding from nonprofit or business organizations could create a bias and charging a fee could repel users from participating in the initiative), language availability (most of the initiatives were only available in English, which leaves the other language versions without quality oversight), and user-friendliness. They found five problems. The first was that the three main mechanisms, each of which had its advantages and disadvantages, were utilized by the quality initiatives: codes of conduct or ethics, tool-based evaluation, and third-party evaluation. Secondly, sustainability of health information websites could be difficult due to the responsibility placed on the user, be they a citizen, a health care provider, or a third party; keeping the initiative up-to-date, cost, acceptance by all involved parties, and market conditions. Thirdly, enforcement by the initiatives can be a challenge. Fourthly, the approach, scope, reach, and enforcement of the initiatives may be insufficient. Finally, gaps persist and must be attended to achieve optimal health information website quality. Cross-cultural adaptation and comprehensibility could form a part of the “codes of conduct or ethics” and “third party evaluation” mentioned in the first problem together with the insufficient objectives listed in the fourth problem, converting these two problems into goals. Risk and Dzenowagis (2001) recommended that the World Health Organization, due to its international recognition and mission, act to improve oversight of the quality of health information on the Internet.

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high (Flesch-Kincaid median score = 9.8, where 10 or more equals “fairly difficult”) in Canadian agency HIV websites (Gilbert, et al., 2019), none of the online health information on preexposure prophylaxis (PrEP) was at the recommended 6<sup>th</sup> grade readability level (Keckojevic, et al., 2020), and the mean readability level was at 9<sup>th</sup> grade for online information on fibromyalgia, with only eight percent of the websites complying with the recommended 6<sup>th</sup> grade level (Basavakumar, et al., 2019). Additional studies have recommended that writers of health information texts aim for a readability level of 3<sup>rd</sup> to 5<sup>th</sup> grade (Howe, et al., 2016; Weiss, 2007; United States Department of Health and Human Services, 2002).

What matters is how an international health authority like the WHO would surveil myriad multilingual health information websites for quality, including comprehensibility and cross-cultural adaptation. One researcher, along with his team, proposed using a software or an application. Lawrentschuk, et al. (2009) and Lawrentschuk, et al. (2012) applied the HON principles using an automated toolbar function to evaluate oncology health information accessible via a Google search in English, Spanish, French, and German. The 2009 research assessed for differences in website availability between languages in the various types of cancer covered by urological oncology. The researchers used the Google search engine to obtain a total of 2400 websites using a predetermined set of keywords in each of the four languages. The first 150 websites in each language underwent quality assessment using the HON automated toolbar function. The researchers manually evaluated a set of English health information websites that were included in the study using the HON principles for quality control of the contents.

The researchers found the English websites had the most HON accreditations, while the Spanish language had the least. The results of the manual evaluation were proportional to the automated ones, verifying that the HON toolbar performed accurately. However, the one disturbing finding was that most of the websites were not HON accredited, although the researchers noted that most of the accredited websites were more recently published. Unaccredited health information websites tend to push treatments and include commercial advertisement, and therefore lack balance.

Both Lawrentschuk, et al. (2009) and Lawrentschuk, et al. (2012) observed that due to the abundance of unreliable health information available online, medical doctors tend to distrust websites. Instead, they suggested that health care providers demand and contribute reliable information on accredited websites, to which they should direct their patients. Among the limitations in the Lawrentschuk, et al. (2009) study is the use of only one search engine - different languages may prefer different search engines – and online health information quality assessment initiatives (many of which, as pointed out earlier, vary regarding usage fees, language availability, or user-friendliness). This study failed to take discourse and culture into consideration, which are critical when comparing comprehensibility between languages and which this thesis research takes into consideration.

The Lawrentschuk, et al. (2012) study compared the quality of the online searches using medical and lay terminology and evaluated the quality of websites about common types of cancer for language or disease differences. Once again, the researchers used the Google search engine to obtain the websites, and the HON automated toolbar to check for website content quality. The set of keywords used was translated from English into French, Spanish, and German by medical translators and verified for accuracy by laypersons and doctors who were native in those languages. Quality was also controlled by doing a manual assessment

based on the HON principles on a small set of non-accredited websites that showed up in the search.

Lay versus specialized keywords proved to be a critical factor in the number and quality of the online search. There were fewer websites resulting with a technical keyword, such as “melanoma,” than with a lay term, such as “skin cancer,” keyed into the search engine. This is heartening, since the public searching for online health information are more likely to use lay terms; however, it is critical that their search results in reliable health information websites. Differences among organ groups regarding the total percentage of HON-accredited websites were found, as well as those that resulted from alternate keywords, and were significant for liver and bile duct cancers (Lawrentschuk, et al., 2012, p. 709). French had the most accredited websites, followed by English, Spanish, and German, for all the types of cancers searched, especially for breast and skin (Lawrentschuk, et al., 2012, p. 709). The first third of the search results contained the most accredited websites for all organ malignancies, except for breast cancer. When manual quality control was performed, the researchers found that much less than half of the websites resulting from the online search were accredited.

Overall, the results in this and their earlier study (Lawrentschuk, et al., 2009) show that, although the number of multilingual health information websites is increasing, there is an alarming lack of quality, resulting in distrust on the Internet as a resource for disease and treatments. This quality issue needs to be addressed by the health care community, government, and non-profit organizations as health information increasingly is provided via the Internet. In addition to ensuring accuracy in online health information, it is imperative to improve their accessibility – including comprehensibility – to the patients and guarantee this across all languages and cultures. For instance, Lawrentschuk, et al. (2012) found that breast cancer websites contained better quality information in English than in Spanish. Writers must acknowledge that patients from a diverse background - regarding languages and cultures - will search online for health information. Web hosts need to guarantee availability of accredited websites containing cross-culturally adapted texts that are comprehensible for the target audience.

In addition to HON and DISCERN, another website quality instrument mentioned in multiple studies is the Journal of the American Medical Association (JAMA) benchmarks. The JAMA benchmarks call for specifications within health information websites intended as standard features. These include listing the names of the authors of the content along with their affiliations and credentials, references and source lists, disclosure of who owns, sponsors, advertises, and / or funds the website in question, as well as any conflicts of interest; and finally indicate whether the information is current by showing the date posted and updated (Silberg, Lundberg, & Musacchio, 1997). In a study that assessed the quality, readability, and accuracy of health information websites on hypospadias treatment, the researchers noted that

HON does not directly evaluate written content but DISCERN does (Cisu, et al., 2019). Another study analyzing the quality of online information about fibromyalgia by Basavakumar, et al. (2019), found that HON and JAMA were unreliable measures of content quality or accessibility. Along with JAMA and HON, the drawback of DISCERN is the subjective nature of its questionnaire (Risk & Dzenowagis, 2001) and the required knowledge of the specific topic of the website under evaluation to answer certain items validly (Rew, et al., 2018), that determine the success of health information websites. The focus of the research by Risk and Dzenowagis (2001) and both studies by Lawrentschuk, et al. (2009 and 2012) were on the quality assessment of the health information itself using HON – and Rew, et al. (2018) also used DISCERN – without any regard to culture, linguistics, and translation. In addition to website quality assessments, numerous studies have evaluated readability using a range of instruments as described below.

Wiriyakijja, et al. (2016) evaluated readability using the Flesch Reading Ease Score – which dates to the 1940s and utilizes formula average sentence length and average number of syllables per word (Flesch, 1948) – along with quality using the three aforementioned assessment instruments – HON, JAMA, and DISCERN – in online health information about oral leukoplakia treatment, as there was a dearth of studies that analyzed both readability and quality of online information on this topic.

Wiriyakijja, et al. (2016) conducted a Google web search in one day, using the keyword “leukoplakia treatment,” resulting in forty-seven websites that partly provided information about oral leukoplakia treatment and no websites that were exclusively about this topic. The quality of these websites was seriously deficient: only eight of the forty-seven displayed the HON seal, the DISCERN analysis mean results were “poor,” and the JAMA benchmarks showed that nearly all the websites (95.7%) met the disclosure requirements, but less than half of them met the other criteria (Wiriyakijja, et al., 2016). The average mean Flesch Reading Ease score was 47.5, with a range from 23.5 to 72.9. Forty-one websites possessed a readability level of fairly difficult to very difficult. In conclusion, oral leukoplakia treatment websites were found to have difficult readability and dubious content quality. While general readability and quality of oral leukoplakia treatment websites were evaluated, the study by Wiriyakijja, et al. (2016) demonstrates how website quality evaluative applications and a readability instrument fail to address cross-cultural adaptation or comprehensibility regarding health literacy.

A study by Lindley, et al. (2012) evaluated the readability and the volume of online sexual health information, which included HIV, written specifically for lesbians. They noted that, while health information campaigns about HIV targeted injection drug users, gay men, African American teens, and rural African American communities, the lesbian population was omitted. It was also observed that lesbians are at risk due to their tendency to consult their

gynecologist infrequently and a misperception by gynecologists and lesbians that the latter group has a reduced risk for sexually transmitted infections (STIs), including HIV. Lindley, et al. (2012) based their framework of sexual health, which includes HIV, on a well-established guide in use by health professionals for over two decades.

The search keywords were “lesbian sexual health” on the search engines MSN, Yahoo!, and Google, and the first hundred English-language websites from each of the search engines were selected. Exclusion criteria were books, blogs, advertisements, and Wikipedia pages. The remaining websites were assigned a score based on the order in which it was found in the search results in its respective search engine. In each website, the home page and up to three additional internal webpages were evaluated to ascertain which sexual health topics were included. Interrater coding agreement was established among Lindley and her colleagues (2012). To measure readability, the validated and frequently used Flesch Reading Ease scale (Flesch, 1948) and Flesch-Kincaid grade level formula (Kincaid, et al., 1975) were applied to the websites.

Of the 300 websites from the search, only 25 English-language sexual health websites specifically for lesbians, one-third of which was hosted by countries outside of the United States, met the inclusion criteria. Of those hosted outside of the United States: 16% were based in Canada, 4% in the United Kingdom, and 4% in Australia. Almost three-quarters (72%) of these 25 websites provided information about HIV, which was in fact the most frequently discussed health condition for a target audience whose greatest risks – bacterial vaginosis (68%), hepatitis B (64%), gonorrhea (52%), genital herpes (68%), chlamydia (68%), breast cancer (28%), ovarian cancer (24%), HPV (64%), and cervical cancer (36%) – had fewer, if any, mentions in these websites. While these results may not seem directly relevant to the focus of this thesis, they are listed here to demonstrate how certain populations are excluded from health information access tailored to their culture. In the case of this thesis, due to language, and in the case of the study by Lindley, et al. (2012), the writers failed to organize the health information to the specific needs of lesbians.

The overall readability level exceeded those recommended: the average Flesch Reading Ease score was 47.01, indicating a “difficult” level, and the Flesch-Kincaid grade level was 10.83 (~ 11<sup>th</sup> grade), with 8.80 (~ 9<sup>th</sup> grade) being the lowest score among the 25 websites (Lindley, et al., 2012). Doak, et al. (1996b) recommended 3<sup>rd</sup> to 5<sup>th</sup> grade level readability for health information texts targeted to audiences with low literacy (Howe, et al., 2016). The easiest to read were the websites hosted in the United Kingdom with the highest reading ease score and the lowest grade level, whereas those hosted by the United States government were the most difficult due to the use of medical jargon (Lindley, et al., 2012). It should be mentioned that this thesis’ corpus includes United States government website texts as well as those from various United Kingdom-based hosts. However, while the thesis will compare

between translated and non-translated texts within and between different languages, Lindley, et al. (2012) examined each of the 25 websites individually as their corpus was exclusively in English. Lindley, et al., (2012) researched websites whose target audience was lesbian, having excluded other populations of sexual minority women (SMW) such as bisexual women, without any formal assessment for cross-cultural adaptation. The study by Lindley, et al. (2012), clearly exemplifies the writers' collective ignorance of the health information needs of their target audience along with their readability level; this reflects a serious lack of cultural competence. Their study on websites targeted to lesbians confirms this lack of cross-cultural competence. As of the publication of this thesis, no prior research exist that evaluate comprehensibility or cross-cultural adaptation of health information websites on HIV.

Nor do any studies exist that assess comprehensibility or cross-cultural adaptation of multilingual tuberculosis websites. However, one study evaluated readability and identified the target audience of 45 English-language websites (Brumwell, et al., 2018). Their objective was to obtain readable health information about treatment for tuberculosis patients. Brumwell, et al. (2018) observed that people with HIV were more likely to comply with their treatment once they learned about the etiology of HIV, the mechanisms of the treatment, its dosage, and how to verify its effectiveness (Penn, et al., 2011), which supported prior research on the role of patient education on treatment compliance (Macq, et al., 2007; Dick, et al., 2004; Liefoghe, et al., 1999; Tola, et al., 2016). There was a need for similar patient education for people with tuberculosis to improve compliance, using a patient-centered approach via the promotion of health literacy (Brumwell, et al., 2018), which would cure the patients as well as reduce the disease incidence and risk of the bacteria becoming drug-resistant if the treatment protocol is completed.

To this end, Brumwell, et al. (2018) analyzed existing texts on TB treatment to gain insight for the development of new patient education materials. Instead of search engines, Brumwell, et al. (2018) collected their set of websites in a more targeted manner by directly consulting the United States Center for Disease Control and Prevention's [findtbresources.cdc.gov](http://findtbresources.cdc.gov) website, along with those of the World Health Organization, United States' state health departments, the Stop TB Partnership, the International Union Against Tuberculosis and Lung Disease, and Treatment Action Group. The inclusion criteria, which 45 websites met, were that the material be downloadable in a printable format, in English, TB patients as the target audience, with the goal of educating them about their treatment (Brumwell, et al., 2018). Most (67%) of the websites were written by government health departments. While 69% of the websites were from the United States and Canada, only three of them represented high TB prevalence countries – namely, South Africa and Kenya. This North American-dominant corpus may have created a bias regarding the results, which could

not be considered an international reflection. Two targeted pediatric TB patients, two others were for patients with drug-resistant TB, and three were for patients with HIV-TB coinfection.

To assess readability, Brumwell, et al. (2018) used the Flesch-Kincaid Grade Level on either the first one hundred words or paragraph, whichever was longer, of the text. This issue with this approach is that the multiple sections of website content may have been written by different writers; therefore, the results only reflect the evaluated sections and not the entire textual content of the websites. The median readability level was 7<sup>th</sup> grade with a range between 5<sup>th</sup> and 8<sup>th</sup> grade, which the authors noted was easier to read than the average American newspaper (Brumwell, et al., 2018). However, the readability level was still high, especially considering that two of the texts were intended for children with TB.

While Brumwell, et al. (2018) did not include any methodology to assess the tone of the 45 website texts, they observed “variability... some documents took on an educational tone, explaining various aspects of treatment in simple terms” (p. 339). This “variability” included “paternalistic and non-patient-centered language” in the texts (p. 336) and “commanding, containing only instructions for patients to obey the doctor without accompanying explanations” (Brumwell, et al., 2018, p. 340). Additionally, many of the texts lacked explanations for the treatment instructions, which compounded the power distance “by reinforcing a power dynamic in which the doctor’s instructions should dictate the patient’s actions without the need for understanding,” (Brumwell, et al., 2018, p. 340) thus impeding patient empowerment via improved health literacy. These observations are an important acknowledgment of the vital role that tone plays in the cross-cultural adaptation of health information website texts, which is a key focus of this thesis, and influences the readers’ health literacy development. The researchers recommended that future TB information documents be written not only avoiding stigmatizing terms but implement people-centered vocabulary adapted to different target audiences, such as a lower readability grade level for children and patients with lower literacy levels, to empower the readers to be informed participants in their TB treatment (Brumwell, et al., 2018).

For readability and suitability regarding health literacy in languages other than English, Howe, et al. (2016) assessed hypertension and diabetes patient education texts published in Spanish. The researchers noted that Hispanics, who represent 17% of the population in the United States<sup>14</sup> and 12.9% of whom speak Spanish at home, were susceptible to limited health literacy; Hispanic adults with low health literacy is 65%<sup>15</sup> and up to 84% of those over 65 years of age (Howe, et al., 2016). Howe, et al. (2016) strove to fill the gap of evaluating the appropriateness of Spanish language health information on hypertension and diabetes – two

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<sup>14</sup> The authors also pointed out that “in some metropolitan areas of California, Arizona, and Texas, Spanish speakers represent over 75% of the population” (Howe, et al., 2016, p. 171).

<sup>15</sup> Compared with white adults, of whom 28% have low health literacy (Howe, et al., 2016).



ailments with a high prevalence in the Hispanic community. Their research questions concerned the readability and suitability, and whether there were any differences between Spanish language health information texts about diabetes and hypertension.

Thirty-two health information texts – thirteen for hypertension and 19 for diabetes – were collected from government-based websites. Readability was evaluated using the Fry Readability Graph (FRG), which was adapted for use in Spanish with consideration for the linguistic differences from English (Fry, 1977; Gilliam, et al., 1980) and previously used in prior research on health topics ranging from obesity to cancer. The FRG “estimates the reading grade as a function of the average number of syllables and sentences in three 100-word passages” (Howe, et al., 2016, p. 172).

Since readability only provides a partial picture of the quality of a health information website (Doak, et al., 1996b), Howe, et al. (2016) also implemented the Suitability Assessment of Materials (SAM) (Doak, et al., 1996b). In addition to readability, this instrument contains twenty-two items to evaluate health information texts in six areas: content (which included the clarity and the scope of the information), literacy demand, graphics, layout and typography, learning stimulation and motivation, and cultural appropriateness. Learning stimulation is informed by a frequently applied public health theoretical framework, the social cognitive theory, which is presented in Section 3.1.2. Learning stimulation and motivation relies on the writer’s linguistic strategies and promotes the reader’s self-efficacy (Howe, et al., 2016). This instrument was reported to have interrater reliability and validity in prior studies in other languages in countries such as Portugal (Souza, et al., 2015) and Taiwan (Chang, et al., 2014); however, it is best to use when more than one researcher is involved. Two of the researchers were native in Spanish, and a third was fluent but not native in this language.

Overall, the readability grade was 7.1, with hypertension at 7.7 and diabetes at 6.3.<sup>16</sup> Ninety-two percent (twelve out of thirteen) of the hypertension texts, compared with fifty-three percent (ten out of nineteen) of the diabetes texts were above the 6<sup>th</sup> grade level. None of the hypertension and only ten percent (two out of nineteen) of the diabetes texts were written at the 3<sup>rd</sup>-to-5<sup>th</sup> grade level (Howe, et al., 2016). The researchers identified technicality of vocabulary as a key issue, particularly in the hypertension texts, along with phrases that are common in the scientific field, such as “*Cómo medir la presión arterial en casa: Revisión de la investigación para adultos (Measuring blood pressure at home: A review of adult studies)*” (Howe, et al., 2016, p. 177); the latter half of the title lacks meaning for the general audience.

As for suitability, more diabetes texts (mean SAM score 63.2 with 42.1% superior) were rated as more superior for the SAM score than the hypertension texts (mean SAM score

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<sup>16</sup> They used an independent sample t-test accompanied by Cohen’s d and Fisher’s exact tests, and calculated Cramer’s V and Bonferroni 2-proportion to see if any differences existed between the texts for the two diseases.

43.9 with 0% superior). The mean SAM scores for content were significantly lower for hypertension than for diabetes texts, meaning the latter was more suitable. Where cross-cultural adaptation was concerned, the SAM analyzes “the match between images and content in the material to the target population” (Howe, et al., 2016, p. 177). This instrument has a limitation of subjectivity, which the researchers strove to reduce via the recruitment of three researchers to independently analyze the texts. The SAM score was significantly lower for texts about hypertension than those for diabetes, meaning the latter were of a superior level. The issue with this form of analyzing cross-cultural adaptation is that, with its emphasis on the visuals, important cultural aspects of linguistics – such as tenor – are not taken into consideration. Howe, et al. (2016) noted that there exist variations among Spanish speakers from different countries. They used the example of *verduras*, which can mean vegetables, or for the Puerto Ricans refer to yams and potatoes – specifically, root vegetables (Howe, et al., 2016). This can result in certain intended readers responding in different ways.

Even though hypertension is more prevalent than diabetes in the United States, the online health information for the latter disease was better designed according to the researchers’ analyses using the FRG and the SAM score. The authors recommended that the creation of new texts for Spanish-speaking readers in the United States<sup>17</sup> be done with low health literacy in mind and run pilot tests of these new texts on representatives of the target community.

These researchers’ rationale for accompanying readability with other measures was that readability alone is inadequate. However, the study did not test comprehensibility of their hypertension and diabetes health information samples. Howe, et al. (2016, p. 172) observed that, due to word and sentence length measurements in readability formulas, “lower grade assessments may be falsely interpreted as improving ease of use.” Doak, et al. (1996b) noted the necessity of comprehensive textual analysis that considers, among other features, content, and cross-cultural adaptation. Instead of adding instruments to a readability tool, this thesis will include a linguistics-based evaluation approach that is based on a sociocultural linguistics theoretical framework for health information websites.

Another analysis of readability and quality of Spanish health information websites published in Spain and Latin America was conducted by Alioshkin Cheneguín, et al. (2020), a group of researchers based in the former country. They noted that 60.5% of Spanish-speaking

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<sup>17</sup> While such findings should not be generalized to the global population of a language, it would be prudent to always render health information texts at the 6th grade NIH- and AMA-recommended readability level unless the target audience is confirmed to have a lower literacy level (Howe, et al., 2016). High readability levels in health information content continue to be a serious problem: a COVID-19 multilingual online health information readability assessment using the Simple Measure of Gobbledygook (SMOG) and the Flesch-Kincaid readability tests involving eleven countries found that the texts exceeded the 6<sup>th</sup> grade level for the general public (McDermid, et al., 2022).

users search online for health information, and that this language is the third most common on the Internet (Alioshkin Cheneguín, et al., 2020).<sup>18</sup>

One of the instruments in this study, the INFLESZ, is a validated readability scale – formulated based on the Flesch Reading Ease and the Flesch-Szigrüst scales – for Spanish online texts (Alioshkin Cheneguín, 2020; Castillo-Ortiz, et al., 2017; Hernández-Morante, et al., 2015; Barrio-Cantalejo, et al., 2008). This instrument allows the researchers to enter the website’s URL or text, which results in a score that classifies the text on a spectrum ranging from very difficult to very easy. The INFLESZ and other readability and comprehensibility tools that have been scientifically validated are established techniques for evaluating health materials.

Along with the DISCERN tool, Alioshkin Cheneguín, et al. (2020) implemented the Bermúdez-Tamayo instrument to evaluate the quality and content of health information websites. The Bermúdez-Tamayo questionnaire was developed specifically for Spanish language online health information and is based on “the recommendations by the main ethical codes and law in Spain and Europe” (Alioshkin Cheneguín, et al., 2020, p. 3), which raises the question about its use on websites published in Latin America, whose quality is measured based on foreign rules instead of adapted to Latin American “ethical codes and law,” which would represent their culture. This instrument has been validated and proven to be reliable for twelve of its eighteen elements. This questionnaire is divided into six parts, including authorship. Like the DISCERN, the Bermúdez-Tamayo tool leaves areas open to interpretation; the researchers, aware of this limitation, agreed not only to use both tools to reduce subjectivity, but about the categories and items therein, including “the purpose and objective of the website” (Alioshkin Cheneguín, et al., 2020, p. 3). Two researchers independently collected the data, discussing those without initial consensus until there was an agreement.

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<sup>18</sup> They compared websites from patient associations with those found via search engines. Two of the researchers independently searched for the websites using Google (google.es), Yahoo (es.yahoo.com), and Bing (bing.com), basing their search engine selections on the results of Statcounter (statcounter.com) (Alioshkin Cheneguín, et al., 2020). The researchers strove to imitate a typical reader’s consultation via a search engine using one keyword referring to the disease. Alioshkin Cheneguín, et al. (2020) listed among their study’s limitations the restriction of the search results to the first twenty websites and not conducting the search in a single day, thus omitting potentially useful resources. However, their concern may be exaggerated; according to Chitika Insights (2013), which these researchers consulted, the general Spanish-speaking population only looks at the first two results that appear in an online search. Despite the researchers’ efforts to blind the search engines from their location via deactivation as well as switching off their GPS, the addresses of the first two search engines may have betrayed the researchers. They also worked with a cleared history and cache and based their search keyword on data from Google Trends (trends.google.es) using filters to encourage results that were current and not limited to their location. In addition to selecting the first twenty websites that showed up in the search, they consulted the websites of fibromyalgia patients’ associations based in Spain and Latin America. Among the inclusion criteria were that the websites be in Spanish and contain information about fibromyalgia. There was a litany of exclusion criteria, such as duplicates, dead links, and videos/images.

Out of 305 websites filtered through the exclusion criteria, 73 remained for analysis. Most of them were hosted by non-profit organizations (53), seven of the hosts were commercial entities, six were institutional, four were entities that offered free-of-charge information, and three were from proprietors of media. There were no significant differences between the three search engines regarding the types of website host. Seven of the websites were translated from English, and four from Catalan.

There were no statistically significant differences between the two groups of websites regarding readability, both of which resulted in the “slightly difficult” median, scoring 53.7 for the websites found via search engines and 51.7 for those provided by patient associations (Alioshkin Cheneguín, et al., 2020). Only a passing glance was given to technicality of vocabulary; they acknowledged that its use reduces readability and comprehensibility. In addition, their study lacks an analysis of cross-cultural adaptation, a critical element of a successful health information website. Instead of the European-regulations-based Bermudez-Tamayo questionnaire to assess quality, an instrument based on a more universal linguistic theoretical framework to analyze writer-reader relationship and technicality of vocabulary can reveal comprehensibility issues that indicates any cross-cultural adaptation. Culture in online health information websites should no longer be underestimated, which justifies this thesis’ alternative instruments to questionnaires such as the Bermudez-Tamayo.

Chiming in with Howe, et al. (2016) in observing that Spanish speakers in the United States have lower health literacy, Johnson, et al. (2019) evaluated ten bilingual (Spanish and English) health information websites about carpal tunnel syndrome using multiple instruments to compare between the two languages. They noted the gap in research regarding any correlation between the quality of Spanish language health information and poor medical outcome and hypothesized that texts in both languages would be rendered at high readability levels, and that the Spanish versions would have lower cross-cultural adaptation results compared with the English. The researchers selected “the first ten institutional/organizational websites that provided information in both English and Spanish with respect to search ranking” (Johnson, et al., 2019, p. 66).

To evaluate understandability and actionability analysis, Johnson, et al. (2019) used the patient education and materials assessment tool (PEMAT), which was validated for health information on the Internet and consisted of nineteen points using a percentage score, which included “material content, word choice and style, use of numbers, organization, layout and design of web page, and use of visual aids” (Johnson, et al., 2019, p. 65). Understandability was defined as “when individuals with differing health literacy levels can understand the central message,” and actionability was “the ability of the audience to act on or apply the information learned” (Johnson, et al., 2019, p. 65).

Cross-cultural adaptation was evaluated using the cultural sensitivity assessment tool (CSAT). The authors of the CSAT based their instrument on the definition of cultural sensitivity as “an awareness and utilization of knowledge related to ethnicity, culture, gender, or sexual orientation in explaining and understanding situations and responses of individuals in their environment” (Facione, 1993, p. 53; Tofthagen, et al., 2014). A good result means that the health communication text is comprehensible to the target audience, a reflection of cross-cultural competence in terms of the target audience’s health behavior, and is in line with cultural norms (Bayer, 1994). The CSAT contains eighteen elements and includes rating of the text, that scrutinizes whether the target readers could understand the text and the relevance of the behavioral aspects described in the texts to the target community’s culture (Johnson, et al., 2019). The eighteen elements rate the format, the visual and the written message on a Likert scale from 1 (culturally insensitive) to 4 (culturally sensitive) (Guidry, et al., 1996; Johnson, et al., 2019). This includes two questions on technicality of vocabulary (one on the overall technicality of the text and the other on whether the target audience would understand the listed signs and symptoms of the disease), one regarding the clarity of the message, and one on the positivity of the tone in the text. The instruments used in this thesis’ study evaluate writer-reader relationship and technicality of vocabulary in greater detail compared with the CSAT. The CSAT authors established a mean score of 2.5 as the limit; less than this indicated that the written documents were unacceptable (Guidry, et al., 1996; Tofthagen, et al., 2014; Johnson, et al., 2019). CSAT validity has not been reported in this or other consulted studies, however inter-rater reliability was established using multiple testers (Guidry, et al., 1998; Guidry & Walker, 1999; Friedman & Hoffman-Goetz, 2006) and it has been applied to assess cancer information for African Americans, Jewish, Black/Caribbean, First Nations, and East Indian ethnic groups (Guidry, et al., 1998; Guidry & Walker, 1999; Friedman & Hoffman-Goetz, 2006). The researchers, who are expected to think like the target readers, must bear in mind the diversity within the intended cultural group to prevent assuming any stereotypes (Guidry, et al., 1996) when applying the CSAT to the health information websites.

To evaluate readability, Johnson, et al. (2019) implemented the Simple Measure of Gobbledygook (SMOG) for the English texts, and SOL, a linguistically adapted SMOG which had been validated for use in Spanish, French, and German texts. As mentioned earlier in this chapter, this instrument analyzes how long a sentence is and the number of syllables per word and the number of multi-syllabic words there are in a text. Inter-rater agreement was analyzed for the two bilingual researchers, who applied the abovementioned tools to texts in their respective native language.

The English websites scored better than the Spanish versions, with a PEMAT score of 53.11% and 48.08% for understandability and 32 % and 29 % overall; however, there were

no significant differences between the two language versions ( $p = 0.263$ ) (Johnson, et al., 2019). A high number of medical terminologies, including inappropriate use of professional jargon, made up seventy percent of the contributing factor of these results, along with passive voice usage. Images on Spanish websites lacked translated captions; explanations of the anatomy were provided only in English.

As for cross-cultural adaptation, there was a significant difference between the two languages. Both language versions of the websites scored below the mean 2.5 acceptability threshold in the CSAT, with 2.43 for the English and 2.23 for the Spanish, partly due to incomplete translation from English to Spanish. Johnson, et al. (2019) acknowledged that the CSAT could only generalize for adequate cross-cultural adaptation, when the reality in the United States is that the Hispanic communities are made up of people from various Spanish-speaking Latin American and Caribbean countries and therefore are culturally diverse.

In addition, the readability level for both language versions<sup>19</sup> was higher than the recommended 6<sup>th</sup> grade level, with the English SMOG score ranging from 8<sup>th</sup> to 11<sup>th</sup> grade, and the Spanish SOL score ranging from 8<sup>th</sup> to 12<sup>th</sup> grade. The latter group contained more multisyllabic words than the former ( $p < 0.001$ ) (Johnson, et al., 2019). These results align with prior research, even though the English scores improved in the study by Johnson, et al. (2019). Since the Spanish language contains more polysyllabic words compared with English, there may exist a possible bias that skews towards overestimation of multisyllabic words in Spanish regarding the readability measures. The two evaluators observed that some of the Spanish versions had been abridged or included poorly translated terminology, both of which could also contribute to skewing the Spanish SOL towards lower scores. There was also a lack of recommendations for action. Such unsatisfactory scores reflect websites that are difficult to understand.

Most importantly, the study by Johnson, et al. (2019) highlights the hazards of direct translation and the use of culturally neutral multimodality. The researchers found that the ten sets of websites lacked cross-cultural adaptation. They stated that “utilization of direct translation tools often leads to poor translations, which should not be used in the medical setting” (Johnson, et al., 2019, p. 68), citing a previous study whose findings included 43% of all medical terminology having been inadequately translated using Google Translate (Patil & Davies, 2014). Such renderings of text in languages other than the original impede the target readers’ ability to make informed health decisions, which can result in poor prognosis.

The Agency for Healthcare Research and Quality (AHRQ) – who works at the federal level in the United States “to produce evidence to make health care safer, higher quality, more

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<sup>19</sup> Differences between the two languages were statistically analyzed using independent sample t-tests.

accessible, equitable, [...] to make sure that the evidence is understood and used” (Agency for Healthcare Research and Quality, 2015 About AHRQ, para. 1) – and the Centers for Medicare and Medicaid Services (CMS) – a United States government organization that promotes health equity and outcomes (Centers for Medicare and Medicaid Services, n.d., Strategic plan section) – advise caution with readability formulas, which the two organizations perceive as having a “narrow and mechanical focus” (Agency for Healthcare Research and Quality, 2015). They note that readability formulas “generally assume that longer words are harder words and longer sentences are harder sentences” (Agency for Healthcare Research and Quality, 2015) without any consideration for textual clarity and cohesion or for technicality of vocabulary. There exists a tendency to assume a direct link between the number of words, the average sentence length, and the ability to make decisions based on the provided information (Dray & Papen, 2004). The institutional and contextual aspects of health literacy are overlooked when the primary focus is on the statistical results of readability tests (Payne, et al., 2000; Cavalieri, et al., 2019). The AHRQ (2015) warns of measurement problems with these instruments, and the CMS (2020) adds that “grade level scores tend to be unreliable,” “less precise than they sound and prone to misinterpretation,” and “has the potential to do harm.” The AHRQ (2015) point out that they do not gauge comprehensibility or reading ease, including whether they will engage the reader, the effectiveness of the content to the point of achieving the writer’s intended purpose – that the reader would heed the text’s call to action. Readability formulas need to be combined with other evaluative tools that consider vocabulary (Ayre, et al., 2021), writer-reader relationship including the cultural aspects (Bruce & Rubin, 1988), and the needs of the target audience, which include their health literacy level. While health information websites are multimodal entities that extend beyond texts to include, for example, videos and graphics, the focus of this thesis is on writer-reader relationship and technicality of vocabulary in the text. Based on the abovementioned instruments, even a high-ranking health information website could still have poor comprehensibility due to containing specialized words and expressions that are unfamiliar to the reader.

This section demonstrates how health information website quality assessment applications and readability formulas lack the ability to evaluate comprehensibility and cross-cultural adaptation. The instruments used in this thesis’ study expands on the CSAT questions about the writer’s tone, the clarity of the message, and the technicality of vocabulary in the texts. This section also reflects the dearth of research on the comprehensibility and cross-cultural adaptation of multilingual health information websites on HIV and tuberculosis. Apart from the study by Alioshkin Cheneguín, et al., 2020, in which Spanish translations from the original Catalan texts were evaluated, as of the completion of this thesis, no studies exist that evaluated readability and cross-cultural adaptation of health information websites in Catalan. The next section focuses on the evaluation of technical terminology.

The fallacies of public health readability methods could be ameliorated by techniques utilized in discourse analysis. There persists a need for interdisciplinary research that unites applied linguistics with public health to identify areas for improvement in multilingual health information websites. Improvements based on collaborative research, together with contribution from the target population, would build trust and boost compliance, such as responding to a website's call to get tested for an infectious disease.

## **2.2 Writing and translating for the lay audience**

Professionals within the biomedical field speak a language that features scientific terminology and specific syntactic choices, to the point of “strong evidence that languages are more similar in sentence and text structure within scientific and technical writing than in nontechnical writing [and that] corresponding sublanguages [of different languages] are often structurally more similar than two dissimilar sublanguages of the same language” (Kittredge, 1987, via Copeck, et al., 1997, p. 396). Technical writing possesses identifiable regularities that can be assessed in research, which implies that in this study, identifying a health information text that is written at too high a level for the public will be easier than one written at a more appropriate level for improved health literacy. In addition, the translation of health information websites must be not only just as lexically accessible, but also culturally appropriate, addressing the implications of lexis as well as the overall text. The intended purpose of the text influences its translation (Sager, 1982), which in turn affects the outcome of the multilingual health information.

Online health information seeking is one way that a patient strives to attain control over their condition. A well-translated website – that is, one that is cross-culturally adapted and whose technicality of vocabulary is appropriate for the target audience – empowers the reader to improve their health literacy. But if a website provides a poor translation, reflects a lack of cross-cultural competence, and exudes a condescending tone either by implying that the reader is dumb or ignorant or irresponsible or noncompliant – in any manner that appears to lack respect for the reader – with a higher number of technical words as well as overall vocabulary at the university level, the website leaves the readers impotent, highly anxious, offended, confused, and frustrated – anything but empowered – and the writer is perceived as condescending, on a power trip, and pompous. Conversely, an extremely dumbed down website text devoid of specialized words could insult the readers' intelligence, as well as deprive them of a learning opportunity to improve their health literacy. A well-written health information website addresses the reader with respect for their intelligence as well as their culture and presents the information with all the technical terms accompanied by a definition or explanation. Lack of information, including unfamiliarity with terminology relevant to the



disease, leaves a patient with unanswered questions and uncertainty, which negatively affects their mental state. Anxiety has a detrimental effect on a patient's health and has been linked with treatment noncompliance (Dimatteo, Lepper, & Croghan, 2000) and an inability to make decisions about treatment options (Stairmand, et al., 2015). Websites promoting getting tested for an infectious disease such as HIV and tuberculosis, could fail in their campaigns if their text contains medical jargon and a condescending tone or one that does not match the way that information is best received by the target audience.

Researchers in South Texas collaborated with web developers and the Hispanic community to create and improve a health information website for a population with low health literacy (Moore, et al., 2009). These researchers questioned whether the Healthy Texas website could guide such people in preventive care and to get early intervention in a community whose members reported poor health and reluctance to obtain treatment. Among the focus of this study was technicality of vocabulary.

Once the original version of the website was created by a web user expert, it was put to the test by a group from the intended audience. The intended audience was comprised of residents from the thirty-eight counties from south and west of San Antonio to the Texas-Mexico border, sixty-five percent of whom were Hispanics (a significantly higher percentage compared with most of the United States) and approximately one-third of whom lack a high school diploma (Moore, et al., 2009). Many of them speak a non-English language at home, fail to seek needed medical care, and often rely on their bilingual children to interpret for them (Moore, et al., 2009). Therefore, the participants in the website trial testing, conducted one hour at a time accompanied by a session technician, were made up of both end users as well as connectors (community opinion leaders who would refer the website to potential end users), both of whom were adept at using a computer and navigating the Internet.

The participants answered a survey about their impressions of the Healthy Texas website. Among the critical feedback was the high amount of medical jargon affecting the clarity of the health information. They requested the use of lay terminology, translation into Spanish, and greater relevance of the contents to their regional population. Moore, et al. (2009) did not indicate in which language(s) the interviews were conducted.

Based on the interviews, the terminology used on the website was too difficult. This study revealed technicality of vocabulary issues, for example, "cardiologist" instead of "heart doctor" (Moore, et al., 2009). Another critical finding, albeit unexpected for these researchers, was the need for a family member, often a child, to accompany the participant to help with website translation. This fact highlights the importance of cross-cultural adaptation of health information websites to be more inclusive for Spanish-speaking target audiences in US-based health information websites, which even more important since family and friends are trusted more by this population than their family doctor (Moore, et al., 2009). The Healthy Texas

website testing on this target audience had the limitation of not having been translated into Spanish and then undergo further testing, which the researchers stated would be the next steps (Moore, et al., 2009). Moore, et al. (2009) acknowledged an earlier study finding that health information websites intended for a broad range of audiences need to be written with low literacy in mind (Nielsen, 2000).

In a doctoral dissertation examining the translation phase of patient information leaflets (PILs) production, Jensen (2013) compared original texts with translated texts, between Danish and English. As is the case with websites, PILs must be translated so that the target readers will understand the information. In her scrutiny of who the translators were and why the target language became so difficult for the intended readers to comprehend, the author highlighted the hazards of poor translations by pharmacists and the need for tighter legislation for sworn specialized professional translators in the field of medicine to prevent potentially dangerous misinterpretations on the part of the recipients of the pharmaceutical products. A shortcoming of this study is that it did not investigate the lay friendliness of the PILs for the users of the pharmaceutical products. Jensen (2013) used a health communication patient-centered framework in her study, which omits cultural aspects.

The Healthy Texas website and Jensen (2013)'s thesis highlight the importance of well-translated health information that keeps technical vocabulary that is defined or explained to a minimum. The translated texts must not only be comprehensible with a clear message, but also adequately cross-culturally adapted so that the target reader can relate to the health information. Both studies lack the linguistic aspects of cross-cultural adaptation. This thesis' comparative analysis of translated and non-translated health information websites sheds light on the linguistic aspects of cross-cultural adaptation and on the usage of technical vocabulary in the translated ones by cultural groups.

### **2.3 A linguistics-based approach to evaluating health communication websites**

Due to the limitations of the health information website quality initiatives, readability and comprehensibility questionnaires, and a public health theory based cultural competence instrument in analyzing cross-cultural adaptation regarding writer-reader relationship and technicality of vocabulary in health information website texts, it is necessary to consider a linguistics-based approach. This section showcases the research that has led to the development and implementation of the main instrument in this thesis' methodology.

Clerehan, et al. (2005) collaborated to formulate a linguistic framework based on Systemic Functional Linguistics - the details of which will be presented in Section 3.2

(Theoretical Frameworks) - to assess the quality of PILs. The researchers pointed out that many studies analyze readability of public health communication materials using formulas whose validity had been questioned and lack a scrutiny of “the overall structure or organization of the text, or the vocabulary used... the prior knowledge of the reader or the significance of the role relationships between author and reader” (Clerehan, et al., 2005, p. 335). This study marks the first time, to their knowledge, that a linguistic theoretical framework was formulated to evaluate the quality of PILs. Two of the researchers - both linguists - independently assessed eighteen PILs for the same medication from one country according to their formulated theoretical framework, dubbed Evaluative Linguistic Framework (ELF), and cross-checked each other’s evaluation. They then chose by consensus the most useful aspects of their theoretical framework for this type of health communication text. They found seven critical features of systemic functional theory that are relevant to evaluating PILs: generic structure, move, rhetorical elements, technicality of the vocabulary, appropriate factual content presentation, lexical density, and role relationship between the writer and the reader. Document design mattered as well, since the layout, font size and style, and any visual aids may affect the reader’s ability to understand the PIL (Schriver, 1997; Hartley, 1994 & 1999). Clerehan, et al. (2005, p. 342) highlighted the potential that their linguistic theoretical framework could have for analyzing health communication texts, which can “detect important features present in patient information leaflets.” They have listed the following five issues with the application of readability formulas:

1. Implication that the target audience read at the level of completed formal education, without specifying the number of years of schooling or grade level.
2. Failure to consider non-textual components such as previous knowledge, current situation, or cultural differences.
3. Lack of measurement of recognition of structure and text organization.
4. Lack of measurement of information density (not to be confused with word length) and the use of appropriate language.
5. Failure to inform about the target audience’s level of comprehension of a text, and which aspects thereof they do (not) understand.

Unlike statistical comprehensibility approaches used by other studies, Clerehan, et al. (2005) showed through their study that a linguistic formula to evaluate PILs can reveal vital information that addresses the above issues. Clerehan, et al. (2005, p. 343) recommended a multidisciplinary process that includes consultation with a linguist, to improve the comprehensibility of PILs.

To propose specific ways to improve the readability of PILs using a new evaluative approach, Clerehan and Buchbinder (2006) put their linguistically based theoretical framework, ELF, to the test, by analyzing the same eighteen samples as in their prior study.

The two researchers performed the analysis, with a portion thereof verified by a colleague. The following linguistic features were assessed: generic structure, the identification of moves and rhetorical functions, lexical specialization and density, author-reader identities and relationship, visual aspects, headings, theme, and mood. The author's identity was unclear, as well as that of the target reader; some of the PILs appear to have been written for healthcare providers and others for patients. As an extension of the doctor-patient relationship, such clarity in health communication text is paramount. The researchers observed that, due to variability at both the discourse and the lexicogrammar levels, the PILs, all of which had differing texts lengths, fail to meet their aim.

There was sufficient agreement among the samples to identify nine structural moves - only one of which seemed required - and the genre as patient information leaflet. Within several moves, multiple signals were present, rendering the text and the use of interpersonal meanings confusing for the reader. There was an excess of information in a compact space, with the wording less "spoken-like" than needed for the lay audience. This absence of consistency between the PILs, according to Clerehan and Buchbinder, should be worked out through reader-focused assessment to ensure that the PILs meet the purpose and the needs of the target audience. They recommend collaboration between applied linguists and healthcare providers to render texts in all media, online as well as print, that combines linguistic analysis with a public health strategy that is "both text- and reader-focused" (Clerehan & Buchbinder, 2006, p. 65) to produce effective health communication that has been "both empirically tested and theoretically based" (Clerehan & Buchbinder, 2006, p. 65).

This reader-focused assessment took place once a new set of PILs were rendered, under the guidance of the ELF, by a healthcare association (Hirsh, et al.,<sup>20</sup> 2009). Nineteen PILs, all in English, from the prior studies by Clerehan and Buchbinder (2005 & 2006) were used, along with one that was not previously included, plus four new ones that had been written following the ELF guidelines. Feedback was obtained using three foci: process (think-aloud while reading the sample, followed by a brief summary of what they had just read), product (writing pluses for positive aspects of the PIL sample and minuses for negative aspects directly on the leaflet, and then rationalize their choices), and opinion (focus group discussion, guided by researchers who asked questions based on the ELF).

Feedback was obtained from the sample group of 27 participants, all of whom suffered from the same ailment for at least thirteen years and were taking or had taken one of the four medications included in the sample of PILs. They had all finished secondary education, with over half of them having completed college studies. Whether the education level truly represented the general population is questionable; the advantage to the study was these

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<sup>20</sup> While Hirsh led the study, Clerehan and Buchbinder are included as authors.

readers' ability to judge clearly and critically (Hirsh, et al., 2009, p. 254). The new PILs - those formulated using ELF guidelines - were preferred over the old PILs. The readers desired a consistent generic structure, with the benefits of the drug listed prior to the side effects. Clear instructions and information, which require appropriate grammatical application in terms of the aim of the text, were also preferred. A positive tone - whether encouraging or reassuring - was also strongly preferred by the readers, who disliked any negative or patronizing attitude in the PIL. The sample group of readers also leaned towards headings in the form of questions, and expected them to be followed by answers, with the usage of lay terminology and the avoidance of technical vocabulary, with three or four lexical items per clause to facilitate comprehensibility. Although several of the questions used in this study called for subjective opinions, the feedback from the sample group of readers further verified the ability of a linguistics-based evaluative framework for PILs to improve its readability. Up until now, the ELF was applied only to a small sample of PILs about the same group of drugs.

Clerehan and Buchbinder (2006, p. 65) and Hirsh, et al. (2009, p. 254) also recommended future research to test their linguistic theoretical framework on other patient-focused health texts. Sand, et al. (2012) analyzed twenty informed consent documents (ICDs), ten old and ten recently published. The researchers defined the readability of a document as one that clearly extends an invitation to the reader to enroll in the clinical study and outlines the implications of participation. The adjusted version of the ELF excluded lexical density, which was irrelevant for written texts in Norwegian,<sup>21</sup> and factual content analysis, which was irrelevant for these documents. The twenty ICDs were analyzed, one at a time, and any lack of clarity was resolved by consensus between the three researchers. The findings of the old and the new documents were then compared.

The new ICDs, which were more oriented towards research, were easier to read than the old ones, whose information density regarding the reader's diagnosis and treatment was excessive. Overall, the more concise and clearer the documents, the more comprehensible they were. Sand, et al. (2012, p. 76) state that the ELF needs "further validation" for analyzing ICDs, and that this framework "does not cover all aspects that might influence readability," as they discovered more items during the analysis. Additional aspects affecting readability include the target audience's cognitive status, age, psychological state, and health condition. The researchers recommend that future studies include larger samples from multiple countries.

Together with other colleagues, Clerehan and Buchbinder (Clerehan, et al., 2016) reformulated the Evaluative Linguistic Framework to evaluate health questionnaires. They

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<sup>21</sup>Clerehan, et al. (2016: 341) acknowledged that their linguistics-based theoretical framework may not encompass across different languages due to variations in norms of cultural discourse (headings, metadiscourse, lexical density, and writer-reader relationship).

then put this version of their linguistic theoretical framework to the test by assessing the quality of self-report health questionnaires in English and French, as well as to Spanish, Dutch, and Turkish versions of a health questionnaire. By testing on two different questionnaires in five languages, they investigated whether the adapted variation of the ELF would work multilingually. Three researchers independently evaluated a health questionnaire using ELF to identify its moves (generic structures), as well as to spot any gaps in the framework with regard to quality evaluation of a health questionnaire.

Based on consensus, the Evaluative Linguistic Framework for Questionnaires (ELF-Q) was then drafted. The new tool was tested on two different health questionnaires in English and four other languages. Four researchers tested the ELF-Q on the English version of the questionnaire, while trained native speakers tested it on the health questionnaire in their respective languages. The findings showed that the ELF-Q found both questionnaires in all five languages were acceptable, despite minor issues whose editing could enhance readability. The researchers recommended that future questionnaires be formulated and tested using the ELF-Q, which is concise and user-friendly.

Patient-reported outcome measures (PROMs) were once again the genre focus of a study by Petkovic, et al. (2015),<sup>22</sup> in which they questioned whether and how to evaluate comprehensibility and cross-cultural adaptation. Several of them were also involved in the ELF-Q assessment of multilingual self-reported quality of life health questionnaires (Clerehan, et al., 2016) described above, thus they compared this evaluation instrument to three different readability instruments (Flesch Reading Ease, Flesch-Kincaid grade level, Simple Measure of Gobbledygook – also known as SMOG). To examine the feasibility of analyzing cross-cultural adaptation, these researchers scrutinized the process with or without back-translation and/or consultation with a group of experts (Petkovic, et al., 2015). The results of this review were judged by an “equity working group” (Petkovic, et al, 2015, p. 2448) for their viewpoints on the necessity of evaluating comprehensibility and cross-cultural adaptation for PROM.

The researchers focused on literacy as opposed to health literacy, because weak reading, writing, and mathematics skills have been linked with a poor understanding of health and prevention, which results in higher rates of hospital stays and noncompliance of chronic disease self-care (Trifiletti, et al., 2006; Williams, et al., 1998). When health communication is consistently published at a literacy level beyond that of the target audience, equity and ethical problems arise due to potential for discrimination on the part of health care professionals (Petkovic, et al., 2015). Equally at issue for this research group was comprehensibility, which they perceived in connection with cross-cultural adaptation. The translated version, according to them, should be equivalent to the original text. The definition they adopted for

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<sup>22</sup> Again, Clerehan and Buchbinder were among the researchers.

comprehensibility (which describes translation) was the achievement of “equivalence between the original and adapted versions of a questionnaire (that) refers to the extent to which an instrument is interpreted similarly in two or more cultures” (Herdman, et al., 1998, via Petkovic, et al., 2015, p. 2449). This definition delineates the researchers’ care in distinguishing cross-cultural adaptation from translation; they recognized the importance of the content equivalence between different languages within diverse cultural contexts (Petkovic, et al., 2015). While this research group was concerned with the equivalence of the PROM in different languages and cultures, as well as readability level, to reduce bias in multi-country trials, readability, comprehensibility, and cross-cultural adaptation are equally critical in the implementation of all health communication texts to prevent health disparities due to errors that affect the transfer of the meaning from the original version.

Petkovic, et al. (2015) noted a lack of agreement about the best approach for cross-cultural adaptation, according to a literature review performed by Epstein, et al. (2015). Empirical support is absent for the approach recommended by most previous studies: that the “questionnaires be translated, back-translated, and then reviewed by a committee to ensure equivalence to the original” (Petkovic, et al., 2015, p. 2449). Such a committee would be responsible for verifying that the questionnaire would work the same way – in other words, have the same intended meaning – in the location of the translated version so that the same responses would be elicited (Petkovic, et al., 2015).

Another literature review was performed by Petkovic, et al. (2015) to identify the instruments used to evaluate comprehensibility and cross-cultural adaptation of questionnaires, along with methods employed in health research. Four review articles focused on readability instruments used for patient questionnaires: two studies applied the Flesch-Kincaid grade level and the other two compared Windows-based software, Reading Calculations, FORECAST, Flesch Reading Ease, and Gunning FOG formulas (Alas, et al., 2013; Zraik & Atcherson, 2012; Bergman, et al., 2010; Pace, et al., 2012; via Petkovic, et al., 2015). As for cross-cultural adaptation, the researchers found 94 articles with 31 different guidelines without any best practices for questionnaires (Beaton, et al., 2000; Guillemin, Bombardier, & Beaton, 1993; Kulis, et al., 2011; Leplège & Verdier, 1995; McKenna & Doward, 2005; via Petkovic, et al., 2015).

Based on prior research, the research group selected the Flesch Reading Ease, Flesch-Kincaid grade level, and the SMOG to test two PROMs - the Health Assessment Questionnaire (HAQ) and the Osteoarthritis Knee and Hip Quality of Life (OAKHQOL) - that were available in multiple languages<sup>23</sup> for comprehensibility and overall quality and compared

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<sup>23</sup> The HAQ was tested in English, Dutch, French, Spanish, and Turkish. The OAKHQOL was assessed in English and French.

the results with those using the ELF-Q as the testing instrument. Regarding cross-cultural adaptation, the research group relied on the results of an experimental study conducted in 2010 that compared different approaches involving or excluding back-translation and a group of experts. This group of experts consisted of a translator, a linguist, a clinician, a health education theory expert, a patient, and a methodologist (Petkovic, et al., 2015, p. 2456). Then a special interest group (SIG) session took place, in which readability and comprehensibility were defined, the limitations of standard readability tests were highlighted, and the ELF-Q was presented. They debated the results of readability tests and the cross-cultural adaptation review. Considering all of these, they determined that comprehensibility and cross-cultural adaptation are priorities for PROMs.

The results of the three tests on the two PROMs that were available in multiple languages were varied but not ideal. The Flesch-Kincaid grade level and the SMOG revealed that all the language versions of the Health Assessment Questionnaire (HAQ) were above the recommended reading level,<sup>24</sup> while the Flesch Reading Ease placed the English version as “fairly easy” while all the other language versions were “difficult.” (Petkovic, et al., 2015, p. 2457). The Osteoarthritis Knee and Hip Quality of Life (OAKHQOL) were “standard” according to the Flesch Reading Ease, while the French version was graded as slightly easier than the English version by the SMOG and the Flesch-Kincaid grade level tests (Petkovic, et al., 2015, p. 2457). Based on these results, the authors observed the difficulty of applying standard readability formulas which were developed for texts in English to analyze its translated versions in different languages, due to linguistic variations (Petkovic, et al., 2015, p. 2457).

The authors also noted that readability formulas only evaluate text complexity and do not examine critical features of discourse (“‘top-down’ factors involved in reading comprehension such as recognizing the structure and organization of a text, or ‘bottom-up’ factors such as the density of information and appropriateness of the language”) or cross-cultural competence (Petkovic, et al., 2015, p. 2457). However, all the language versions of the PROMs were deemed satisfactory using the ELF-Q, albeit with minor changes to improve the comprehensibility since they all contained specialized terms (Petkovic, et al., 2015). The reason for this difference compared with the readability formulas is that the ELF-Q “considers the overall structure and organization of a text, the clarity of function, the language and vocabulary used, as well as the content layout and cultural appropriateness” (Petkovic, et al., 2015, p. 2457).

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<sup>24</sup> The American Medical Association and the National Institutes of Health (NIH) recommended that the reading level of health education materials for patients and the general public be at most grade 6 (Eltorai, et al., 2014; Weiss, 2003; Weiss & Coyne, 1997; Cotugna, Vickery, & Carpenter-Haeefele, 2005; Doak, et al., 1996a).



As for the cross-cultural adaptation test, the effect of back-translation was moderate while consulting with an expert committee proved optimal (Petkovic, et al., 2015). The equity SIG session consisted of 31 delegates of Outcome Measures in Rheumatology working group (OMERACT) from North America, Europe, and Australia. Included in the discussion topics were considering the target patients when analyzing the PROM for comprehensibility and cross-cultural adaptation, as well as differentiating between the two concepts. The committee agreed that comprehensibility pertains to a single culture but is equally important with regard to cross-cultural adaptation to implement when the questionnaire will be used in multiple cultures (Petkovic, et al., 2015). They concurred that back-translation was not as useful a tool as consulting an expert committee, which could include patients, to ensure an accurate PROM. Perceived barriers to the latter approach included access to the means for translation and cross-cultural adaptation. The majority of the participants in the SIG session were in agreement regarding the importance of comprehensibility and cross-cultural adaptation of PROMs.

Petkovic, et al. (2015) seconded the findings by Hirsch, et al. (2009) – whose patients found information developed following the details of the ELF to be more comprehensible – by recommending the application of the ELF-Q as a guideline to create PROMs that are comprehensible and appropriate for patients with a lower literacy level, as well as accompany consultations with expert commissions and/or patient focus groups to improve cross-cultural adaptation in translated versions.

Two years after the development of the ELF-Q, Morony, et al. (2018) evaluated fourteen printed patient education materials – eight were self-management and six were about diet and nutrition – for chronic kidney disease (CKD) using the ELF. They adapted the writer-reader relationship aspect of the instrument to evaluate this particular genre of health communication, highlighting the importance of clarifying the reader's responsibilities and the urgency of the call to action. They also simplified the technicality of vocabulary section to two questions to assess how technical the vocabulary is, and whether it is appropriate. The researchers found that most of the materials presumed the reader's prior knowledge about CKD. Most of the materials addressed CKD patients in general, regardless of stage; in other words, it was unclear whether the information applied to patients of a specific stage of CKD. The typical writer was a medical CKD specialist representing an organization or a health care provider, whose tone leaned towards "authoritative, guarded, and distant, reflecting thinking that was formal and analytical rather than personal and specific" (Morony, et al. 2018, p. e10). The vocabulary was too specialized for CKD patients and potentially other readers. Additionally, the writers' objectives and the identity of the intended audience were often unclear. Their limitations consisted of a small sample of two different types of information, which complicated the identification of the key elements per the ELF (Morony, et al., 2018).

As in the previous studies, the researchers recommended the use of “a theoretically grounded linguistic tool that focuses on the intended audience and their specific needs,” (Morony et al., 2018, p. e1) and future research to adapt and apply the ELF to other – including electronic – forms of health communication.

Cavalieri and her colleagues (2019) applied the ELF as part of an ethnographic textual evaluation of printed<sup>25</sup> caregiver information materials on the ketogenic diet (KD) for pediatric refractory epilepsy in two Italian cities. They identified a gap in the research of health literacy among people with epilepsy, a lack of information on the ketogenic diet for this population in Italy, and the need for a best practices evaluation in doctor-caregiver written communication. Cavalieri, et al. (2019) developed a project which involved doctors and linguists to create information for chronic pediatric patients and their caregivers and entailed genre research to form a framework that addresses doctor-caregivers written communication, exploring existing best practices in the United Kingdom and the United States, assessing the Italian context and the caregivers’ feedback on the existing information, and transferring the US-UK best practices to the Italian context to develop improved information. Their project was based on a combination of sociolinguistics (SFL) and ethnography<sup>26</sup> to survey the readers. They then ran a discourse analysis regarding the quality of written caregiver information booklets about the KD in Italian to identify areas for improvement to create a more suitable version.

The two-step methodology consisted of an adaptation of the Information Satisfaction Questionnaire (ISQ) (Loblaw, et al., 1999) to evaluate the caregivers’ perceptions of the communication status quo and the informativeness, readability, and comprehensibility of the written information on the KD that was provided by their health centers, and an ELF analysis of the KD information booklets to which the caregivers referred in the questionnaire. The ISQ, written in simple language, was voluntary and anonymous for the caregivers, also requested suggestions for improvement of the KD information booklets, including their preferred communication medium. The ISQ included questions assessing the persuasiveness and credibility of the information booklets. Cavalieri, et al. (2019), applied the original version of the ELF (Clerehan, et al., 2005) to the KD information booklets. The three information booklets averaged thirty pages in length and contained text and images. One was created by a medical nutrition company, and the other two were rendered by hospital dietitians.

The group of caregivers surveyed by Cavalieri, et al. (2019) was small due to the novelty of this epilepsy treatment. They were all parents, with nearly a quarter of the group of foreign (i.e., non-Italian) origin. Their education level varied broadly: 40% completed junior high school, 20% held a high school diploma, and 32% had a master’s degree. The article

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<sup>25</sup> That is, paper-based, as opposed to online.

<sup>26</sup> The ethnographic aspect was intended by Cavalieri, et al. (2019), to study the effects of the written health communication texts on the interactions between the caregivers and the health professionals.

does not state the education level for the remaining 8%; it could be a combination of university degree and did not complete junior high school. In 17.5% of the surveyed caregivers, the responsibility of dietary preparations for the epileptic children was shared with grandparents and nannies, which highlights the importance of the clarity of the information on the KD diet. 64% of those surveyed considered the KD diet information booklets readable, and 60% said the facts therein were understandable. 70% stated that there was insufficient information to decide to try the KD diet on their epileptic child, and 55% of them thought the instructions were insufficient and there was lack of clarity regarding the benefits and side effects. Overall, those surveyed found the printed KD diet information booklets unsatisfactory and inadequate to enable informed decision-making. Among the recommendations the caregivers offered was that the information should be thorough yet easy to understand in plain language in a reader-friendly format. They stated that they would prefer a website, which could contain more exhaustive information on a broader range of related topics around the KD for epileptic children that could be periodically updated. Furthermore, the foreign caregivers requested translated – or at least simple language – versions, along with ethnic recipes that would reflect cross-cultural adaptation.

The ELF analysis results showed that the three booklets were not entirely lay friendly, reflecting a negligence of consideration of their audience's readability and comprehensibility levels. The booklets contained "semi-technical vocabulary such as 'mechanism of action,' 'dietotherapy,' and 'use of a concomitant drug,' which, while not involving technical terminology, is based on assumptions regarding readers' knowledge or familiarity with specific terms" (Cavalieri, et al., 2019, p. 103). Technical terms and semi-technical expressions can be difficult for readers to comprehend, especially those with a junior high school education level (40%), or foreigners who are not yet proficient in the host country's language (22.5%) (Cavalieri, et al., 2019). As for writer-reader relationship, the researchers detected an impersonal style via the use of the passive, or the writers referred to the patients or the children. The writers never addressed the readers – the caregivers – directly. In addition, there was greater emphasis on the medical facts of the KD for epileptic children than on the day-to-day care implementing the dietary treatment. All these lead to a greater distance between the healthcare professionals and the caregivers (Cavalieri, et al., 2019). Ironically, one of the booklets featured a question-and-answer format, which generally lends itself to a sense of a dialogue between the writer and the reader. Cavalieri, et al. (2019) also noted that the ELF analysis' visual category brought their attention to the use of bold type or underlining for emphasis. While this thesis study only uses the technicality of vocabulary and writer-reader relationship categories of the ELF in the discourse analysis of multilingual health information websites, the visual aspects within the text prove vital as revealed in Section 4.3.1.

This thesis focuses on two categories of the ELF questionnaire: technicality of vocabulary and writer-reader relationship. The assessment of technicality of vocabulary in multilingual health information websites in this study is bolstered by an additional instrument, which is presented in the next section.

## **2.4 Reinforcing the technicality of vocabulary analysis**

In addition to the ELF questionnaire to evaluate technicality of vocabulary in multilingual health information websites, this study incorporates the use of cues in a text, dictionaries, and a rating scale. Technicality of vocabulary is critical to comprehensibility in terms of health literacy. Therefore, its research is necessary to determine whether online health information will be understood by the public. Identifying technicality of vocabulary has proven to be a formidable challenge over the decades. Its research has been notoriously time-consuming (Chung & Nation, 2004; Liu & Lei, 2019), and therefore unpopular in language sciences.

Chung & Nation (2004) compared four different methods on an anatomy text to identify specialized words: a computer-based approach, a technical dictionary, clues in a text, and a rating scale. The computer-based approach proved the easiest to apply once the researcher mastered the software and is well-versed in Excel or another spreadsheet program, however collocations of terms should be included to maximize the outcome (Chung & Nation, 2004). This approach is best used for research that would benefit teaching a second language within a specialized area, e.g., to create a glossary for learners in a technical training program. For this thesis study, which could benefit researchers as well as health communication writers, a methodology more closely related to the writing process is warranted.

Their dictionary-based approach was tested with two different medical dictionaries. The differences between these dictionaries were reflected in the results, which were comparable with the computer-based approach. Chung and Nation (2004) noted the inconsistency between dictionaries because the terms selected for inclusion were based on “the intuitive judgement” of the compilers – at worst a sole author, or by a group at best. Selecting the best dictionary for the aim of a particular study is paramount (Chung & Nation, 2004). Since this thesis study evaluates the writer’s attitude as perceived by the reader via their use of technical words, the most commonly used specialized dictionary in the health care field is the primary deciding factor.<sup>27</sup> This is further explained in Section 4.3.2 of the methodology chapter.

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<sup>27</sup> For this thesis research, public health specialists and health care providers were consulted to ascertain which medical dictionaries in English, Spanish, and Catalan were the most commonly used.

The third method to identify technical terms was via clues in the text. Chung and Nation (2004) observed that a specialized word could be in bold or italics, or it could be accompanied by a definition or its synonym in parentheses. Issues with the method of using clues to identify technical words is that definitions come in various forms, which are not always easy to recognize (Chung & Nation, 2004). In addition, bold and italics could have a purpose different from highlighting a specialized word (Chung & Nation, 2004). Finally, using clues to spot technical terms requires the researcher's intuitive judgment (Chung & Nation, 2004). In this thesis project, an exhaustive set of guidelines for identifying specialized terms has been devised for the word extraction phase of the methodology as described in Section 4.3.1 of the methodology chapter.

Chung and Nation's (2004) devised rating scale, which ranked words according to their level of technicality per their meaning in the text – from general knowledge to highly field-specific, was the most accurate. However, they reported that it was time consuming and labor intensive. It relied on the researcher's intuition and a good knowledge of the area of specialty. The background of the author of this thesis is in healthcare and, more recently, in translation studies. Thus, a rating scale was added to the methodology of this study, albeit different from the one by Chung & Nation (2004). This different rating scale, which is described in detail in Section 4.3, is the Technicality Analysis Model.

The Technicality Analysis Model (TAM) was formulated for English for Academic Purposes (EAP) by Ha and Hyland (2017) to identify specialized words for language instruction in a specific field, because they recognized that the knowledge of technical vocabulary facilitates learning about the subject. Furthermore, Ha and Hyland (2017, p. 36) acknowledged the gray area of this concept: "technicality is not a binary term; we cannot say a word is either technical or not." Unlike the ELF's yes/no questions, the TAM required the categorization of a word along a range of five levels from least to most specialized. Ha and Hyland's (2017) research questions addressed the way technicality could be categorized, to what degrees of technicality, and what vocabulary would be specific to a particular field – in the case of their study, finance, and their technical level. Ha and Hyland reviewed five methods previously used to identify and classify specialized words. The intuition of field experts, however this approach can be work intensive, and meta-language patterns are both subjective as they rely on individual opinion. The third previous approach was checking the word frequency in corpus comparison, where a technical text was compared with a general corpus; Ha and Hyland (2017, p. 37) acknowledged this method's unlikelihood of being "comprehensive, however, as it is often specialised collocations which take on technical meanings and neither multi-word units or everyday words with technical meanings will show up as technical in such comparisons." Two other approaches were a 2-step (Kwary, 2011) and a 4-step model (Chung & Nation, 2003), both intended to bypass the limitations of the

previous three approaches. They were complicated and still risked overlooking crucial specialized terms, as well as inviting contention within the gray area between general use and specialized. The example used for describing this issue is relevant to this thesis: body part names whose definitions are anatomical and “occur in general use with little change in meaning” (Chung & Nation, 2003, p. 105).

Ha and Hyland’s (2017, p. 37) instrument, the TAM, comprises of “a set of criteria that measures the degree of technicality of a word” to assist the researcher in classifying it within a continuum from *least technical* (TAM1), *slightly technical* (TAM2), *moderately technical* (TAM3), *very technical* (TAM4), and *most technical* (TAM5). Using a financial corpus, they consulted a learner’s dictionary as well as two different ones used by finance experts, in addition to a general language dictionary. In addition, they implemented the concordance function of *WordSmith Tools* and the random concordance function in *WordBanks* (the corpus on which the Collins dictionaries are based). For word usage frequency, they consulted the British National Corpus (BNC), the Corpus of Contemporary American English (COCA), and the New General Service List (NGSL). The TAM was intended to deconstruct “technicality” of vocabulary via the categorization process through four factors: the general and specialized definitions of a word, labelling them according to established word lists, the polysemy along with “the literal meaning of a word” (Ha & Hyland, 2017, p. 38). These four factors are based on whether the general and specialized senses of a word were equivalent – the more different the meanings were, the more specialized the word; the frequency of the occurrence of the word, and whether the word was monosemous. The most technical monosemous words tend to be more specialized than polysemous ones (Ha & Hyland, 2017).

The methodology that Ha and Hyland followed was to first consult their sources for any specialized definitions. If not, the word was classified as TAM1 (*least technical*). If yes, then polysemous senses were assessed. If the word lacked a general sense, this step was passed over to the third step, which was the consultation of the frequency. The financial corpus consisted of both written and verbal English built expressly to test the TAM. It contained 33 reports and 347 transcripts, totaling 6,753,212 words spread almost equally between spoken and text. Ha and Hyland, with “several graduate students” (2017, p. 40), identified the words, ran a keywords analysis to compile a discipline-specific vocabulary list, and then ran the TAM pilot test. With the TAM, the researchers found 837 technical words and realized that “a word specific to a financial sector is not necessarily technical, indicating that technicality and specificity are distinct concepts” (Ha & Hyland, 2017, p. 44), reflecting the specific words’ use in business transactions as pertinent to the finance area. Regarding the TAM classification results: 672 words were TAM1 (*Least Technical*), 42 were TAM2 (*Slightly Technical*), 88 were TAM3 (*Moderately Technical*), 26 were TAM4 (*Very Technical*), and 9 were TAM5 (*Most Technical*). Among the limitations that the authors conceded included the subjective choices

of dictionaries as representative of what English for Academic or Specific Purposes teachers and their students would also use. This thesis will consider this limitation as described in Section 4.3. Another limitation acknowledged by Ha and Hyland (2017, p. 45) is the inevitable subjectivity of identifying and classifying technical words: “human decision-making is an inescapable part of any linguistic analysis – even those decisions made by disciplinary experts,” however they believe that the TAM’s more complex rubrics reduces the subjectivity.

It must be emphasized that the TAM was implemented in only one language, on a financial corpus of texts whose readers were expected to know such vocabulary. Ha and Hyland recommended that future research apply the TAM to other disciplines, as in this thesis. More details about the application of the TAM on multilingual health information website texts is provided in Section 4.3.

If teachers experience difficulty identifying technical vocabulary, it likely would be equally challenging for writers of health information texts to differentiate between specialized and lay terms. Thus, while the computer approach could significantly shorten the duration of the analysis, the combination of the use of clues to identify technical terms for extraction from texts, dictionaries, and a rating scale adapted for the analysis of health information websites to complement the Evaluative Linguistics Framework (ELF) questionnaire is intended to reduce sole investigator bias as well as render the thesis study more translatable to health communication research and practice.

This linguistic framework instrument, complemented by the TAM, proves practical for analyzing the readability and cross-cultural competence of health communications texts in this study. It should be noted that *cross-cultural competence* in these studies strictly pertains to text and omit the cultural implications beyond the text in terms of, for example, images. The other frameworks used to assess comprehensibility of health communication texts lack applicability across different languages, fail to focus on top-down features - including those critical to culture - or bottom-up items, including “density of information (not word length) and appropriateness of language” (Clerehan et al., 2005, p. 342, & 2016; & Dixon-Woods, 2001 – also noted by Petkovic, et al., 2015), overlook visual elements, and some are not specifically designed for this area of specialty. Other health communication text assessment tools do not address the disparity between their scores and the actual readability by the target audience (Clerehan et al., 2016), since such instruments deem texts with a high number of syllables per word and lengthy sentences not readable or comprehensible, when “it is possible that the presence of long sentences and certain polysyllabic words may in fact serve to assist readers to make connections between the thought-units contained in clauses and sentences” (Clerehan, et al., 2005, p. 342). The researchers also criticized the Questionnaire Appraisal System (Willis & Lessler, 1999), pointing out its lack of basis in linguistic theory, as it only

partially addresses rhetorical elements and indirectly considers the vital writer-reader relationship (Clerehan et al., 2016).

The studies by Sand, et al. (2012) on Informed Consent Documents and Clerehan, et al. (2016) on Patient Information Leaflets and two types of health questionnaires demonstrate the adaptability of the Evaluative Linguistic Framework to evaluate different types of health communication texts. Clerehan, et al. (2016, p. 341) stated that the ELF “is likely to be of value for other health care texts such as patient information... which further research may confirm.” In this study, the Theoretical Frameworks and the Methodology sections will outline the ELF in detail and how two sections of this instrument will be adapted to evaluate the pragmatic and cultural features of multilingual health communication websites.

## **2.5 Voice of Medicine, Voice of Lifeworld**

To complement the SFL theoretical framework on which the ELF is based and tie in the technicality of vocabulary analysis, this thesis incorporates Mishler’s (1984) Voice of Medicine and Voice of Lifeworld. This framework, which is detailed in Section 3.3, personifies the subcultural aspects of the writer-reader relationship in terms of their respective primary roles: the health expert writer and the lay reader. The writer represents the biomedical professions, which is distinct with its own language featuring vocabulary that is not used by anyone outside of this realm. Their responsibility is to communicate clearly to the reader in the latter’s language for optimal compliance. This section presents prior research that exemplifies the Voice of Medicine and the Voice of Lifeworld in health care discourse analysis.

In a study by Barry, et al. (2001), thirty-five doctor-patient interactions were analyzed only to find that the distinction between Voice of Medicine and Voice of Lifeworld is not always binary. This study resulted in four categories of communication: Strictly Medicine, Lifeworld Blocked, Lifeworld Ignored, and Mutual Lifeworld (Barry, et al., 2001, p. 493). When the doctor and patient communicated in the voice of Strictly Medicine, the doctor was the most satisfied with the outcome of the consultation, particularly the drop-ins with acute ailments that required a prescription treatment, such as antibiotics. Lifeworld Blocked occurred in consultations that were predominated by chronic physical ailments. The patient spoke in the Voice of Lifeworld, which the physician silenced with the Voice of Medicine. For example, a patient with chronic kidney disease and heart problems questioned the cause and the prognosis of the angina, which the physician did not explain. As a result, the patient left feeling extremely vulnerable – and died half a year later. In the case of Lifeworld Ignored, the patient communicated primarily in the Voice of Lifeworld, which the doctor ignored and spoke in the Voice of Medicine. Most of the cases in this category involved chronic physical ailments and had the worst clinical



outcomes. Despite reiterations and persistence, the patient's details were repeatedly ignored by the physician, so that the patient slowly succumbed to the Voice of Medicine. As a result, patients felt angry about being unheard. In the instance of Mutual Lifeworld, the clinical consultations involved psychological along with physical ailments. When the Voice of Lifeworld dominated the conversation, the doctor showed respect and empathy towards the patient, and a sense of ease prevailed. One case involved a man suffering from heartburn and worried that it could be a symptom of a bigger problem such as cancer. He had been dealing with his daughter's serious chronic illness and resulting hospitalization, during which time he had to care for her two children. The physician listened to the patient, explained the condition, and prescribed the correct medication. Both the doctor and the patient reported satisfaction about the consultation. When both the doctor and the patient communicated using the Voice of Medicine (Strictly Medicine) or the Voice of Lifeworld (Mutual Lifeworld), the clinical outcome was successful (Barry, et al., 2001, p 503). Matthiessen (2013, p. 454) also noted the importance of health care professionals communicating using the Voice of Lifeworld.

The importance of the Voice of Medicine and Voice of Lifeworld regarding writer-reader relationship is evident in the study by Maglie (2017). A mixed method approach using corpus and discourse analysis to assess an online health question-and-answer platform was applied to ascertain communication patterns in terms of Mishler's Voice of Medicine and Voice of Lifeworld. The corpus was split into two sub-corpora: one consisted of the patients' questions and the other contained the health professionals' answers. The results showed that the health professionals expressed either formality and authoritativeness in terms of power distance, or affection and alliance (Maglie, 2017). The patients applied a less formal approach in their queries to the health professionals (Maglie, 2017). A notable detail from the results is the health professionals' use of the third person pronoun to avoid stigma and shame (Maglie, 2017). Since Maglie's study focused on different types of role relationships per se, as opposed to analyzing writer-reader relationship and technicality of vocabulary to gauge the comprehensibility and cross-cultural competence of health websites, her information serves as a useful example for this thesis research from the broader viewpoint of Systemic Functional Linguistics within the more focused realm of Translation and Language Sciences to look at the attitude of the health professional towards the lay reader, whether in the original language or in the translated text.

This is the first time that the Voice of Medicine and the Voice of Lifeworld will be incorporated with SFL in a written health communication study. The Voice of Medicine and Voice of Lifeworld will be applied within the context of SFL to aid in the assessment of the tone of the health information website texts in light of writer-reader relationship and technicality of vocabulary.

## 2.6 Health information discourse analysis

Following the writer-reader relationship and TAM analyses, a qualitative discourse analysis of writer-reader relationship and technicality of vocabulary will be performed. This section presents the studies to which the discourse analysis refers. Several of the markers used in this study's analysis pertain to metadiscourse, which is defined by Hyland (2005; Hyland & Jiang, 2018) as:

The commentary on a text made by its producer in the course of speaking or writing and has become one of the most productive ways of modelling interaction. Interaction is defined here as the writer's rhetorical awareness of the reader as a participant in the discourse, as someone who, through the choice of metadiscourse devices, can be engaged, guided and swayed by a text that is both comprehensible and persuasive. It focuses on those items which most overtly invoke the presence of the writer or reader in a text, organise propositional discourse and display the writer's stance. (Hyland & Jiang, 2018, p. 19)

Section 3.2.4 provides an in-depth theoretical explanation of metadiscourse. This section presents a literature review of some of the metadiscourse markers that are implemented in the discourse analysis of this thesis.

Hyland & Jiang (2018) assessed the changes in metadiscourse in scientific discourse over the past fifty years. They selected four disciplines from the hard and soft sciences – applied linguistics, biology, electrical engineering, sociology. Hyland & Jiang (2018) created three corpora for three points in time: 1965,<sup>28</sup> 1985, and 2015 from journals with a long and strong (based on the Thompson-Reuters categories) history to counteract the limitation of the changes in research publications. From each of the five journals from each field, they selected six articles “at random,” with single and co-authored papers were equally represented; thus, each corpus contained 120 articles. Using concordance software, they applied the common keywords from each of Hyland's (2005) metadiscourse in academic writing list. Hyland and Jiang (2018) admitted that this methodology does not capture every instance of metadiscourse in the text (a limitation which influenced the decision in this thesis study to use the more time-consuming coding approach). They eliminated the non-metadiscourse-functioning instances from the concordance lines. This work was done independently by both authors with an inter-rater agreement of 95% prior to resolving disagreements. The results were normalized and analyses for statistical significance were performed.

Hyland and Jiang (2019) found that metadiscourse usage increased in academic writing over the fifty years. Closer examination revealed that interactive metadiscourse, which

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<sup>28</sup> Except for applied linguistics, since one of the journals began in 1967. The researchers selected articles from the 1967 publications.

includes code glosses, was responsible for this increment. Between 1965 and 2015, there was a significant increase in interactive metadiscourse (which include five markers, of which only code glosses are relevant to this thesis since it serves to provide additional information to add clarity) and a significant decrease in the interactional ones<sup>29</sup> with the exception of self-mentions, which are used by writers to make their presence known in the text through, for example, exclusive first-person pronouns. Hyland and Jiang (2019) postulated that the increase in interactive metadiscourse “indicates greater awareness of the readers’ processing needs, or at least greater care in constructing arguments” (p. 24), while the increase in self-mentions “projects a more personal stance and signals an overt authorial role” that permits the writers greater visibility, “stepping in to explicitly signal their presence and take responsibility for their claims and actions and credit for their interpretations” (p. 27). Further scrutiny of interactional metadiscourse revealed that research article persuasion patterns also varied by discipline. Self-mention usage increased in sociology, biology, and electrical engineering, but decreased in applied linguistics. Nevertheless, in all four fields, there was an overall “trend towards more reader guidance” and “rhetorical shift in argumentation patterns in academic writing towards a greater awareness of readers” (Hyland and Jiang, 2019, p. 28). This increment in the writer as an identity in the text and what writers anticipate in their readers may influence health professionals, whose work culture with its specialized language differs from the culture and vocabulary of the outside world.

Herrando-Rodrigo (2010) performed a contrastive analysis of two writer-reader relationship markers – engagement markers and self-mentions<sup>30</sup> – in an English corpus of twenty online medical texts composed for lay readers (18,107 words) and twenty medical research articles (40,883 words – the two unbalanced sub-corpora posed a limitation), both about urology. Writers implement engagement markers to include the reader in the text by addressing them via, for example, inclusive first-person plural pronouns, second-person pronouns, and imperatives. Herrando-Rodrigo (2010) differentiated between the specialized, highly technical research articles, whose intended audience were medical professionals, and online texts that were adjusted and adapted for the lay reader. She dubbed the latter “Electronic Popularizations”<sup>31</sup> (“e-Pop” for short). She noted the challenges of discerning whether an e-Pop was a reformulated research article – translated and/or adapted – or if it was an original work on a biomedical topic intended for the lay audience. The objective was to ascertain the different ways the two metadiscourse markers were used in the research articles compared with the e-pops.

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<sup>29</sup> Interactional markers also include hedge words, engagement markers, attitude markers, and boosters.

<sup>30</sup> A detailed explanation of these two metadiscourse markers are in Section 3.2.4.

<sup>31</sup> Popularization was defined in Section 1.1.1.

The research articles contained exclusive first-person plural pronouns that referred only to the authors, who implemented these self-mention markers to claim ownership of their work. As regards engagement markers, primarily asides – comments or explanations enclosed in parentheses or hyphens, such as this one – were found in the research articles, which the authors used to treat potential arguments against their interpretations of the findings. Imperatives, the inclusive first-person plural, and second-person pronouns were scarce in research articles, which Herrando-Rodrigo (2010) interpreted as the authors not feeling compelled to directly address their academic and professional audience. She found more engagement markers in the e-Pop texts, mostly using asides, imperatives, and second-person pronouns to connect with the reader. She observed the use of both metadiscourse markers in an interactional way via the question-and-answer format to draw the reader into the dialogue with the writer, who took on the reader's voice to ask the question using first-person singular pronouns, followed by the use of the second-person form in the answer. Herrando-Rodrigo (2010) postulated that writers repeatedly addressed their readers to include them in the interaction and observed that these writers adopted the readers' voice to give readers the impression of being in the same medical situation, expressing solidarity with them. The engagement markers rendered the e-Pops more accessible, however, Herrando-Rodrigo (2010) warned that this benefit risks misleading the lay audience into unrealistic health care expectations, such as treatments resulting in a quick recovery. The variations in the use of engagement markers and self-mentions in the research articles compared with the e-Pops were due to the two groups of texts' different audience and purpose. Herrando-Rodrigo (2010) suggested that both research article and e-Pop writers strove to relate with their readers, albeit in different ways, with the e-Pop writers more focused on calling and holding the reader's attention to accessible information.

A more recent study by Diani (2019), which also analyzed engagement markers as well as self-mentions in an English corpus of websites about twenty-six different pediatric neurologic syndromes consisting of 226,069 words, also found a much higher frequency of the former marker compared with the latter. This corpus was divided into three sub-corpora: the first was about the syndromes, the second pertained to medications and treatments, and the third consisted of guidelines for parents. Diani (2019) aimed to find out how writers express themselves in online health communication, and how they connect with their readers via engagement markers and self-mentions. The methodology combined discourse analysis with corpus linguistics analysis. Diani's (2019) analysis of self-mentions was limited to exclusive first-person pronouns and possessive adjectives. Engagement markers included the second-person pronouns, the inclusive first-person plural pronouns, imperatives, and questions (as in the aforementioned question-and-answer format).

That a much higher frequency of engagement markers, compared with the low frequency of self-mentions, were found in the corpus as a whole reflected the website writers' aim to connect with the reader by direct address and inclusion. While all three sub-corpora featured more engagement markers than self-mentions, there were marked differences: as regards self-mentions, the guidelines sub-corpus contained the most and the syndromes sub-corpus had the least. The guidelines sub-corpus also contained the most engagement markers, with the treatments sub-corpus a close second, and the syndromes sub-corpus a distant third. These results corresponded with the purpose of each of the three different website sections and reflected "how distinctive contexts influence the way writers project their voice and engage with their readers" (Diani, 2019, p. 22). The majority of the first-person singular usage was in the question-and-answer format, in questions that the reader might ask and the writer answers. The exclusive first-person plural pronouns were less frequent in the corpus and used in relation to the purpose of the website (e.g., "*our* mission is...") or to position themselves with an argument or perspective (e.g., "*we* again urge patients...") (Diani, 2019, p. 25). The most frequently used engagement markers were second-person pronouns, which foment a connection with the reader. The second most frequent was imperatives, which was used for recommendations and instructions. The inclusive first-person pronoun was less frequent in the corpus and was implemented to make the reader feel a part of a community of parents with children affected by diseases, lending a sense of familiarity. Diani (2019) concluded that the findings show how the writers – instead of manifesting their own identity in the websites – emphasized the readers in an empathic dialogic interaction to enhance their health literacy and empower them as caregivers.

While no multilingual comparative studies on self-mentions and engagement markers exist in health communication, a study by De Cock and Serrano (2017) compared person deixis in parliamentary debates in Spanish and Catalan. Their hypotheses were: one, that there were differences between Spanish and Catalan as regards the use of the expression of politeness via deictic markers, and two, that the Spanish formal second-person pronoun was more prevalent compared with the Catalan one. A corpus of Spanish and Catalan parliamentary debates from 2001 and 2005 was built. These years were selected due to the parallel political situation at that time to reduce bias in that respect. The Catalan corpus was 5,000 words smaller than the Spanish one. Manual coding was performed on the corpus, whose data were then extracted and compared with previous analyses of informal interaction and other registers. The data were then statistically analyzed to check for any significant findings.

De Cock and Serrano (2017) found that the Catalan politicians were more likely to implement person deictics, and when doing so, they tended to be in plural. Neither language showed a difference between inclusivity and exclusivity in the use of the first-person plural.

The Spanish politicians, which used statistically significantly more singular references, tended towards “a more distanced and impersonal way of presenting facts and data” (De Cock and Serrano, 2017, p. 104). These results were explained by the Spanish government having two prominent parties with a prime minister and an opposition leader, while the Catalan government is composed of multiple parties and “prefer to focus the debate on parties or coalitions” (De Cock and Serrano, 2017, p. 104). Thus, more plural references are implemented by the Catalan politicians. Only the second-person formal address was used. Both Spanish and Catalan are languages in which the pronoun need not be included in a sentence with a conjugated verb so that the speaker (using a self-mention) and/or the addressee (with the use of a relational or engagement marker) could be understood. De Cock and Serrano (2017) observed that including the pronoun when not otherwise needed bore the pragmatic implication of “emphasis, contrast, clarification or discursive focus [...], also the expression of politeness” (p. 111) and “impoliteness strategies (when looking into the personalization of an attack)” (p. 112). The authors were surprised to find that the Catalan politicians tended to include the pronoun more frequently compared with the Spanish politicians. Their study evaluated spoken discourse in a different genre, in which imperatives were rarely used (De Cock & Serrano, 2017), thus the applicability of their findings to this thesis’ results will be limited even though both spoken political debates and health information websites feature persuasion.

Between texts written by professionals of a specific field for the lay public and scientific research articles, there exist similarities in the use of metadiscourse devices, such as the prevalence of hedge words. It is possible that health professionals carried this over to health communication for the general audience from their work in the medical realm. The professional development of health care writers includes skill-building for publishing medical articles. In an article detailing the structure and style of a scientific paper, Antic (2009) notes the importance of hedging in medical discourse, whose role is to allow “the student to present statements with appropriate accuracy, caution and humility, expressing possibility rather than certainty and prudence rather than overconfidence” (p. 58). In a situation in which the research findings rely on the general approval of the medical community and the necessity to analyze the evidence and its reliability on topics related to potential life and death issues – and prevent antagonistic feedback – hedging using modal verbs, adverbs, and adjectives such as “might,” “perhaps,” and “possibly” could prove beneficial for the author (Antic, 2009, p. 58). In addition to the possibility of the fallout of being disproven, Antic (2009) noted that hedges are a vital rhetorical device for medical writers because they balance fact with analyses while presenting information in a complete, objective, and precise manner.

However, there are differences in hedging based on the scientific text writer’s linguistic background. Salager-Meyer (2011) performed a review of contrastive linguistic research on

hedging in scientific discourse between two languages. She observed that “research papers written in Spanish and in English by Spanish-speaking scientists were [...] found to use less hedging – or modalization – than those written in English by native English-speaking scientists” (Salager-Meyer, 2011, p. 36), and there were variations in the amount of hedging between other linguistic cultures and English. Her research concluded that hedging, which is integral to scientific writing, is also influenced by the scientists’ linguistic culture. Salager-Meyer (2011) focused on scientific discourse intended for an audience of experts; however, her study should be considered in light of this thesis due to the background of the writers and translators in popularized texts such as multilingual health information websites on HIV and TB diagnostic testing.

While research on hedges in biomedical articles (e.g., Salager-Meyer, 1994) exists, only one study compares this interactional metadiscourse device, along with self-mentions between English and Catalan. Pujol Dahme and Selfa Sastre (2015) performed a longitudinal study to evaluate the academic register, including the use of hedges and self-mentions, in eight master’s theses from the University of Barcelona written in Catalan and eight published articles in English – one of each written by the same eight authors as they learned how to report on their research using the academic style first in their native language and then in English. Based on prior research, it was noted that students for whom English is a non-native language experienced difficulties with academic papers, exhibiting variations in writing style, in this language (Pujol Dahme & Selfa Sastre, 2015). This struggle is complicated by Spanish academic writing manuals that advise against any references to the writer or the reader, and generally do not address the use of metadiscourse devices such as hedges and boosters (Pujol Dahme & Selfa Sastre, 2015). The gaps identified were the need for discourse analysis in English and Catalan of students’ immunology research papers as they developed their academic writing skills from their native language to the *lingua franca* of the field of study. To improve these students’ academic writing abilities in English, Pujol Dahme and Selfa Sastre (2015) aimed to identify the features that differed through the development of such skills in this corpus. The common trait of master’s theses and research articles is the Introduction, Method, Results, and Discussion (IMRD) structure, along with their ultimate aim to share knowledge. Based on the Systemic Functional Linguistics framework – specifically, register and interactional metadiscourse – the methodology involved coding to identify the metadiscourse markers and relied on concordance to compare their frequency between Catalan and English. Inter-rater agreement was 86%, with an independent rater discussing the case with the researchers to resolve disagreements. In addition to the small corpus, limited prior comparative studies between languages called for caution as differences may also be due to the characteristics of the languages themselves.

Results showed that the master's theses in Catalan contained more hedge words compared with the English, although the difference was not statistically significant. Pujol Dahme and Selfa Sastre (2015) expected more hedges in the research articles than in the master's theses. They concluded that the lack of hedges in the English publications may be a result of "the high level of competitiveness in biomedical sciences, so more robust results require fewer hedges (Pujol Dahme & Selfa Sastre, 2015, p. 173). The English publications had significantly more self-mentions than the Catalan master's theses. Pujol Dahme and Selfa Sastre (2015) interpreted that the absence of the authorial voice in the master's theses is due to the basic differences between this academic genre and the published research articles. Conversely, the Catalan authors established their identity by highlighting their individual contribution to assert their professional credibility in the English research articles. The researchers of this bilingual study concluded that "the high use of self-mention in publications together with a lower use of hedging could be interpreted as an effort to project an authorial imprint" (Pujol Dahme & Selfa Sastre, 2015, p. 174). Furthermore, they believe the higher use of self-mentions in English publications is a cultural trait, referring to a previous study of business management research articles in English and in Iberian Spanish that had similar results (Mur, 2007) and the influence of the Spanish academic style manuals that discouraged any references to the writer or the reader. Pujol Dahme & Selfa Sastre (2015) recommended future comparative research comparing the use of metadiscoursal devices between languages.

While analyses of hedge word usage in multilingual corpora are limited (for example, Salager-Meyer, 2011; Pujol Dahme & Selfa Sastre, 2015), as of this publication, none exist for multilingual health information websites. There does exist one study on hedge word usage in written health communication texts in English. Afreh, et al. (2017) conducted a mixed-method evaluation of the use of hedging in 100<sup>32</sup> patient information leaflets (PILs), whose results are more pertinent to those of this thesis. Acknowledging the scarcity of research on hedging strategies in medical discourse in general, particularly in PILs, Afreh, et al. (2017) aimed to identify the hedging strategies in this form of health communication. Their framework was based on Hyland's (1998c) metadiscourse model and on the functional principle for classifying words by Quirk, et al. (1985). The latter framework concerned the identification guidelines for setting up word classes, including functional, morphological, and notional (Afreh, et al., 2017). As such, hedge words were divided into two categories: lexical and non-lexical (strategic). The latter classification pertained to hedging by "regularly used grammatical

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<sup>32</sup> In the abstract, Afreh, et al. (2017) stated fifty PILs were analyzed. In the methodology section of their paper, they stated that their corpus comprised one hundred PILs. One of the authors, Dr. Akoto, clarified that they had analyzed fifty for a conference presentation – thus the amount in the abstract – and one hundred for the published paper (O.Y. Akoto, personal communication, October 10, 2022).



patterns and other means of expressing reservation” (Afreh, et al., 2017, p. 520). The methodology comprised three steps. First, all the hedge words in the PILs were tagged. Second, the texts were reviewed to check that the tags were correct, i.e., real hedge words. The final step involved manually copying the real hedge words for analysis.

The results showed that 70.1% of the hedge words found in the PILs were of the lexical type, the large majority of which were modal auxiliary verbs such as “may” and “could” to express possibility in which the writer expresses a hesitation to commit to a claim. Additional lexical hedge types included epistemic adverbs (e.g., “generally”) and epistemic adjectives (e.g., “possible”) also appeared in the corpus of PILs. The non-lexical hedge types found were mainly passive voice, conditional clauses, and admission to lack of knowledge. Afreh, et al. (2017) insisted that passive voice was a form of hedging because the writer removes themselves from the claims in the text. Conditional clauses in the form of problem-solution statements in and of themselves were also considered hedging, even though such sentences contained an epistemic modal verb. Admission to a lack of knowledge was classified by Afreh, et al. (2017) as hedging with the justification that phrases such as “it is not known whether” indicate that the writer state their lack of knowledge about the topic. In the process of ascertaining which lexico-grammatical forms of hedging were prevalent in their corpus of PILs and in pharmaceutical writing in general, the study by Afreh, et al. (2017) contributes to the knowledge that hedging forms a part of health communication discourse. Hedge words are among the markers to analyze writer-reader relationship in this thesis, which provides the first study to assess hedging in multilingual health information websites.

There exists an empirical discourse analysis study of an English online health forum – another type of popularized format – which examined the strategies for explaining biomedical terminology to the lay audience. Anesa and Fage-Butler (2015) pointed out that “explanation plays a fundamental role in popularization processes” (p. 119). To ascertain which explanatory devices were implemented for recontextualizing expert scientific knowledge so that the lay reader could understand the concepts, they performed a discourse analysis of 129 interactive (i.e., those having more than five responses per thread in an exchange between professionals and lay users) and collaborative (two or more participants) threads in one public online forum focused on cardiology from 2009 up to the time of the study.

Anesa and Fage-Butler (2015) found definitions, figures of speech (which includes metaphors, similes, and personification), exemplifications, and generalizations.<sup>33</sup> Definitions were given by using lay terms accompanied by a code gloss – e.g., parentheses – containing the specialized term sometimes preceded by a hinge word – e.g., “is called” – or the

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<sup>33</sup> Figures of speech and generalizations were excluded from the discourse analysis of this thesis since they do not explicitly define or explain the technical terms.

conjunction “or.” The inverse occurred as well; a technical word would be presented first, followed by a definition using a lay term using a code gloss. Code glosses were not always present; sometimes the technical term would be defined with the word “means.” Metaphors and similes were used to describe, for example, the role of the left ventricle of the heart as the “workhorse” of said organ. Personification was implemented to animate how, for instance, a mental state could manifest in the body – e.g., that stress is “talking” via physical symptoms. Exemplification was implemented by the writer to give an example of what could cause a health issue before adding that there were other potential causes. Generalization, which Anesa and Fage-Butler (2015) stated were a vital feature of popularized texts, was the inverse of exemplification. The health professional writer replies to a reader’s question regarding whether a cardiac issue will resolve either by addressing the audience as a whole or by referring to a population group as opposed to the individual reader. These forms of explaining technical vocabulary in popularized texts proved useful in the methodology of this thesis.

A similar study was conducted by Mattiello (2019) with the objective of exploring the explanation strategies in the process of the recontextualization of science in TED Talks about the biomedical aspects of cancer. While TED Talks are a different mode from online written health information website texts, both share a similar field and tenor in that experts transmit biomedical information to a lay audience. A qualitative discourse analysis of thirty TED Talks in English, in which thirty-two experts verbally presented to a mixed expert and lay public. The corpus consisted of 63,789 words. Mattiello (2019) used the transcripts that were provided on the website.

Mattiello (2019) found seventy instances of explanation strategies of a technical term, of which thirty-three instances were hinge words and forty-seven instances were descriptions. She observed that the TED talk presenters tended to incorporate lay terms, familiar vocabulary, or rhetorical figures to introduce specialized words (Mattiello, 2019) while informing and explaining cancer-related concepts. Specialized words preceded their definition, sometimes linked by the verb “to mean.” TED Talks expert speakers sometimes cited a popularly known institution as a reference for the definition. Speakers would emphasize aspects of a technical term with a periphrasis (“malignant cells”)<sup>34</sup>, a hyperbole (“rapidly-growing”), a demonstrative pronoun (“this”), or a negation (“not only can..., but...”). Metaphors and similes were also found in the corpus. Mattiello (2019) highlighted the importance of defining specialized words to render the concepts comprehensible for a lay audience in the process of informing them about cancer topics.

In addition to explanation strategies for specialized terms, Mattiello (2019) noted that TED Talks speakers used relational and engagement markers – specifically, second-person

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<sup>34</sup> All the examples in this sentence are mine.

pronouns and questions – to captivate their audience, citing a study by Caliendo & Compagnone (2014) as well as one by Compagnone (2014). These researchers, along with Mattiello (2019) and Anesa and Fage-Butler (2015), were interested in genre-specific strategies as opposed to culture- or multilinguistic-specific aspects as regards relational and engagement markers and the introduction of technical vocabulary to the lay audience.

This section presented prior research on multiple aspects of writer-reader relationship and technicality of vocabulary, from explanations methods to introduce specialized terminology to a lay audience to markers to analyze hedging, self-mentions, as well as relational and engagement markers. These qualitative studies served as points of reference for the coding rubrics and the discourse analysis that were performed on the English, Spanish, and Catalan health information websites.

## **2.7 Summary**

This chapter demonstrates that prior research on online health information quality, readability and comprehensibility, and cross-cultural competence leaves gaps that are addressed by this thesis' study. Writer-reader relationship questions persist regarding the differences in the cross-cultural adaptation and the clarity of the information and the writer's tone that affect the comprehensibility of the translated and non-translated English, Spanish, and Catalan health information websites on HIV and tuberculosis testing. Knowing how technical these health information websites are, and any differences between the translated and non-translated versions of English, Spanish, and Catalan sub-corpora would benefit researchers and practitioners to advance improvements in terms of word choices. The next chapter presents the theoretical framework for analyzing technicality of vocabulary and writer-reader relationship to determine the comprehensibility and cross-cultural adaptation in multilingual health information websites on HIV and tuberculosis testing.



### **3. THEORETICAL FRAMEWORK**

*Theories are nets to catch what we call 'the world': to rationalize, to explain, and to master it.*

*We endeavor to make the mesh ever finer and finer. - Karl Popper*

*(Popper, 2002, pp. 37-38)*

This chapter presents the theoretical frameworks that guide the methodology and the interpretation of the results of this study. Applying public health theories to the multilingual health information websites in this study's sample to evaluate comprehensibility and cultural adaptation on a linguistic level would be illogical. The most frequently used public health theories are outlined in order to justify the need for a linguistic framework for health communication. This chapter then presents the aspects of Systemic Functional Linguistics that are relevant to addressing this study's research questions regarding writer-reader relationship and technicality of vocabulary in multilingual health information websites. Based on Systemic Functional Linguistics, Evaluative Linguistic Framework will then be introduced as the foundation for this research. Furthermore, this research is influenced by the Voice of Medicine and Voice of Lifeworld (Mishler, 1984), whose details will be provided to show how it complements the Evaluative Linguistic Framework in the analysis of writer-reader relationship and technicality of vocabulary in order to gauge whether the multilingual health information website texts in this study's sample are comprehensible and culturally competent.

#### **3.1 Health Behavioral Theories**

This section presents five public health theories that are most frequently applied to campaigns. The first two work on the intrapersonal level, the third operates on the interpersonal level, and the last two function on the community level. Their benefits and faults are highlighted. Following this section, the rationale for implementing a combined language sciences framework instead of a public health theory to gauge comprehensibility and cross-cultural competence in multilingual health information websites in this thesis study will be set forth.

##### **3.1.1 Intrapersonal level: Health Belief Model and Transtheoretical Model**

One health behavior framework that is used often is the Health Belief Model (HBM), a continuum theory which is based on Lewin's decision-making model (Lewin, 1935, 1936;

Lewin, et al., 1944) and created in the mid-twentieth century by a team of psychologists employed by the United States government to ascertain the reasons that people choose whether to consult with a health provider (Rosenstock, 1966). It is deemed “continuum” due to its feature of a single equation based on influential variables that can affect the likelihood of action (Weinstein, et al., 1998; Weinstein, et al., 2008). The HBM postulates that health decisions are based on three factors happening at the same time: motivation for self-care, perceived threat – based on perceived susceptibility and perceived severity – of a health issue, and the willingness and ability to overcome perceived barriers such as financial costs (McKenzie, et al., 2017).

To exemplify how the HBM works: Jane Doe searches online for information on HIV testing and clicks on one of the links from the results list on her Internet browser. She reads the health information website, which details the risks and benefits of knowing one’s HIV status and initiates her thought process to get tested. Certain details, such as her age, religion, ethnicity and race, sexual orientation and level of sexual activity, influence her decision-making process. As a twenty-something bisexual atheist who practices polyamory, Jane Doe recalls her high school health course, which highlighted the risks of unprotected practices, and remembers that time she experimented with unprotected chemsex last year and realizes that she really could not be certain that she was HIV negative. This is an example of perceived susceptibility. She also realizes that if she is HIV positive and does not start drug therapy immediately, she could develop full-blown AIDS and die young from complications. This is an example of perceived severity. Based on these factors, as well as the risk of passing the HIV virus along to her partners, Jane Doe perceives a threat. She also sees that getting tested would enable her to know her HIV status and improve her chances of survival should the result be positive. These are perceived benefits. She is averse to needles, is financially strapped, and is hesitant to discuss her sex life with health care providers out of fear of discrimination – which are perceived barriers. The website lists LGBTQ friendly clinics that guarantee anonymity and that include free oral and, if necessary, follow-up blood tests that give her the confidence to find out her HIV status. This is referred to in the HBM as self-efficacy. Weighing the risks of her unknown HIV status with the advantages and disadvantages of getting tested, Jane Doe makes her decision. This final step is regarded by the HBM as the “likelihood of taking recommended preventive health action” (McKenzie, et al., 2017, p. 163).

Although the HBM takes variables such as a person’s age, ethnicity and race, economic status, and education level into consideration, it hardly addresses comprehensibility and perfunctorily treats cross-cultural competence. Questionnaires based on this model tend to be culture-neutral or Euro-American beliefs in general, i.e., without consideration for cultural diversity within the population among whom exists variations in belief, such as regarding religion, or influenced by social conditions such as poverty, that could affect health behavior

(Facione, 1993). Also, the HBM works best on the intrapersonal level, whereas SFL – and ELF – deals directly with text, and the Voice of Medicine and Voice of Lifeworld described in Section 3.3 function on an interpersonal level, which is arguably more critical in assessing the competence of multilingual health information websites.

Another popular intrapersonal health behavior theory, the Transtheoretical Model (TTM), is also known as the Stages of Change Model. As its alias suggests, this model is a stage theory,<sup>35</sup> based on the classification of the target audience and a system of categories for which each stage signifies in a particular order. Factors that can induce change as well as barriers to change – both common to the target audience as a whole as well as different ones at each categorical stage – are identified (Weinstein & Sandman, 2002). Based on psychology, Prochaska (1979) formulated the TTM, which applies stages of change to incorporate concepts and actions of change from several different theories, thus its name (Prochaska, et al., 1998; McKenzie, et al., 2017). In summary, “the core constructs of the TTM include the stages of change, the processes of change, decisional balance (i.e., the pros and cons of changing), self-efficacy, and temptation” (McKenzie, et al., 2017, p. 168). This framework recognizes that health behavioral change takes a long time to evolve, that there is a risk of relapse into old habits and the need for reinforcements to ensure the new behavior becomes a permanent fixture. The TTM could be applied to the aforementioned Jane Doe, assuming that her first HIV test result was negative, to motivate her to get an HIV test every six months and adopt safe sex practices.

### 3.1.2 Interpersonal level: Social Cognitive Theory

While it is easiest to distinguish the continuum theories from stage theories on the intrapersonal level, there remains the requisite justification to forgo that as well as the community level health behavior frameworks in this study. The health behavior frameworks that operate on the interpersonal levels assume that an individual is influenced by the people they interact with, such as family members, friends, and health care providers, and that this influence occurs in both directions. A frequently used theory applied in health promotion campaigns at this level is Bandura’s (1986, 2000) Social Cognitive Theory (SCT), which is considered a major advance in the health field due to its inclusion of social and environmental factors (Burke, et al., 2009). This framework stresses the importance of reinforcement in learning, yet that behavior change is also influenced by the person’s anticipated

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<sup>35</sup> Proponents of stage theories “claim that there are *qualitative* differences among people and question whether changes in health behaviors can be described by a single prediction equation” (Weinstein, et al., 2008: 124-125; emphasis in the original). Stage theory frameworks can be applied on the intrapersonal level (for example, the TTM) and on the community level (for example, the CRM).

consequences of a behavior. “In this model of reciprocal causality, internal personal factors in the form of cognitive, affective, and biological events, behavioral patterns, and environmental influences all operate as interacting determinants that influence one another bidirectionally” (Bandura, 2001, p. 14-15). There are several ways that the SCT can be applied in health promotion campaigns, three of which are direct reinforcement (receiving important feedback from a vital source, such as a group counselor, for a behavior), vicarious reinforcement (social modeling, by watching someone else receive reinforcement for a behavior), and self-reinforcement (the do-it-yourself version) (McKenzie, et al., 2017). Within the social context, reward or punishment could be regulated by one’s environment; social and cultural influences figure prominently since they can help, prevent, or undo the individual’s endeavors to change their behavior (Bandura, 1986; Burke, et al. 2009).

### 3.1.3 Community level: Diffusion Theory and Community Readiness Model

In addition to the intrapersonal and the interpersonal level, there exist health behavior models that are intended to function at the community level, which could be applied to institutions and public policy, and involves the people’s environment and culture. Examples of application at this level are encouraging immigration center employees to inform their clients to get tested for TB, and an HIV testing campaign at a neighborhood needle exchange center for injecting drug users. The Diffusion Theory (Rogers, 1962) is a continuum theory that works at the community level with the explanation of the pattern of adoption of an innovation – a new concept in the form of a commodity or a service, such as HIV or TB testing. A few daring innovators are the first to take up the offer, followed by a handful of early adopters, who have by then verified that the innovation is worthwhile. They are followed by the early and the late majority of the community, both of whom require external motivation to adopt the innovation, with the latter group being more skeptical. The small group of laggards are the most difficult to convince, as they are set in their ways and mistrustful of anything new. However, Diffusion Theory does not consider cultural issues.

Nor does the Community Readiness Model (Edwards, et al., 2000), a stage theory that acknowledges that people within a community are at different levels of preparedness. It also recognizes that no two communities are alike despite having similar problems, so the approach to bring on change would have to vary. (McKenzie, et al., 2017). This is determined via interviews with key informants. Once the stage at which a community is at is determined, the health promotion campaign can be planned to progress towards the goal of each of the remaining stages and ultimately to permanent change.



### 3.1.4 Rationale for rejecting health behavioral theories for this study

As demonstrated in this section, the health behavioral theories do not address comprehensibility, which in this study is mainly related to technicality of vocabulary, and most of them only perfunctorily address cross-cultural competence, which in this study is related to writer-reader relationship. To analyze these two elements of multilingual health information websites that are vital to convince their target readers to take the desired action, it was more logical to create a framework based mainly on linguistics: Systemic Functional Linguistics complemented with Mishler's the Voice of Medicine and the Voice of Lifeworld.

## 3.2 Systemic Functional Linguistics for health communications

For more than three decades, discourse research exploring pragmatic elements in health communications has revealed the persisting "knotty relationships and intricate choreographies characterizing medical relationships" (Martin, 2014, p. 515). Healthcare workers acquire their communication skills through formal education and internships. Their rigorous training lacks the incorporation of pragmatic discourse to health communications, a critical skill which could reduce misunderstandings between medical experts and laypeople (Martin, 2014, p. 515). These medical professionals at different types of organizations, ranging from government to nonprofit, provide health information websites that ideally feature pragmatic elements which avoid misinterpretations on the part of the general public.

The relationship between the writer (e.g., the health professional) and the reader (the layperson seeking health information online), along with technicality of vocabulary, are the pragmatic determinants of focus in this study. As introduced in Section 1.1.3, the term "pragmatic" refers to "the relationship between the language, its users, and the contexts in which they operate" (Butler, 1988, p. 83). Systemic Functional Linguistics (SFL) claims that a text can simultaneously create three types of meanings: textual (the manner in which the text is arranged), ideational (how experience is reflected in language), and interpersonal (role relationship) (Eggins, 2004). The interaction between these three meanings can also be viewed from SFL's register perspective.

M.A.K. Halliday with C.M.I.M. Matthiessen (2014a & 2014b) have been formulating SFL since the 1960s to define the interrelation between linguistic choices. Text is at the focus, within the context of situation, which incorporates the three discourse components of register: field (the scenario, which forecasts experiential – or ideational – meanings), tenor (the people involved, which forecasts interpersonal meanings), and mode (the functions given to language within the given scenario, which forecasts textual meanings). In the case of this study, medical language may be deemed the register type (Pilegaard, 1997). The field is health

communication, the mode is websites – either read directly or downloaded, and the tenor is relationship between the writer of the health information text and the presumed lay – as in not a biomedical professional – reader in the selected language. Registers are consistent groups of choices that are made according to the needs that arise in a given context of situation that is placed within a context of culture. Text and context of situation correspond with one another (see Figure 1 below). Within this immediate surrounding of the text, the causes for what was stated and omitted can be explicated.

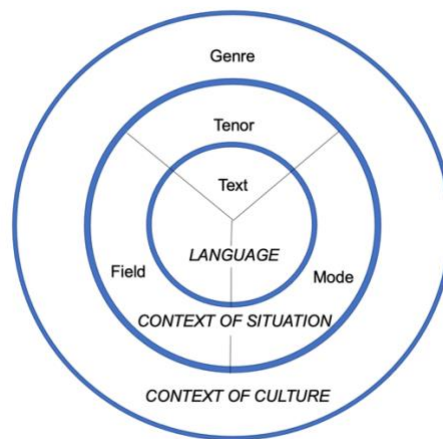


Figure 1 - Text is within the context of situation (register) which is encompassed in the context of culture (genre).

This transfers in both directions: not only should the writer’s choices be of concern, but also what the reader anticipates from the text within the context (Halliday & Hasan, 1989, pp. 45-46).

As illustrated in Figure 1 above, beyond the context of situation lies the context of culture. Genres develop as a response to communicative needs that arise in the wider context of culture. Culture, according to Halliday and Hasan (1989, p. 46), comprises a set of meanings and values. Context of culture pertains “to the knowledge, values and practices within society which impact upon language used in a text” (Clerehan, et al., 2005, p. 335). Context of situation is where the text functions (Halliday & Hasan, 1989). According to Clerehan, et al., “the key situational aspects impact on the type of language used” (2005, p. 336). The reader’s set of values and meanings, as well as the cultural setting of the text, figure in the comprehension of the text. This includes the immigrant or native’s perceptions of health and self-care, illness and treatments, as well as clinics and health care providers. Conversely, the cultural situation of the country that provides the health information website figures prominently in this interface.

If an English-speaking immigrant is reading a health information website published in Catalonia - whether in Spanish or Catalan - to obtain information about tuberculosis, the host country's culture interacts with that of the immigrant. Interactions, in this case refer, firstly, to the relationship between the website writer and translator, secondly, to the manner in which the information is conveyed by the writer and how this manner affects the way the information is received by the reader, and thirdly, whether the website presents the text in the form of Frequently Asked Questions or a descriptive explanation of any given length, whether concise or exhaustive. This immigrant will have a different experience reading the text in Spanish or Catalan than in English, which will influence their perceptions of the tuberculosis information as they may not yet have "learned to *expect* (of what is coming next in the text)" (Halliday & Hasan, 1989, p. 46) in Spanish or Catalan. The immigrant's set of values and meanings interact with the culture of their host country, right down to the Catalan website text that is being read and may interfere with their ability to "use the context in this predictive way" (Halliday & Hasan, 1989, p. 46). The Catalan website writer assumes that the tuberculosis information, as a text, will be understood in its context of situation, however the comprehensibility of the health information text depends on the influence of the English-speaking immigrant's culture, including how well they can predict what comes next in the text.

Context is where the reader forms a meaning from the text. Therefore, in health communication discourse, not only cross-cultural competence but the textual elements are vital to the success of a campaign to promote good health behaviors. Halliday (2002 [1977], p. 58) explains the connection between text and context of situation:

The patterns of determination that we find between the context of situation and the text are a general characteristic of the whole complex that is formed by a text and its environment. [...] The principle is that each of these elements [field, tenor, and mode] in the semiotic structure of the situation activates the corresponding component in the semantic system, creating in the process a semantic configuration, a grouping of favoured and foregrounded options from the total meaning potential, that is typically associated with the situation type in question. [...] The concept of register is the necessary mediating concept that enables us to establish the continuity between a text and its sociosemiotic environment.

Certain selections and related choices of words and their grammatical organization inevitably incorporate selections in the written texts (which forms a part of Halliday's *tone*) (Halliday & Greaves, 2008). These selections indicate the author's attitude and emotion. The writer's attitude and emotion are critical elements behind a message via an impersonal mode that lacks a human voice, such as that of a website. According to Lukin, et al. (2011, p. 190), Halliday defined register "as a semantic configuration (e.g., Halliday, 1985, 2002 [1977]) [as

a] ‘clustering of semantic features according to situation type’” (Halliday, 1978, pp. 68, 111, 123). The semantic stratum is, for Halliday, where language interfaces with the eco-social environment.



Figure 2 - Halliday’s register plays a central role in connecting discourse to the context of society.

At this interface, register is the ‘necessary mediating concept that enables us to establish the continuity between a text and its sociosemiotic environment’ (Halliday, 2002 [1977], p. 58; see Bowcher, 2012).” As we can see in the diagram above (Figure 2), Halliday’s register plays a central role in connecting discourse to the context of society, or culture.

Bowcher (2012, p. 73) states that Halliday uses the term “register” to link between discourse and the process of society. According to Lukin, et al. (2011, p. 188), “register holds the dimensions of Halliday’s systemic functional theory together.” Lukin, et al. point out that people are insidiously and overtly influenced by their society with regard to cultural beliefs and actions (2011, p. 189), which explains the flexibility of Halliday’s model with regard to the acceptance of language in its environment, and its alterations over time (2011, p. 189). A medical doctor one year away from retirement may neglect to explicate certain outdated technical terms to their bewildered and overwhelmed intern on their first day fresh out of medical school. Another example would be a forensic pathologist, whose work culture involves the use of highly specialized terminology that they would not use outside of the laboratory, such as during a casual family barbecue. Thus, Lukin, et al. assert, Halliday’s notion of register is useful for research in which culture figures prominently:

As a central conceptual tool that does not stratify the relation of genre and register, Halliday’s notion of register helps us recognize - or at least frame and test - the idea that recognized social situations might sometimes be the same register, or identify and evaluate the register differences in what are normally counted as ‘the same’ social activities: it is a

model well suited to calibrating the shuffling and reshuffling of cultural space-time and its boundaries. (2011, p. 189)

According to Halliday, language possesses multiple dimensions (Lukin, et al., 2011, p. 188), for instance, the sociocultural. Health information in one country may tend more towards persuasion, whereas in another it may inform or simply instruct. If a multilingual health information website features direct translations without cultural adaptations that bear each minority community within the overall target audience in mind, health disparities within this overall group will result due to inaction on the part of the minorities who misunderstand the text. This cross-cultural adaptation includes the perceived attitude of the writer towards the reader. This study applies a framework that is based on SFL, to analyze multilingual health information websites for comprehensibility and cultural adaptations. The pragmatic determinants – writer-reader relationship and technicality of vocabulary – will be analyzed via a questionnaire based on the framework that will be explained in the next section to ascertain whether they could affect the implications of the texts in health information websites within the context of situation and the context of culture, and ultimately the reader's – depending on their respective sociocultural background – comprehension.

### 3.2.1 Evaluative Linguistic Framework

As pointed out in the literature review in the previous chapter, additional features – beyond, for instance, the number of technical words and the sentence length – of a text published in multiple languages must be evaluated for a clearer picture of its comprehensibility. So, methods like SMOG are insufficient and there is a need for an approach based on a linguistic theory, such as Systemic Functional Linguistics' context of situation. The approach in which each of the three aspects of register (field, tenor, and mode) are assessed (for example, as described in Eggins, 2004, pp. 344-345), excludes elements of Halliday's Systemic Functional Linguistics theory that have proven vital in assessing the readability of PILs (Clerehan, et al., 2005; Clerehan & Buchbinder, 2006), multilingual patient self-report health questionnaires (Clerehan, et al., 2016) and informed consent documents (ICDs) (Sand, et al., 2012). Clerehan, et al. (2005) developed the Evaluative Linguistics Framework (ELF) and adapted it to analyze the three types of health communication texts mentioned above. The ELF extends beyond simply analyzing the register of a text to include discourse and lexicogrammar.

Discourse, which Clerehan and Buchbinder (2006) deemed most valuable for evaluating the comprehensibility of health communication texts, was split into three subcategories: technicality of lexis, status relations, and macrotheme / lexical density. Technicality of lexis is included under field, as it is related to what is being talked about. Word

choices made by the writer can forge a connection with or create a distance from the targeted reader, which ties in with status relations. This is a determinant of the appropriateness of the writer's message in transferring the task to the reader to act upon. The manner in which the writer transmits this message matters: whether the text was written as a command or a request, as a directive or as a piece of advice. The reader could perceive whether the writers, often medical experts in the case of health communications texts, are placing themselves on level with or consider themselves superior to the audience. The identity and perceived status of the author, as well as that of the reader, determine the success of the objective of the text rendered and read, respectively. Halliday (1994) perceived discourse semantics to explicate the relationship, as reflected in a text, between the writer and the reader. Lexical density is the number of lexical items in which the information is given divided by the number of clauses. In addition to field, it is included in mode (Halliday, 1985) of discourse, as it figures in the presentation of information. As such, the lexical density of a text depends upon the level of specialty that the author expects of the reader, in terms of textual (mode) and ideational (field) meanings (Halliday, 2002 [1977], p. 229). All three subcategories of discourse figure in the three versions of the ELF.

Clerehan, et al. (2005, p. 337) presented the ELF, based on Systemic Functional Linguistics' context of culture (health communications materials as genre, and – for example, PILs – as a subset thereof, the mode). With the following nine features to analyze PILs in Table 1, the authors evaluated the texts within the context of situation and context of culture to determine exactly how the text functions.

Table 1 - The original ELF (Clerehan, et al., 2005, p. 337).

<b>Item</b>	<b>Description</b>	<b>Assessment</b>
<b>Overall organizational or generic structure of the text</b>	Series of sections or moves in a text (for example, background on drug, dosage instructions, account of side effects)	What identifiable sections of text (moves) are present? Are all essential moves included? What is the sequence of moves and is this appropriate?
<b>Rhetorical elements</b>	The function of each move in relation to the reader (for example, to define, instruct, inform)	What is the function of each move in relation to the reader? Are these clearly defined and appropriate? Is there clear guidance about what to do with the presented information?
<b>Metadiscourse</b>	Description of the purpose/structure of the text	Is there a clear description of the purpose of the text?

<b>Headings</b>	Signposts in the text for the reader	Are there headings present? If present, are they appropriate?
<b>Factual content of text</b>	Facts included in the text	Is the factual information correct and up-to-date? Is the source of information provided? Is the quality and strength of the evidence discussed?
<b>Technicality of vocabulary</b>	The technicality of the medical terminology/other vocabulary that is used	How technical is the vocabulary that is used in the text? Is this appropriate?
<b>Lexical density</b>	Density of the content words in the text	What is the average content density of the text (content-bearing words per clause)? Is this appropriate (for example, below 3-4 if possible)?
<b>Relationship between writer and reader</b>	What is the relationship between the writer and the reader (for example, medical expert to layperson; doctor to their patient)?	Is it clear who the writer and intended audience is? Is the relationship between writer and reader clear and consistent? Is the person who is expected to take responsibility for any actions clear?
<b>Format (included for completeness, though not a linguistic consideration - <i>this note is of the original authors and not mine</i>)</b>	Visual aspects such as layout, font size, style, use of visual material, etc.	What is the length, layout, font size, and visual aspect of the document?

The ELF underwent changes since its origination. This framework and its methodology were adapted by Sand, et al. (2012) to evaluate a different text type, informed consent documents (ICDs). Two of the original framework items were excluded. Lexical density was not feasible for the Norwegian language of the text analyzed in this study, nor did the researchers consider this determinant relevant. They also eliminated factual content of text, as it did not play a direct role in ICDs. Clerehan, et al. (2016) adapted the framework and methodology to analyze self-report health questionnaires, clarifying the questions to consider in assessing each determinant, and ways to appropriately answer each question. The researchers added “overall judgment” to evaluate whether the questionnaire would be acceptable. Their version was labeled the ELF-Q. Through a few carefully considered adaptations for different genres of health communication texts, these studies demonstrate the versatility of this framework.

To assess linguistic and cultural comprehensibility of health communication website text, this thesis' study was focused on two of the ELF determinants as refined in the ELF-Q (Clerehan, et al., 2016): technicality of vocabulary and writer-reader relationship as extracted in Table 2 below:

Table 2 - Writer-reader relationship and technicality of vocabulary in the ELF-Q (Clerehan, et al., 2016, pp. 338-339).

Item	Description	Assessment	Appropriate Responses
<b>Writer-reader relationships</b>	Nature of the relationship between the writer and the reader (for example, medical expert to layperson; university research group to individual) as expressed in the identifying matter, in instructions, and in items	<p>Is it clear who the writer and intended audience are?</p> <p>Is the relationship between the writer and the reader clear and consistent? For example, are the items consistent in referring to the participant (<i>you, me</i>)?</p> <p>How positive (encouraging, reassuring) is the tone (for example, nonjudgmental about possible responses)?</p>	<p>Identity of the writer clear: yes / no / uncertain</p> <p>Intended audience clear: yes / no / uncertain</p> <p>Relationship is consistent: yes / no / uncertain</p> <p>Tone is positive: yes / no / uncertain</p>



		<p>Are items generalizable to respondents in all social strata, age, and ethnic / national groups in target population?</p> <p>Are the items clear and unambiguous for the target population?</p> <p>Are the response options clear and unambiguous for the target population?</p>	<p>Items are generalizable: yes / no / uncertain</p> <p>Items clear / unambiguous: yes / no / uncertain</p> <p>Responses clear / unambiguous: yes / no / uncertain</p>
<b>Technicality of vocabulary</b>	The technicality of the medical terminology / other specialized vocabulary	<p>How technical is the vocabulary used in the text?</p> <p>Is any technicality appropriate (for example, if a disease or treatment terms are mentioned, can the participants be expected to know these)?</p> <p>Are the remaining words among those most frequently used in the language?</p>	<p>Technicality appropriate: yes / no / uncertain</p> <p>Words are in the most frequent usage list: yes / no / uncertain</p>

These two sets of questions form a part of the methodology as described in Chapter 4 (Sections 4.3.4 and 4.4). Both the writer-reader relationship and the technicality of vocabulary questionnaires address aspects of the health information website texts which function within the field (what is being talked about) and the tenor (who is involved) of the context of situation. The mode (communication channel) is represented by the health information websites on HIV and tuberculosis, whose vehicle is digital media. The whole concept functions within the context of culture (with health communications materials serving as the genre).

However, there is more to the SFL foundations of the writer-reader relationship and technicality of vocabulary questionnaire, reaching beyond register and genre to ideology, or rather, delving a bit deeper into the tenor aspect of the context of situation, as the next section explicates. This informs the guidelines that add rigor to the textual analysis using the ELF questionnaire.

### 3.2.2 Ideology & interpersonal metafunction

Ideology in the Hallidayan sense figures in terms of the writer's word choices to reflect healthcare as a cultural institution, which can influence the way that the reader can relate to the message on the website. The traditional Systemic Functional Linguistics model has [phonology / lexicogrammar / language] at its base with concrete words and structures, or lowest level; from this point, the model progresses through semantics and genre/register, and arrives at Ideology at its highest, most abstract level (Martin, 1992; Eggins, 2004; Banks, 2005; Melrose, 2005; Halliday & Matthiessen, 2014a). Despite the general consensus about the placement of Ideology, its definition varies. The basic definition pertains to the author's "mind-set or world-view," and "thus in some way informs and ultimately controls all language produced" (Banks, 2009, p. 39). Fairclough (2003) perceived ideology as "reprehensible *per se*" and attributable to certain authors in particular discourse categories (Banks, 2009, p. 40). Banks (2009) argued that every author has an ideology that is reflected in their use of language. Eggins (2004) states that ideology influences field regarding the way the text reflects ideational meanings "as to who initiates, what the kinds of actions/events are, who responds to those actions, and how" (p. 350). Ideology also impacts tenor in terms of how the interpersonal meanings are encoded in the text and its intensity, and "who is the core participant being argued about" (Eggins, 2004, p. 350). Finally, ideology impacts mode through the encoding of textual meanings of the information provided (and what is omitted) (Eggins, p. 350). In this study, the ideology of the writer is reflected via their word choices, which affects the influence of the health information website text on the reader.

As mentioned earlier, in the traditional Systemic Functional Linguistics (SFL) model, ideology ranks the highest. Banks (2009) questioned this placement using three case studies

to argue that it is possible to have different texts with identical context of culture (genre) and context of situation (register: field, tenor, and mode) and with different ideologies (as well as different semantic and lexicogrammatical traits). Such cases raise doubts about the traditional position of ideology in the classic SFL model. Banks suggested that ideology be “part of Context, and within Context it is situated in tenor” in an integrative SFL model (2009, p. 57), since tenor pertains to the people taking part in the discourse and their social roles – in the case of health information websites, the relationship between the writer and the reader.

With regard to writer-reader relationship, the guidelines for the textual analysis of multilingual health information website texts are informed by Banks’ (2009) proposal of ideology forming a part of tenor within context together with interpersonal metafunction in terms of a text’s ideational meanings and the lexical denotations (Hyland, 1998b). This thesis explores the differentiation between a text’s “ideational elements and its textual and expressive meanings” (Hyland, 1998b, p. 438): the clarity and consistency of the identity of the writer and the reader, as well as the tone of the text, that is, writer’s attitude towards the reader. For instance, the lexical denotations via the use and avoidance of technical words contributes to the way that the reader perceives the writer’s attitude. These guidelines are outlined in Section 4.4.

Tenor interrelates with interpersonal metafunction, which involves the author’s attitude – which stems straight from their perception of the universe – during their connection via their text with the reader (Banks, 2009). Interpersonal metafunction, according to Eggins and Martin, “is concerned with organizing the social reality of people we interact with (by making statements, asking questions, giving commands; saying how sure we are; saying how we feel about things)” (Eggins & Martin, 1997, pp. 238-39, via Tebble, 1999, p. 186). Halliday and Matthiessen (2014a, pp. 166-167) define *tone* as “a prototypical example of the prosodic mode of expression characteristic of the interpersonal metafunction.” In Eggins’ version of the SFL model – see Figure 3 below for a simplified variation – the interpersonal, which is located on the semantics level, links lexicogrammar at the most basic level with tenor, which forms a part of register and is found one level up from semantics (Eggins, 2004, p. 112).

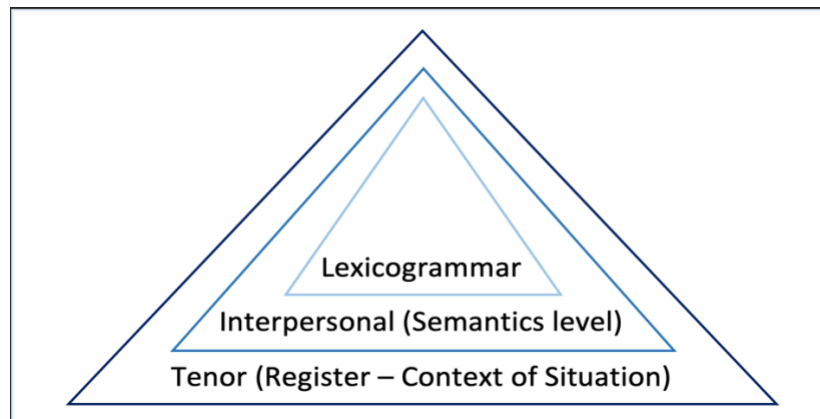


Figure 3 - A simplified rendering of Eggins' SFL model (2004, p. 112, simplification is mine).

Tenor is the link between the text and the participants – that is, the writer as well as the reader – via interpersonal metafunction (Eggins & Martin, 1997, via Tebble, 1999). A discourse analysis in terms of lexicogrammar reveals the linguistic structure – vocabulary and language usage (with regard to grammar) – of the text. This is where context affects meaning. Interpersonally, in terms of tenor, a discourse analysis can show how the writer relates to the reader. The next section proposes an alternative view to the relationship between technicality of vocabulary and writer-reader relationship.

### 3.2.3 Textual metafunction & technicality of vocabulary

While technicality of vocabulary and writer-reader relationship are scrutinized separately in this thesis, they are unequivocally connected. The inclusion or absence of specialized words in the text forms an integral part of the writer's expectations of the reader's ability to comprehend the message and respond accordingly – in the case of the corpora in this study, get tested for TB and/or HIV if they are at risk. One way to perceive technicality of vocabulary apart from writer-reader relationship is to apply the concept of textual metafunction, which deals with information flow, or textual metadiscourse. This “refers to devices which allow the recovery of the writer's intention by explicitly establishing preferred interpretations of propositional meanings” and is “dependent on the knowledge relationships between participants and the writer's assessment of what needs to be made explicit” (Hyland, 1998b, p. 442). Such devices extend beyond the inclusion of specialized terms to metadiscourse functions such as the use of code glosses (Hyland, 1998b), lexical familiarization<sup>36</sup> (Hyland,

<sup>36</sup> Defined as the author's intention to present unfamiliar terminology within a specific context to a particular type of reader (Williams, 1981). This is a broad category with multiple subcategories, as exemplified in Chapter 6.

1998b; Ho, 2016), multimodality<sup>37</sup> such as using bold, italics, or underlining to highlight a term (Chung & Nation, 2003); repetition (Chung & Nation, 2003), and hinge words (Hoste, et al., 2010; Pearson, 1996). In addition, technical terms can appear as cognates, Greek or Latin affixes, acronyms, multiple capital letters or letters combined with numbers, and multiword units (Hoste, et al., 2010). Greek or Latin affixes form a part of compound words that are common in biomedicine, including nominalization. Nominalization is the result of a verb or adjective being used as a noun and is known in Hallidayan functional grammar as “a transformation of an underlying clause into a noun phrase” (Daniele, 2021, p. 31). The definitions and examples of these devices are provided in Section 4.3.1 for identifying technical vocabulary in multilingual health information websites.

All of these devices demonstrate that technicality of vocabulary is not as simplistic as the use of specialized words (i.e., it is not just a piece of a text); the complexity lies not only in the writer’s professional language, but in the assessment of the reader’s health literacy and the choices made in presenting such technical terms. It was defined from the outset of this thesis (Section 1.1.3.2) that technicality of vocabulary pertains to field. Textual metafunction, however, correlates with mode *and* it interacts with interpersonal (which correlates with tenor) and experiential (correlating with field) metafunction. This interaction between the metafunctions reflects the writer’s attitude, influenced by their cultural background, through the text. Therefore, technicality of vocabulary could be perceived as a smaller circle within a larger circle that represents writer-reader relationship, as depicted in Figure 4.

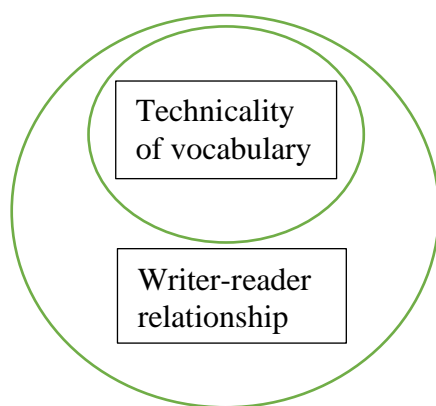


Figure 4 - Technicality of vocabulary & writer-reader relationship.

Writer-reader relationship and technicality of vocabulary can be viewed as two concentric circles, that is, as distinct concepts. However, technicality of vocabulary possesses a “field-specific meaning” (Wignell, et al., 1993, p. 144) influences writer-reader relationship, which pertains to tenor. Medicine is being talked about by the writer, who is a health expert.

<sup>37</sup> Defined in this thesis in terms of mode as “a socially and culturally shaped resource for making meaning” (Kress, 2010, p. 79).

A health information text containing specialized words implies that the writer expects the reader to be of a higher-than-average level of health literacy. On the other hand, a health information text that is rendered completely in layman's terms implies that the writer does not expect the reader to be familiar with specialized medical words, and that the writer wants the reader to completely understand the message.

This perception of writer-reader relationship and technicality of vocabulary lies in the writer's assumption of the target audience's reading comprehension and health literacy level (Clerehan et al. 2005). With regard to technicality of vocabulary, a comprehensible text will contain terminology that is at or below the reading level of the target audience, with any necessary explanations of potentially new words or phrases. Nation (2001, p. 12) suggests that a maximum of five percent of the text's vocabulary be technical. For consistency within a text, Clerehan, et al. (2016) recommended consulting one of several lists of frequently used words in multiple languages<sup>38</sup> to "harmonize the level of vocabulary for targeting lay people." Translators possess the unique opportunity to do precisely that for their target audience, if the source text incorporates technical vocabulary.

### 3.2.4 Interpersonal metadiscourse & writer-reader relationship

Markers of interpersonal metadiscourse "alert[s] readers to the author's perspective towards both the propositional<sup>39</sup> information and the readers themselves, thus contributing to a writer-reader relationship and anticipating the subjective negatability of statements" (Hyland, 1998b, p. 443). One such marker is hedges, which "represents an absence of certainty" (Hyland, 2006), and which "mark the writer's reluctance to present or evaluate propositional information categorically" (Holmes, 1988; Hyland, 1996a, 1996b; Hyland, 1998b, p. 443) in order to be "cautious and realistic" (Ho, 2016, p. 14). In other words, the writer does not fully commit to a statement. There are several types of hedges. The writer can "hedge" by increasing uncertainty with words such as "approximately," circumvent a direct reference to a potentially delicate topic (depersonalization, as opposed to directly naming the subject), or add subjectivity to a claim by using a verb such as "guess."

Another interpersonal metadiscourse marker is emphatics, which "imply certainty and emphasise the force" (Hyland, 1998b, p. 443) of the health information website's message and requires "respect for the community's rules concerning rhetorical respect" (Hyland, 1997;

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<sup>38</sup> Of the lists that Clerehan, et al. (2016) shared in their article, two are relevant to this study. In English, General Service List, <http://www.newgeneralservicelist.org>.

In Spanish, [http://es.wiktionary.org/wiki/Appendice:Palabras\\_mas\\_frecuentes\\_del\\_espanol](http://es.wiktionary.org/wiki/Appendice:Palabras_mas_frecuentes_del_espanol).

Also notable for English is Coxhead's Academic Word List. Different sources, which are listed in the methodology chapter, were employed in this study.

<sup>39</sup> Propositional information refers to text about the topic, whereas metadiscoursal information pertains to text that addresses the readers (Ho, 2016).

via Hyland, 1998b, p. 444) for the target audience. Ho (2016, p. 14) refers to emphatics as “boosters,” and notes that, together with attitude markers, credibility and affective appeals can be established (Ho, 2016; see also Crismore & Farnsworth, 1989; Hyland, 1998a).

Attitude markers “express the writer’s affective attitude to textual information in a more varied way than hedges, conveying surprise, obligation, agreement, importance, and so on” (Hyland, 1998b, p. 444). They emphasize the writer’s affect through the use of “attitude verbs, necessity modals, and sentence adverbs” (Hyland, 1998b, p. 444) and can reflect the writer’s biased position (Ho, 2016). Attitude markers and another type, relational markers, can be difficult to differentiate “because writers frequently indicate attitudes for interpersonal reasons” and both types of markers “comment on propositional content” (Hyland, 1998b, p. 444).

Relational markers “explicitly address readers, either by selectively focusing their attention or by including them as participants in the text situation” and focuses on engaging the reader with the use of “second person pronouns, imperatives, question forms, and asides that interrupt the ongoing discourse” (Hyland, 1998b, p. 444). In addition, person markers show the “importance of the degree of author presence in contributing to the variability in tenor of a text” via “the frequency of first person pronouns and possessive adjectives to present both propositional and metadiscoursal information” (Hyland, 1998b, p. 444). Examples of each interactional metadiscourse marker are listed in Table 3.

Table 3 - Interpersonal metadiscourse markers, adapted from Hyland (1998b) & Ho (2016).

<b>Interpersonal metadiscourse markers</b>	<b>Purpose</b>	<b>Signals</b>	<b>Examples</b>
<b>Hedges</b>	Writer withholds full commitment to statements	Words of indetermination or depersonalization, subjective verbs	<i>A bit, about, almost, approximately, generally, guess, it is likely, it is possible, may, maybe, might, must, perhaps, probably, suppose, think, would</i>
<b>Emphatics / Boosters</b>	Writer emphasizes force or certainty to message	Words that “boost” or emphasize a statement	<i>Absolutely, as much as possible, certainly, definitely, in fact, it is clear, obvious, really, very</i>

<b>Attitude markers</b>	Writer expresses attitude / bias to propositional content	Words conveying surprise, obligation, agreement, importance, & so on	<i>I agree, surprisingly, unfortunately, X claims that</i>
<b>Relational markers / Engagement markers</b>	Writer explicitly refers to or builds relationship with reader	Second person pronouns, imperatives (directives), question forms, asides that interrupt the ongoing discourse	<i>Consider, frankly, it is natural that, note that, you can see that</i>
<b>Person markers / self-mentions</b>	Writer explicitly refers to themselves	First person pronouns	<i>I/me/my/mine; we/us/our/ours</i>

In addition to the above, diminutives serve as a pragmatic device for the writer to persuade the reader towards the objective of the health message. For example, if the reader is averse to needles, the writer might minimize the pain of a blood draw or a subdermal injection of a fluid as in the case of the Mantoux test for tuberculosis. Example words would be “small,” “tiny,” or “a few.” Together with hedge words, diminutives are considered a form of mitigation in pragmatics, whose different definitions were summed up by Albelda & Estellés (2017) as stressing “the *diminishing, downgrading, or weakening* of some discursive parameter... (which) can affect the **precision** or **quantity** of the **propositional meaning**... the **illocutionary force** of the utterance... (and) the speaker’s commitment to the propositional content and participants’ obligations” (p. 72, emphasis theirs). Diminutives function as a form of pragmatic mitigation to reassure the reader that taking a diagnostic test for an infectious disease has more benefits than pain.

A writer of successful health information websites knows how to use their status and its potential dynamics with the reader to reassure while persuading, informing, or instructing without judgment to comply with the message. One study demonstrated how the writer empowered the readers through ideological motivation and persuasion (Ho, 2016; see also Morris & Chan, 1997). Another study showed how informative presupposition persuaded readers to accept a policy change (Saarinen, 2008, p. 345, via Ho, 2016). In health promotion campaigns, persuading the reader to comply cannot be accomplished simply by stating the



contents; what truly matters is the manner in which the message is given, and this occurs at the level of interpersonal metafunction.

From the viewpoint of Halliday’s interpersonal metafunction, two perceptions exist with regard to the social indicators of tenor, “which have their linguistic realizations in the discourse semantics, lexicogrammar and phonology of the languages being used” (Tebble, 1999). According to Hasan, the social indicators of tenor are role relationship and social distance (Tebble, 1999). Martin’s equivalences are, respectively, power / status and solidarity / contact (Martin, 1998a, 1998b, via Tebble, 1999). As shown in Table 4, Martin (1992, 1998a, 1998b) links negotiation and appraisal with Power / Status, and Involvement with Solidarity / Contact.

Table 4 - Features of interpersonal metafunction, adapted from Tebble (1999, p. 187) & based on Martin (1998a, 1998b).

<b>Social Indicators of Tenor</b>	<b>Discourse Semantics</b>	<b>Lexicogrammar</b>
<b>Power / Status</b>	Negotiation <ul style="list-style-type: none"> <li>• Speech function</li> <li>• Exchange</li> </ul> Appraisal <ul style="list-style-type: none"> <li>• Engagement</li> <li>• Affect</li> <li>• Judgment</li> <li>• Appreciation</li> <li>• Graduation</li> </ul>	Negotiation <ul style="list-style-type: none"> <li>• Mood</li> <li>• Tagging</li> </ul> Appraisal <ul style="list-style-type: none"> <li>• Evaluative lexis</li> <li>• Modal verbs</li> <li>• Polarity (positive/negative)</li> <li>• Pre/numeration</li> <li>• Intensification</li> <li>• Repetition</li> <li>• Logico-semantics</li> </ul>
<b>Solidarity / Contact</b>	Involvement <ul style="list-style-type: none"> <li>• Naming</li> <li>• Technicality</li> <li>• Swearing</li> </ul>	Involvement <ul style="list-style-type: none"> <li>• Vocation / Names</li> <li>• Technical lexis</li> <li>• Specialized lexis</li> <li>• Slang</li> <li>• Taboo lexis</li> </ul>

The writer demonstrates their power / status through “their choice of modal verbs and modal adjuncts, polarity – choice between positive or negative (Halliday, 1994), evaluative lexis, intensification, numeration, and logico-semantics” (Tebble, 1999, p. 186). The writer

expresses solidarity / contact in the text “by their choice of person, vocation (naming of people), specialized or technical lexis, slang and taboo lexis (after Martin, 1992, 1998a, 1998b),” which reflects the level of formality and intimacy with the reader (Tebble, 1999, p. 186). The writer must “negotiate their meanings, express their attitudes, judgements and appreciation, and build up a level of solidarity” (Tebble, 1999, p. 187) with the reader. The writer must establish trust, show respect, and display empathy with the reader, and maintain all this throughout the text (Tebble, 1999). A successful writer’s advice and recommendations will be accepted and acted upon by the reader. Modals can also assist the writer’s persuasion by expressing assurance or concession. By reassuring the reader, the writer promotes compliance.

According to Hoey (1991), persuasive text commonly includes statements that illustrate a problem-solution scenario, or there might be a goal-achievement pattern. The former presents a situation that needs to be resolved, frequently in a question-and-answer (Q&A) format or by using a condition-consequence (if/then) statement (Hoey, 2001). The latter is frequently seen in scientific writings and narratives, and usually includes the following features: the presentation of a situation and the goal [for example, “How to (insert goal here)], and then the method, the result, and its evaluation (Hoey, 2001, p. 146). Both are considered to be “culturally popular” since they are found more frequently in certain cultures, as opposed to being universal (Hoey, 2001, p. 122-123). The analysis of this study will ascertain whether either of these patterns or any of the markers described below occur more frequently in multilingual health information websites in any of the languages. Other markers that Hoey (1991) listed are: direct appeal using an imperative verb or convince the reader with connectors – such as “so that” or “that’s why” – and the use of modal verbs – of the deontic obligation type such as “should” or “must” or “have to” – and expressions – for example, “it is important that...” Certainty markers may also reflect the writer’s attitude: “of course” or “indeed,” or “surely” or “certainly” (Dafouz-Milne, 2008). Unlike hedges, certainty markers reflect the writer’s commitment to the truth of the proposition. The additional markers for persuasive text are exemplified in Table 5.

Table 5 - Persuasive text markers (adapted from Hoey, 1991; Dafouz-Milne, 2008).

<b>Persuasive text markers</b>	<b>Signals</b>	<b>Examples</b>
<b>Direct appeal</b>	Imperative verbs	<i>“Consult your doctor”</i>
<b>Consequence markers</b>		<i>So that, that’s why, thereby, therefore</i>

<b>Modal verbs of the deontic obligation type</b>		<i>Have to, must, should</i>
<b>Modal expressions</b>		<i>"It is important that"</i>
<b>Certainty markers<sup>40</sup></b>		<i>Always, certainly, clearly, indeed, of course, only, undoubtedly</i>
<b>Additive markers</b>	To move the argument forward	<i>Also, and, as well, furthermore, in addition, moreover</i>
<b>Adversative markers</b>	Illustrate the pros & cons of an issue or a link between two clauses	<i>Advantage / disadvantage; "on one hand,... on the other hand,..."; but, however, or</i>
<b>Code glosses</b>	To add extraneous information	<i>() or : For example, to name a few</i>

It should be noted that the negative imperative – sentences and phrases that start with “do not” – should be considered regarding relational and engagement markers as well as serving as a direct appeal. A writer might employ a negative imperative to reassure the reader (“do not worry”), to instruct the reader (“do not scratch the PPD test site”), or to persuade the reader to seek immediate medical attention (“do not delay, since it is crucial to take the PEP as soon as possible after possible exposure to HIV”).<sup>41</sup>

Judgment based on sanction and propriety as an attitude on the writer’s part also must be ascertained. This can be determined via the use of words and expressions that reflect “evaluating behavior” (Martin & White, 2005, p. 52-53). Sanction words and propriety words can reflect praise or condemnation (see Table 6 for examples). Expressions of praise and condemnation, compared with those of persuasion, are less likely to be found in the diagnostic testing section of HIV & TB health information websites, although if risk factors are included the chances are higher.

Table 6 - Judgemental attitude markers, based on Martin & White (2005).

<b>Type</b>	<b>Purpose</b>	<b>Examples</b>
<b>Sanction words</b>	Reflect praise	Candid, credible, direct, discrete, frank, honest, tactful, truthful

<sup>40</sup> For more certainty markers, see: Triki (2018).

<sup>41</sup> All of these examples are mine.

	Reflect condemnation	Blunt, deceitful, deceptive, devious, dishonest, lying, manipulative
<b>Propriety words</b>	Reflect praise	Altruistic, caring, charitable, ethical, fair, generous, good, humble, just, kind, law abiding, modest, moral, polite, respectful, reverent, sensitive, unassuming
	Reflect condemnation	Arrogant, avaricious, bad, corrupt, cruel, evil, immoral, insensitive, irreverent, mean, snobby, rude, discourteous, selfish, greedy, unfair, unjust, vain
<b>Implicit judgment</b>	Words that evoke implicit judgment based on evaluating behavior	HIV infection, incarceration, prison, contact or carrier (as in TB contact tracing)

In addition, certain symbols, such as “prison” (a TB risk factor), evoke implicit judgment based on evaluating behavior. Another example refers to the TB risk factor of having been infected by HIV, whose persisting stigma results in implicit judgment based on evaluating behavior, even though the main idea in this statement pertains to being immunocompromised.

Examples of writer-reader relationship are medical expert to patient, public health advocate to layperson, or layperson to layperson. The manner of the writer could be authoritative, instructional, encouraging, pacifying, judgmental, or cooperative, or it could be any combination thereof. The writer’s use of language – including the use of technical words – also provides clues, from the more formal approach of a doctor towards a patient, or the informal as such between peers. Whether this is intentional, the writer’s manner as perceived by the reader is particularly important in light of not only the sensitivity of the topics – infectious diseases such as HIV and tuberculosis – but also with respect to both the writer and the reader’s cultural background. If we perceive language as “both interpersonal and transactional, it is important to consider how the language of a health care encounter is recipient-tailored” (Brown & Fraser, 1979). The ideal role relationship is clear and consistent throughout the website, free of reproach and any form of prejudice when empowering and assigning responsibility to the reader. In such cases, “it may be inappropriate for the health

professional to be vague and where politeness strategies may have to compete with concerns over efficacy of information transfer” (Adolphs, et al., 2004). Clerehan, et al. (2016, p. 340) advised that albeit “difficult to ensure generalizability to all respondents in a target population, efforts should be made to allow for different [...] ethnic/national groups.”

Language is intricately woven into the fabric of culture, which is nonexistent without spoken (or signed, as in sign language) and written forms of communication; the two cannot be evaluated separately. Since the ELF measuring instrument only superficially examines whether technicality of vocabulary and writer-reader relationship are culturally appropriate – for instance, in the latter via the question, “are items generalizable to respondents in all social strata, age, and ethnic/national groups in target population? (Generalizable: yes / no / uncertain)” – the next section provides a complementary framework for the cross-cultural competence aspect of the analysis.

### 3.3 Incorporating the Voice of Medicine & the Voice of Lifeworld into SFL

In a paper on applying SFL to medical care contexts, Matthiessen (2013, pp. 452-454), emphasized in terms of tenor the “institutional roles” such as *physician-patient* and the importance of writer-reader relationship in patient-centered health care. In health information websites, such roles are ideally clear and consistent because the writer includes situation types that occur outside of health care settings with which the reader can identify. That the reader can relate to the context of situation and the context of culture is critical. If the context of situation – particularly the field and the tenor – of a multilingual health information website reflects the Voice of Medicine more than the Voice of Lifeworld, the message will fail to resonate with the reader, who will not heed the call to action to get tested for HIV and TB.

The Voice of Medicine and Voice of Lifeworld will be applied within the context of SFL’s field and tenor to aid in the assessment of the clarity of the writer-reader relationship and the tone of the health information website text are vital for comprehensibility. Field, according to Matthiessen (2013, pp. 452) is the “socio-semiotic process,” which would be *recommending*, *persuading*, or *informing* via health information websites. The writer’s tone figures with regard to this process. Medical and public health experts “need to find ways of dealing with their experiences within hospitals in contexts outside hospitals” (Matthiessen, 2013, p. 452) in order for the health information website to be comprehensible to the reader. Matthiessen likened this communication between experts and the general public as the Voice of Medicine and the Voice of Lifeworld according to Mishler (1984).

The Voice of Medicine could be perceived as that of a subculture which “manifests a technical interest and signals a scientific attitude” (Maglie, 2017, p. 31). Its denizens

communicate with each other in “professional settings (that) provide a perspicuous site for the investigation of how objects of knowledge, controlled by and relevant to the defining work of a specific community, (which) are socially constructed from within the settings that make up the lifeworld of that community – that is, endogenously, through systematic discursive procedures” (Goodwin, 1994, p. 630). Due to their training within the environment, they collectively understand and communicate concepts differently or in more nuanced – specialized – ways than people outside of their realm ever possibly could (Goodwin, 1994). Mishler (1984) explained that in the clinical setting, the Voice of Medicine was reflected in the health professional’s control of the structure and the content of the dialogue with their patient to block out the latter’s personal and social contexts of their signs and symptoms. This authoritative dominance restricted the dialogical contents to what the health professional deemed relevant for patient diagnosis and treatment. It should be noted that Mishler’s research on the Voice of Medicine and Voice of Lifeworld occurred four decades ago, in the days when physician-centered care was prevalent and considered the norm, prior to the health care industry’s evolution to patient-centered care (see, for example, Laine & Davidoff, 1996).

Not only is there a difference between the lay readers’ world and biomedical experts’ work environments, but the Voice of Medicine varies between countries. For example, the United States is the only developed country without universal health care; as such, the lay reader’s interaction with health professionals includes economic concepts unique to American health care (Lo, 2010).

Health experts who spend a significant part of their daily life in the subculture of the Voice of Medicine need to remember that the target reader of multilingual health information websites is familiar with the language not of the Voice of Medicine, but that of the Lifeworld. The Voice of Lifeworld “is characterized by non-technical discourse and directly relates to the patients’ subjective experiences of illness” (Maglie, 2017, p. 31). That is, the social and personal contexts of their signs and symptoms that the health professional would play down or even block out in their dialogue with their patients (Mishler, 1984). The interaction between the Voice of Medicine and the Voice of Lifeworld needs to be inverted for more humane health communications (Mishler, 1984, p. 98).

The Voice of Medicine and Voice of Lifeworld concept stems from Habermas’ (1984, 1987) Theory of Communicative Action. The world inside the specialized profession is differentiated from the world outside – the systems world and the lifeworld. Mishler (1984) took this key element from Habermas’ theory and applied it to health care: the systems world is the Voice of Medicine, and that of daily life is the Voice of Lifeworld. Set apart from the general world cohabitated by everyone representing all walks of life, a professional works within a small, more defined realm, communicating with their colleagues using the Voice of Medicine. Collocations commonly spoken within this specialized field would be unfamiliar to the public

(that is, those of the lifeworld). For example, biomedical experts say, “latent TB” and not “dormant tuberculosis” or “passive TB.” While the Voice of Medicine permits a display of power distance, in transmitting health information while reflecting their professional cultural values and practices, its display of the “scientific attitude” (Mishler, 1984, p. 104) could backfire via, for example, the inclusion of specialized terms in the message to the reader. That expert ideally should transmit health information messages using the Voice of Lifeworld in order for the target audience to comprehend and respond as intended.

In professional communities, everyone interacts using specialized words and phrases that their patients cannot comprehend, and that regularly challenges medical translators who are assigned with not only transferring information from one language to another, but from specialized language to one that the general population could comprehend (Vezzani, et al., 2018). Bearing in mind the suggestion made in Section 3.2.3 that technicality of vocabulary be perceived as forming a part of writer-reader relationship, the writer (and translator) must consider their use of technical terms and the overall tone of the health information in the multilingual website to ensure that the Voice of Medicine is moderated and the Voice of Lifeworld is present so that the reader can identify with the message and heed the call to action.

In the evolution of the modern patient-centered health care, which includes popularized health information texts, the Voice of Medicine – with its technical language, professional expertise, and critical judgment – is still apparent in the interaction between a health professional and the patient’s Voice of Lifeworld as they negotiate their relationship (Maglie, 2017). Consistent collaboration and mutual respect are necessary for an effective outcome. When the Voice of Medicine hinders the Voice of Lifeworld by disregarding the reader’s day to day situation, power distance increases. Matthiessen (2013) stresses that health care professionals should consider scenarios in the world outside the health care realm that are significant to their target population – the Voice of Lifeworld – as opposed to the Voice of Medicine. In health information websites, such a reflection of everyday life situations makes the target reader feel acknowledged. Prior metadiscourse studies affirm that “writers in different disciplines represent themselves, their work and their readers in different ways” (Hyland, 2008, p. 12). Together with Systemic Functional Linguistics, Mishler’s Voice of Medicine and Voice of Lifeworld would do well to complement the theories used by health professionals presented at the beginning of this chapter in the process of developing comprehensible, culturally adapted multilingual health information websites. In this thesis, the Voice of Medicine and the Voice of Lifeworld reinforces Systemic Functional Linguistics to evaluate cultural differences between languages in multilingual health information websites on diagnostic testing for HIV and TB.

### **3.4 Summary**

This chapter explained how Systemic Functional Linguistics (with the Evaluative Linguistic Framework) serve in the analysis of writer-reader relationship and technicality of vocabulary where frequently used health behavioral theories, such as the Health Belief Model or the Community Readiness Model, lack the capacity to evaluate the comprehensibility and cross-cultural competence of multilingual health information website texts. The Voice of Medicine and Voice of Lifeworld complement SFL's sociolinguistics framework by highlighting the contrast between the writer's professional culture and that of the reader. This does not necessarily imply that the biomedical culture versus lay culture takes precedence in this study but runs parallel to the cultural differences between languages in general as the genre of the texts is health communication. The next chapter applies this study's theoretical framework to the methodology.



## 4. METHODOLOGY

*“Though this be madness yet there is method in ‘t.”*

*– spoken by Lord Polonius in Hamlet (Act 2, Scene 2) (Shakespeare, 1992)*

The Shakespearean quote is a request to the audience to trust that the “mad” person knows what they are doing until the result is revealed. The research questions will be reiterated in this chapter, which will explicate the mixed methods approach that is applied to this linguistics-based multilingual study to analyze comprehensibility and cross-cultural competence in multilingual health information websites on HIV and TB testing. Included in this chapter are the techniques for building and restructuring the corpus, the six steps of data collection, statistical analysis, plus the limitations of this study.

### 4.1 Research questions and methodology overview

While the Internet has become the primary source for medical information, quality inconsistency between language versions of this type of website remains an issue that contributes to health disparities in populations that negatively affect minority communities. As noted in the literature review, the ELF-Q in the study by Clerehan, et al. (2016) found that both questionnaires in all included languages were acceptable, barring minor readability issues. To address the gap in the application of a linguistics-based instrument to evaluate comprehensibility and cross-cultural competence with regard to writer-reader relationship and technicality of vocabulary in multilingual health information websites, English, Spanish, and Catalan websites on HIV and TB testing were analyzed with the objective of ascertaining whether there exist any differences.<sup>42</sup> Therefore, the research questions are:

1. In the health information websites on HIV and TB diagnostic testing in English, Spanish, and Catalan, are there variations regarding writer-reader relationship between:
  - a. The non-translated texts?
  - b. The non-translated and translated texts?

What are the key cross-linguistic similarities and differences?

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<sup>42</sup> This was revealed to me in a dream.

2. How technical is the vocabulary in the websites about HIV and TB diagnostic testing in the translated and non-translated versions of English, Spanish, and Catalan websites on HIV and TB testing?
3. Are there any differences in the treatment of technicality of vocabulary between the translated and non-translated versions of English, Spanish, and Catalan health information websites on HIV and TB testing?

The steps of this methodology are as follows:

1. The corpus of 73 multilingual health information websites in English, Spanish, and Catalan, was built. It consists of 151 texts of varying lengths.
2. A list of the extracted words was created for each language in a table format to facilitate the classification of technicality according to the dictionaries.
3. Three different dictionaries per language were consulted to complete the word lists.
4. The classification of the technicality of vocabulary was executed in two sub-steps:
  - a. Classification of each word in the word lists.
  - b. Using the word lists to classify each word extracted from the pertinent text to assess the technicality of the text.
5. The ELF-W Technicality of Vocabulary and Technicality of Text questionnaire was applied to 151 texts in MAXQDA.
6. The ELF-W Writer-Reader Relationship questionnaire was administered to 151 texts in MAXQDA.

## **4.2 Step 1: Building the corpus**

Linguistics evolved from assessments of a small set of data based on the researchers' grammatical intuitions in the twentieth century into analyses of actual databases of language examples, formally known as corpora, that have become the norm today and which Leech (2000) alludes to as the corpus revolution. A corpus is a "collection of texts in electronic format which are processed and analyzed using software specifically created for linguistic research" (Zanettin, 2012, p. 7). Not to be mistaken for corpus linguistics that focuses on language constructions, studies using corpora for discourse analysis – such as this thesis' study – can incorporate qualitative and quantitative methodologies. The ability of quantitative analysis to reveal frequency patterns is the main strength of corpus-based research, as it reduces or eliminates altogether the need for less reliable intuitive analysis. This is helpful for languages

for specific purposes (LSP), of which medical language forms a part (Pilegaard, 1997; Salager, 1983). The quantitative aspect is critical to an interdisciplinary project that incorporates a field – public health – that relies heavily on evidence-based practices.

A multilingual corpus – in the case of this study, between English, Spanish, and Catalan health communication websites – can reveal differences in “the actual patterns of use” (Biber, et al., 1998, p. 4) of the pragmatic elements of the texts. The corpus features similarities between the three aforementioned languages regarding content and time period of the websites. The list of web hosts included in this study’s corpus may be viewed in Table 7. In total, the web hosts consisted of 16 government organizations (including the World Health Organization and one country’s public health service), 22 nonprofit organizations (including medical centers such as Kaiser Permanente and Mayo Clinic) plus one that collaborated with a publisher, one pharmaceutical company that collaborated with a publisher, and one commercial publisher.

Table 7 - List of health information websites on HIV & TB diagnostic testing in the corpus.

AIDSinfo	Gais Positiu	Massachusetts
AIDS Info Net	Gay Men’s Health Crisis (GMHC)	Department of Public Health
American Association for Clinical Chemistry	Generalitat de Catalunya / CanalSalut	Mayo Clinic
The American Foundation for AIDS Research (AmFAR)	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Merck Manual
Antisida Lleida	Govern Ílles Balears Direcció General de Salut Pública y Participación	National Library of Medicine
Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Greater Than AIDS / Más Que SIDA	NAM AIDSmap
BCN Checkpoint	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	NYC Health
Boston Public Health Commission	Healthfinder	NY State Department of Health
Centers for Disease Control & Prevention	Health Information Translations	Office on Women’s Health - US Department of Health & Human Services
CESIDA	HealthReach	Planned Parenthood
European Lung Foundation	Health Service Executive	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control
Explain TB	Kaiser Permanente	POZ
Florida Health		SaludMadrid
Fundació Lluita Contra la SIDA		

San Francisco AIDS Foundation
TeensHealth from Nemours Foundation
US Department of Health & Human Services
Whitman-Walker Clinic
World Health Organization (WHO)
Xunta de Galicia Consellería de Sanidade

Each website was assigned a code based on numbers and letters. Websites from predominantly English-speaking countries were assigned the number 1, followed by an underscore, followed by a second number given to the website in sequential order, that is, in the order of when it was added to the corpus. Then each language version of the website was assigned its corresponding language tag accordingly: “EN” for English, “ES” for Spanish, and “CAT” for Catalan.

The corpus, which contains a total of seventy-three multilingual websites, was built from December 2017 through March 2019 by searching for health information on HIV and TB published on the Internet. It should be noted at this point that websites are among the numerous health promotion mediums via the Internet; other online formats include social media and blog posts, as well as discussion forums. Compromising between time constraints and the desire to incorporate a large sample, the corpus for textual evaluation in this study was limited to the diagnosis or testing section of each health information website. Unless the first (home) page of the website provided information about testing and diagnosis, it was excluded from this study, because its contents – which included etiology, incidence rate and prevalence of the infectious disease, treatment, and prevention recommendations – tended to be more varied. Such wide-ranging variations in the presentation of health information would have complicated the objectives of this study in terms of register. Diagnostic testing methods for HIV and TB are based on clinical guidelines backed by scientific evidence, therefore the methods are universal. How the writer presents these facts to the reader regarding writer-reader relationship and technicality of vocabulary is the focus of the textual analysis.

The websites were found via Google (Google Inc., Mountain View, CA) searches using the keywords “HIV,” “tuberculosis,” “diagnosis,” and “test” in English, Spanish, and Catalan. Google is a well-known search engine, for instance, the primary search engine for eighty percent of the users in the United Kingdom (Basavakumar, et al., 2019), and seventy-two percent of people in the United States seek health information online per year mainly via a search engine such as Google according to the Pew Research Center (Fox & Duggan, 2013; Rew, et al., 2018). Castillo-Ortiz, et al. (2017) noted that, on a global level, Google was the most frequently used search engine. The searches were performed using an anonymous browser with no cookies, a cleared history and cache, and with the location data blocked and GPS deactivated, a protocol also followed by Johnson, et al. (2019) and Alioshkin Cheneguín, et al. (2020).

Search engines generally serve as the first step for the public seeking online health information (Cisu, et al., 2019). However, this study focused on the linguistic aspects of health information websites as opposed to how easily a lay reader could find them (e.g., such websites appearing in the first ten results of a search). Therefore, replicating the general

public's typical mode of access (e.g., running a Google search using the keywords "HIV" and "test") was less of a priority than building a corpus of adequate size. As such, the search also included a top-down approach that was informed by the knowledge of the author of this thesis about different stakeholders: direct consultations with public health agencies, private companies, and nonprofit organizations in the United States, the United Kingdom, Spain, and Catalonia, many of which provided referrals and hyperlinks that resulted in more websites to add to the corpus. The following countries are represented in the corpus: United States, United Kingdom, Ireland, Spain, Catalonia,<sup>43</sup> Switzerland, and Germany. The qualifying websites were required to be available to the public, provide information about HIV or TB diagnostic testing, and include at least two of the following languages: English, Spanish and Catalan. Due to direct accessibility from the websites, downloadable PDFs qualified for this study. Each website was saved by at least one of the following methods: downloading the PDF and/or the html version and taking screenshots from February through March 2019. The last update of each website page and its retrieval date for this study were recorded.

An important aspect to bear in mind about the management of multilingual health information websites is that some websites had different texts for the non-translated English and the translated Spanish. The Spanish versions, in several cases, had omissions and / or an older version of the Spanish translation was left in while the English version was updated or revised. Health information websites usually – and should always – undergo periodic revisions per the recommendations of established principles such as Health on the Net (HON)<sup>44</sup> (Lawrentschuk, et al., 2009, and Lawrentschuk, et al., 2012), however the different language versions are not always revised simultaneously.

As always, limitations exist regarding the corpora. The selected websites were from a specific time frame. As such, updates and redesigns may have occurred on at least some of the included websites since their screen capture for this study's corpora. The corpora are a random selection in the sense that all the samples meet the inclusion criteria (Woods, et al., 1986). In this sense, were another researcher to replicate this study's approach to the compilation of the corpora, the result would be similar if not identical (Williams & Chesterman, 2011). The proportion of multilingual health information websites based in locations where English is the predominant language outsized the number of multilingual health information websites based in non-English-speaking locations.<sup>45</sup>

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<sup>43</sup> Catalonia is listed in addition to Spain for linguistic purposes.

<sup>44</sup> The Health on the Net (HON) Foundation is a multilingual non-government organization, sponsored by the World Health Organization, whose mission is to accredit human health websites employing the main principles of the "basic ethical standards in the presentation of information."

<sup>45</sup> Prior to selecting HIV and TB, cancer – both of a particular type and in a broader sense – was investigated to see if a better proportion between language subcorpora could be achieved. It became clear that obtaining an equal share of translated and non-translated multilingual health information

Over the course of gathering the multilingual TB & HIV health information websites, the number of words for the testing or diagnosis section of each website was noted using the Google extension Word Counter Plus.<sup>46</sup> For this study, the only pertinent data was the word count. In the event that Word Counter Plus did not work for the website or PDF document, the word count was performed manually. As shown in Table 8 below, this corpus totaled 92,195 words, averaging 615 words per website text. The longest text contained 4,596 words, and the shortest had 30 words.

Table 8 - The study's corpus: number of words and text length.

<b>Total number of words</b>	<b>Average number of words per website</b>	<b>Longest text</b>	<b>Shortest text</b>
92,195	615	4,596	30

The corpus was divided into four sub-corpora according to the language of the country that hosts the multilingual website, i.e., the English sub-corpus was made up of websites with English as the *primary*<sup>47</sup> language, with translations in other languages. The corpus of seventy-three multilingual HIV & TB diagnostic testing information websites – 150 website texts – that met the inclusion criteria was organized thus: English (52 websites; 71,852 words), Spanish (8 websites; 5,143 words), Catalan (8 websites; 9,176 words), and Others (5 websites; 6,145 words). Table 9 below lists the characteristics of the sub-corpora.

Table 9 - The characteristics of this study's sub-corpora, organized according to source language.

<b>Primary or official language of host website</b>	<b>English</b>	<b>Spanish</b>	<b>Catalan</b>	<b>Others</b>
<b>Number of websites</b>	52	8	8	5

website text was impossible, and that it would be necessary to work with what is available, adjusting accordingly in terms of size and location source to reduce bias due to the unbalanced sub-corpora.

<sup>46</sup> Word Counter Plus operates offline and can be obtained at <https://steven-roberts.github.io>. This extension works by highlighting the section to be included in the word count, and while maintaining the arrow over the highlighted section, holding down the control key while clicking the trackpad. A window then pops up with a list of options, in which “Word Counter Plus” is selected. The window is replaced by a Word Counter Plus window that lists the word count, character count, average word length, and the longest word length.

<sup>47</sup> As opposed to official, so that countries without an official language could be included in the best fitting corpus. For instance, the United States of America lacks an official language but the fact that its primary language is English is common knowledge and legally codified (EveryCRSReport.com, 2010). Therefore, US-based websites form a part of the English corpus.

<b>Total number of words</b>	71,852	5,143	9,055	6,145
<b>Average number of words per text</b>	684	342	477	559

The Others sub-corpus included websites from multinational and international organizations with multiple official languages, such as the World Health Organization, which is based in Switzerland. The Others sub-corpus in particular highlights an issue with popularization of health information that Herrando-Rodrigo (2010) described well:

When using the World Wide Web it is difficult to know whether we are dealing with a translation, an adaptation or a version of a source text or, on the contrary, if we are dealing with a totally new piece of medical literature addressed to a lay community on line. (p. 256)

The characteristics of the sub-corpora of non-translated and translated texts per language is displayed in Table 10, which also shows the distribution of the web hosts (as listed in Table 7) through the sub-corpora.

Table 10 - The characteristics of this study's sub-corpora (non-translated L1 and translated L2 separated).

<b>Group</b>	<b>English L1</b>	<b>English L2</b>	<b>Spanish L1</b>	<b>Spanish L2</b>	<b>Catalan L1</b>	<b>Catalan L2</b>
<b>Number of websites</b>	52	16	7	65	8	2
<b>Total number of words</b>	34,351	6,245	2,383	43,420	4,047	1,749
<b>Average number of words per text</b>	661	390	340	668	506	875
<b>Website hosts</b>	15 government organizations, 1 public-private entity, 12 non-profit organizations, 2 commercial publishers	2 government organizations, 8 non-profit organizations	1 government organization, 3 non-profit organizations	19 government organizations, 1 public-private entity, 19 non-profit organizations, 2 commercial publishers	3 government organizations, 5 non-profit organizations	1 government organization & 1 nonprofit organization



At first glance, there may appear to be a concerning discrepancy in the number of words per sub-corpus. However, they correspond between the different L1 versions and L2 versions. For example, the English L1 sub-corpus has a similar number of words to the Spanish L2 sub-corpus, and the Spanish L1 sub-corpus is like the English L2 sub-corpus.

Since Catalan is spoken in a smaller area by fewer people than Spanish and English, it is to be expected to find proportionally fewer multilingual health information websites based in predominantly Catalan language regions, and to find such websites based elsewhere that include a Catalan translation. Therefore, the Catalan L1 and L2 sub-corpora are smaller than their English and Spanish counterparts, and this discrepancy in sub-corpora sizes will be considered in the statistical analysis.

Since the writer's use of specialized terms affects the reader's perceived meaning of the text regarding comprehensibility and cross-cultural competence, it was necessary to analyze technicality of vocabulary first.

### **4.3 Steps 2 through 5: Technicality of vocabulary**

As explicated via the summary of the Chung & Nation (2004) paper in Section 2.4, the computer approach could significantly shorten the duration of the analysis. Nevertheless, the combination of the use of clues to identify technical terms for extraction from texts, dictionaries, and a rating scale adapted for the analysis of health information websites to complement the Evaluative Linguistics Framework (ELF) questionnaire is intended to reduce sole investigator bias as well as render the thesis study more translatable to health communication research and practice.

#### **4.3.1 Step 2: Word extraction and creating the word lists**

The classification of vocabulary was accomplished systematically in the following manner: word extraction, the creation of a word list, dictionary consultation, and the TAM-HC classification. The first step in the technicality of vocabulary analysis – as the second step of the methodology of this study – was word extraction. Words considered technical were manually selected from a total of 73 multilingual health information websites – a total of 151 web pages. To identify technical words, a set of guidelines that was more detailed than in the aforementioned study by Chung and Nation (2004), based on Systemic Functional Linguistics (SFL), was required.

Along with the interpersonal metafunction and social indicators of tenor aspects of SFL as explicated in Section 3.2.2 (Ideology) of the Theoretical Framework chapter, in which a writer expresses their level of solidarity with the reader via the use of technical or specialized words, to evaluate technicality of vocabulary in relation to writer-reader relationship, an approach to viewing technicality of vocabulary separately from writer-reader relationship is to include textual metafunction (which concerns the flow of information). Also referred to as textual metadiscourse, this relies on writer's perceptions of the reader's knowledge base and what needs to be explicated and involves tools that enable the reader to interpret the meanings in the text in the way that the writer explicitly proposes (Hyland, 1998b). One of the clues to spotting technical words is a code gloss, which "refers to the writer's act of supplying additional information to ensure the reader is able to recover the writer's intended meaning, either by explaining, comparing or expanding what has been said" and "reflects the writer's predictions about the reader's knowledge-base or ability to understand text content" (Hyland, 1998b, p. 443). Code glosses help readers to understand propositional meaning of the specialized term (Hyland, 1998b; Ho, 2016). Parentheses or words and phrases indicating that a technical term is about to be defined or explained or presented in the process of lexical familiarization signal a code gloss (Hyland, 1998b; Ho, 2016). In addition to the use of parentheses, examples of code glosses to identify technical words are: "for example," "for instance," "in other words," "namely," "such as," "that is to say" and "the use of" (Hyland, 1998b; Ho, 2016).

In addition to code glosses, the following clues aid in spotting technical words, according to Chung and Nation (2003, p. 8):

(1) the word being defined in the text (what Bramki and Williams (1984) call lexical familiarization), (2) the word being written in bold or italics, (3) the word appearing as a label in a diagram. [...] Definitions can take a very large variety of forms (Bramki & Williams, 1984; Flowerdew, 1992), and some of these may be difficult to notice. [...] Definitions may be accompanied by some typographical marking (using bold or italics...) of the technical term being defined. [...] Repetition also provides a clue.

Repetition effectively helps the lay reader to learn new technical terms (Nation, 2018). However, according to Zipf's law, technical terms do not occur as frequently as words that are common knowledge and used in daily interactions outside of specialized professions (Zipf, 1949; Sorell, 2012). Therefore, there will be less repetition and therefore less reinforcement for the reader through this means (Nation, 2018). In health information text, some specialized words and phrases may be repeated numerous times – some examples from the corpus are *HIV*, *tuberculosis*, and *test* – while other terms may only be repeated once or twice, if they get repeated at all. For this reason, after the pilot test, it was decided to eliminate this marker from the textual analysis.

Definitions can also be preceded or followed by hinge words or phrases, such as “is referred to as,” “denotes,” “is defined as,” “is called,” or “known as” (Hoste, et al., 2010; Pearson, 1996). Additional features of technical words, such as Greek or Latin affixes (for example, *intravenous*), numeric symbols (for example, CD4 cells), and multiple capital letters (for example, HIV) (Hoste, et al., 2010) aided in spotting technical words in the analysis.

Multimodality was taken into consideration during the analysis of website texts. Included in this consideration was redundancy between textual and paratextual features - such as the use of bold type and italics already mentioned, in addition to underlining - since it referred to the writer’s expectations of the reader regarding attention to particular details of the health information (Bazzanella, 2011, p. 247), particularly with regard to the use of specialized words. In a website text, underlining may be used instead of bold or italics to hotlink a technical term to its definition, in addition to single or double quotation marks or a different color. Even when not hyperlinked to a definition or explanation, technical words could appear in another color. Quotation marks around a term intended to emphasize its technicality are included. Multimodality of headings or subheadings are excluded since they do not serve to introduce or reinforce a technical term in term of health literacy unless it is otherwise clearly intended to present a new word or phrase.

It is important to note that acronyms, multiple capital letters or letters combined with numbers, and multiword units are included as technical vocabulary (Liu & Lei, 2019). Examples from this thesis research include the following: Human Immunodeficiency Virus and its acronym, HIV; CD4 cells, p24 antigen test, BCG (Bacille Calmette-Guérin), PPD (purified protein derivative) – as in the PPD skin test for tuberculosis, and LTBI (latent tuberculosis infection).

An Excel spreadsheet (see Figure 5) was created for the word extraction process. One row per webpage, the following information was listed in each column: disease (HIV or TB), language (English, Spanish, or Catalan), country (plus region or city, if targeted towards a more specific geographical population), website name, website link, word count, date last updated, date added to corpus, date analyzed, and words extracted for analysis.

Disease	Language	Country (city or national)	Website name	Link	Word count	Last updated (Date added to corpora)	Words selected for analysis (Total #)
1. TB	EN	USA	Healthfinder.gov [Office of Disease Prevention and Health Promotion (ODPHP)]	<a href="https://healthfinder.gov/HealthTopics/Category/doctor-visits/talking-with-the-doctor/testing-for-latent-tuberculosis">https://healthfinder.gov/HealthTopics/Category/doctor-visits/talking-with-the-doctor/testing-for-latent-tuberculosis</a>	506	21/02/2018 (since updated 27/2/2019)	27/09/2018, 18/1/2019, 20/8/2019, 8/6/2020 Testing, latent tuberculosis, doctor, tuberculosis, TB, disease, lungs, active TB, spread (verb), latent tuberculosis infection, LTBi, treated (participle), signs, symptoms, risk, stressful, nurse, appointment, screening test, results
				<a href="https://health.gov/espanol/myhealthfinder/temas/consultas-doctor/pruebas-deteccion/preguntas-doctor-prueba-tuberculosis-latente">https://health.gov/espanol/myhealthfinder/temas/consultas-doctor/pruebas-deteccion/preguntas-doctor-prueba-tuberculosis-latente</a>	548	27/06/2018 (since updated 25/3/2019)	08/06/2020 Doctor, prueba, tuberculosis latente, enfermedad, pulmones, tuberculosis activa, transmitir, infección tuberculosa latente, contagiar, tratamiento, signos, síntomas, riesgo, estresante, enfermera, cita, resultados
	ES			<a href="https://www.lemus.ie/bitstream/handle/10147/314351/A.%20Information%20Leaflet%20for%20Contact%20of%20People%20with%20TB.pdf;jsessionid=DB754C93A4B4E3C0B238A48CB76C9C42?seq">https://www.lemus.ie/bitstream/handle/10147/314351/A.%20Information%20Leaflet%20for%20Contact%20of%20People%20with%20TB.pdf;jsessionid=DB754C93A4B4E3C0B238A48CB76C9C42?seq</a>		09/04/2018, 15/01/2019, 12/8/2019,	TB, contact tracing, doctor, appointment, medical history, tests,

Figure 5 - Excel spreadsheet created for word extraction process.

The technicality of vocabulary analysis process initially was based on the prior research using the ELF instrument, whose questions are listed in Section 4.3.4. A pilot test, conducted from January to early March 2019, consisted of a run-through of the original plan – apply the technicality of vocabulary and writer-reader relationship ELF-Q questionnaire – using a sample of eight multilingual health information websites in English, Spanish, and Catalan. The outcome was the realization that the ELF instrument was created for studies in which multiple researchers collaborated and inter-rater agreement could be ascertained. In a doctoral thesis research conducted by a sole investigator, the subjectivity of the qualitative analysis posed a formidable risk of bias. For greater objectivity, a reinforced approach was necessary to the judgment-based methodology. Another instrument was added.

Ha & Hyland (2017, pp. 38-39) developed the Technicality Analysis Model (TAM), which comprises a ranking of five levels of technicality of words. The analysis involves four points of consideration. First, whether the word possesses common knowledge and specialized definitions is ascertained. Second, whether the word in question is on a reference list. Third, whether the word has only one meaning, or several. And last, whether the word contains a literal definition. This approach incorporates dictionaries and word lists to determine word usage frequency and differentiation between lay and professional terminology. It was a combination of corpus-based keyword assessment with a judgment-based rating (Liu & Lei, 2019). Consulting the frequency of each word included in the quantitative analysis reveals their level of prevalence in day-to-day usage, suggesting whether a word is of common knowledge among the target population as well as its level of difficulty within the language. According to Liu and Lei (2019) in their review of rating scales, the TAM was the most sophisticated system.<sup>48</sup> The five distinctions created by Ha and Hyland (2017) are described in Table 11.

Table 11 - The five TAM categories (Ha & Hyland, 2017).

<b>TAM1(LEAST technical)</b>	No specialized sense in a dictionary but has a general sense.
<b>TAM2 (SLIGHTLY technical)</b>	Has a specialized sense that contains more details than the related general sense.
<b>TAM3 (MODERATELY technical)</b>	Is monosemous or its specialized sense is remotely or not related to any of its general senses or has a specialized sense that contains more details than the related general sense.

<sup>48</sup> Similar rating scale studies include: Kwary (2011) and Watson Todd (2017).

<b>TAM4 (VERY technical)</b>	Is monosemous or its specialized sense is remotely or not related to any of its general senses.
<b>TAM5 (MOST technical)</b>	Has a specialized sense, and cannot be understood literally.

Since Ha and Hyland (2017) applied the TAM to a financial corpus, it was necessary to conduct a pilot test on the same eight samples from this study's corpus of multilingual health information websites to ascertain the instrument's transferability to health communication texts. The test put into question the necessity of the original five distinct categories of TAM for the present study. While grading technical terms in a non-binary manner proved beneficial for the present study, simplification was desirable for texts created by specialists for a lay audience who wouldn't have any experts available to explain the unfamiliar words and phrases.

Some scholars argue that a word in and of itself cannot be classified as specialized, others insist that certain terms can indeed be considered technical. The nay-sayers assert that words like X-ray, vaccination, and blood are common knowledge medical words, therefore there is nothing "specialized" about them (see, for example, Ha & Hyland, 2017, pp. 45-46, for more about this argument against the nay-sayers). On the other hand, those that support the necessity for the differentiation between layman's and even the least specialized words and terms justify their viewpoint regarding comprehensibility of technical text, such as legal, financial, and medical documents, by the public – as in the people who do not work in the aforementioned fields (Ha & Hyland, 2017). What the two camps of scholars would hopefully be in unanimous agreement is that each discipline – in the case of this study, health care – possesses its specific lexicon of specialized terminology (Hyland & Tse, 2007).

These detailed categories served Ha and Hyland (2017) well in their evaluation of a financial corpus, chosen with the assumption that the readers would be more familiar with the terms in their daily lives as opposed to, for example, the field of engineering (Ha & Hyland, 2017). However, to analyze health communication whose corpus contains multilingual health communication websites intended for a lay audience, adaptations to the TAM instrument were necessary. A TAM5 word would (should) be rare, since its criterion is "cannot be understood literally" (Ha & Hyland, 2017) and comprehension of the health information text is critical. Therefore, for this study, the number of distinctions between TAM rankings have been subsumed: TAM2 and TAM3 into TAM2-3, and TAM4 and TAM5 into TAM4-5, with their respective criteria combined, as listed in Table 12. This adapted instrument has been named "TAM-HC," with the "HC" representing health communications.

Table 12 - TAM-HC categories as adapted for this study (from Ha & Hyland, 2017).

TAM1 (LEAST technical)	No specialized sense in a dictionary but has a general sense with a high usage frequency. It may or may not be listed in a medical dictionary.
TAM2-3 (SLIGHTLY to MODERATELY technical)	Is monosemous or has a specialized sense that contains more details than its related general sense, or is remotely or not related to any of its general senses. The word has a general sense with a lower usage frequency OR is specialized with medium to high usage frequency AND is listed in a medical dictionary.
TAM4-5 (VERY to MOST technical)	Is monosemous or its specialized sense is remotely or not related to any of its general senses, OR has a specialized sense that cannot be understood literally. The word has a general sense with a low usage frequency OR a specialized sense with a low to medium usage frequency AND is listed in a medical dictionary.

Such a parametric approach in this study bolsters the strength of the results by rendering the analysis more objective, thus improving its reliability. Another benefit of the TAM-HC instrument is the ability to store the classifications as a word list – in effect, creating a lexicon – to use in the analysis of the websites, which facilitated the overall methodology. Thus, more columns were added to the aforementioned Excel spreadsheet: TAM1, TAM2-3, TAM4-5, plus a column for additional observations. The result of this expansion is shown in Figure 6.

1. Disease	2. Country (city or national)	3. Website name	4. Link	5. Word count	6. Last updated	7. Date added to corpus	8. Words selected for analysis (Total #)	9. TAM 1 (EASIEST technical) - the definition according to the word's usage in the text has no specialized sense in a dictionary, only a general sense. (Total #)	10. TAM 2-3 (FLUENTLY to MODERATELY technical) - the word is monosemous, OR has a specialized sense that contains more details than its related general sense, OR is semantically related to any of its general senses. (Total #)	11. TAM 4-5 (PERTY to MOST technical) - the word is monosemous, OR has a specialized sense that is remotely or not related to any of its general senses, OR has a specialized sense that cannot be understood literally. (Total #)
1. TB	EN	USA	<a href="https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html">https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html</a>	506	21/02/2018 updated 27/07/2019	21/02/2018 27/07/2019	21/02/2018 27/07/2019	Testing, latent tuberculosis, doctor, tuberculosis, TB, disease, lung, (participial), signs, symptoms, risk, stressful, nurse, appointment, screening test, results (7)	Testing, latent tuberculosis, tuberculosis, TB, lung, active, active TB, latent tuberculosis infection, infection, signs, symptoms, nurse, screening, screening test, test (15)	LTB (1)
2. TB	EN	USA	<a href="https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html">https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html</a>	548	27/06/2018 (line) updated 25/07/2019	08/06/2020	08/06/2020	Doctor, prueba, tuberculosis (latente, enfermedad), pulmones, tuberculosis activa, tuberculosis (latente), contagiar, tratamiento, signos, síntomas, riesgo, estratemia, cita, resultados (2)	Doctor, prueba, tuberculosis, tuberculosis latente, latente, enfermedad, pulmones, tuberculosis activa, tuberculosis (latente), infección, infección tuberculosis, infección tuberculosis latente, tuberculosis, contagiar, tratamiento, signos, síntomas, riesgo, estratemia, enfermedad (2)	
3. TB	ES		<a href="https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html">https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html</a>	66	09/04/2018 15/01/2019 12/8/2019	09/04/2018 15/01/2019 12/8/2019	09/04/2018 15/01/2019 12/8/2019	TB, contact tracing, doctor, appointment, medical history, tests, skin test, Mantoux test, injection, results (2)	TB, contact tracing, doctor, medical history, medical, tests, skin test, skin, Mantoux, Mantoux test, injection (1)	
4. 2. TB	EN	Ireland	<a href="https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html">https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html</a>	371	17/07/2019 12/8/2019	17/07/2019 12/8/2019	17/07/2019 12/8/2019	Results (1)	Results (1)	
5. TB	ES		<a href="https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html">https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html</a>	66	09/04/2018 15/01/2019 12/8/2019	09/04/2018 15/01/2019 12/8/2019	09/04/2018 15/01/2019 12/8/2019	Results (1)	Results (1)	
6. 3. TB	EN	Ireland	<a href="https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html">https://www.cdc.gov/disease-prevention-and-health-promotion/odp/odp18-00018.html</a>	371	17/07/2019 12/8/2019	17/07/2019 12/8/2019	17/07/2019 12/8/2019	Results (1)	Results (1)	

Figure 6 - Screenshot of Excel spreadsheet with TAM-HC instrument.



The second step also consisted of inserting the extracted words into a word list for each of the included languages: English, Spanish, and Catalan. This process and the word extraction were completed simultaneously. Each language list was done as a table in a Microsoft Word document: the first column listed the words. The second column listed the websites from which the word was extracted. The subsequent columns were completed in the third step: the consultation of general language corpora and both general and specialized dictionaries.

### 4.3.2 Step 3: Dictionary Consultation

The March-April 2019 pilot test also served to test the TAM-HC as a complement to the ELF technicality of vocabulary questionnaire by providing quantifiable results. Via manual scrutiny, the vocabulary was checked in three different dictionaries plus the general language corpora for the respective language to classify whether it qualified as a technical term. The criteria for the three dictionaries were that the first is a general one that states whether a word is specialized, the second shows the word usage frequency, and the third is a medical dictionary. For the English websites, the dictionaries consulted were the *Merriam-Webster* online dictionary (the general reference and medical sections, which appear on the same website) and the *Oxford English Dictionary (OED)* for general reference, as well as the *Cambridge Dictionary*. In addition, two well-known general English language corpora were consulted to check word usage frequency: the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA).

Discrepancies arose: the frequencies recorded in the BNC matched the *Cambridge Dictionary's* inclusion criteria: “tuberculin” and “induration” had lower frequencies than “sputum,” which was listed in the *Cambridge Dictionary* (2019) as specialized but was not specialized according to the *OED* (2019). However, neither “tuberculin” nor “induration” were listed in the *Cambridge Dictionary* (2019). All three words were listed in both the *OED* (2019) and the *Merriam-Webster* (2019) dictionary as layman’s terms. The Catalan version had its share of issues: based on the criteria, “*embarassada*” (pregnant) was classified as “very technical” or TAM4. It had a specialized sense in the medical dictionary (DEMCAT, 2019), but it is commonly used among the general population and logically should have been classified as TAM2. It was worth noting that the frequency for “*embarassada*” was 2.79 per million words in the Catalan corpus of information published on the web known as the CUCWeb<sup>49</sup> (Boleda, et al., 2006). This suggests that the frequency criterion is not to be trusted blindly. Corpora

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<sup>49</sup> The CUCWeb comprises of 166 million words, whereas the general Catalan language corpus – the CTILC, which stands for *Corpus textual informatitzat de la llengua catalana* – consists of approximately 50 million words (Boleda, et al., 2006, p. 2) dated from 1832 to 1988.

are collections of texts from certain genres and from a certain period. This has the advantage of reaching beyond the language standards to reflect the variation of the included genres and the use of words therein, thus reflecting the cultural aspect more accurately (Ataboev, 2019). This highlighted the importance of using dictionaries alongside the general language corpora for Ha and Hyland (2017). The approach served them well, since their study of a large financial corpus was conducted solely in English. For a multilingual study, in which discrepancies arose between the general language corpus and the dictionaries, the use of general language corpora raised issues. This cumbersome approach was simplified with an alternate option for this study. The general language corpora were not drawn on in this step, and the types of dictionaries necessary for each language were determined: one general language dictionary, one specialized medical dictionary, and one dictionary that featured word usage frequency. It may be argued that consulting a dictionary may be considered too rudimentary or primitive a method. Ataboev (2020) contends that general language corpora contain the most up-to-date resources. However, dictionaries are more stable than the more frequently updated general language corpora (Institut d'Estudis Catalans, 2020a; *Oxford English Dictionary*, 2020; Ataboev, 2020). The COVID-19 pandemic has confirmed this decision; many of the specialized medical words that have been extracted from the TB and HIV testing website texts and classified as TAM4-5 – for example, “PCR” – have become household words over the course of this study’s analysis. The usage of the frequently updated general language corpora over the course of the COVID-19 pandemic would have skewed the results, whereas the more stable dictionaries guarantee consistency throughout the two-year-long analysis.

Based on the March-April 2019 TAM-HC pilot test, different dictionaries intended for different users – for health care professionals, native speakers, and to consult word usage frequency – were selected. A word could be deemed “general” or “specialized” in a native speaker’s dictionary. The word’s appearance in a medical dictionary verifies its technicality, particularly when it possesses multiple meanings. The usage frequency dictionary indicates whether the word is somewhat known or only spoken among experts in the field. Table 13 lists the dictionaries selected for each language in this study.

Table 13 - Corpora and dictionaries selected for each language.

Language	General dictionaries	Medical dictionaries	Other dictionaries (in languages in which the general dictionary does not provide the word usage frequency)

<b>English</b>	<i>Oxford English Dictionary</i>	<i>Merriam-Webster Medical Dictionary &amp; Stedman's Medical Dictionary</i>	
<b>Spanish</b>	<i>RAE</i>	<i>Diccionario de Términos Médicos</i>	<i>Diccionario del Uso del Español Actual</i>
<b>Catalan</b>	<i>DIEC2 Diccionari de la llengua catalana</i>	<i>Diccionari enciclopèdic de medicina (DEMCAT)</i>	<i>Diccionari descriptiu de la llengua catalana</i>

Some of these dictionaries include word usage frequency, as seen in the screenshots below (Figures 4.3 and 4.4), which was noted in the analysis. In the *Oxford English Dictionary*, the primary data source is the Google Books Ngrams data, version two, “cross-checked against data from other corpora, and re-analysed in order to handle homographs and other ambiguities” (*Oxford English Dictionary*, 2020). The calculations, which are periodically revised, are adjusted for singular and plural noun forms, infinitive and other verb tenses, as well as accepted spelling variations – particularly the differences between the US and the British (*Oxford English Dictionary*, 2020). In the OED, the frequency ranges from one (very low) to eight (very high) and is logarithmic, for example, a word ranked 4 would be approximately ten times more frequent than a word ranked 3 (*Oxford English Dictionary*, 2020). The “frequency (in current use)” can be found immediately below the pronunciations (see Figure 7).

The screenshot shows the Oxford English Dictionary (OED) website. At the top, there are navigation links: HOME, ABOUT, COMMUNITY, BLOG. On the right, it says "Access: Universitat Pompeu Fabra" and "Personal profile: Sign in". The main header features the OED logo and the text "Oxford English Dictionary The definitive record of the English language". A search bar is present with the text "Quick search Find word in dictionary" and a "GO" button. Below the search bar, there are links for "Lost for Words?", "Advanced search", and "Help".

The main content area displays the entry for "tuberculosis, n.". It includes a "View as: Outline | Full entry" link and "Quotations: Show all | Hide all" and "Keywords: On | Off" options. The pronunciation is given as: "Pronunciation: Brit. /t(j)ʊbəkʊˈlɔːsɪs/, /tʃʊbəkʊˈlɔːsɪs/, U.S. /təˌbɜːkjəˈlɔːsəs/, /ˌt(j)uˌbɜːkjəˈlɔːsəs/". Below this is a "Frequency (in current use)" indicator consisting of five red dots. The "Origin" is noted as "A borrowing from Latin. Etymon: Latin *Tuberculosis*." The "Etymology" section states: "< German †*Tuberculosis* (1830 or earlier, often attributed to J. L. Schönlein; now ... (Show More)".

The definition begins with "Disease characterized by the formation of tubercles; spec. that caused in humans by infection with the bacterium *Mycobacterium tuberculosis*, the characteristic lesion of which is a caseating granuloma. Frequently with distinguishing word indicating the site or stage of infection, method of transmission, etc. In later use also: disease caused by other mycobacteria (in a".

On the right side, there is a "Browse:" section with links for "Dictionary", "Sources", "Categories", "Historical Thesaurus", and "Timelines". Below this is a "My entries (1)" and "My searches (1)" section. A "Jump to:" section is also present. A "This entry has been updated (OED Third Edition, June 2014)." notice is displayed. Below the main entry, there are links for "Entry history" and "Entry profile". A "Previous version: OED2 (1989)" link is also visible. At the bottom right, there is a "Thesaurus" and "Categories" link.

At the bottom right of the screenshot, there is a list of related terms with their dates:

Entr	Date
tuberculin, n.	1861
tuberculization, n.	1823
tuberculize, v.	1835
tuberculized, adj.	1835
tuberculo-, comb. form	
tuberculoid, adj.	1898
tuberculoma, n.	a1836
tuberculose, adj.	1752
tuberculosed, adj.	1851
tuberculosis, n.	1839
tuberculo-, comb. ...	
tuberculous, adj.	1892
tuberculum, n.	1597
tuberiferous, adj.	1846
tuberiform, adj.	1822
tuberin, n.	1900
tuberless, adj.	1851
tubero-, comb. form	1879
tubero-, n.	1664
tuberosity, n.	1704

Figure 7 - Oxford English Dictionary. Accessed May 19, 2019.

The *Gran Diccionario del Uso de Español Actual* is based on the Cumbre<sup>50</sup> corpus, which includes oral and written samples from various genres and fields used in Spain, Latin America, and the Spanish-speaking community of the United States with the elimination of regionalisms (Sánchez, 2001). The frequency was based on general usage, and was determined via the following rubric (Sánchez, 2001, p. 10):

1. Low (up to 3 times per million words)
2. Moderate (3-10 per million)
3. Notable (11-25 per million)
4. High (26-75 per million)
5. Very high (more than 75 per million)

Not only was the usage frequency recorded, but also whether the word was commonly used or possessed a specialized meaning, as well as any geographical differences in its usage. All of this information is pertinent to this study, especially since the frequency was based on details that more closely represent the intended audience consisting of Spanish-speaking readers of health information websites in the United States, the United Kingdom, and the European Community. It is due to all these minute details covering a broad range of issues that this dictionary was selected over the more recent *Diccionario de uso del español* by María Moliner, whose second edition was published in 2016.

In the *Diccionari descriptiu de la llengua catalana* (Institut d'Estudis Catalans, 2020b), the word frequency ranking ranged from five (least frequent, indicated by four white dots) to one (most frequent, with four black dots) (Institut d'Estudis Catalans, 2020b). The information is based on quantitative data from the Corpus Textual Informatitzat de la Llengua Catalana (CTILC) (Institut d'Estudis Catalans, 2020a). The last update for this dictionary took place in 2016 (J. Soler, personal communication, November 10, 2020). The approximately uniform distribution of each lexical element found within the entire corpus is taken into account (Institut d'Estudis Catalans, 2020b). An example of this ranking – in this case, one black with three white dots, indicating the rank of 4 (infrequent) – is located next to the pronunciation, as shown in Figure 8.

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<sup>50</sup> The written texts date from 1950 to 1995 (Briz Gómez & Albelda Marco, 2009). The outbreaks that we know as full-blown AIDS that attracted media attention in the summer of 1981 and the naming of the disease caused by HIV by the Centers for Disease Control and Prevention in 1982 have contributed to the language corpora, like COVID-19 continues to do at the time of this thesis' writing. Epidemics and pandemics come and go, influencing the language corpora over time.



Figure 8 - Diccionari descriptiu de la llengua catalana. Accessed May 19, 2019.

These dictionaries were trialed in a pilot test that took place from May through July 2019. The three different language word lists' third column was updated for the general language dictionary to list whether the word was specialized. The fourth column listed the word usage frequency according to a second dictionary. The fifth column listed whether the word was listed in the specialized medical dictionary. The TAM-HC analysis was thus ready for step three.

The dictionary consultation phase of the Spanish word list was completed concurrently from August through December 2019, with the remaining 11 words scrutinized in September 2020. The Catalan word list was also completed in December 2019. The English word list was started in August 2019 in order to run pilot tests. As the English language corpus is significantly larger than the other language corpora, word extraction and word list creation took much longer and was completed in February 2020, with two of the dictionary consultations completed in March 2020. The third column of the English word list – that is, consultations using *Stedman's Medical Dictionary* - was completed in April 2020.

#### 4.3.3 Step 4: TAM-HC classification

The fourth step was the TAM-HC classification. This step was broken down into two parts. The first part is the TAM-HC classification directly in each language word list. The second part of the fourth step placed each word according to its classification on an Excel spreadsheet, in order to visualize the amount of words according to each TAM-HC category for each website.

In order to streamline the process of the TAM-HC classification for each language word list, the specifications for each TAM-HC category required clarification. A pilot test was conducted on a sample of ten websites texts. Variations in the meaning of certain words exist between English, Spanish, and Catalan. For example, the Catalan word “*infecció*” [infection] contains more meanings than the English counterpart. In addition to “*alteració de l'estat normal causada per la invasió de gèrmens patògens capaços de desenvolupar-s'hi i de produir-hi substàncies tòxiques*” [alteration of the normal state (in the body) caused by the invasion of pathogenic germs capable of replicating and producing toxic substances (in the body)] and “*malaltia infecciosa*,” [infectious disease], this Catalan word also carries the definition, “*conjunt d'animals nocius que infesta un lloc*” [a set of noxious animals that infest a place], whose English counterpart would be “infestation” (*Diccionari Descriptiu de la Llengua Catalana*, 2020).

The following criteria are provided for the English word list, which is also laid out in Table 14 below. For a word to be TAM1, the word had to be listed as general usage in the *Oxford English Dictionary* with a word usage frequency rate of 5 to 7. No specialized words can be classified as TAM1. A word that is deemed to be of general usage with a word usage frequency rate of 5 to 7 and is listed in either the *Merriam-Webster Medical Dictionary* or *Stedman's Medical Dictionary* can be classified as TAM1. If a word is apparently common knowledge and is listed in the *Oxford English Dictionary* as general 7, and is listed in both medical dictionaries, an exception can be made for it to be classified as TAM1. An example of this would be the word “body.” Another exception is when the root word or correlate is classified as TAM2-3, then the otherwise TAM1 word is classified as TAM2-3. Examples of this case are the words from the English word list “medical” and “medically.” “Medical” is classified as TAM2-3 per the criteria as described below, but “medically” would be classified as TAM1 per the criteria above.

The TAM-HC criteria for the TAM2-3 classification include technical vocabulary. According to the *Oxford English Dictionary*, the word is listed as either general usage or specialized, or both. To clarify, for a word to be classified as TAM2-3, it must be of general usage with a lower word usage frequency or specialized with a word usage frequency of 5 to 7 (with the exception as explicated in the previous paragraph). To be classified as TAM2-3, words that are in general usage with a lower frequency or deemed both general and specialized must be listed in both the *Merriam-Webster Medical Dictionary* and *Stedman's Medical Dictionary*. If a word is deemed as specialized and is not listed in either of the medical dictionaries, it is classified as TAM2-3. This also goes for words that are not listed in the *Oxford English Dictionary* but are listed in either or both medical dictionaries, the latter case depending on the root word or collocate. Examples of such TAM2-3 classified technical words

include the following from the English word list: “physical examination,” “medical history,” and “medical records.”

For a word to be classified as TAM4-5, it had to be deemed by the *Oxford English Dictionary* as either general with a very low frequency or specialized with a frequency of 3 or less or a combination thereof, plus it must be listed in both medical dictionaries. A word that is not listed in the *Oxford English Dictionary* but is listed in both medical dictionaries is also qualified for TAM4-5 classification.

Table 14 - TAM-HC classification for the English word list.

	<b><i>Oxford English Dictionary</i></b>	<b><i>Merriam-Webster Medical Dictionary</i></b>	<b><i>Stedman’s Medical Dictionary</i></b>
<b>TAM 1</b>	General.  5 to 7	Not listed.  Listed if Oxford ranks the word as general 7.	Not listed.  Listed if Oxford ranks the word as general 7.
<b>TAM 2-3</b>	General with a lower frequency.  General & specialized.  4 to 6  Specialized with a higher frequency, including 7.	Listed.  Listed or not listed.  Listed or not listed.	Listed.  Listed or not listed.  Listed or not listed.
<b>TAM 4-5</b>	General & specialized.  Specialized.  General with low frequency.  <4.  Not listed.	Listed.  Listed.  Listed.  Listed.	Listed.  Listed.  Listed.  Listed.

When no usage frequency is indicated for a technical word, its similarity to related words and whether it is listed in other dictionaries carries more weight. An example of this scenario from the English word list is “antiviral,” which was classified as TAM2-3 based on the classification of its root word, “viral.”

The TAM-HC classification criteria for Spanish word list, which is also laid out in Table 15 below, required several adjustments according to the differences in the dictionary features. Compared to the word usage frequency in the *Oxford English Dictionary*, which ranged up to 8, the *Gran Diccionario de Uso del Español Actual* ranged from 1 to 5. This dictionary also indicated whether a word was specialized. For a Spanish word to be classified as TAM1, the word had to be unaccompanied by any indication of specialization by the *Diccionario de la Lengua Española*. No specialized words are categorized as TAM1. The word usage frequency for most TAM1 words was 5, although there were instances of lower frequency. The word could not be considered as specialized. In addition, a TAM1 word could not be listed in the *Diccionario de Términos Médicos*.

TAM2-3 words in Spanish were listed in the *Diccionario de la Lengua Española* and the *Gran Diccionario de Uso del Español Actual* as either general, specialized, or both general and specialized. The word frequency ranged between 2 and 4, with a few exceptions. If a word was listed as general in the *Diccionario de la Lengua Española* and the *Gran Diccionario de Uso del Español Actual* but carried a frequency of 1 or 2, and it was listed in the *Diccionario de Términos Médicos*, it was assigned as TAM2-3.

However, if a word had a specialized label in the *Diccionario de la Lengua Española* with the rest of the above-mentioned details, it was assigned as TAM4-5. TAM4-5 words were either not listed or listed as specialized in the *Diccionario de la Lengua Española* and the *Gran Diccionario de Uso del Español Actual*. Also, the word usage frequency was 1 or it lacked a frequency number. The word was listed in the *Diccionario de Términos Médicos*.

Table 15 - TAM-HC classification for the Spanish word list.

	<i>Diccionario de la Lengua Española</i>	<i>Gran Diccionario de Uso del Español Actual</i>	<i>Diccionario de Términos Médicos</i>
<b>TAM1</b>	General.	General, 3 or 4	Not listed.
<b>TAM2-3</b>	General. General & specialized. Specialized.	1 or 2 1 to 4 2 to 4 General or specialized.	Listed. Listed or not listed. Listed or not listed.
<b>TAM4-5</b>	Specialized.	1 or no frequency number. Specialized.	Listed.



The TAM-HC classification criteria for the Catalan word list, which is also laid out in Table 16 below, bore greater similarity to the Spanish than to the English. Like the Spanish version, the Catalan had to be adjusted for the difference with regard to the word usage frequency. The *Diccionari Descriptiu de la Llengua Catalana* frequency ranged from 0 to 4. For a Catalan word to be classified as TAM1, the word had to be deemed by the *Diccionari de la Llengua Catalana, version 2* (DIEC2) as *lèxic comú* (LC) (common lexis). No specialized words in Catalan are classified as TAM1. The word frequency was either 3 or 4, and the word was not listed in the Catalan medical dictionary, *Diccionari enciclopèdic de medicina* (DEMCAT).

TAM2-3 words in Catalan had a listing of either LC, LC and a specialized category, for example, “*medicina i farmàcia*” (MD) (medicine and pharmacy), or a specialized category. The word usage frequency was 2 to 4. If the word was LC in the DIEC2 but had a listing in the DEMCAT, it was categorized as TAM2-3. If the word was LC and specialized or simply specialized in the DIEC2 and was not listed in the DEMCAT, it received a TAM2-3 rating. There were several unusual situations, for example, the Catalan word “*nebulitzar*” (nebulize) had an LC listing in the DIEC2 and was not listed in the DEMCAT, however its word usage frequency rating was 0, therefore it was classified as a TAM2-3 word.

The TAM4-5 words in Catalan either had a specialized listing or were not listed in the DIEC2. The word frequency rating was either 0 or 1, or the word was not listed in the *Diccionari Descriptiu de la Llengua Catalana*. A Catalan TAM4-5 word was listed in the DEMCAT.

Table 16 - TAM-HC classification for the Catalan word list.

	<i>Diccionari de la Llengua Catalana, version 2 (DIEC2)</i>	<i>Diccionari Descriptiu de la Llengua Catalana</i>	<i>Diccionari enciclopèdic de medicina (DEMCAT)</i>
<b>TAM1</b>	General. No specialized words.	3 or 4	Not listed.
<b>TAM2-3</b>	General. General & specialized. Specialized.	0 to 2 1 to 4 2 to 4	Listed. Not listed or listed. Not listed or listed.
<b>TAM4-5</b>	Specialized.	0 to 1	Listed.

However, there were several outliers that merited the TAM4-5 classification but were not listed in any of the three dictionaries. The decision was based on the TAM-HC classification of a cognate or root word of the term in question, such as “*antiretroviral*” (antiretroviral) and “*immunoenzimàtic*” (immunoenzymatic), or whether it was an acronym, such as “IGRA,” or contained numbers, such as “p24.” Multiword units that were clearly medical terms but not found in any of the three dictionaries also garnered a TAM4-5 rating, such as “*mitjà de contrast*” (contrast medium).

#### 4.3.4 Step 5: ELF-W technicality of vocabulary analysis

Once all the websites had the TAM-HC analysis completed, the fifth step was conducted from September 2020 to November 2020. The ELF technicality of vocabulary questions was applied to each sample text, along with additional questions plus a formula developed for this study based on the outcomes of the pilot test conducted from May through June 2020 using the same sample group of multilingual health information websites.

With the possible answers in parentheses tailored to reduce sole researcher bias for this study, the original ELF-Q (Clerehan, et al., 2016) version was as follows:

1. How technical is the vocabulary used in the text? (Exemplify by listing problematic technical words & explicate each one.)
2. Is any technicality appropriate (for example, if medical terms are mentioned, can the participants be expected to know these)? (Technicality appropriate: yes / no / uncertain, and justify.)
3. Are the remaining words among those most frequently used in the language? (Words are in the most frequent usage list: yes / no / uncertain)

As mentioned at the beginning of this section, the ELF-Q was designed for studies conducted by multiple researchers who could test for inter-rater reliability and debate any differences in judgments until an agreement was reached. The clues found in the text and the TAM-HC are intended to bolster the strength of the sole researcher’s data from the questionnaire. The answer to the first question is supported by the proportion of the extracted words in each TAM-HC classification. That is, the comparison between the number of TAM1, TAM2-3, and TAM4-5 words for each text. For the second question, the clues in the text support the answer. This question, however, left the options too wide open to vague responses, since the affirmative, negative, and uncertainty lacked detail. Two additional “sub-questions” – 2a and 2b – were added to justify the answer to question 2 in an organized manner. Sub-question 2a examines the non-multimodal clues in the text, while sub-question 2b notes the presence of any textual multimodality.

The pilot study demonstrated the redundancy of the third question in the above version, whose data was irrelevant. Consulting the most frequent usage list for each word within the text of each website in this study's corpus would be time-consuming,<sup>51</sup> plus – most importantly – the focus of this study was on the use of technical words to assess the comprehensibility in terms of health literacy, as opposed to readability in terms of literacy. However, the technical vs non-technical ratio to evaluate the text was a speedier way to quantify this for such a large corpus. If this study focused primarily on technicality of vocabulary and assessed literacy along with health literacy, then checking the remaining words with the most frequent usage list would have been part of the methodology. The third ELF-Q question was eliminated for this study, which is concerned about comprehensibility in terms of health literacy, as opposed to readability in terms of literacy.

Last but not least, a gap in the ELF-Q questionnaire became apparent: the lack of observation of any instances where layman's terms or an explanation was used to avoid the inclusion of a technical word or phrase. This element is vital to the analysis of technicality of vocabulary and reflects the writer's expectations of the reader's ability to comprehend the health information.

The revised instrument, designed to assess website texts, has been named the ELF-W. The questionnaire for technicality of vocabulary is as follows:

1. How technical is the vocabulary used in the text? (Note the proportion of TAM1/TAM2-3/TAM4-5 classifications for the text.)
2. Is any technicality appropriate (for example, if medical terms are mentioned, can the participants be expected to know these)? (Technicality appropriate: yes/no/uncertain, and justify based on the clues from the text, which are detailed in questions 2a & 2b.)
  - a. How were the technical terms identified in the text? [Possible responses: numerical symbols or multiple capital letters, Greek/Latin affixes, words accompanied by a definition<sup>52</sup> or explanation,<sup>53</sup> including the use of hinge words (lexical familiarization/code glosses). If none, then "not applicable."]

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<sup>51</sup> If literacy were a concern, a computer-based automatic term extraction/recognition statistical approach or mixed statistical and linguistically oriented approach would be recommended.

<sup>52</sup> "Definition" is defined as "an attempt to show the meaning of one word (or another linguistic expression) by means of some other words which say the same thing" (Goddard, 2011, p. 33).

<sup>53</sup> "Explanation" within the context of lexical familiarization is when the meaning of an introduced term is given via a set of words that means the same thing (Bramki and Williams, 1984). Whether accompanied by a definition or an explanation, the technical term requires clarification. Clarification, according to Halliday (1994, p. 226), is when "the secondary clause clarifies the thesis of the primary clause, backing it up with some form of explanation or explanatory comment."

- b. Was there any multimodality within the text, i.e., were technical words presented in bold, italics, or underlined? (Possible responses: yes (list the instances)/no)
3. Did the writer avoid any technical terms by implementing layman's terms or via an explanation? (Possible responses: note instances where layman's terms or explanation was used to avoid usage of a technical term.)

In addition to evaluating the technicality of vocabulary word by word, there was a need to determine the technicality of the text overall. This was done in two ways. First, the third question of the ELF-W identifies instances where the writer avoided the use of a technical term. This is as critical as the quantity of specialized terms – whether explained or not – in determining the comprehensibility of a text. The crucial qualitative data can distinguish between two different texts of the same language with the same percentage of technicality: the first one could accompany the specialized words with hinges and definitions while the second one lacks such features and render its text less comprehensible. The second measure, which was formulated during the May-July 2019 pilot test, is a calculation of the percentage of technical words for each website: the total number of TAM2-3 & TAM4-5 words is multiplied by one hundred, and that result is divided by the number of words in the text results. This measure provides the quantitative factor to determine technicality of text.

#### **4.4 Step 6: Analyzing ELF-W writer-reader relationship**

The final step consists of the completion of the writer-reader relationship section of the ELF-W questionnaire. Each yes / no / uncertain answer must be justified by at least one example, in order to reduce sole researcher bias. This was automatic in the analysis, which required highlighting the exemplary excerpts for each marker identified. The analysis is performed by searching for the patterns and markers described in Section 3.2.3 of the preceding chapter. A pilot test was conducted to ascertain which clues in the text correspond with specific questions and determine any necessary adaptation of this questionnaire to health information websites.

##### **4.4.1 Establishing valid indicators of writer-reader relationship through a pilot study**

A sample of ten multilingual health information websites on HIV and tuberculosis (TB) diagnostic testing, drawn from this thesis' corpus, was submitted to a pilot study. Only the diagnostic / testing section was analyzed. The results are presented in the order of the questions in the ELF-W instrument for writer-reader relationship, which is the result of the ELF-Q (which was presented in Table 3.2) and the Morony, et al. (2018) versions, which have been

combined and adapted to analyze health information websites, thus the renaming of the instrument as the ELF-W as mentioned earlier. Due to the similarity of the markers for the first two questions, these are discussed together.

*Is it clear who the writer is? (Identity of the writer clear: yes / no / uncertain)*

*Is it clear who the intended audience is? (Intended audience clear: yes / no / uncertain)*

**Q1 & Q2 markers:** explicit versus implicit identification of the writer & reader, respectively.

Unclear identification of the writer or reader means that the website lacks any self-reference or self-identification within the text. However, initial review of the texts in this study's corpus verified that all had a clear identity of the writer as well as that of the reader. This renders unhelpful the original ELF-Q possible responses, since they would inevitably be "yes." Differentiating between the type of identity of the writer and the reader would be more helpful in comparing the sub-corpora.

The pilot study suggested that this study's texts fell into two distinct categories for identity of both the writer and the reader: explicit and implicit. An explicitly clear identification of the writer refers to themselves. An implicit identification of the writer may incorporate the use of a first- or third-person pronoun as a self-reference. Regarding cross-cultural competence, the writer's use of the individualist "I" versus the first person plural self-mention indicating that the writer is the organization might reflect hierarchy depending on the context. The writer could reduce the power distance between themselves and the reader via the collectivist and inclusive "we" (an engagement marker) that refers to the identity of both the writer and the reader. Similarly, with the reader, who could be addressed implicitly or explicitly identified in the text as a specifically targeted group, for example, the contacts of a person diagnosed with active tuberculosis.

*Is the relationship between the writer and the reader clear and consistent? For example, are the items consistent in referring to the participant (you, me)? (Relationship is consistent: yes / no / uncertain)*

**Q3 markers:** pronoun usage and verb conjugation. Indications of minimum or maximum power distance were noted.

The third question concerns the consistency and clarity of the writer-reader relationship – the tenor between the writer and the reader – which is vital to capture and retain the reader's attention in order to effectively transmit the message. More specifically, interpersonal metadiscourse must be considered. According to Hyland (2017), this is best done by comparing concordance patterns to discern occurrence patterns rather than counting the frequency. Hyland (2017, p. 19) explains that what needs to be counted is the "forms acting in the service of rhetorical objectives" and not simply the "forms," which could increase the

number of occurrences, skew the results, and weaken the study. These “forms acting in the service of rhetorical objectives” are “signals which can stretch to clause or sentence length” (Hyland, 2017, p. 19). If worded well, the writer will succeed in connecting with and influencing the reader in informed decision making. Therefore, this question gauges tenor and ideology with a focus on whether the writer consistently relates to the reader. Culturally, this question is concerned with power positions in role relationships, whether the two players are on equal footing, or one is connecting from a higher level down towards the other. Cues can include forms of address and can reveal the relationship between the writer and the reader as established by the former. This can appear in health information text, for example, in Healthfinder (March 2019), as the writer referring to the reader using the familiar second-person pronoun *tú*, while providing the reader with a set of questions to ask their doctor expecting the reader to address their doctor using the formal second-person pronoun *usted*. Another example is when a Spanish first-person plural expresses hierarchy in a patronizing manner or an egalitarian tenor in a way that is inclusive or empathetic without getting involved.

*How positive (encouraging, reassuring) is the tone (for example, nonjudgmental – neither condemning nor criticizing – about the choices of action)? (Tone is positive: yes / no / uncertain)*

**Q4 markers:** problem-solution statements, goal-achievement statements, cause-and-effect statements, modal verbs of obligation, modal clauses, modal expression, direct appeal / imperative verbs, adversative markers, additive markers, certainty markers, propriety words (positive and negative), and diminutives. Indications of minimum or maximum power distance were noted.

The fourth question evaluates the persuasiveness of the message in the health information text, as well as whether the writer expressed any form of judgment against the reader or against any particular population. In addition to the concept of public health as a cultural institution (Matthiessen, 2013), this question gauges whether the health information has been adapted from the “Voice of Medicine” to the “Voice of the Life-world” (Mishler, 1984, p. 104). In other words, it is crucial for the writer to consider the reader’s situation in terms of HIV or TB risk factors outside of the healthcare realm, in the real world. The writer can successfully persuade the reader by referring to potential or likely lifestyle scenarios of the reader in a problem-solution or a condition-consequence statement.

Through the use of interpersonal metadiscourse markers, the writer interacts with the reader as the former renders the text, which the latter reads (Ho, 2016, p. 5). The more persuasive the tone of the advice, informing the reader in an empowering manner, the more the health information text reflects patient-centered healthcare and the more successful the

writer will be. The markers listed in Tables 3.5 and 3.6 aided in the identification of the writer's tone in the text.

To bolster the writer-reader relationship evaluation rubric, persuasion and justification markers are necessary for the ELF question "How positive (encouraging, reassuring) is the tone (for example, nonjudgmental – neither condemning nor criticizing – about possible responses?". This question gauges the writer's attitude towards the reader. The critical issue regarding health information websites is whether the text is persuasive to the reader, without any negativity, is culturally competent and stigma-free, to the point of compliance with the writer's recommendations.

*Are items generalizable to readers in all social strata, age, and ethnic/national groups in the target population? (Generalizable: yes / no / uncertain)*

**Q5 markers:** inclusion words and stigma words (including pronoun and verb conjugation usage).

The fifth question assesses whether a reader from the target audience, whether old or young, and regardless of social strata or nationality or ethnicity, could relate to the message in the health information website. "Strata" in this case pertain to economic, education, and/or social status within their community. This reader's cultural background and the writer's ideology as reflected through word choices influences the effects that the health information website text has on the reader. This can include inclusion, discrimination, and stigma.

Stigma is a social marker that discredits (Goffman, 1963) and "exists when elements of labeling, stereotyping, separation, status loss, and discrimination occur together in a power situation that allows them" (Link and Phelan, 2001). From a socio-functional viewpoint, "stigmas originate and persist to protect and promote groups' values through social cohesion and control" (Thaker, et al., 2018). The use of categorization, such as ethnicity and sexual orientation [e.g., "men who have sex with other men," frequently presented by the initialism "MSM" (Ávila & Gras, 2014)], is standard practice in public health, since it aids in tracking infectious diseases and identifying groups to target for preventive actions, however transferring this into text intended for the public carries the risk of discrimination. Examples of stigma words include those of implicit judgment, such as "history of homelessness," "prison," and "drug and alcohol abuse." Socio-economic determinants, such as "unemployed," "disadvantaged communities," and whether one was born in the host country, can also result in discrimination (Scott, et al., 2017; von Unger, et al., 2019). Other discriminatory words single out specific ethnic groups, which imply that immigrants pose a high risk of importing a disease that could threaten population health (Scott, et al., 2017; von Unger, et al., 2019).

Language that promotes inclusion strives to foment egalitarianism and refrain from offense. Inclusive language steers clear of expressions that are deemed in any form

discriminatory, biased, or prejudiced towards a specific group (American Psychological Association, 2021). It comprises of terms that do not refer to gender (i.e., non-binary, e.g., congressperson instead of congressman) or include both the masculine and the feminine (for example, the Spanish word for nurse, *enfermero/a*), as well as person-first phrases (e.g., “people with HIV,” as opposed to terms that identify the person solely on their condition, such as “the HIV-positives.”). The treatment of pronouns and conjugated verbs can also contribute towards inclusion: for example, the implementation of the English gender-neutral “they” instead of “he or she” to include non-binary people. Every instance of the English inclusive “they” is counted in this study. In Spanish and Catalan texts, pronouns and conjugated verbs are marked only once within a sentence to avoid skew in comparison with the English.

*Are the choices of action clear and unambiguous for the target population? (Choices of action clear / unambiguous: yes / no / uncertain)*

**Q6 markers:** modal verbs of obligation / clauses / expressions, problem-solution statements, goal-achievement statements, words of implicit judgment.

The sixth question concerns the clarity of the choices for the target audience. Examples include the use of modal verbs of obligation, modal clauses and expressions, as well as expressions such as “the only way to find out,” which could be identified within a problem-solution statement.

*Is the person who is expected to take responsibility for actions clear? (Identity of person who is expected to take responsibility clear: yes / no / uncertain)*

**Q7 markers:** convincing words, direct appeal / imperative verbs, pronoun / verb conjugation usage (especially second-person or third-person), adverbs of time. Indications of minimal or maximal power distance were noted.

The seventh question gauges whether the health information text makes clear the identity of the person expected to take responsibility for the recommended actions. Since the focus in the text is on the reader, this is another gauge of tenor and ideology.

The websites that clearly identified who was responsible for taking the recommended actions featured imperative verbs (exemplified in Table 3.5) and adverbs of time, as well as the use of the second-person pronoun. This was consistent in each language version within each sample website. The Spanish and Catalan versions of the websites based in the United States will be more likely to utilize the formal second-person pronoun and verb conjugations. The effectiveness of placing responsibility on the reader is fraught with careful word selection, lest the writer come across as authoritarian to an audience with cultural issues with regard to power distance in a negative manner.



*Is the importance and/or urgency of the action made clear? (Importance / urgency of action clear: yes / no / uncertain)*

**Q8 markers:** none, as this question was eliminated from the ELF-W.

The eighth question, which analyzes whether the health information website text expresses the urgency and/or importance of the recommended actions, was eliminated from the final version of the ELF-W writer-reader relationship questionnaire. The analysis in this thesis study is limited to the diagnosis / testing section of each website. The pilot test revealed that this could be problematic: the indicators for this question – an explanation of risks, symptoms, and threats to self and community – could be in an earlier section of the website that has been excluded from the analysis. While the sense of urgency could form a part of tenor with the implementation of words of drama or alarm, the results could be misleading without the information about risks, symptoms, and threats to self and community presented in parts of the website that have been excluded from this corpus.

The “uncertain” option was eliminated as well. It made no sense in an analysis of a large sample with regard to, for instance, whether the identity of the writer was clear. Either the writer is identified or refers to oneself, explicitly or implicitly, or not. There is a chance that the results could be fifty-fifty, which would qualify as “uncertain.” Therefore, while “uncertain” remains a possible answer, this option was eliminated from the final version of the ELF-W.

Based on the results of the pilot test, the final version of the ELF-W writer-reader relationship questionnaire is as follows:

1. Is it clear who the writer is? (Identity of the writer clear: yes / no)
2. Is it clear who the intended audience is? (Intended audience clear: yes / no)
3. Is the relationship between the writer and the reader clear and consistent? For example, are the items consistent in referring to the participant (*you, me*)? (Relationship is consistent: yes / no)
4. How positive (encouraging, reassuring) is the tone (for example, nonjudgmental – neither condemning nor criticizing – about the choices of action)? (Tone is positive: yes / no)
5. Are items generalizable to readers in all social strata, age, and ethnic/national groups in the target population? (Generalizable: yes / no)
6. Are the choices of action clear and unambiguous for the target population? (Choices of action clear / unambiguous: yes / no)
7. Is the person who is expected to take responsibility for actions clear? (Identity of person who is expected to take responsibility clear: yes / no)

The fourth question is the most critical, as it will be the most likely to reveal the sociocultural features of each text. The other questions are more straightforward, whereas the most intensive discourse analysis occurs with the fourth question.

## 4.5 Coding the corpora for markers of writer-reader relationship

For word extraction and the TAM-HC classification, the use of Excel spreadsheets and word lists using tables created in Word functioned well. However, in the process of pilot testing the ELF-Q and its adaptation to analyze multilingual health information websites, viewing the data in a comprehensive and interpretative manner on an Excel spreadsheet proved challenging. The need for a computer assisted qualitative data analysis software (CAQDAS) that could better link the data between sample texts, display the findings on a single text as well as within a corpus, and provide an overview of the different aspects of the analysis of the corpora on command became evident.

The website by the University of Surrey, the Computer Assisted Qualitative Data Analysis (CAQDAS) Networking Project,<sup>54</sup> enabled comparison between Atlas.ti, NVIVO, and MAXQDA. Among the specifications for this study were: equal compatibility between Mac OS and Windows, the ability to save the data in at least two places (on a website, on a USB drive, and/or on Google Drive), techniques to view all the data based on a single criteria in one table or chart, constant access to a straightforward non-hierarchical coding scheme, easy access to data files, the ability to attach notes to any part of a text, compatible with website text with ability to capture web content for import, and mixed methods features potentially relevant to this study. Additional requirements included accessible self-teaching methods, such as a downloadable instruction manual and captioned tutorial videos. These specifications eliminated Atlas.ti and NVIVO, narrowing the options down to MAXQDA.

Prior to purchasing MAXQDA, a free downloadable CAQDAS called [CorpusTool by UAM](#) was considered, due to its usage by SFL researchers and its potential for user-friendliness. However, there was insufficient information with regard to its compatibility with Mac OS X, and the author had not responded to the query.

The website text samples were imported into MAXQDA in the best available format that could be saved as described in the corpus-building process in Section 4.2. Screenshots were the last resort, as they are more difficult to code than PDF files. Html files are ideal, as these are the most likely to show the website text exactly as it appears to the reader, although this was not always the case. Due to this, the text on MAXQDA is simultaneously compared with the screenshots to ensure that the analysis reflects what the reader would view, particularly where multimodality is concerned.

For this study, a comparable corpus is useful to find out how particular texts in English, Spanish, and Catalan speak to particular audiences that communicate in these three languages in translated versus non-translated texts. Comparing pragmatic determinants in

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<sup>54</sup> University of Surrey. (n.d.), *Computer Assisted Qualitative Data Analysis (CAQDAS) Networking Project*, <https://www.surrey.ac.uk/computer-assisted-qualitative-data-analysis>

translations and non-translated texts in these three languages is best done with a comparable (as opposed to parallel) corpus, which helps to identify norms (McEnery & Xiao, 2007) and patterns in the texts. For word extraction and the TAM-HC classification, organizing the corpora as described in Section 4.1 worked efficiently.

However, the corpora had to be organized differently for steps five and six of the analysis in order to assess technicality of vocabulary and writer-reader relationship via the ELF-W in each language separately. They were divided up and rearranged: the English (68 websites), Spanish (71 websites), and Catalan (10 websites) language texts each had their own corpus, regardless of their host country's official [or legally codified (EveryCRSReport.com, 2010), in the case of the United States] language.<sup>55</sup> The texts of each language corpus were divided into non-translated (L1) and translated (L2) groups. Ultimately, there were six sub-corpora as characterized in Table 10 earlier in this chapter: English translated and non-translated website texts, Spanish translated and non-translated website texts, and Catalan translated and non-translated website texts. The file name as described in Section 4.2 facilitated the identification of each file's language version.

#### 4.5.1 MAXQDA codes for the ELF-W analysis

Codes were created for each ELF-W question for writer-reader relationship and technicality of vocabulary. The codes are listed in this section.

##### *Technicality of vocabulary codes*

The codes assigned to each identifier and relating to each ELF-W technicality of vocabulary questionnaire are listed in Table 17 below.

Table 17 - Technicality of vocabulary codes.

<b>Question</b>	<b>Code</b>
1. How technical is the vocabulary used in the text?	Percentage of technical words (TAM2-3 & TAM4-5) in each sample.
2. Is any technicality appropriate?	Clues from the text (see the next two sections below)

<sup>55</sup> The sub-corpora sizes were not balanced. The English and Spanish sub-corpora are larger than the Catalan sub-corpus. This was due to the availability of the websites that met the inclusion criteria. Most of the websites contained an English and a Spanish language version, while not many of these websites offered a Catalan language version. Websites included in this study's corpora that were based in Spain and Catalonia contained language versions in Spanish and Catalan, but not in English.

2a. How were the technical terms identified in the text?	2a Numerical symbols 2a Multiple capital letters 2a Greek / Latin affixes 2a Words accompanied by a definition or explanation, including use of hinge words (lexical familiarization & code glosses)
2b. Were there any multimodality within the text?	2b Multimodality (underlined, italics, bold type, hyperlinks, quotation marks, different color)
3. Did the writer avoid any technical terms by implementing layman's terms or via an explanation?	3 Implemented layman's terms (code plus note stating term substituted) 3 Explanation to avoid use of a technical term (code plus note stating term avoided)

### *Writer-reader relationship codes*

Table 18 below displays the codes pertaining to each ELF-W writer-reader relationship question.

Table 18 - Writer-reader relationship codes.

<b>Question</b>	<b>Code</b>
1. Identity of the writer	1 Explicit: nouns, description 1 Implicit: general organization
2. Identity of the reader	2 Explicit: nouns, descriptions 2 Implicit: general audience 2 Cultural: individual 2 Cultural: community
3. Clarity & consistency between the writer & the reader	3 Pronoun usage (1 <sup>st</sup> /2 <sup>nd</sup> /3 <sup>rd</sup> person; sing/pl) 3 Verb conjugation usage (same as above) 3 Cultural: min power distance 3 Cultural: max power distance
4. How positive is the writer's tone?	4 Problem-solution statement 4 Goal-achievement statement 4 Cause & effect statement 4 Direct appeal / imperative verb 4 Modal expressions 4 Modal clauses

	<p>4 Modal verbs of obligation</p> <p>4 Adversative markers</p> <p>4 Additive markers</p> <p>4 Certainty markers</p> <p>4 Propriety words (positive / negative)</p> <p>4 Diminutives</p> <p>4 Cultural: min power distance</p> <p>4 Cultural: max power distance</p>
5. Are items generalizable to readers in all social strata, age, and ethnic/national groups in the target population?	<p>5 Inclusion words</p> <p>5 Stigma words (including pronoun / verb conjugation usage)</p>
6. Are the choices of action clear and unambiguous for the target population?	<p>6 Problem-solution statements</p> <p>6 Goal-achievement statements</p> <p>6 Modal verbs of obligation / clauses / expressions</p> <p>6 Words of implicit judgment (see Table 12)</p>
7. Is the person who is expected to take responsibility for actions clear?	<p>7 Convincing words</p> <p>7 Pronouns / verb conjugation usage (esp. 2<sup>nd</sup> or 3<sup>rd</sup> person)</p> <p>7 Direct appeal / imperative verb</p> <p>7 Adverb of time</p> <p>7 Cultural: min power distance</p> <p>7 Cultural: max power distance</p>

While Hyland (2017) recommends concordance as opposed to frequency count, there is risk of omission due to the wide variety of the texts. Thus, each website text is analyzed twice to ensure that all markers have been spotted, to reduce sole researcher bias. The risk is not one hundred percent eliminated by a sole researcher analyzing each website twice. However, the risk is reduced compared with analyzing each website once. As mentioned in Section 4.4, each answer must be accompanied by an example, which is achieved via coding.

In the process of coding the websites from each language corpus for step 6 to analyze writer-reader relationship, two methodological issues became apparent. The first issue arose in the third question, which contained separate codes for pronouns and verb forms. Use of grammatical person (personal pronouns, verb forms) to indicate the presence of the writer and the reader differs between languages. Hyland (2017), and Hyland and Jiang (2018), alludes

to the language variation issue in discourse analysis of interpersonal metadiscourse. But this can be overcome via broadening the parameters of the code to adapt for the linguistic variations in English, Spanish and Catalan while capturing the essence of relational markers. As shown in the revised ELF-W writer-reader relationship instrument codes in Table 4.14 below, personal pronouns and verb forms have been consolidated into a single code for relational markers.

The second issue revealed itself in the form of redundancy. While the third and fourth questions focus on the writer and the seventh question focuses on the reader (as perceived by the writer), several codes overlapped. This raised a concern about skewed results in relational markers for the third and seventh questions, which measure tenor in the ideological sense. This was also a risk regarding the codes for direct appeal/imperatives and modal verbs, modal clauses, and modal expressions in the fourth and seventh questions. All three questions reflect the cultural dimension of power distance through the writer's choices of words. To ensure a more accurate and streamlined outcome, these three questions were combined into a single question, as shown in Table 19 below.

While the markers for persuasion (Table 5) and judgment (Table 6) were implemented in the analysis once the redundancy issues were resolved as shown in Table 19 below, it was necessary to add a separate "persuasion marker." It had to be distinguished from modal expressions that included assessment signals that were omitted by the rubrics for the other markers used for evaluating persuasion, such as "it would be wise to" and "it would be a good idea to." This enabled the modal expressions to be applied to answer the fifth ELF-W question as listed in Table 19 pertaining to the clarity of the choices of action, while persuasion markers were used to respond to the third ELF-W question, which concerned the tone of the writer-reader relationship.

Table 19 - Writer-reader relationship codes, streamlined version.

<b>Question</b>	<b>Code</b>	<b>Rubrics</b>
1. Identity of the writer	1 Explicit 1 Implicit	Nouns, description General organization, without any self-mention
2. Identity of the reader	2 Explicit: nouns, descriptions 2 Implicit: general audience  2 Cultural: individual	Nouns, descriptions General audience, without any specifications All references to living longer / quality of life (HIV), protecting one's immune

	2 Cultural: community	system, prevent contracting disease / latent TB from becoming active TB, cure (TB), peace of mind of a negative test result All references to preventing disease spread
3. Is the tone of the relationship between the writer and the reader, who is expected to take responsibility for action, positive, clear, and consistent?	<p>3 Relational / engagement markers</p> <p>3 Person markers / self-mentions</p> <p>3 Persuasion marker</p> <p>3 Hedge</p> <p>3 Diminutive</p> <p>3 Cultural: min power distance</p> <p>3 Cultural: max power distance</p>	<p>2<sup>nd</sup> person pronouns / verb forms, inclusive 1<sup>st</sup> person plural pronouns, directives, questions, &amp; asides that interrupt the ongoing discourse</p> <p>Exclusive 1<sup>st</sup> person pronouns / verb forms &amp; possessive adjectives</p> <p>Assessment to persuade the reader</p> <p>Words of indetermination or depersonalization, subjective verbs</p> <p>Words that diminish the meaning or impact</p> <p>1<sup>st</sup> person plural pronouns / verbs, inclusive in a generalized manner</p> <p>Lack of 1<sup>st</sup> person plural pronouns / verbs, inclusive in a generalized manner; often “the person” / “la persona” &amp; 3<sup>rd</sup> person pronouns / verbs, passive verb usage</p>
4. Are items generalizable to readers in all social strata, age, and	4 Inclusion words	Inclusive language intended to avoid offence & meets the ideals of egalitarianism,

ethnic/national groups in the target population?	<p>4 Discriminatory words</p> <p>4 Stigma words (including pronoun / verb conjugation usage)</p>	<p>including non-binary words &amp; person-first language</p> <p>Words that are binary or refer to a social group in a discriminatory manner</p> <p>Words that evoke implicit judgment based on evaluating behavior</p>
5. Are the choices of action clear and unambiguous for the target population?	<p>5 Modal verb / clause / expression of obligation</p> <p>5 Imperative verb</p>	

At first glance, it appears that the fifth question shares most of the same codes with the third question in the revised ELF-W writer-reader relationship instrument. While this question also measures tenor in the ideological sense, the focus of the fifth question is on the reader's perception of the choices of action.

Each researcher's analysis will differ from the next regarding the same text, a fact that requires them "to be constantly self-reflective about the constitutive power of their linguistic data" (Baxter, 2010, p. 119). Fairclough points out how critical discourse analysis features "a 'moderate' or 'contingent' form of social constructivism" in which the texts contain, as he terms it, "construals," whose effects on society "depends upon a range of conditions which include for instance power relations but also properties of whatever parts or aspects of the world are being constructed. We cannot transform the world in any old way we happen to construe it; the world is such that some transformations are possible, and others are not" (Fairclough, 2010, p. 4-5). Therefore, a more objective methodology featuring both qualitative and quantitative analyses is desirable. Improving the strength of the current study through reinforced instruments to assess pragmatic determinants and cross-cultural competence – that is, by predetermined guidelines, as delineated in this chapter – boosts the applicability of the results, both academically and professionally.

Once the ELF-W technicality of vocabulary and the ELF-W writer-reader relationship analyses are completed, the results can be extracted by activating the selected texts and pertinent codes per ELF-W question, which are applied to an analysis, mixed methods, or a visual tool query within MAXQDA. For this study, the data were transferred from MAXQDA via an Excel spreadsheet into RStudio, in which R will be used for statistical analysis. Thus, it



was possible to compare parallel texts (the source texts with their translated versions) as well as comparable texts (translated versus non-translated texts within the same language) using this CAQDAS along with R and R Studio, which will aid in achieving the aim of this thesis.

## 4.6 Statistical analysis

Up to this point in the mixed-methods study, the methodology focused on qualitative analysis. The objective of the quantitative analysis was to test the data set – the number of occurrences for each marker in each sub-corpus in relation to each of the six sub-corpora – for statistical significance regarding the research questions. That is, whether there are statistically significant variations regarding writer-reader relationship between the non-translated texts and between the non-translated and the translated texts. The aim of the statistical analysis also was to reveal the key cross-linguistic similarities and differences regarding the writer-reader relationship markers between the sub-corpora. As for technicality of vocabulary, the purpose of the quantitative analysis was firstly, to normalize the data due to the disparate sizes of the sub-corpora to accurately ascertain how technical the vocabulary is in each language, and secondly, to check for statistical significance in the differences in the treatment of technicality of vocabulary between the translated and non-translated versions of English, Spanish, and Catalan health information websites on HIV and TB testing.

Statistical analysis was conducted in three ways using R and R Studio. The first two approaches are descriptive: the means are calculated, and graphs show the mean proportion with 95% standard error. The means show the average of a set of numbers. However, the means cannot indicate the significance of the data, nor can any certainty be determined as to whether the results reflect the real world. To address the latter issue, graphs that show the mean proportion with 95% standard error<sup>56</sup> will be created. This allows a five percent leeway for erroneously assuming the results may be significant when they are not.<sup>57</sup> The proportions that appear in the graph are calculated by multiplying the variables, and then calculating the square root out of their product. The standard error, which is calculated from the mean proportion, takes the disparate sub-corpora sizes into account. The number of cases of a given marker for each of the words in the sub-corpus are divided by the total number of words in the corpus; this is the dependent variable. This will provide a clearer picture of the dispersion and a visual form of comparison between the six sub-corpora.

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<sup>56</sup> The standard error (SE) is the result of the standard deviation (SD) divided by the number of cases of the sample (the number of variables according to the language and whether it was translated or not).

<sup>57</sup> “Assumption” is the operative word. Standard error indicates the likelihood of significant differences, which must be verified by a statistical test.

The standard error bar shows whether the mean value reliably represents the data: the smaller the standard error bar, the more reliable and less variable it is (*Interpreting Error Bars*, n.d.). Via the overlap over the mean proportion bar graphs, the standard error bars can also communicate the *chance* of significant differences between data sets. The emphasis on “chance” matters, because only a statistical test can indicate significance.

This is where fitting linear regression models using R Studio comes in. Generalized linear regression models and linear regression models reveal more details about the data than descriptive statistics such as the mean and standard deviation. The means cannot verify whether the results are significant or report on the magnitude of the significant findings. These are the objectives of generalized linear regression models and linear regression models.

At first glance, logistic regression models for the two sets of binary data [the identity of the writer (explicit / implicit) and the identity of the reader (explicit / implicit)], and Poisson regression models for the count data appear to be the optimal approach. However, these could result in too many significant results, which puts this study at risk of type I errors (false positives: when the null hypothesis is true, and it is rejected). Therefore, mixed models will be fitted. Where the number of statistically significant results are lost, statistical credibility is gained.

The generalized linear models<sup>58</sup> will include a random intercept for the specific sub-corpus if computational problems do not occur. In the cases where computational problems arise, the random intercept will be removed, and linear models will be fitted. Binary dependent variable data (identity of the writer and identity of the reader in the ELF-W writer-reader relationship questionnaire, whose data fall into one of two categories: “explicit” or “implicit,” rendering the data binary as opposed to continuous) will be analyzed using generalized linear mixed models or generalized linear models with binomial distribution, where the binary data is converted into zeros and ones in the process of fitting the model.

For the comparison between the three non-translated (L1) language sub-corpora – whose only fixed effect is language – to answer the first research question, the linear models

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<sup>58</sup> Generalized linear models and linear models reveal more details about the data than descriptive statistics. Both statistical methods associate categorical predictors to a single outcome variable. In linear models, whether the distribution of the dependent variable is normal is not problematic, because normal distribution is assumed in the generation process. However, in language sciences research, the data tends to not be generated from normal distribution, thus the need for generalized linear models, such as the Poisson regression model and the logistic regression model mentioned earlier. Frequently referred to as mixed models, generalized linear models are more flexible than linear models, which contain only fixed effects (normal explanatory variables). In addition to fixed effects, generalized linear models contain random effects (random samples from a population that tends to be perceived as extraneous) (Levshina, 2015). Data with multiple sources of random variability are best analyzed using generalized linear models when the results of a linear model appear suspect. In generalized linear models, the random effects account for individual differences – such as within each translated or non-translated language version website within the different sub-corpora – in response to an effect.

used chi-square tests, which were applied to each of sets of markers for each ELF-W question within the two datasets: one for technicality of vocabulary and the other for writer-reader relationship. It should be noted that the dataset for technicality of vocabulary included the data from the TAM-HC analysis for technicality of text, which answers the first ELF-W question in this pragmatic determinant.

To compare between non-translated (L1) and translated (L2) sub-corpora within each of the three languages to answer the second research question, an omnibus test – which is somewhat like ANOVA – explores whether the language significantly explains variance that occurs in the dependent variable (whether it explicates part of the variation). To find out afterwards how this result materializes, pairwise contrasts are computed and accompanied by Cohen's *d*, which is a measure of effect size. The linear models included the  $\beta$  coefficient and the regression coefficient *z*. The  $\beta$  coefficient, which is the standardized slope in a linear regression model, generally reflects the relationship between two variables. The regression coefficient *z*, frequently referred to as the *z*-score, is the estimate divided by the standard error and reflects the high or low tendency to move towards the mean. It should be noted that there is a *p*-value associated with the chi-square test, another linked to the pairwise contrasts, and in the case of the models for the second research question, still another *p*-value connected to the comparison between L1 and L2.

Research using a corpus with mixed qualitative and quantitative analysis appeals to academics and professionals in the health field, which historically prefers to apply experimental trials and evidence-based approaches to their practice in investigation, education, and administering care (Crawford, et al., 2014, p. 86). In the field of translation and language sciences, some opine that null hypothesis significance testing should be abandoned in linguistics studies because language data cannot be considered random (Gries, 2005; Koplenig, 2019). Instead, Koplenig (2019) advocates for the use of means or regression coefficients (although he concedes that other statistical methods such as ordinary least square regression are feasible) to show whether there exists converging evidence. Gries (2015) is a proponent of mixed effect models, such as the generalized linear models used in this thesis' study, because they can analyze unbalanced sub-corpora. In addition to testing for *p*-value significance, health communication literature published in recent years has repeatedly called for an improved - less subjective - measuring instrument for cross-cultural competence, which the ELF has potential to provide via the sociocultural aspects of SFL. While developing a more efficient comprehensibility and cross-cultural competence methodology regarding writer-reader relationship and technicality of vocabulary is not the aim of this study, the ELF as well as the TAM benefitted from adaptations regarding the genre and to render this research more solid and convincing. Once the discourse analysis is completed, however, there persists the

issue of the reliability of the statistical analyses for significance due not only to the notion of a corpus not being a random sample, but also to the inevitable unbalanced translated and non-translated sub-corpora within each language, each of which may also have variations in corpus size. While larger sub-corpora reduce false positive risks (Koplenig, 2019), balancing translated and non-translated sub-corpora size across languages may be a mission impossible. Researchers must not be discouraged from determining the most appropriate and accurate statistical analysis approach for  $p$ -value significance in comparative sub-corpora studies.

## 4.7 Summary

This chapter detailed each of the six steps of the methodology and the statistical analysis of this mixed methods study to answer the following research questions:

1. In the health information websites on HIV and TB diagnostic testing in English, Spanish, and Catalan, are there variations regarding writer-reader relationship between:
  - a. The non-translated texts?
  - b. The non-translated and translated texts?What are the key cross-linguistic similarities and differences?
2. How technical is the vocabulary in the websites about HIV and TB diagnostic testing in the translated and non-translated versions of English, Spanish, and Catalan websites on HIV and TB testing?
3. Are there any differences in the treatment of technicality of vocabulary between the translated and non-translated versions of English, Spanish, and Catalan health information websites on HIV and TB testing?

The data collected using ELF-W writer-reader relationship questionnaire, the ELF-W technicality of vocabulary questionnaire, the TAM-HC instrument, and the evaluation of the overall technicality of the website text to ascertain whether a website is comprehensible in terms of health literacy and culturally adapted regarding language usage were then statistically analyzed. This was done by calculating the mean, creating graphs that show the mean proportion with 95% standard error, and fitting linear regression models. Where warranted, significant results underwent sub-coding of a marker to ascertain features that differentiated the sub-corpora in question, whose results are presented in Chapter 6 Discussion. The rest of the results are presented in the next chapter.

## 5. ANALYSIS: Writer-reader relationship

*“You have to work on something that makes you uncertain, that makes you doubt yourself.”*

*- Stephen Sondheim (“Obituary: Stephen Sondheim”, 2021, para. 44)*

Stephen Sondheim’s quote above could serve as a reminder to researchers of all disciplines that we start our study with questions that are framed within specific theories and base the report on facts using data and statistical results. The findings in this study are compared with other findings on the same topic. Conducting this interdisciplinary study has been an effort to unite the knowledge of linguistics, translation studies, and public health to clear up questions on the wherefores of recurring and persisting issues in writer-reader relationship and technicality of vocabulary in health information texts. In the pursuit of answers, researchers question themselves at every step: about the most suitable frameworks, the best approach with reliable and valid instruments, the significance of the results, and whether the explanations leave no stone unturned. This chapter reveals the key findings of this study as regards writer-reader relationship and applies them towards answering the research questions in greater depth. The research questions that will be addressed in this chapter are:

1. In the health information websites on HIV and TB diagnostic testing in English, Spanish, and Catalan, are there variations regarding writer-reader relationship between:
  - a. The non-translated texts?
  - b. The non-translated and translated texts?

What are the key cross-linguistic similarities and differences?

The presentation of this and the next chapter will be in the order of the research questions: writer-reader relationship will be discussed in this chapter, followed by technicality of vocabulary in the next chapter. Within the topic of each discourse analysis marker, the sub-corpora will be discussed with a focus on their main results and the use of examples. As pertains to each marker, the non-translated sub-corpora are compared with one another, and the non-translated and translated sub-corpora are compared with each other.

## 5.1 Statistical analysis results

This section presents the most salient statistical analysis results,<sup>59</sup> which will be succinctly summarized.

The mean proportion<sup>60</sup> graph comparing the frequency of the persuasion markers between the sub-corpora is shown in Figure 9. In the comparison between languages, the Spanish, followed by the Catalan, non-translated sub-corpus had the most persuasion markers. Within languages, both the Spanish non-translated and the Catalan non-translated sub-corpus contained more persuasion markers than their respective translated sub-corpus, however the difference is not very big (0.03 percentage points and 0.05 percentage points, respectively).

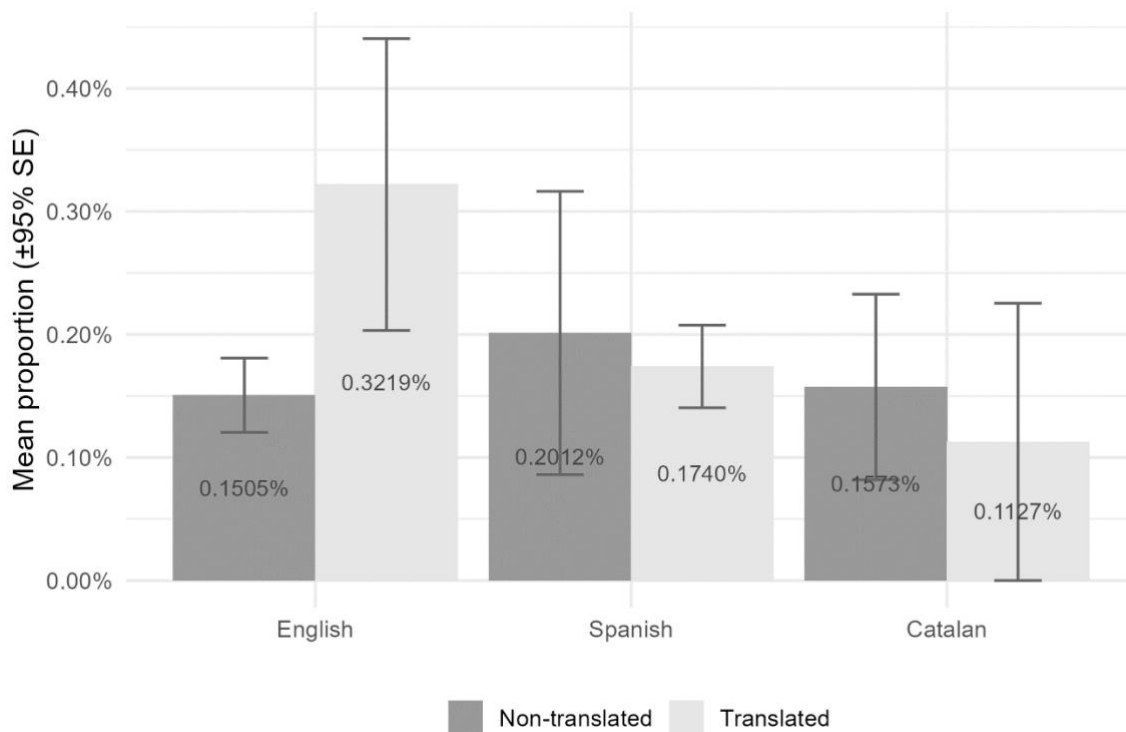


Figure 9 - Comparison of persuasion markers in each sub-corpus.

The two English sub-corpora have a more notable contrast regarding persuasion markers. The English translated sub-corpus contained 0.17 percentage points more than the English non-translated sub-corpus. The standard error for most of the sub-corpora are large, limiting its ability to reliably represent the data. While the standard error bars for the three languages' non-translated sub-corpora overlapped, there was no overlap between the English non-

<sup>59</sup> The complete results from the fitted linear regression models for all the markers can be found in Appendix 2.

<sup>60</sup> Not to be confused with the mean, the method for calculating the mean proportion is explicated in Section 4.6.

translated and translated sub-corpora. The linear regression models indicated that English translated sub-corpus had significantly more persuasion markers than the non-translated counterpart ( $\beta = 0.002$ ,  $SE = 0.001$ ,  $z = 1.988$ ,  $p = 0.047$ ).

As for relational and engagement markers in each sub-corpus, the mean proportion graph is shown in Figure 10. Between languages, the English and the Spanish non-translated texts contained 5.71% and 5.51%, respectively, relational and engagement markers while the Catalan non-translated texts had much less (2.53%). In the comparison between non-translated and translated texts within each language, the English and the Spanish non-translated sub-corpora had 2.64 percentage points and 1.17 percentage points, respectively, more relational and engagement markers than the English and the Spanish translated sub-corpora, and the inverse was the case for the Catalan sub-corpora with a 1.58 percentage points difference. The standard error bar for the Spanish non-translated sub-corpus is large. In this case, relational and engagement markers can be found in all the Spanish non-translated texts, however, two of the texts contain a disproportionately high number of these markers.

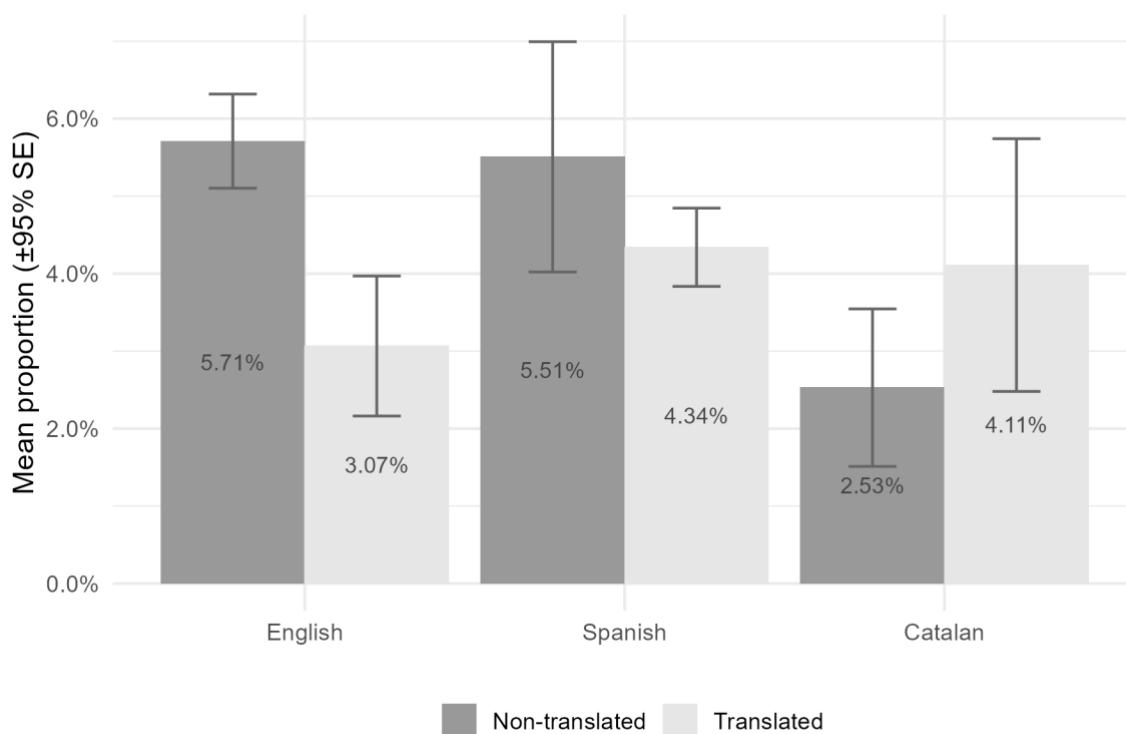


Figure 10 - Comparison of the use of relational and engagement markers in each sub-corpus.

There is some lack of overlap between the three non-translated sub-corpora, as well as between the English non-translated and translated sub-corpora, indicating the possibility for significant differences. The linear regression models verified a significant difference between the two English sub-corpora: the English non-translated texts have significantly more relational

and engagement markers compared with the English translated texts ( $\beta = -0.026$ ,  $SE = 0.012$ ,  $z = -2.263$ ,  $p = 0.024$ ).

The comparison of the use of hedge words in the sub-corpora can be visualized in the mean proportion graph below (Figure 11). Of the three non-translated sub-corpora, the English one used the most (0.99%) and the Catalan one used the least (0.19%). Within each language, the English non-translated texts contained 0.42 percentage points more hedge words than the English translated texts, while the inverse was the case for the Catalan sub-corpora, whose translated texts had 0.50 percentage points more than the non-translated ones. The two Spanish sub-corpora are almost equal, with the Spanish non-translated texts having only 0.03 percentage points more hedge words than the Spanish translated ones. The Spanish non-translated sub-corpus has a large standard error bar. Closer examination revealed that only three of the Spanish non-translated texts contain hedge words.

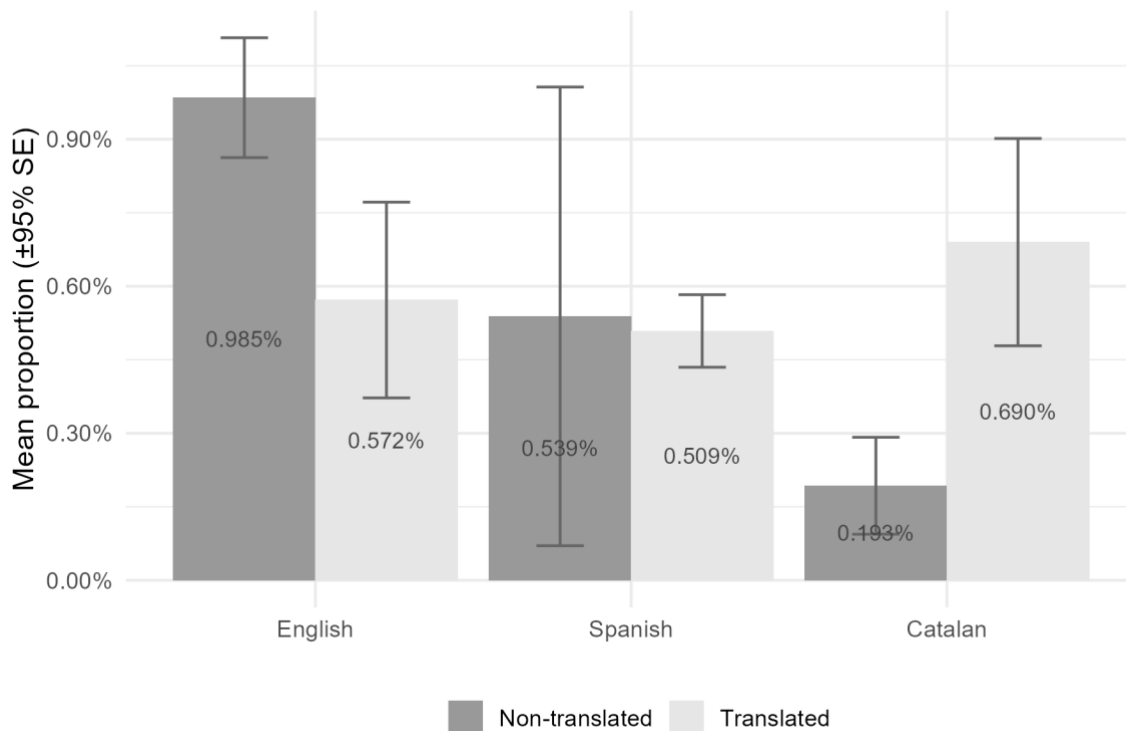


Figure 11 - Comparison of the use of hedge words in each sub-corpus.

The standard error bars for the English and Catalan non-translated sub-corpora do not overlap, nor is there overlap within the English and the Catalan translated and non-translated sub-corpora. The linear regression models verified that there was a significant difference ( $X^2(2) = 7.122$ ,  $p = 0.028$ ), interpretable as the English non-translated sub-corpus having more than the Catalan non-translated sub-corpus ( $d = 0.989$ ,  $p = 0.049$ ), without any significant differences between the Spanish non-translated sub-corpus and the rest of the languages. In



addition, there was a significant result for the Catalan translated sub-corpus having more hedge words compared with the Catalan non-translated sub-corpus ( $\beta = 0.005$ ,  $SE = 0.002$ ,  $z = 2.825$ ,  $p = 0.005$ ).

Figure 12 shows the mean proportion graph for inclusion words in the six sub-corpora. In the comparison between languages, the Spanish non-translated sub-corpus had the most inclusion words at 0.30%, while the Catalan non-translated sub-corpus contained the fewest at 0.12%. The English translated sub-corpus and the Catalan translated sub-corpus contained 0.12 percentage points and 0.11 percentage points, respectively, more inclusion words than their corresponding non-translated sub-corpus. The inverse was the case for the Spanish sub-corpora, with the Spanish non-translated texts having 0.57 percentage points more inclusion words than the Spanish translated texts. The standard error bar is very large for the Spanish non-translated sub-corpus, indicating a wide data variability around the mean, which does not accurately represent the data. Closer examination revealed that the inclusion words were concentrated in three Spanish non-translated texts.

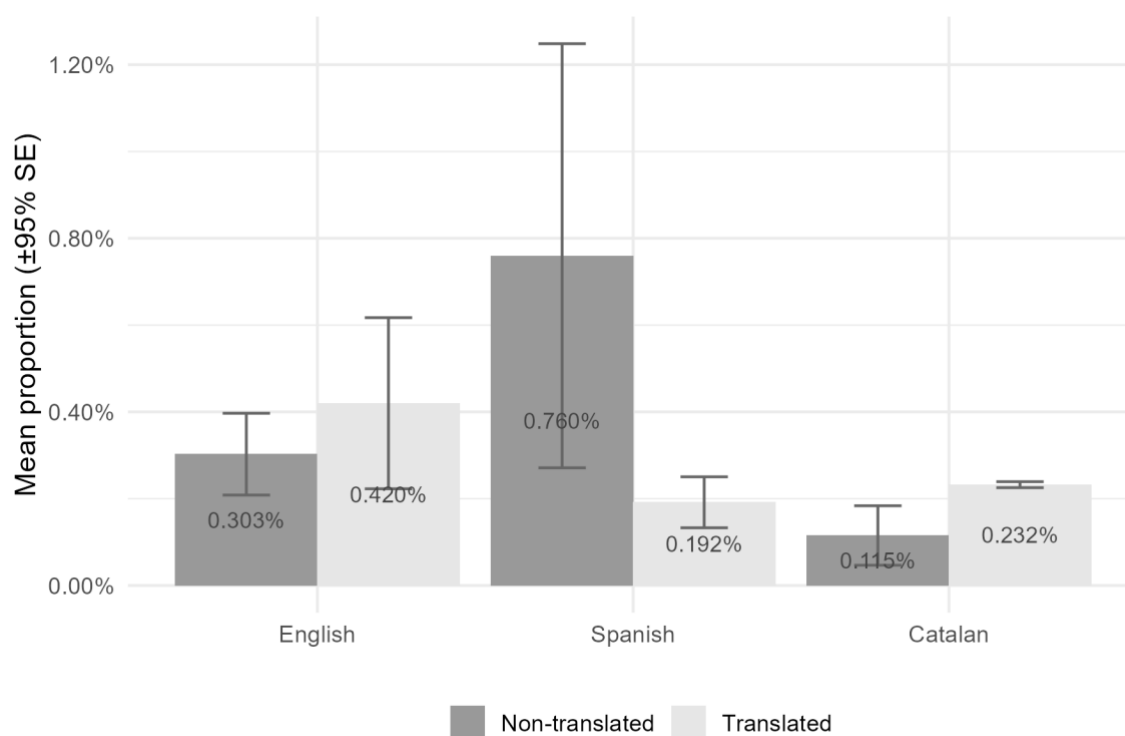


Figure 12 - Comparison of the use of inclusion words in each sub-corpus.

The standard error bars for the English non-translated and the Catalan non-translated texts do not overlap, nor do the ones for the Spanish and Catalan pairs of translated and non-translated sub-corpora, showing possible significant differences. According to the linear regression models, the Spanish non-translated texts contained more inclusion words

compared with the Spanish translated ones ( $\beta = 0.010$ ,  $SE = 0.004$ ,  $z = 2.240$ ,  $p = 0.025$ ). There were no other significant differences between the sub-corpora regarding the use of inclusion words.

The four statistically significant results were for persuasion markers, relational and engagement markers, hedge words, and inclusion words. The data set of this study showed insignificant results for the remaining writer-reader relationship markers due to the unbalanced size of the six sub-corpora. The next section focuses on the qualitative evaluation of the first four statistically significant markers, followed by a discourse analysis of the remaining markers.

## 5.2 The significant markers

The research question concerns the writer's tone within the scope of writer-reader relationship, and how their tone may be received by the reader. It concerns the cultural adaptations in the texts in terms of the SFL framework with a particular focus on tenor and interpersonal metadiscourse within the context of situation, which is within the context of culture regarding language. All this forms a part of writer-reader relationship because the writer's cultural background and sensitivity, if present, to those of the reader influence the former's word choices in the process of transmitting the message. The writer's decisions can affect the way in which the health information is received by the reader. The significant findings regarding the writer's tone will be discussed first between the English, Spanish, and Catalan non-translated sub-corpora; and then between the translated and non-translated sub-corpora.

### 5.2.1 The writer's tone: Persuasion markers

Persuasion markers aided in answering the third question of the writer-reader section of the ELF-W instrument. It pertains to the writer's tone as perceived by the reader and differentiated from modal verbs, clauses, and expressions analyzed in the instrument's fifth question, which concerns the clarity of the call to action and will be addressed in Section 5.3.5. Persuasion markers is one of the ways that the writer invokes their tone to promote the compliance of the reader via convincing the reader about the epidemiological facts and how heeding the call to action would be beneficial. While Hoey (2001) observed that persuasive writing was prevalent in problem-solution and goal-achievement statements,<sup>61</sup> both of which tend to appear in

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<sup>61</sup> While these two statement types failed in the pilot tests to serve as useful markers in this study due to the difficulties in ascertaining them, the writers of the health information websites on HIV and TB diagnostic testing did use similar approaches to persuade the reader.

certain cultures as opposed to being universally popular, as explicated in Section 3.2.4, this study found the differences not in statement types but by level of formality. In the next two subsections, differences between the non-translated sub-corpora and between the translated and non-translated sub-corpora, respectively, will be examined.

*Persuasion markers: Differences between the non-translated sub-corpora*

No significant differences existed in the comparison between the English, Spanish, and Catalan non-translated sub-corpora. This appears to reflect the similarity in interpersonal metadiscourse among the writers in each of the three original languages. The most frequently used persuasion word was “recommended” in English and its counterpart in Spanish and in Catalan, as in examples (1), (2), and (3) below.

- (1) “It is recommended that everyone 13 to 64 years old get tested for HIV at least once.”  
(HealthReach, *HIV testing, part 2*, 2018)
- (2) “...es recomendable que te realices la prueba.” (...it is recommended that you do the test.) (CESIDA, *¿Tienes?*, 2018)
- (3) “**És recomanable que es facin la prova...**” (It is recommended that the test is done...)  
(Generalitat de Catalunya, *A Catalunya*, n.d.)

It should be noted that the Spanish (2) and Catalan (3) word is an adjective while the English is a past participle. While the English translation of the Spanish and the Catalan counterpart is “recommended,” the word could also be translated as “advisable” or “commendable,” which does not work as fluidly in the English syntax. Variations of this word in the process of expounding the information about TB and HIV diagnostic tests were often repeated. According to a study by Weaver, et al. (2007), repetition boosts the reader’s perception of persuasiveness of the message.

The persuasive approaches did not vary widely between the Spanish and the Catalan non-translated sub-corpora. The English one did differ, albeit not significantly. This is consistent with the results of a comparative study between English and Spanish news editorial articles by Dafouz-Milne (2008), in which she found that texts containing more metadiscourse markers were more persuasive.<sup>62</sup> The discourse analysis shows that the English non-translated sub-corpus featured a more conversationally informal tone, whereas the Spanish

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<sup>62</sup> Dafouz-Milne (2008) noted the limitation of the fluid concept of persuasion. Like culture, persuasion may be perceived somewhat differently depending on the group.

and the Catalan writers tended towards a formal tone. The writer selected persuasive words and expressions that, in the case of the English non-translated sub-corpus, reflected either a more casual informal tone that reduced the power distance with the reader, or – in the case of the Spanish and the Catalan non-translated sub-corpus, a more respectful yet authoritative formal tone that increased the power distance.

In the English non-translated sub-corpora and the Catalan non-translated sub-corpora, the most frequently used persuasion word is “recommend” in noun, verb, or adjective form. The word “recommends” or “recommended,” was found in seventeen websites<sup>63</sup> in the English non-translated sub-corpus. Only the adjective form of “recommend” was found in the Spanish non-translated sub-corpora.

The Catalan non-translated sub-corpus implemented other modal clauses, aside from “és recomanable que” (it is recommended that). For example, BCN Checkpoint (*La prova*, n.d.), counselled, “és aconsellable que et facis la prova” (it is advisable that you get tested), and the website hosted by the Catalan government stated, “és convenient que et facis la prova” (it is appropriate that you get tested). These modal clauses would be anticipated from a health professional with its polite authoritative nature, rendering the text more formal.

Seven of the English non-translated websites featured still other persuasive markers. One such marker emphasized the importance, e.g., “can be an important step toward” (GMHC, *HIV*, n.d.), “important part of” (United States Department of Health & Human Services Office of Disease Prevention and Health Promotion, *Get tested*, 2019; POZ, *HIV*, 2016); “is important” (Office on Women’s Health, *HIV*, 2018; HealthReach, *HIV testing, part 1*, 2017) “it is very important to” (Kaiser Permanente, *HIV*, 2015); “the important message is” (HealthReach, *HIV/AIDS, part 7*, 2017). While “it is important” is a modal expression, in this instance the purpose is persuasion; therefore, this modal expression reflects the writer’s tone as perceived by the reader. Stressing the “importance” of getting tested for HIV and tuberculosis is a form of direct appeal (Hoey, 1991).

As regards tenor, appealing to the reader in a less formal manner reduced the power distance and expressed solidarity without sacrificing politeness, which the writers of the English non-translated sub-corpus accomplished by selecting more casual or conversational persuasive words. Six websites in the non-translated English sub-corpus incorporated the word “better” or “best” in their persuasive clauses” (CDC, *Get tested*, August 2017; CDC, *HIV*,

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<sup>63</sup> These seventeen websites are: AIDS Info Net, *HIV*, 2018; AIDSinfo, *HIV overview*, 2019; American Association for Clinical Chemistry, 2018; Cachay, 2018; CDC, *Get tested*, August 2017; CDC, *HIV*, 2019; Greater Than AIDS, *HIV testing*, n.d.; HealthReach, *HIV Testing, part 4*, 2017; HealthReach, *HIV testing, part 2*, 2018; Kaiser Permanente, *HIV*, 2015; National Library of Medicine, *HIV Screening test*, 2018; NYC Health, *Be sure*, n.d.; Office on Women’s Health, *HIV*, 2018; Planned Parenthood, *Should I*, n.d.; POZ, *HIV*, 2016; San Francisco AIDS Foundation, *Testing*, n.d.; Whitman-Walker Health, *HIV/STI*, n.d.

2019; GMHC, *HIV*, n.d.; Pebody, 2015; Planned Parenthood, *Should I*, n.d.; Thompson, et al., English version, 2019). Five websites stressed the positive in persuading the reader using less forceful deontic modality such as “it is a good idea to” (Planned Parenthood, *Should I*, n.d.; TeensHealth, *How to*, 2018). Less forceful does not necessarily imply weaker but communicating on a more casual as opposed to authoritative level as an expression of solidarity with the reader. This change in tenor in terms of solidarity occurs without sacrificing politeness. Instead of the more formal tone of suggestion “it would be beneficial,” the writers of the English non-translated sub-corpus opted for “good for” (The American Foundation for AIDS Research (AmFAR), *Basic*, 2018; HealthReach, *Pregnancy, part 3*, 2017) and “good ways of” (POZ, *HIV*, 2016).

Both the English non-translated sub-corpus and the Spanish non-translated sub-corpus persuaded by emphasizing benefits. For example, Xunta de Galicia Consellería de Sanidade (n.d.) entitled a section of their text “*ventajas del diagnóstico precoz*” (advantages of early diagnosis). Beneficial words can be either formal, such as the aforementioned “advantages” in the Spanish non-translated sub-corpus, or informal, five of which were found in the English non-translated sub-corpus. They range from the informal to the formal. Examples of the informal in the English non-translated sub-corpus include “it will help” (San Francisco AIDS Foundation, *Testing*, n.d.), “it is most helpful to” (GMHC, *HIV*, n.d.), and one that contains an expression of probability with a hedge word, “may benefit from” (AIDSinfo, *HIV overview*, 2019). An example from the Spanish non-translated sub-corpus is “*puede ayudar a un mejor control*” (it may help for better control) (Grupo de Trabajo Sobre el Tratamiento del VIH, *32 VIH*, n.d.). Examples of the more formal suggestions include “there are still great health benefits to” (CDC, *HIV*, 2019) and “one benefit to” (Planned Parenthood, *Should I*, n.d.). These are less formal persuasive words which indicate that heeding the health message’s call to action would be advantageous to the reader. These words also reflect individualism, which is prevalent in English-speaking economically developed countries such as the United States and the United Kingdom (Hofstede, 2015).

Individualistic words of suggestion in the tenor of the English non-translated sub-corpus were also used to persuade the reader. Two writers took an even more informal tone to “encourage” (Whitman-Walker Health, *HIV/STI*, n.d.) the readers, because getting tested is “a smart thing to do” (POZ, *HIV*, 2016). Such an informal tone reduces the power distance between the writer and the reader, so that the latter perceives the former as human (Kelleher, 2009), as opposed to the Internet or the institution providing the information. The writer’s tone is friendly, reflecting camaraderie, which is perceived as warmth by the reader (Bellur & Sundar, 2017). The interpersonal elements of the writer-reader relationship are important for the reader to adopt the behavioral change proposed by the writer. In this study, the writers of

the English non-translated sub-corpus imparted their professional knowledge to the reader in a less formal manner that does not necessarily reduce the hierarchy altogether.

These observations of the differences between the non-translated sub-corpora regarding the formality of persuading the reader matter to the translator, whose awareness thereof will aid in culturally adapting the message to persuade the reader in the target language in a natural manner. The next section exhibits the increased distance and decreased solidarity of the more formal persuasive English translated sub-corpus.

*Persuasion markers: Differences between the translated & non-translated sub-corpora*

The linear regression model confirmed that the English translated sub-corpus had significantly more persuasion markers compared with its non-translated counterpart ( $\beta = 0.002$ ,  $SE = 0.001$ ,  $z = 1.988$ ,  $p = 0.047$ ). This finding adds to the answer of the second research question, that there exist differences between the translated and non-translated texts. As mentioned in the introduction to this section, this study distinguishes persuasion markers from modal verbs, clauses, and expressions which are analyzed in Section 5.3.5 – even though they also serve to persuade the reader – to differentiate between two different ELF-W questions as the focus in this section is on the writer’s tone. The most frequently used persuasion words in the English non-translated (L1) and translated (L2) sub-corpora are shown in Table 20.

Table 20 - The most frequently used persuasion markers in the English non-translated (L1) and translated (L2) sub-corpora.

English L1	English L2
Recommends / recommended	Recommend
Importance	Beneficial words
Better / best	
Good	
Beneficial words	
Encourage	

As mentioned earlier in this section, the non-translated English sub-corpus contains a greater frequency of persuasion markers with a more conversational, less formal tone. Like the non-translated English sub-corpus, the most frequent persuasion marker is variations of the word “recommend” with multiple usage within the websites.<sup>64</sup> In addition, the translated

<sup>64</sup> CESIDA, *Any questions*, 2018; Explain TB, *Essentials*, n.d.; Grupo de Trabajo Sobre el Tratamiento del VIH, *HIV*, n.d.; World Health Organization, *HIV/AIDS*, 2018; World Health Organization, English version, 2019.

English sub-corpus features a more tactical, polite, and formal approach to the use of beneficial words.

However, there is a broader variety of more formal beneficial words that do not exist in the English non-translated sub-corpus. Two websites used “it is advisable” (BCN Checkpoint, *The HIV test*, n.d.; Xunta de Galicia Consellería de Sanidade, *Infection*, n.d.), whose expression of suggestion is more authoritative (Eggins, 2004). The word “benefit” was implemented in a more formal manner compared with the non-translated English sub-corpus. The writer of the Xunta de Galicia Consellería de Sanidade (*Infection*, n.d.) website, which is hosted in Spain, promoted the “therapeutic and preventive benefits of early diagnosis.” One website was less formal by persuading the reader with the words “can help” (Grupo de Trabajo Sobre el Tratamiento del VIH, *32 HIV*, n.d.), which includes an expression of probability (Eggins, 2004) – i.e., a hedge word. In contrast, the writer of another World Health Organization website (World Health Organization, *HIV/AIDS*, 2018) stated that “it is best practice” and “effective,” which reflects the authoritative knowledge of the writer.

This formal tone in the English translated sub-corpus was likely a transferral of the same tone in the non-translated texts in the other languages. One example is shown from the BCN Checkpoint website, which is hosted in Catalonia. The Catalan source text (4) is followed by the translated English text (5):

- (4) *Per tant, si ets una persona sexualment activa és aconsellable que et facis la prova del VIH almenys un cop o dos a l'any.* (Therefore, if you are a sexually active person **it is advisable to** get tested for HIV at least once or twice a year.) (Punctuation error maintained from the website.)
- (5) If you are therefore a sexually active person, **it is advisable that** you take the HIV test at least once or twice a year.

As demonstrated in the example above with the persuasion marker in bold type, the translated English text reflects the formal tenor of the source Catalan text.

Using a less formal, or more conversational, tone differentiates the English non-translated sub-corpus from English translated sub-corpus. Dafouz-Milne (2008, p. 110) observed that readers prefer “texts that guide and show consideration towards the audience, by establishing a dialogic tenor without resulting too assertive or patronizing.” The formal shift in the tenor results in an unequal, hierarchical sense of power distance between the writer and the reader. A study by Yu, Shen, & Min (2022) found that readers were more likely to believe corrected scientific information provided by the authoritarian Chinese government due to its formal tone. Such credibility might also be the case with scientific institutions. Contrastive

studies between countries are necessary to verify whether such reader credibility in scientific organizations is universal or if there exist cultural differences. These results show that insufficient cultural adaptation occurred during the translation process into English. To boost the persuasiveness, it is necessary to match the health communication message to the cultural frame (Suau Jiménez, 2010; Uskul & Oyserman, 2010). Therefore, a translation from a language with a formal tone to a target language whose readers are more accustomed to an informal tone should be culturally adapted accordingly.

### 5.2.2 Relational and engagement markers

Relational and engagement markers were among the response options for the third question in the writer-reader relationship section of the ELF-W instrument. Hyland (2005) defines these as markers that explicitly address the reader to get their attention or to interact with the reader in the discourse. As outlined in the coding rubrics in Section 4.4.1, relational and engagement markers were identified by second person pronouns and verb forms (including imperatives), inclusive first-person plural pronouns, directives, along with questions and asides that interrupt the ongoing discourse.

#### *Relational and engagement markers: Differences between the non-translated sub-corpora*

There were no significant differences in the use of relational and engagement markers between the non-translated sub-corpora. For this corpus, this indicates that no meaningful cultural differences exist between the original language regarding this marker. Therefore, relational and engagement markers may not necessarily be a major concern for translators to bear in mind when culturally adapting health information websites on HIV and tuberculosis diagnostic testing from one language into another.

This finding, in a sense, contradicts a discourse analysis by Montero Fleta, et al. (2003), which examined the use of relational and engagement along with person markers in academic textbooks and in semitechnical magazines and compared them between the original English and the translated Spanish and Catalan texts. The researchers, who noted that English language semitechnical writing tended to address the reader directly perhaps to resemble the more conversational discourse – found a greater number of relational and engagement markers in the translated semitechnical magazines compared with those of academic textbooks and reasoned that it was due to the more informal writing style and distinct marketing goal of the former genre (Montero Fleta, et al., 2003). In the semitechnical texts, Spanish translators removed the English second-person 85% of the time, replacing it with either the third-person passive tense (*se pasivo*) 48% of the time – which was significantly



lower than its use in the translated academic textbooks – or the formal second-person or impersonal constructions. They – along with the Catalan translators – retained the first-person plural 75% of the time. The Catalan translators replaced the English second-person form with the third-person passive tense 85% of the time. The study by Montero Fleta, et al. (2003) had the same limitation as this thesis study: the Catalan corpora were smaller.

However, a pilot study of 20 English and Spanish research articles and semitechnical texts performed by Suau-Jiménez (2010), whose purpose was to highlight the implications for translators who work with these genres, revealed that the only overarching differences between the two languages were the English tendency towards the passive voice while the Spanish texts frequently used *se pasivo*. Otherwise, the languages' use of metadiscourse were similar within each genre (Suau-Jiménez, 2010). While her corpus was small, it corroborates this thesis study, in which there were no significant differences in the use of relational and engagement markers between English, Spanish, and Catalan non-translated sub-corpora. The next subsection demonstrates a case of differences between translated and non-translated sub-corpora when, due to the lack of significant differences between the three non-translated sub-corpora, there may not be a valid need to culturally adapt relational and engagement markers in the process of translation.

*Relational and engagement markers: Differences between the translated and non-translated sub-corpora*

The linear regression model showed that the English non-translated sub-corpus contained significantly more relational and engagement markers, compared with its translated counterpart ( $\beta = -0.026$ ,  $SE = 0.012$ ,  $z = -2.263$ ,  $p = 0.024$ ). This contributes to the verification of the existence of differences between translated and non-translated texts, answering the first research question in the affirmative. This, however, raises another question: if there were no significant differences between the Catalan, Spanish, and English non-translated texts, then why would the translated English sub-corpus have significantly fewer relational and engagement markers compared with its non-translated counterpart? First, the relational and engagement marker types found in these sub-corpora will be discussed.

While second-person pronouns, followed by directives, were used the most in both the English translated and the English non-translated sub-corpora, the English translated sub-corpus contained more inclusive first-person plural pronouns compared with the non-translated one, as shown in Table 21, which shows the occurrences and the mean of the relational and engagement marker types used in the texts in the two English sub-corpora.

Table 21 - Comparison of subcategories of relational / engagement markers between English non-translated (L1) and translated (L2) sub-corpora. The data are shown as [occurrences (mean)].

	English L1	English L2
Relational / engagement markers	1,901 (36.56)	156 (9.75)
Directives	356 (6.85)	10 (0.63)
Questions & asides that disrupt the ongoing discourse	0 (0)	0 (0)
Second-person pronouns & verbs (except imperatives)	1,543 (29.21)	140 (8.81)
Inclusive first-person pronouns	2 (0.04)	6 (0.38)

As defined in Section 3.2.4, writers use relational and engagement markers to directly address the reader or include them as a collective “we.” The use of a pronoun together with the verb forms is important for successful health information campaigns, along with the consideration of cultural implications of certain pronoun form usage in the language in which the text is written. Chen, et al. (2016) stated that a similarity, a familiarity, between the narrator and the reader increases persuasiveness. In other words, the writer displays empathy (Diani, 2019). One example (6) can be found in the translated English text on the website hosted by the Spanish organization Grupo de Trabajo Sobre el Tratamiento del VIH (32 *HIV*, n.d.):

- (6) When a strange agent enters *our* organism, the organism reacts producing some proteins called antibodies, which later turn into *our* defence system against this agent. Once antibodies are produced as a part of fight against pathogens, symptoms similar to influenza symptoms can be produced at times accompanied by high fever and swollen glands. The same happens, when HIV enters *our* body.

If that narrator uses the first-person plural in the process of striving to come across as similar to the reader and thus more familiar, the latter will sense an increased threat of severity (“this could happen to me!”) via empathy (“feeling the writer’s pain”) and heed the health information text’s call to action to get tested for HIV or TB.

Including pronoun usage together with verb forms and considering the cultural implications of certain pronoun form usage according to each language is paramount for the success of health information campaigns. For instance, the use of the first-person plural can

have different cultural implications depending on the language. Aijón Oliva (2020) noted that the inclusive first-person plural is more prevalent in persuasive discourse, extending beyond the goal of simply transmitting information as the writer involves the reader in their point of view. “We” could actually imply “you,” with the reader as the person responsible for taking action. “We,” in this case, is applied as a way to be indirect and avoid an accusatory impression in a similar way to how scientists write to focus on the paper rather than refer to themselves, especially when their study refutes an earlier one – in short, “to desubjectify the speaker’s viewpoint” (Aijón Oliva, 2020) while being polite (De Cock, 2011). Also, in terms of hierarchy, the use of “we” instead of “you” can be used to minimize power distance between the writer and the reader. For example (7):

- (7) *Conèixer el **nostre** estatus serològic del VIH és senzillament una altra manera de cuidar la **nostra** salut.* (Knowing *our* HIV status is simply another way to take care of *our* health.) (Gais Positius, *Servei*, n.d.)

In the above example, “we” actually means “you” as the writer strives for solidarity with the reader. The writer places the reader in the former’s place so the latter would reach the same conclusion and get tested (Aijón Oliva, 2020). This finding supports that of a study by Herrando-Rodrigo (2010) as well as that of Diani’s (2019) in that there is a statistically significant result only regarding relational and engagement markers (see Section 2.6); the writers adopted the reader’s voice to give the impression of experiencing the same medical situation. Such projection of identity is done by the writers to engage the readers in the narrative and could be used to empower and involve the reader.

“We” could also be perceived by the reader as “we” as a collective, with the call to action being applicable to everyone without singling out anyone. To the reader, this inclusive “we” emphasizes solidarity and inclusion. A text by NYC Health (*Be sure*, n.d.) (8) proclaims:

- (8) “Together we can stop the spread of HIV and other STIs” (Emphasis mine).

Such applications are useful in communities that have a collective culture and for minority target audiences to render the writer as non-accusatory and nonjudgmental. Even within highly individualistic countries such as the United States and the United Kingdom (Hofstede, 2015), health information text reflecting collectivism can be effective in persuading the reader to act accordingly (Kemmelmeier & Jami, 2021) if the target audience is a minority community with its own culture that foment interdependence as opposed to independence. The opposite of the above example would be the “us versus them” mentality that is frequently applied in politics to stress ideological differences (Proctor & Su, 2011). However, it is not ideological

differences that the writer wants to express in an HIV or TB diagnostic testing message. Such an expression would fail to achieve an effective outcome of a health information campaign. A more effective approach expressing solidarity excludes the use of “them.”

An established working relationship with the use of the distancing first-person plural can be applied to represent the organization (that is, the website host institution, such as the World Health Organization). This application of the first-person plural pronoun, in the form of a person marker or self-mention, increases hierarchical distance<sup>65</sup> between the writer and the reader, who is addressed as “you,” which is a relational marker. For example: “We will determine the appropriate test type based on *your* sexual and drug use history.”<sup>66</sup> The power of decision belongs to the writer, and the reader would have to accept the decided test type. As exemplified above, the meaning of the writer’s choice of pronoun usage to address themselves and the reader sets the context – such as the inclusive “we” for solidarity as opposed to “you” to emphasize authority. The tone softens and the power distance is reduced when the exclusive first-person plural pronoun is substituted with a third person while maintaining the second-person pronoun, as exemplified (9) from the Health Service Executive (*Information*, 2014) website:

(9) The doctor will decide what other tests **you** will need based on this result.

In the English non-translated sub-corpus, most of the relational and engagement markers comprised second-person pronouns and imperative verbs. Diani (2019) observed that the use of the second-person pronouns foments an intimate relationship with the reader via solidarity in a discursal conversation while identifying the reader as an individual. The example below by the writer of the Centers for Disease Control and Prevention website (*Get tested*, August 2017) (10) demonstrates such implementation of “you” as an engagement marker:

(10) *Doing it* – testing for HIV – can give **you** important information and help keep **you** – and others – safe. [...] Knowing **your** HIV status can give **you** peace of mind – and testing is the only way **you** can know for sure. Knowing **your** status is also important because it helps **you** make healthy decisions to prevent getting or transmitting HIV. HIV testing is a normal part of life and if everyone else is *doing it*, **you** can too! (italics theirs, bold type mine)

<sup>65</sup> Power distance per Hofstede’s cultural dimensions (2001) may come to mind, however this thesis refers to “power distance” within the SFL framework as described in this chapter, and whose rubrics are detailed in Table 4.13.

<sup>66</sup> This is an arbitrary example written by me.

The writer reinforces the identity of the reader as an individual through the repetition of the second-person pronoun, and uses the possessive to refer to the readers' health care providers. This is common in health information websites since they inform the reader, who are then advised to consult with their health care provider (Diani, 2019). In the example below (11), the writer of the Healthfinder website (United States Department of Health & Human Services Office of Disease Prevention & Health Promotion, *Testing*, 2019) empathizes with and subsequently instructs the reader:

- (11) Visiting the doctor can be stressful. It helps to have questions for the doctor or nurse written down ahead of time. **Print** this list of questions and take it to **your** appointment.

The directive followed by a second-person possessive pronoun reinforces the writer's authority in the process of instructing the reader. As regards the use of directives, Herrando-Rodrigo (2010) stated that "by doing this, authors intend to show the reader how reliable their arguments are" (p. 268). The use of the second-person imperative in this sense becomes a persuasion tool for the writer. Diani (2019) observed that directives instruct as well as provide advice and suggestions that would benefit the reader, as exemplified by Healthfinder (United States Department of Health & Human Services Office of Disease Prevention and Health Promotion, *Get tested*, 2019) below (12).

- (12) Here are other steps **you** can take to help prevent HIV:
- **Use** a latex condom with water-based lubricant every time **you** have vaginal or anal sex.
  - [..]
  - **Limit your** number of sexual partners.

In the mid-twentieth century, "patients were regarded as passive victims but were expected to want to get better by following the advice of the expert doctor (Cushing, 2015; Parsons, 1951b). The doctor's orders were not to be questioned. In contrast, patient-centered medicine became predominant by the end of the twentieth century, stemming from a result of more than a decade of intensive research on the doctor-patient relationship (Cushing, 2015). By the early twenty-first century, knowledge of medicine has become accessible to patients via the Internet and increasing global migration resulting in sociocultural diversity has resulted in the need for a more collaborative approach in the doctor-patient relationship (Cushing, 2015). Therefore, if the health information website text is targeted towards the older

generations, chances are a more authoritative tone with a heavier use of imperatives would not only be acceptable but anticipated.

As mentioned, increasing global migration has influenced the doctor-patient relationship due to the need for cross-cultural competence, which includes language use. Specifically, in some languages, this requires an awareness of when the usage of the formal second-person pronoun is expected. A noteworthy observation in the analysis of the translated Spanish and Catalan texts, even though there were no significant differences in the results, was that most of the translators opted for increased power distance by using the formal second-person pronouns. This probably was to err on the cautious side regarding cultural adaptation because the choice between the formal and the informal second-person pronoun varies between “country, audience, message, and communicator” (Maafs-Rodríguez, et al., 2022). They noted that implementing the second-person formal renders the text more acceptable to a broader audience, to which the writer expresses respect. This was the choice taken by the German-based organization, Explain TB (n.d.), in the following example in English (13), Spanish (14), and Catalan (15).

- (13) If **you** notice pain or shortness of breath in the hours after bronchoscopy, please **notify** the doctor or nurse. This helps to detect more serious side effects early, such as a collapse of the lung or significant bleeding.
- (14) Si **usted nota** dolores o problemas para respirar en las horas siguientes del examen, **avise** inmediatamente al doctor o enfermero. Esto ayuda en la detección temprana de efectos secundarios más serios como hemorragia o colapso pulmonar. (If you notice any pain or trouble breathing in the hours following the exam, notify the doctor or nurse immediately. This helps in the early detection of more serious side effects such as haemorrhage or collapsed lung.)
- (15) Si **vostè nota** dolor o manca d'aire després de la prova, **si us plau notifiquei-ho al seu** metge o infermera ràpidament per a descartar aviat els efectes secundaris més greus com un col.lapse del pulmó o un sagnat significatiu. (If you notice pain or trouble breathing after the test, please notify your doctor or nurse quickly to quickly rule out the more serious side effects such as collapse lung or a significant bleeding.)

The Catalan translation (15) contains more relational and engagement markers compared with the English (13) and the Spanish versions (14). The translator took liberty to include a polite request word, which is absent in the other translations (i.e., there is no “please” or “por favor.”). Another omission in the English and the Spanish translations is the second-person

possessive to refer to the reader's health care providers, which is present in the Catalan version. The Catalan translation thus reflects a writer-reader relationship that is more conversational, intimate yet respectful considering the use of the formal second-person pronoun usage. Of the websites in this thesis' translated sub-corpora, only that of the GMHC (GMHC, VIH, n.d.) featured the informal second-person pronouns, rendering its tone more relatable (16).

- (16) Saber que **tienes** el VIH puede ser un paso importante en el cuidado de **tu** salud y en la planificación del futuro. Saber que no **tienes** el VIH, también, puede **ayudarte** a planear la forma de **mantenerte** así. (Knowing that **you** have HIV can be an important step in caring for **your** health and planning for the future. Knowing that **you** don't have HIV can also help **you** plan how to stay that way.)

It should be noted that the GMHC is a non-profit organization that strives to meet their beneficiaries on a less formal level, whereas websites from government and medical organizations would be expected to have a more authoritative tone via the writer's lexicogrammatical choices. Thus, the use of the formal second-person pronoun in Spanish and Catalan would be anticipated in the process of the writer constructing an identity through tenor.

Hyland & Jiang (2018) and Diani (2019) included questions and asides that disrupt the discourse. According to Diani (2019), writers employed these as engagement devices to imitate a consultation with a health expert in which the reader is asking the question, to which the writer responds with information. The author of this thesis disagrees with Diani (2019) as to whether the what and how questions are "disruptive," since the question-answer format is frequently used in health information texts. The argument by Diani (2019) regarding such questions serving as relational and engagement markers is nevertheless sound, as in the example (TeensHealth, *How to*, 2018) below (17) from this thesis' non-translated English sub-corpus:

- (17) How Do the Tests Work?

Most HIV tests use a blood sample, either from a blood draw or finger prick. Others use saliva (spit), but this is a little less accurate than blood tests.

It can be appreciated how the question is posed as if the reader were asking it, followed by an expert representing the Voice of Medicine taking care to communicate in the Voice of the Lifeworld.

Since none of the questions in this study's corpus disrupted the discourse, they were not counted as relational and engagement markers<sup>67</sup> but did serve as technicality of vocabulary markers since they tended to precede the introduction of medical concepts. This thesis' corpus did not contain any asides, which is also a relational and engagement marker as defined at the beginning of this section.

In this section, the implementation of relational and engagement markers in multilingual health information websites on HIV and TB diagnostic testing was shown to serve the writer to connect with the reader to inform, advise, empathize, and instruct the reader. This study's corpus features differences in relational and engagement markers in the English translated and non-translated sub-corpora. The use of the inclusive first-person plural pronoun was more prevalent in the translated English texts, whereas the non-translated English texts contained more second-person pronouns. The next section discusses hedge words in this study's corpus.

### 5.2.3 Hedge words

Hedge words are one of the pragmatic markers in response to the third question in the writer-reader relationship section of the ELF-W instrument. This question concerns whether the tone of the relationship between the writer and the reader, who is expected to take responsibility for action, was positive, clear, and consistent. Hedge words (see Section 3.2.4) are interpersonal metadiscourse devices that can indicate the writer's lack of full commitment to their statement through the expression of possibility and tentativeness (Salager-Meyer, 2011).

Hedges were the only writer-reader relationship marker with significant results in the comparison between both the three non-translated sub-corpora and between the non-translated and translated sub-corpora within each language. The former comparison will be discussed in the next section, and the latter in the subsequent section.

#### *Hedge words: Differences between the non-translated sub-corpora*

The English non-translated sub-corpus had significantly more hedge words than the Catalan ( $d = 0.989$ ,  $p = 0.049$ ). There were no significant differences between the Spanish sub-corpus and either the English or the Catalan sub-corpora.<sup>68</sup>

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<sup>67</sup> It bears mentioning that had the questions been included in this study's relational and engagement markers analysis, the frequency in all three language versions would have increased markedly. However, there would not have been any differences between languages, nor between the translated and non-translated versions within each language. Therefore, the linear regression models would not have been affected.

<sup>68</sup> While this result seems counterintuitive, it is indeed statistically possible.



A conscientious scientist will use hedge words in their discourse (Jensen, 2012) intended for both their professional peers (Voice of Medicine) and the public<sup>69</sup> (Voice of the Lifeworld). This discourse analysis found hedging as a part of epistemic modality, which is defined as “an estimation of the likelihood that (a certain characteristic of) a certain state of affairs is/has been/will be true (or false) in the context of the possible world under consideration” (Nuyts, 2001, p. 21). Hyland (1998c) noted that hedging as a part of epistemic modality is connected to the writer’s judgment due to lack of knowledge about the subject in question. In health information websites, using informal tenor via hedging enables the writer to persuade the reader effectively with different rationales that will be explored in this section.

The hedging aspect of epistemic modality is linked to the writer’s own judgment based on limited knowledge (Hyland, 1998b). The English non-translated sub-corpus contained 191 instances of the word “may” as an epistemic auxiliary verb out of 326 hedges. In the first example (18) from the English non-translated sub-corpus, the United States Department of Health and Human Services (*Testing*, 2019) writer does not guarantee that the reader will have to pay for a diagnostic test.

(18) Depending on where you go, testing **may** be free.

The writer implements the epistemic auxiliary verb “may” to avoid committing to certainty that testing sites offer diagnostic testing free of charge. If the reader desires a free diagnostic test, they will have to search for a testing center that provides fee-free testing. The Catalan non-translated sub-corpus also contains this type of hedging, in this case for the possibility of contracting infectious diseases through risky behavior, such as in the following example from the Generalitat Valenciana (*Recomanacions*, 2018) website (19):

(19) *Si el risc es relaciona amb una exposició sanguínia, vosté **pot** haver estat en contacte amb altres infeccions, com ara hepatitis B o hepatitis C [...].* (If the risk is linked to blood exposure, you **may** have been in contact with other infections, such as hepatitis B or hepatitis C [...].)

In the Catalan example, the writer implies through the use of an epistemic auxiliary verb that a risky behavior puts a person at risk for certain infectious diseases. There were no instances

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<sup>69</sup> Jensen (2012) conceded that informal language may appear wordier. However, writers and researchers should remember that this lexical density is also due to biomedical terminology. Technical vocabulary could impede where hedging could facilitate the reader’s ability to process the health information website message.

of hedging by using an epistemic auxiliary verb to express possibility in this study's Spanish non-translated sub-corpus.

Epistemic adverbs were found in the English non-translated sub-corpus, such as in the following example (20) from Florida Health (*Tuberculin*, 2018), in which the writer expresses uncertainty:

(20) A chest x-ray, and **perhaps** other tests, should be done to see if you have tuberculosis.

The Spanish non-translated sub-corpus does not feature hedging using an epistemic adverb. However, epistemic adverbs also appear in the Catalan non-translated sub-corpus. In the next example, the writer of *AntiSIDA Lleida* (*Prova*, n.d.) does not commit to an exact test processing time (21):

(21) *S'extreu una petita mostra de sang que, posat en contacte amb els corresponents reactius (pel VIH i la sífilis) ofereix el resultat en **aproximadament** 15 minuts.* [A small blood sample is extracted which, when placed in contact with the corresponding reagents (for HIV and syphilis) gives the result in **approximately** 15 minutes.]

In this instance, the writer avoids commitment via approximation instead of stating an exact time frame. It can be argued that, concerning biomedical issues such as the wait time for a test result or the incubation period of an infectious disease, the health communication writer is not hedging. The naysayers could contend that the writer is simply stating an approximate time for the sake of flexibility. However, one of the reasons that a writer uses hedge words in health information texts is "to gain some protection from the possible criticism" (Zhen, 2007, p. 18) for stating a fact that features uncertainty. In the instances concerning a time frame, the writer implementing an epistemic adverb that is not intrinsic to the text such as "around" or "approximately" is thus communicating with the reader on the pragmatic level.

The same could be disputed as regards whether the reader has been exposed to infection. The writer can confidently list the situations that would put the reader at risk of contagion, however, the writer cannot confirm that one who partook in a risky behavior in fact contracted HIV, or whether the family members of a person with active TB infection are in fact also sick with this disease. The question is whether the writer is truly hedging in the form of modalization to express probability (Eggins, 2004) if they do know that contagion is a risk with certain behaviors, but they do not actually know whether the reader who behaved in such a way has been infected, or even if the actual pathogen was present while the reader partook in the risky behavior.

In such instances, this thesis adopts the position that the writer is hedging for mitigation to reduce the intensity (Albelda & Estellés, 2021) of alarm that the writer could instill in a reader had the proposition been stated with full confidence; therefore, this metadiscourse device can result in the reader becoming aware that asymptomatic infections are possible without responding in a panic. In the next example, the writer seeks to assuage without minimizing the reader's concern about contagion. For instance, the writer of the NYC Health website (*HIV testing*, 2019) listed the symptoms of a recent infection and stated (22):

(22) [...] if you are experiencing these symptoms after a **possible** HIV exposure.

One text (23) in the Catalan non-translated sub-corpus also reflects the writer's mitigation strategy to address their sense of the reader's concern:

(23) [...] *des de la **possible** exposició al VIH.* [(...) since the **possible** exposure to HIV.] (Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, *Recomanacions*, 2018).

While the Spanish non-translated sub-corpus did not contain any epistemic adverbs, epistemic adjectives were present. The writer of Grupo de Trabajo Sobre el Tratamiento del VIH (75, n.d.) uses an epistemic adjective to inform the reader of a probability (24):

(24) *Si has tenido alguna conducta de riesgo recientemente, **es posible que** te pidan que vuelvas para someterte a otra prueba en unos pocos meses.* (If you've engaged in any risky behavior recently, **it's possible that** they will ask that you return to submit to another test in a few months.)

The writer applies this modalization to express probability, which renders the text less formal in tenor (Eggins, 2004). This form of hedging for the same purpose is also found in the Catalan non-translated sub-corpus, such as the following extract from the Generalitat Valenciana Conselleria de Sanitat Universal (2018) text (25):

(25) *Si el resultat de l'autotest enfront del VIH és positiu significa que **és probable que** haja detectat que hi ha anticossos enfront del VIH. Per a assegurar-se que el resultat és correcte cal fer proves de confirmació.* (If the result of the self-test against HIV is positive it means that **it is likely** that it has detected HIV antibodies. To make sure that the result is correct it is necessary to do confirmatory tests.)

The English non-translated sub-corpus also contains instances of epistemic adjectives, such as in the example from Centers for Disease Control and Prevention (*HIV*, 2019) (26):

- (26) If you have health insurance through your employer, the insurance company cannot **legally** tell your employer that you have HIV. But **it is possible that** your employer could find out if the insurance company provides detailed information to your employer about the benefits it pays or the costs of insurance. (Emphasis on the word “legally” is theirs.)

What the English non-translated sub-corpus contained that does not exist in either the Spanish or the Catalan sub-corpus is when the writer projects the hedging onto the reader, such as in the following example from the Office on Women’s Health (*HIV*, 2018) website (27):

- (27) If you **think** you **might** have been exposed to HIV, get tested.

This instance contains three hedges. First, this is a conditional clause in which the call to action is made in the main clause, which would hold true only on the condition that what is stated in the subordinate clause is true (Afreh, et al., 2017). Second, the writer projects the lack of knowledge onto the reader, who “thinks” they “might” have been exposed. Third, “might” expresses a possibility. This three-in-one hedging-imposed-on-the-reader strategy reinforces the writer’s persuasion power to encourage the reader to get tested.

As regards hedging as defined in this thesis, the English was the only non-translated sub-corpus to feature the projection of hedging onto the reader and contained primarily the epistemic auxiliary verb using “may” more frequently than “might” to indicate possibility. The English non-translated sub-corpus also had epistemic adverbs and adjectives. The Catalan non-translated sub-corpus contained a mix of epistemic modality – auxiliary verbs, adverbs, and adjectives – with no prominent type. The Spanish non-translated sub-corpus mainly used epistemic adjectives and lacked epistemic adverbs. The next section will compare between the translated and the non-translated sub-corpora within each language.

#### *Hedge words: Differences between the translated and non-translated sub-corpora*

The use of hedge words also contributed to the significant differences between translated and non-translated texts. Compared with its non-translated counterpart, the Catalan translated sub-corpus contained significantly more of this marker. Considering Salager-Meyer’s (2011) observations (see Section 2.6), the results of this study show evidence of a lack of cross-cultural adaptation.

This implies that the translators transferred the hedges from the source text. A translated text containing markers that are normally nonexistent or appear infrequently in that language, calls to mind Toury's law of interference:

The more the make-up of a text is taken as a factor in the formulation of its translation, the more the target text can be expected to show traces of interference. (Toury, 2012, p. 312)

While it is prudent to balance between reproducing the source text's overall message along with its linguistic details, the translation ideally contains cross-cultural adaptations (Toury, 2012, pp. 311-312) with respect to the hedge words – and the rest of the markers of concern in this study – so that the resulting text flows naturally for the target reader. Since the Catalan non-translated sub-corpus lacked a hedging preference, suppose that a translated Spanish text contains, for instance, more epistemic auxiliary verbs characteristic of the English source text instead of replacing them with the epistemic adjectives that are more frequent in the Spanish non-translated sub-corpus. The resulting Spanish translation from the English seems culturally unnatural to the reader.

The first two examples compare between an English non-translated text and its Catalan translation in which the type of hedging is not cross-culturally adapted. The writer avoids commitment to the interpretation of a positive test or the chances of a false result. The writer might “guess” their statement to remove themselves from responsibility for or add subjectivity to the risk of infection or the accuracy of the interpretation of the test results, such as in examples (28) and (29) from NYC Health (*Tuberculosis*, 2019; *Tuberculosis testing*, 2019):

(28) A positive test result **usually** means you have TB germs in your body, but you **may** have active TB.

(29) *Un resultat positiu de la prova **en general** vol dir que té gèrmens de TB en el seu cos, però **pot** ser que hagi tuberculosi activa...* (A positive result of the test **in general** means that you have TB germs in your body, but it **may** be active tuberculosis.)

In example (28), the writer generalizes by using the epistemic adverb “usually” that the positive result of a tuberculosis test indicates that one has the bacteria but does not differentiate between latent and active infection, implying – using the epistemic auxiliary verb “may” – that the reader must obtain a differential diagnosis. As shown in the above Catalan example (29), also using an epistemic adverb and an epistemic auxiliary verb – the translation bears no cultural differences from the original text.

The English (30), Catalan (31), and Spanish (32) translations of the website hosted by the German non-profit organization Explain TB (n.d.) show similarities and differences in hedging strategies.

- (30) [...] further investigations **may** be needed to exclude active tuberculosis requiring antibiotic treatment. **Occasionally**, preventive therapy with an antibiotic drug **may** be recommended [...]
- (31) [...] *més proves **poden** ser necessàries per a excloure la Tuberculosi activa que requereix tractament antibiòtic. **Possiblement**, la teràpia preventiva amb un fàrmac antibiòtic es **pot** recomanar [...]* ([...] more tests **may** be necessary to rule out active tuberculosis which requires antibiotic treatment. **Possibly**, they **may** recommend preventive therapy with an antibiotic medication [...]) (Translator's grammatical error intentionally left in.)

Both the English translated text and the Catalan translated text contain two instances of the epistemic auxiliary verb “may.” The translators thus express the tentativeness of the commitment made in the proposition. The contrast is in the use of an adverb. The English translator implemented an adverb of time – “occasionally” – whereas the Catalan translator used an epistemic adverb to emphasize the lack of certainty as to whether preventive antibiotic therapy would be recommended. The Spanish text was rendered differently (32):

- (32) [...] *se requerirán exámenes adicionales para determinar el tratamiento adecuado. **Posiblemente** se le recomendará una terapia preventiva con antibióticos [...]* ([...] Additional tests will be required to determine the appropriate treatment. **Possibly** preventive antibiotic therapy will be recommended [...]).

The Spanish translation lacks epistemic auxiliary verbs, as in the Spanish non-translated sub-corpus, instead using the future verb tense which boosts the certainty that the reader will undergo further examination. The Spanish translator implements an epistemic adverb to hedge on whether the reader would be recommended for preventive antibiotic treatment. This observation in the reduced degree of hedging in the Spanish texts, compared with the English and the Catalan texts, confirms the findings in the study by Salager-Meyer (2011), who noted that Spanish scientists hedged less than English scientists (see Section 2.6).

Hedging in the form of epistemic modality is an interpersonal metadiscourse device that can serve the writer well in the process of relating to the reader in written health communication. Hedging is a frequently used persuasion device in medical discourse (Hyland,

2006, Antic, 2009). It should therefore be no surprise that this study achieved two significant results for hedge words while the rest of the writer-reader relationship markers got one or none. The English non-translated texts featured hedging strategies. The Catalan translated texts reflected this instead of the Catalan non-translated sub-corpus, which does not show a hedging marker preference. These results imply that translators did not culturally adapt the hedging markers from English to Catalan. However, further research using a larger Catalan translated sub-corpus is required to verify these results. The next section deals with another marker vital to health information texts.

#### 5.2.4 Inclusion words

Inclusion words pertained to the fourth question in the ELF-W writer-reader relationship instrument. This question asks whether items are generalizable to readers in all social strata, age, and ethnic/national groups in the target population. The intention of using inclusion words is to avoid offense and foment egalitarianism, since the choice of words influences beliefs and attitudes (Granello & Wheaton, 2001; Kelly, et al., 2016; Ashford, et al., 2018; Baker, et al., 2022). Such words include non-binary words (as opposed to words that pertain exclusively to one gender) and person-first language (terms that identify the person before their condition, as opposed to identifying people based only on their condition). Inclusion words enable the writer to express solidarity with the reader. The writer may demonstrate respect and display empathy through the manner of naming people and their treatment of taboo subjects (Martin, 1992, 1998a, 1998b; Tebble, 1999).

##### *Inclusion words: Differences between the non-translated sub-corpora*

No significant differences were found between the non-translated sub-corpora regarding inclusion words. This indicates that the use of such words was approximately the same between the English, Spanish, and Catalan non-translated sub-corpora. While the results can generally be interpreted as inclusion words not being a priority feature that translators would have to be mindful of in their cultural adaptation work on HIV and TB diagnostic testing website texts, it should be standard practice to bear in mind diversity and equity regarding the target audience in the process of transferring the health information from one language to another. Inclusion of population groups – particularly those at risk of stigma and discrimination, whether by the people in their host country or by their linguistic compatriots – within a language community is vital for the reduction of health disparities. Appropriate strategies used by translators result in culturally sensitive texts (Nápoles & Stewart, 2018) to which the targeted community responds in the ideal manner. The next section presents a case in which the non-

translated sub-corpus contains significantly more inclusion words than the translated counterpart.

*Inclusion words: Differences between the translated & non-translated sub-corpora*

The mean proportion graph for inclusion words indicated that the non-translated Spanish texts had 0.57 percentage points more inclusion words than the translated ones. The very large standard error bar for the Spanish non-translated sub-corpus indicated a wide data variability around the mean, which does not accurately represent the data. The linear regression model showed that there were significantly more inclusion words in the Spanish non-translated sub-corpus compared with the translated one ( $\beta = -0.006$ ,  $SE = 0.002$ ,  $z = -2.510$ ,  $p = 0.012$ ). This could indicate that the translators may have neglected to culturally adapt the texts in terms of diversity and equity.

An alternate interpretation of this result is that the source texts themselves were not culturally adapted, absolving the translators, and placing the blame of negligence on the writers. However, a comparison between the English non-translated texts and the Spanish translated texts revealed that not all the translators carried over the person-first and genderless language from the source texts. Further scrutiny of the types of inclusion words in both Spanish sub-corpora was performed. Table 22 below shows the frequency of the inclusion word types used in the texts in the two Spanish sub-corpora as well as the English non-translated sub-corpus.

Table 22 - Comparison of subcategories of inclusion words between Spanish non-translated (L1) and translated (L2) sub-corpora, and English non-translated (L1) sub-corpus. The data are shown as frequency.

	Spanish L1	Spanish L2	English L1
Person-first	1	14	37
Genderless	2	12	61
Gender-inclusive	1	3	0

In both Spanish sub-corpora, genderless terminology was most frequently used, followed by person-first and gender-inclusive words. The English non-translated sub-corpus primarily used genderless words, followed by person-first language.

The most frequently used word in the English non-translated sub-corpus and both Spanish sub-corpora was for the same concept: partner in English and *pareja*<sup>70</sup> in Spanish.

<sup>70</sup> “*Pareja*” was found in the following websites from the Spanish non-translated sub-corpus: CESIDA, *¿Tienes?* (2018); Xunta de Galicia Consellería de Sanidade, *La infección* (n.d.). This word was also



This word does not appear in the Catalan non-translated sub-corpus. “Partner” or “*pareja*” avoids binary gender usage as well as any reference to sexual orientation. The following examples, in the original English (33) and the translated Spanish (34), are from the website hosted by Office on Women’s Health (*HIV*, 2018, & *VIH*, 2018):

(33) But your HIV test reveals only your status, not your **partner’s**.

(34) *Pero tu prueba de VIH solo revela tu condición, no la de tu **pareja**.* (But your HIV test only reveals your condition, no that of your **partner**.)

According to Google Books Ngram viewer, the frequency of the Spanish word for “my partner” spiked from the late 1970s onwards (Jean-Baptiste, et al., 2010) as shown in Figure 13.

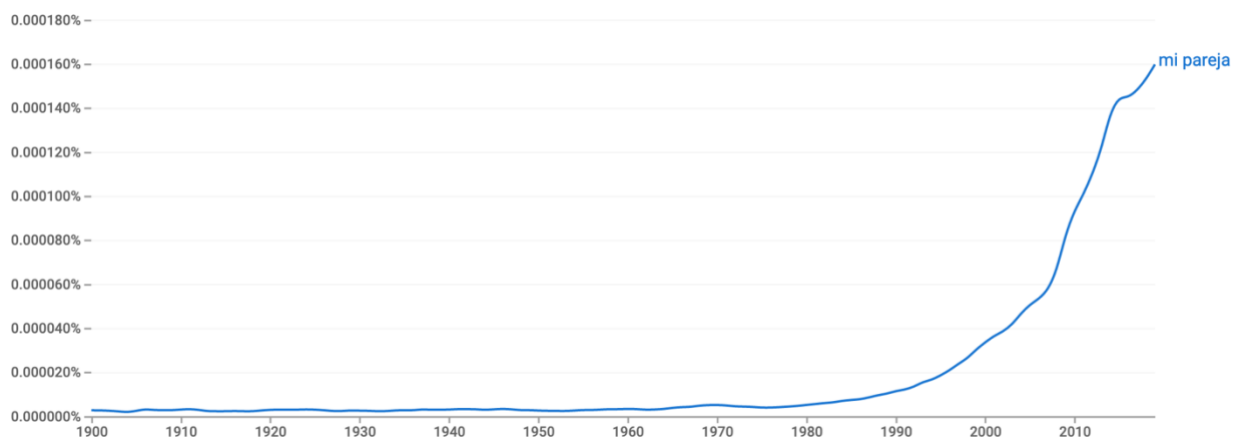


Figure 13 - Usage frequency of *mi pareja*.<sup>71</sup>

Figure 14 shows that, within the same timeframe, this trend rose sharply into the 2010s for the English counterpart, and since then has wavered (Jean-Baptiste, et al., 2010), possibly due to the legalization of same sex marriage in the United States in 2015.

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found in the following websites from the Spanish translated sub-corpus: AIDSInfo/infoSIDA (2019); CDC, *Prueba del VIH* (2019); Greater Than AIDS, *Pruebas* (n.d.); HealthReach, *Riesgos sexuales, parte 4* (2017); HealthReach, *Análisis del VIH, parte 2* (2018); HealthReach, *Con qué frecuencia* (2018); Kaiser Permanente, *VIH* (2015); NYC Health, *Entérese* (n.d.); Office on Women’s Health, *VIH* (2018); Planned Parenthood, *Debería*, (n.d); POZ, *Prueba* (2017); and World Health Organization, *VIH/sida* (2018).

<sup>71</sup> Google Books Ngram Viewer, [https://books.google.com/ngrams/graph?content=pareja&year\\_start=1800&year\\_end=2019&corpus=26&smoothing=3#](https://books.google.com/ngrams/graph?content=pareja&year_start=1800&year_end=2019&corpus=26&smoothing=3#).

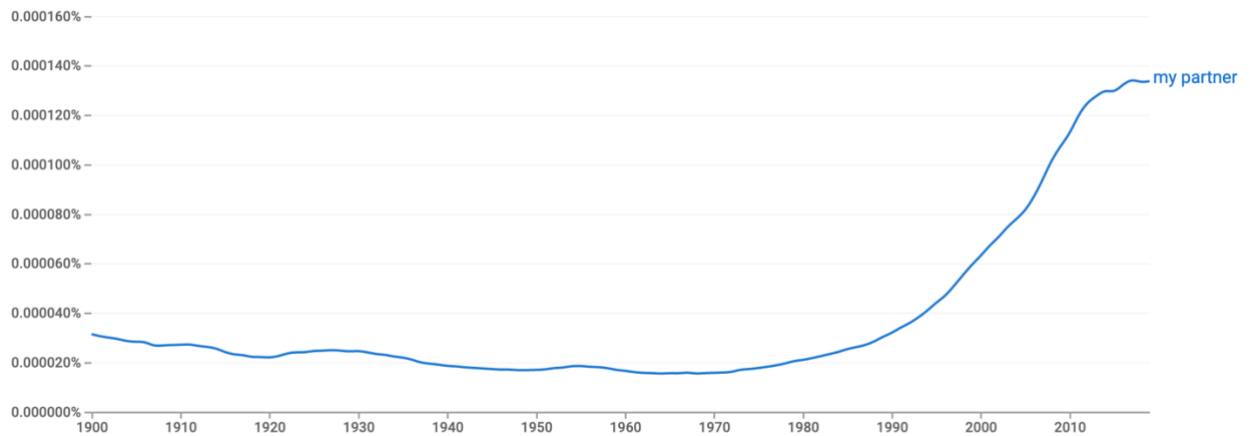


Figure 14 - Usage frequency of “my partner.”<sup>72</sup>

Google Books Ngram Viewer does not include Catalan among its language options. The reliability of the Google Books Ngram “corpus” is questionable due to the lack of critical details about its construction (Pechenick, et al., 2015). Another limitation to this consultation is that there is no way to account for the multiple meanings and contexts of the word “my partner”<sup>73</sup> when consulting its usage frequency in general language corpora. However, it is worth noting that the increment of the usage of “partner,” especially in English, coincides with the onset of the HIV/AIDS pandemic with its accompanying stigma in the 1980s (Kitchener, C., 2019).

The meaning of “partner” in reference to the person with whom one is in a sexual and/or romantic relationship is more neutral, fomenting inclusion and preventing stigma. “Partner,” as in “domestic partnership,” gained political and legal ground as the LGBTIQ+ community convinced health care providers and employers to recognize their romantic relationships for them to have the same rights as heterosexual couples – so they would be considered “family” in terms of hospital visits and receive the same extended health care benefits (Kitchener, 2019). This abstract non-binary word is more flexible than the awkwardly politically correct “significant other.” The writer circumvents potential discomfort and, at worst, offense, and avoids having to assume the reader’s marital status – a one-time hook-up, friend with benefits, lover, boyfriend/girlfriend, fiancé/fiancée, or husband/wife/spouse. In addition, the word “partner” enables both the writer and the reader to steer clear of the potential

<sup>72</sup> Google Books Ngram Viewer, [https://books.google.com/ngrams/graph?content=partner&year\\_start=1900&year\\_end=2019&corpus=26&smoothing=3#](https://books.google.com/ngrams/graph?content=partner&year_start=1900&year_end=2019&corpus=26&smoothing=3#).

<sup>73</sup> In English and Spanish, “partner” has multiple meanings beyond that of the person in which one is in a romantic and/or sexual relationship, including business collaboration or the cliché partner-in-crime. In Spanish, “pareja” can also refer to an animate or inanimate pair. In an attempt to limit to animate meanings, the pronoun “my” was included in this study’s Ngram search based on the example mentioned in Kitchener (2019). It would be interesting to perform a study on the evolution of the use of this word, using in multilingual health information on sexually transmitted diseases, including HIV/AIDS, from the mid-twentieth century to the present. A multilingual corpus of health information on STDs would help control for the correct definition of “partner” in each language.

discomfort of the cultural taboos of sexuality, such as non-heterosexuality, promiscuity, and adultery.

Another written expression of inclusion is person-first language, which is a noun that is post-modified by an adjective or an adjectival clause. In Spanish, this is “*persona con/que/de*” (person with/that/of). One example is, “*la persona con VIH*” (person with HIV) (SaludMadrid, *VIH/SIDA*, n.d.). Nouns can also be post-modified by a descriptive clause. Several instances of this expression of inclusion appeared in the Spanish translated sub-corpus<sup>74</sup> (35):

(35) “...*personas infectadas por tuberculosis/el VIH*” (...people infected with tuberculosis/HIV).

An instance of a noun that is post-modified by an adjective or an adjectival clause also appears in the Spanish non-translated sub-corpus on the website hosted by SaludMadrid (*VIH/SIDA*, n.d.) (36):

(36) ***La persona con VIH puede encontrarse bien y tener buen aspecto.*** (The person with HIV can feel well and look fine.)

While person-first language appeared once in the Spanish non-translated sub-corpus and not at all in the Catalan non-translated sub-corpus, that both sub-corpora are small in contrast to the Spanish translated sub-corpus and both English sub-corpora should be considered. Nevertheless, it may be safe to conclude in this study that the person-first language found in the Spanish translated sub-corpus could have been influenced by the English non-translated sub-corpus.

Where stigma is reflected in labels that refer to a stereotype (Ashford, et al., 2018), person-first language can reduce the risk of the reader perceiving the writer as having an “authoritarian stigmatizing attitude” (Baker, et al., 2022). Consider the following example from the website hosted by San Francisco Department of Public Health Disease Prevention & Control Population Health Division (*Qué es*, 2018) (37):

(37) “...***personas que viven o trabajan en prisiones, asilos, o centros de rehabilitación de salud, o refugios (shelters) para gente sin vivienda***” (“**people who** live or work in prisons, nursing homes, or health rehabilitation centers, or shelters for the homeless”)

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<sup>74</sup> CDC, *Hágase*, May 2016; CDC, 2012; CDC, *Pruebas del VIH*, 2019; Explain TB, *Tuberkulose*, n.d.

The writer displays more respect than the reader would have perceived if the noun “person” had been pre-modified or a label such as “prisoner” or “inmate” was used. Such pre-modified nouns and labels elicit judgment and stigmatize the population being described. The results of a study by Baker, et al. (2022), in which the subjects<sup>75</sup> were surveyed about the usage of pre-modified versus post-modified nouns, implied that using pre-modified nouns in reference to someone with an addiction could influence “beliefs about controlling, coercing, or punishing individuals with a substance use disorder. Participants who completed the survey with post-modified nouns reported less authoritarianism and more benevolence, indicating that this terminology may not be as attached to negative stereotypes, attitudes, and behaviors that premodified nouns connote” (p. 7). Not only can post-modified nouns reduce stigma, but they also encourage inclusion as exemplified by the website hosted by NYC Health (*Tuberculosis Testing*, 2019, and *Prueba*, 2019) (38) and (39):

(38) **People of** all ages, nationalities and income levels can get TB.

(39) **Las personas de** todas las edades, nacionalidades y niveles de ingresos pueden obtener TB. (**People of** all ages, nationalities, and income levels can obtain TB.).

Tied in terms of occurrences with person-first language in the Spanish non-translated sub-corpus were gender-inclusive expressions. In a language which has gendered nouns and adjectives such as Spanish and Catalan, the masculine form is the grammatical default when including both masculine and feminine subjects. Research has shown this linguistic trait negatively affects women, e.g., gendered languages foment unequal treatment of women (Jakiela & Ozier, 2018). Jakiela & Ozier (2018) conceded that it may seem an affront to state that gendered languages impede women’s rights and development, and recommended that the social consequences of linguistic choices, such as using gender-inclusive language, be considered. To make women visible, the word would feature an -o/a ending. Examples in Table 23 list the source text (L1) and the Spanish translation (L2) from this study’s sub-corpora.

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<sup>75</sup> A limitation of this study is that the majority of the subjects were young adults, which may reflect a generational ideology compared with older people who lived through a time when language referring to addiction and drug use was more stigmatizing. There have been changes to terminology referring to addiction through the years (Netherland & Hansen, 2016).

Table 23 - Gender-inclusive language in source (L1) text and Spanish translated (L2) text.

Website	Source L1	Spanish L2
Govern Ílles Balears Direcció General de Salut Pública y Participació ( <i>Infeccions</i> , n.d.; <i>Infecciones</i> , n.d.)	<i>al metge o la metgessa</i> (to the doctor or the doctor)	<i>al médico o la médica</i> (to the doctor or the doctor)
NYC Health ( <i>Be sure</i> , n.d.; <i>Entérese</i> , n.d.)	Sure	<i>seguro/a</i> (sure)
NYC Health ( <i>Be sure</i> , n.d.; <i>Entérese</i> , n.d.)	Comfortable	<i>cómodo/a</i> (comfortable)
CDC ( <i>HIV, 2019; Prueba del VIH, 2019</i> )	It's important to be open with your partners and ask <b>them</b> to tell you...	<i>Pregúntale a su pareja si <b>él</b> <b>o ella</b>...</i> (he or she)

Gender-inclusive nouns and adjectives are an issue that affect Spanish and Catalan more than English. All the translated Spanish examples listed in Table 23 demonstrate solutions to make women more visible linguistically. Maafs-Rodríguez, et al. (2022) gave a stronger suggestion than the more diplomatic recommendation by Jakiela & Ozier (2018) mentioned earlier: that in Spanish texts in which only the masculine word is used whenever a gender-neutral word would not be useful, explicate to the readers that all genders are included.

While gender neutral nouns and adjectives are more available in English, pronouns are handled differently, using the inclusive third-person plural “they,” such as in the last example in Table 23. In institutions such as the American Psychology Association (Lee, 2019) and Merriam-Webster Dictionary (n.d.), the use of the genderless pronoun “they” instead of “he” or the not-so-inclusive gender-inclusive “he or she” has become the norm. The pronoun “they” brings non-binary individuals into the conversation. Gender-inclusive nouns and pronouns, genderless words, and person-first language are examples of the writer moving further away from power and towards solidarity, which is a social indicator of tenor (Martin, 1992, 1998a, 1998b).

In addition to the question of the writer’s expression of solidarity, the use of inclusion words may influence the reader’s perception of how they will be treated by health care professionals and the general public. Brumwell, et al. (2018) recommended implementing people-centered vocabulary adapted to different target audiences, such as a lower readability grade level for children and patients with lower literacy levels, to empower the readers to be

informed participants in their TB treatment, as in the examples (40) and (41) from the website hosted by NYC Health (*Tuberculosis testing*, 2019; *Prueba*, 2019).

- (40) [...] people with HIV or another disease that weakens the immune system should get tested for TB regularly.
- (41) [...] *las personas con VIH u otra enfermedad que debilita el sistema inmunológico debe hacerse la prueba para la tuberculosis con regularidad.* ([...] people with HIV or another disease that weakens the immune system must take the tuberculosis test regularly.)

Incorporating person-first language as well as genderless, which was most frequent in the English non-translated sub-corpus, and gender-inclusive words, which is only found in this study's Spanish sub-corpora, would also reduce power distance between the writer and the reader and improve solidarity as perceived by the reader. Therefore, despite the lack of significant difference between the non-translated sub-corpora, the non-translated Spanish texts having significantly more inclusion words than the translated counterpart highlights this vital feature which translators need to incorporate into their work. Translators may have been partially influenced by inclusion words as evident in the frequency of person-first language in both the non-translated English sub-corpus and the Spanish translated sub-corpus.

### **5.3 Other noteworthy findings**

Inclusion words, persuasion markers, and relational and engagement markers are the significant features used by writers and translators of health communication websites on HIV and tuberculosis diagnostic testing. This does not necessarily imply that the rest of the writer-reader relationship markers should be disregarded due to this study's results. This section discusses the need for writers and translators to consider these "statistically insignificant" markers for a successful connection with the target audience, who they must persuade to heed the message to take the HIV or TB diagnostic test.

#### **5.3.1 Identity of the writer and identity of the reader**

Identity of the writer and that of the reader were the focus of the first two questions, respectively, of the ELF-W writer-reader relationship instrument. As explicated in Section 4.4.1, the relevance of the clarity of the identity of the writer and that of the reader is that any

lack thereof indicates that the website does not have any self-reference or self-identity in the text. For both ELF-W questions, there are only two possible answers: explicit and implicit, as reflected by the binary results of the mean proportion analyses. The identity of the writer and the identity of the reader form the foundation of tenor, which influences other markers in this study, such as persuasion, relational and engagement markers. A specific identification of the writer and/or the reader – e.g., self-referring to the organization hosting the website or naming the target audience population – is an indication of explicit identity; otherwise, the identity is implicit with the writer relatively being assumed to be the organization hosting the website and the reader generally being a lay person.

There were no significant results according to the linear regression models for either question. The mean proportion analysis for identity of the writer, whose graph can be viewed in Figure 15, showed that the Catalan non-translated sub-corpus (62.5%) contained more explicit identity of the writer compared with the English (19.2%) or Spanish (14.3%) non-translated sub-corpus. In the comparison within each language, the Catalan non-translated texts featured more explicit identity of the writer than the translated ones (62.5 percentage points difference), while the inverse was the case for the Spanish (7.2 percentage points difference) and English (12 percentage points difference) sub-corpora. These results reflect the English translated sub-corpus and the Spanish translated sub-corpus containing texts from websites hosted in Catalonia.

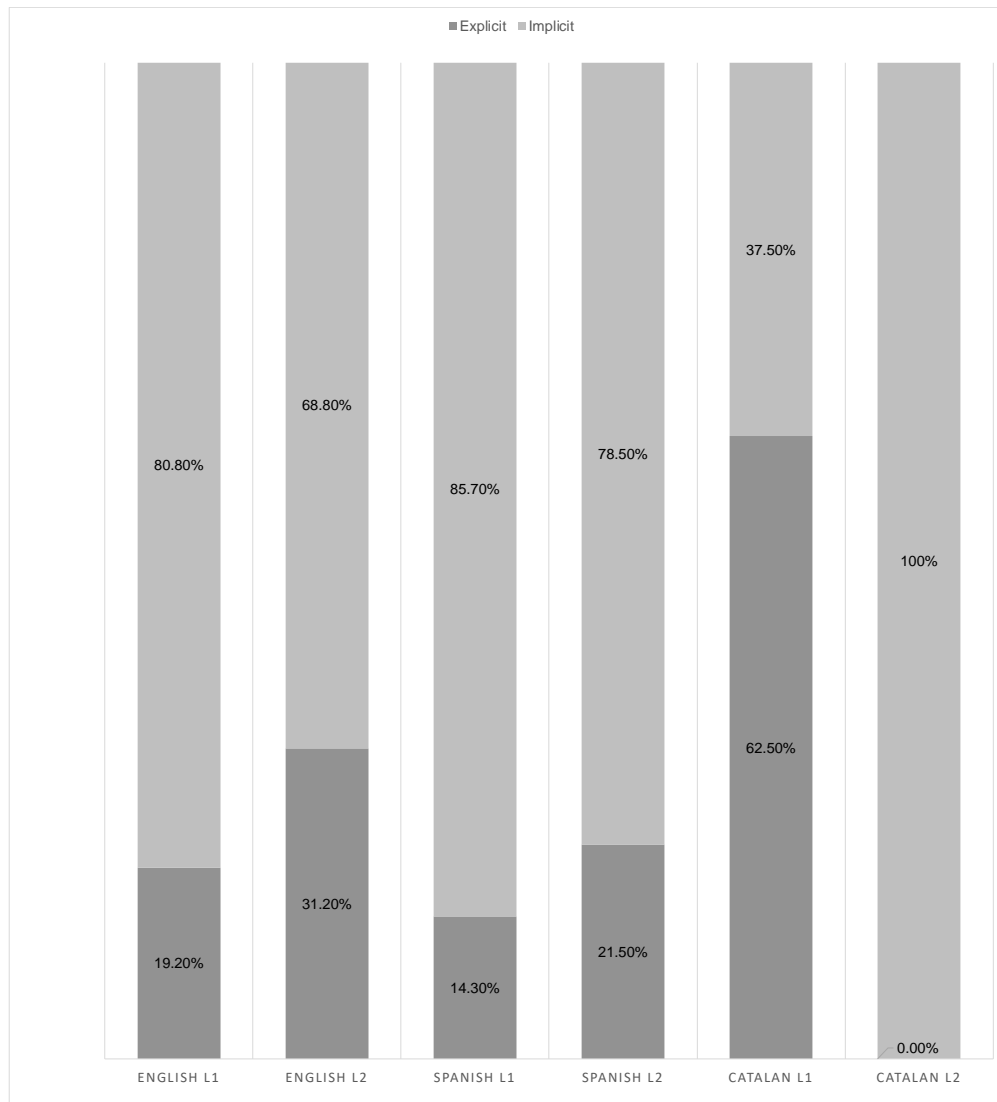


Figure 15 - Mean proportion comparison of explicit & implicit identity of the writer in each language non-translated (L1) and translated (L2) sub-corpus.

The percentage difference between the translated and non-translated texts within each language is the same for implicit identity of the writer, with the inverse comparison: the non-translated sub-corpus had more than the translated one in English and Spanish, whereas the opposite is the case for the Catalan sub-corpora. In the comparison between languages for implicit identity of the writer, the Spanish non-translated sub-corpus (85.7%) contained more than the English (80.8%) or the Catalan (37.5%) counterpart.

As for identity of the reader, the Catalan non-translated sub-corpus (75%) contained more explicit identity of the reader compared with the English (57.7%) and the Spanish (14.3%) non-translated sub-corpora. The Spanish non-translated sub-corpus (85.7%) had more implicit identity of the reader than the English (42.3%) and the Catalan (25%) non-translated sub-corpora. The English (26.5 percentage points difference) and Catalan (25 percentage points difference) non-translated texts featured more explicit identity of the reader



compared with their respective translated ones, whereas the inverse was the case for the two Spanish sub-corpora (39.5 percentage points difference). The case is the opposite concerning implicit identity of the reader: the Spanish non-translated texts contained more than the translated ones (39.5 percentage points difference), while the translated sub-corpus had more than the non-translated ones in Catalan (25 percentage points difference) and English (26.5 percentage points difference).

These coincidences confirm that the translated versions are in fact translations from the non-translated versions – i.e., as shown in Figure 15, the English translations are from the non-translated Spanish and non-translated Catalan, and the Spanish translations are from the non-translated English and the non-translated Catalan. The translated texts follow the pattern of reader identification from their source texts. As shown in Figure 16, the English translated sub-corpus and the Spanish non-translated sub-corpus are more similar to one another. The Catalan translated sub-corpus and the Spanish translated sub-corpus are similar to the English non-translated sub-corpus.

Although the results are not statistically significant, what stands out is that the Catalan non-translated sub-corpus contained more explicit whereas the Spanish non-translated sub-corpus featured more implicit identity of both the writer and the reader. Furthermore, the Catalan non-translated sub-corpus contained more explicit identity of the writer compared with the translated one, while the Spanish non-translated sub-corpus had more implicit identity of the reader compared with the translated one.

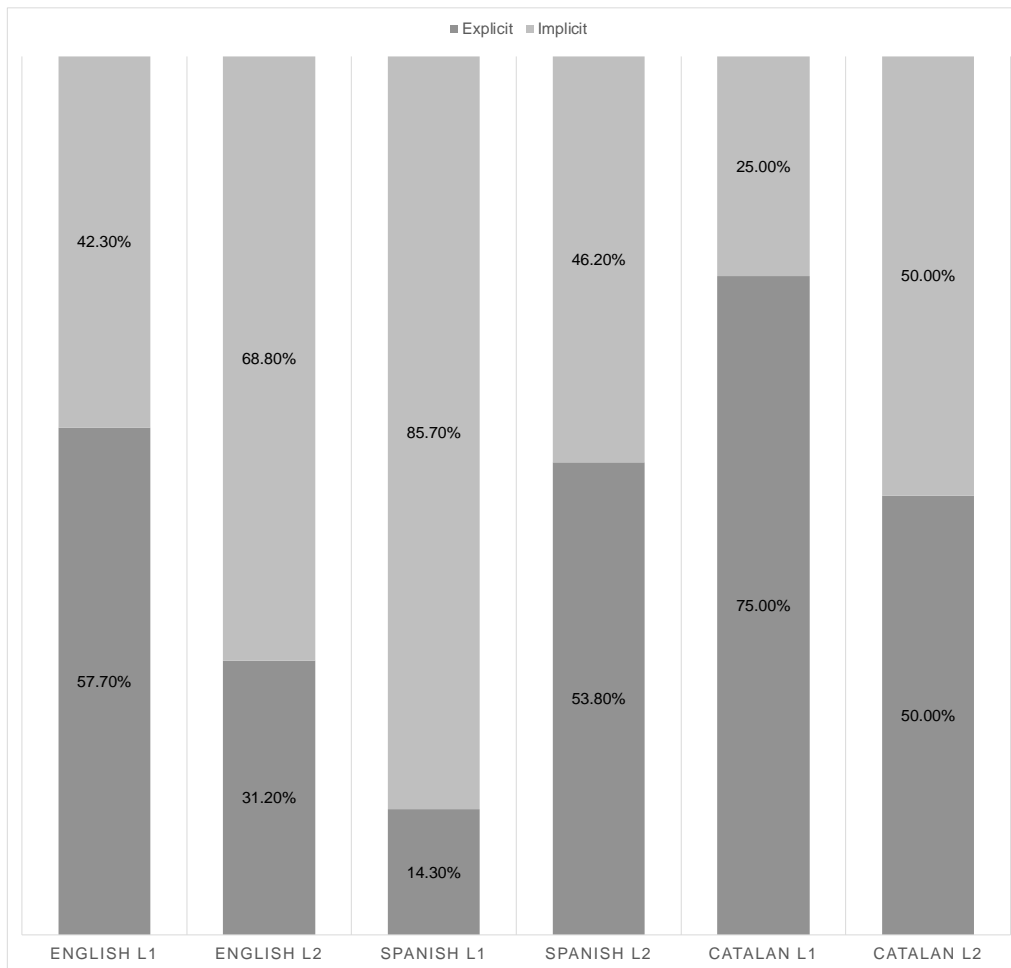


Figure 16 - Mean proportion comparison of explicit & implicit identity of the reader in each language non-translated (L1) and translated (L2) sub-corpus.

De Cock & Serrano (2017) observed that Spanish and Catalan are similar pro-drop Romance languages with structural and pragmatic differences. Their study hypothesized that Spanish and Catalan usage differed regarding the deictic markers, particularly expressions of politeness, and that the Spanish second person formal pronoun is used more than the Catalan counterpart. De Cock and Serrano (2017) implemented a pragmatic and functional framework and a mixed methods approach to analyze syntactic and pragmatic aspects of person reference in Spanish and Catalan parliamentary discourse, which the authors pointed out differed from colloquial discourse.<sup>76</sup> Person deictics were more prevalent in Catalan parliament discourse compared with the Spanish. Spanish was shown to feature singular deictics while Catalan tended towards plural forms, including vocatives, along with “a slight preference for less polite address forms” (De Cock & Serrano, 2017, p. 122).

<sup>76</sup> Parliamentary discourse is formal and conducted under stringent regulations. De Cock & Serrano (2017) applied the definition by Briz (1995) which included a casual setting, daily life situations, equality between speakers, and the topic does not concern a professional matter.

Similarly, the results of this thesis study reveal that the Catalan non-translated sub-corpus contains more explicit identity of the reader; this is done using person deictics. In example (42), the Catalan non-profit organization ACASC (*Prova*, n.d.) refers to themselves in the third person, which renders the text more formal and increases power distance between the writer and the reader.

- (42) **ACASC** realitza la prova ràpida en forma gratuïta des de l'any 2006. Centre alternatiu per detectar el VIH i la sífilis dirigit a **totes les persones majors de 16 anys que ho sol·licitin**. (**ACASC** does the rapid test for free since the year 2006. Alternative center for detecting HIV and syphilis intended for **all people over 16 years of age who request it**.)

In the next example (43), a different Catalan non-profit organization, BCN Checkpoint (*La prova*, n.d.) reduces the power distance not only by referring to themselves in the exclusive (as in excluding the reader) first person plural, but also by addressing the reader individually using a second-person singular pronoun.

- (43) A **BCN Checkpoint** et **facilitem** la prova de detecció de manera ràpida, confidencial i gratuïta. (At **BCN Checkpoint we** provide the diagnostic test to you so that it is quick, confidential and free.)

The translators maintained the explicit identity of the writer in Spanish (BCN Checkpoint, *La prueba*, n.d.) (44) and English (BCN Checkpoint, *The HIV test*, n.d.) (45):

- (44) En **BCN Checkpoint** te **facilitamos** la prueba de detección de manera rápida, confidencial y gratuita. (At **BCN Checkpoint we** provide the diagnostic test to you so that it is quick, confidential and free.)

- (45) At **BCN Checkpoint we** can give you the test quickly, confidentially and free of charge.

A health information website is a product provided by the “cultural institution of healthcare: an example of the region intermediate between culture and situation within context” (Matthiessen, 2013: 444) in SFL. The writer, which the reader might perceive to be the organization as a whole, would be identified implicitly, as in the following example from a website hosted by the Spanish non-profit organization CESIDA (*¿Tienes?*, 2018) (46).

- (46) *La prueba del VIH debe ser siempre voluntaria y confidencial y **se puede realizar de forma gratuita en los centros sanitarios de la red pública y en las ONG.*** (The HIV test should always be voluntary and confidential and **it can be done** for free in the public healthcare clinics and in non-profit centers.)

The above example utilizes the third-person deontic modal verb with an auxiliary verb and informs the reader about where a test could be done, without any self-mention. In contrast, the English translator modified the tenor with a more assertive voice by omitting the third-person deontic modal verb, as shown in the next example (CESIDA, *Any questions*, 2018) (47).

- (47) HIV tests should always be voluntary and confidential and **are performed** free of charge in public health care centers and NGOs.

The example below is from a website hosted by a Spanish organization, (Grupo de Trabajo Sobre el Tratamiento del VIH, 75, n.d.) (48), which demonstrates an implicit identity of the writer with a reduction in the power distance by addressing the reader individually with the informal second-person singular conjugation.

- (48) **Puedes** realizar estas pruebas de forma gratuita en una clínica de salud sexual, en la consulta del médico de cabecera o en un centro comunitario de detección. (**You can** get these tests for free in a sexual health clinic, in the primary care physician's office, or at a community testing center.)

The English translation maintains the tenor of the source Spanish text (Grupo de Trabajo Sobre el Tratamiento del VIH, *HIV*, n.d.) (49):

- (49) You can test for free at an NHS sexual health clinic, a GP surgery, or a community testing project.

Whether the identity is implicit or explicit, the writer of the website text forms a part of the “network of institutional roles in healthcare” (Matthiessen, 2013: 447) and reflects the tenor of the text, whether they are self-representing as an individual or representing the organization. While an implicit identity of the writer risks increasing the power distance between the writer and the reader, whether this is by design and appropriate regarding the culture of the target audience, using the second person singular form (i.e., a relational or engagement marker) can reduce the formality and increase the sense of camaraderie.

As regards the identity of the reader, the results from this study once again reflect those found in the De Cock & Serrano (2017) study. In example (50) below from a website which is hosted by BCN Checkpoint (*La prova*, n.d.) in Catalonia, the reader is addressed explicitly yet indirectly first as a collective through the use of the inclusive first-person plural and then individually as someone belonging to this collective.

- (50) *Els homes gais, bisexuals, i les dones transsexuals som especialment vulnerables al VIH per diverses raons d'ordre biològic estructural i social. Per tant, si ets una persona sexualment activa, és aconsellable que et facis la prova del VIH almenys un cop o dos a l'any. (We gay men, bisexuals, and transsexual women are especially vulnerable to HIV for various reasons of a biological, structural, and social order. So, if you are a sexually active person, it is advisable that you take the HIV test at least once or twice a year.)*

The Catalan text implements the inclusive first-person plural pronoun (i.e., a relational or engagement marker), identifying the writers as a collective of gay men, bisexuals, and transgender women. Then the writers address the reader directly using the second-person singular pronoun – a relational or engagement marker – in an assumption that the reader is like the writers. The target reader's identity is clear: an individual who belongs to a vulnerable collective who might partake in sexual activities that puts them at risk for contracting HIV. The Spanish translation reflects the tenor of the original Catalan text. The English translation (BCN Checkpoint, *The HIV test*, n.d.), however, varies (51):

- (51) Gay men, bisexuals, and transgender women are especially vulnerable to HIV for various structural/biological and social reasons. If **you** are therefore a sexually active person, it is advisable that **you** take the HIV test at least once or twice a year.

The identity of the writer is less clear in the English translation, which lacks the inclusive first-person plural pronoun. The identity of the reader is nevertheless assumed to belong to a vulnerable group who should get an HIV test regularly due to the adverb “therefore.”

The non-translated Spanish texts' implicit identity of both the writer and the reader in this study's sub-corpus may have been due to the writers' professional training. Spanish academic writing manuals generally discourage addressing the writer or the reader (Montolío, 2000; Mendiluce Cabrera & Hernández Bartolomé, 2005; Pujol Dahme & Selfa Sastre, 2015). The implicit examples in the Spanish non-translated sub-corpus – which contained more of this type of identity of the reader compared with English and Catalan as well as with its

translated counterpart – used either first person singular [see example (52) below from the CESIDA website (*¿Tienes?*, 2018), which is hosted in Spain] or second person singular [see example (53) below] form without specifying any characteristics of the reader.

(52) *¿Cómo **puedo** saber **si tengo** el VIH?* (How can **I** find out if **I** have HIV?)

The English translation is exactly the same as the back translation for the above example (52). The above exemplifies the question-answer pattern implemented by some of the writers, in which the questions are posed as though the reader themselves were asking them. Hoey (2001) would classify this pattern as problem-solution (as mentioned in Section 5.2.1) as opposed to question-answer due to the writer recommending a solution to the reader's problem-based question. With the question in the first-person form and the answer in the informative, persuasive tone of the writer, this pattern gives the reader a sense of interaction in dialogue with the writer. What makes example (52) implicit is the lack of specific characteristics that would identify the reader as anyone more specific than the general public. In other words, anyone could be this reader asking this particular question.

The next two examples, in the non-translated Spanish (53) and in the translated English (54), which reflects the tenor of the source text, are from the website hosted by Spanish organization Grupo de Trabajo Sobre el Tratamiento del VIH (75, n.d.; *HIV*, n.d.). The writer directly addresses the reader in the familiar second person singular form.

(53) *Los exámenes médicos periódicos **te** permiten comprobar si **tu** salud es buena. Estas revisiones pueden incluir la realización de pruebas para ver si **tienes** VIH.* (The periodic medical exams allow **you** to check if **your** health is good. These check-ups can include testing to see if **you** have HIV.)

(54) Regular health checks allow **you** to be sure that **you** are in good health. A health check can include testing to see if **you** have HIV.

By directly addressing the reader with the familiar second person singular form, the writer reduces the power distance and lends the reader a sense of receiving the information from a trusted source. This approach renders the text adapted with respect to transcending the diverse cultural differences between the global Spanish speaking communities (Johnson, et al., 2019) along with the English-speaking residents, as well as bridging the power distance between Mishler's (1984) Voice of Medicine and the Voice of Lifeworld (Maglie, 2017).

These examples reflect the findings in this study are similar to those by De Cock & Serrano (2017) – that the non-translated health information websites in Catalan tended to use

plural personal deictics while the Spanish counterpart was more likely to implement the singular. The two ELF-W questions – concerning the identity of the writer and that of the reader – address the foundation of the tenor of the text on which persuasion, relational and engagement markers are based. This is vital information for rendering multilingual health information websites that are adapted to reflect not only the culture of the reader but also that of the writer in terms of power distance. As this writer-reader relationship discussion continues, the upcoming subsections address the remaining metadiscursive markers that aid “the reader in the interpretation and evaluation of the message” (Suau-Jiménez, 2010).

### 5.3.2 Person markers and self-mentions

Person markers and self-mentions were defined in Section 3.2.4 as the use of first-person pronouns and possessive adjectives in discourse as a form of interpersonal metadiscourse. This section delves deeper into these markers, which were mentioned in Sections 5.2.2 and 5.3.1 since they are influenced by the identity of the writer along with relational and engagement markers. They were among the markers used to address the third question of the ELF-W writer-reader relationship section, which concerned whether the writer’s tone was clear, consistent, and positive. Based on mean proportion, the non-translated Catalan sub-corpus (0.75%) contained only slightly more person markers and self-mentions than the English (0.73%), and they both had much more than the Spanish (0.40%) counterparts. The Catalan (0.75 percentage points difference) and English (0.34 percentage points difference) non-translated texts had more person markers and self-mentions than their translated counterparts. The inverse was the case for the Spanish sub-corpora (0.24 percentage points difference). Statistical significance was absent; however, these differences warrant further scrutiny.

Mur-Dueñas & Šinkūnienė (2016) observed in an overview that non-English writers opted for the first-person plural, and impersonal or passive structures instead of the first-person singular pronoun. De Cock and Serrano (2017) found that the Catalan politicians were more likely to use person deictics in the plural form (see Sections 2.6 and 5.3.1). While political discourse and health communications have their differences, the observations by De Cock and Serrano (2017) reflect the findings of this thesis study.

The Catalan writers emphasized their own presence in their websites as direct recommendations in presenting HIV and TB diagnostic testing information, as in the example (55) below.

(55) *A **BCN Checkpoint t’oferirem el suport i l’assessorament que necessitis per afrontar aquesta situació en les millors condicions.*** (At **BCN Checkpoint, we** will offer you the

support and advice that you need to face this situation in the best conditions.) (BCN Checkpoint, La prova, n.d.)

This form of self-mention includes the name of the organization coupled with the exclusive first-person plural pronoun. By including the name of the organization instead of only using the first-person plural verb form, the writer emphasizes the self-promotion to the reader of the organization's willingness to help. In other words, the double self-mention serves as publicity to make known the availability of its services. In addition to the Catalan non-profit organization above (55), a U.S.-based non-profit organization employs this interpersonal metadiscourse marker in a similar way for the same purpose (56).

(56) ***Whitman-Walker*** also offers PrEP, the daily pill for HIV Prevention. To make an appointment or learn more, call **our** PrEP phone line at 202.939.7690. (Whitman-Walker Health, *HIV/STI*, n.d.)

This finding of direct representation is corroborated by Diani's study (2019), which found that self-mentions with exclusive first-person plural pronouns in pediatric neurological syndromes websites were implemented for the same purpose. Hyland (1998b) noted the role of self-mentions in altering the tenor for the writer to, in both examples above, promote the organization as the service provider where the reader could get tested and obtain treatment – in other words, in propositional discourse. In the process of self-mentioning, the reader continues to be included in the form of how the organization can be of assistance.

One usage of self-mentions found in both this thesis and a study using websites on pediatric neurological syndromes (Diani, 2019) – which also found that the overall use of self-mentions was limited – served to engage the readers in dialogue as demonstrated in example (52) in Section 5.3.1. The writer accomplished this by taking on the reader's voice in the process of interaction via direct questions in a problem-solution pattern (Hoey, 2001). Another example is from the Boston Public Health (English version, n.d.) website in the English non-translated sub-corpus (57):

- (57) How do I take care of **my** arm after the test?
- Do not cover the spot with a band-aid or tape.
  - Do not rub or scratch the area.

As exemplified above, the writer “models her/his identity as if s/he were experiencing the (reader's) situation and recontextualizing it as reality” (Diani, 2019, p. 23). Herrando-Rodrigo (2010) noted that, with self-mentions using first-person singular pronouns, “writers give priority



to engaging with their readers rather than claiming authority” (p. 266) in the question-and-answer dialogue that is frequent in popularized online health information (Herrando-Rodrigo, 2010; Diani, 2019).

The study by Diani (2019) also found the use of exclusive first-person plural pronouns served the writer to “identify themselves with a particular argument and gain credit for an individual perspective” (Hyland, 2005, p. 181) as the Voice of Medicine. However, this usage of self-mentions was not evident in this thesis’ corpus. This is a positive finding since an increased use of self-mentions would render the texts less collectivist – i.e., less inclusive. Hyland and Jiang (2018) noted in their analysis of professional journal articles in four disciplines over fifty years that “the more ego-centric stance common fifty years ago in this field has been supplanted with a more collectivist one” with “a rhetorical shift in argumentation patterns in academic writing towards a greater awareness of readers” (p. 28). While health information texts are not academic but semi-specialized, Hyland and Jiang’s (2018) observation appears to reflect the intention of the health experts to forefront their audience in the text. Self-mention and person markers are useful to display professional knowledge; however, limiting their use to a minimum would be prudent for the above-mentioned reasons.

It should be noted that, compared with Spanish, what Catalan and English have in common is the genderless first-person plural pronoun.<sup>77</sup> Pragmatically and culturally, this distinction enables the writer and translator, whether intentional or not, to be more easily inclusive or neutral in the representation of an organization that deals with gender issues. Although the potential for the writer and translator to take advantage this linguistic distinction exists, and while the statistically insignificant results suggest that the Catalan non-translated sub-corpus uses more self-mentions and person markers, upon further scrutiny, there do not appear to be any cultural differences between the three languages in the way that this interpersonal metadiscourse is used. On the topic of inclusion, the next section addresses a marker that poses the risk of its opposite: stigma words.

### 5.3.3 Diminutives

Diminutives was one of the markers in response to the third question of the ELF-W writer-reader relationship section. It asked whether the writer’s tone was positive, clear, and consistent. The mean proportion showed that the Spanish non-translated sub-corpus (0.26%)

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<sup>77</sup> The Spanish masculine first-person plural pronoun can be either exclusive or include both genders, depending on the context. However, there exists an argument to make women more visible by modifying “*nosotros*” to, for example, “*nosotr@s*.” This variation does not exist in this thesis’ Spanish sub-corpora. Writers and translators representing organizations providing health services to specific populations are recommended to consider whether their self-mentions and person markers accurately reflect the target audience in light of inclusion and power distance.

contained more diminutives than the English (0.21%) or Catalan (0.21%) counterparts. The Spanish non-translated sub-corpus had more diminutives than its translated counterpart (0.02 percentage points difference), while the inverse was the case for English (0.02 percentage points difference) and Catalan (0.25 percentage points difference).

While not significant, it is worth noting that the difference according to the mean proportion between languages is minuscule, which suggests no distinct cultural difference. Diminutives are a form of minimization which, in the case of this study, was a way to achieve the goal (Albelda Marco & Estellés Arguedas, 2021) of the multilingual health information websites on HIV and tuberculosis diagnostic testing. When the writer considers the context of situation – particularly its field, which forecasts experiential meanings through the scenario – the prospect of a painful procedure followed by an agonizing wait for the test results may result in the reader’s trepidation and hesitation to heed the message’s call to action. Writers applied diminutives as a pragmatic strategy to mitigate the gravity of an unpleasant subject matter. In the following examples from the non-translated English (58) (Health Service Executive, *Information*, 2014) and non-translated Catalan (59) (Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), *Prova*, n.d.) texts, respectively, a diminutive is implemented to play down the pain of a test involving a sharp object.

(58) *The first test is usually a skin test (called a Mantoux test). It involves a **small** injection into your arm.*

(59) *La prova consisteix en una **petita** punxada en un dit de la mà, d’on s’extreu una **petita** mostra de sang... (The test consists of a **small** puncture in a finger, from where a **small** blood sample is extracted...)*

In example (59), the writer also addresses the reader’s potential concern about the amount of blood being drawn for diagnostic testing. The next example (60) from the non-translated Spanish website hosted by SaludMadrid (*¿Qué es el SIDA?*, n.d.) also demonstrates a writer’s anticipation of this concern by the reader.

(60) *En total pueden sacarte 4 o 5 “**tubitos**” de sangre. ¿Por qué? Porque cada **tubito** de sangre se envía a un laboratorio que estudia una cosa distinta. (In total they can draw 4 or 5 **little tubes** of blood. Why? Because each **little tube** of blood is sent to a laboratory that studies a different thing.)*

In these instances, the primary cultural adaptations are from the medical realm to that of Lifeworld: health professionals may be inured to invasive testing and appear indifferent to their

patients' anxious wait for potentially life-changing test results. There are also linguistic shifts from the English non-translated sub-corpus, in which a diminutive adjective modifies the noun, into the Spanish translated sub-corpus, in which the noun itself becomes diminished. The following instance is from the multilingual website hosted by Boston Public Health (*What is*, 2015 & *Qué es*, 2015) showing first the original English (61), followed by the Spanish translation (62):

(61) It makes a **small bubble** that disappears in about 5-10 minutes.

(62) Se forma una **burujita** que desaparece en unos 5-10 minutos.

Whether the Spanish translator diminishes a noun from the English source text, or a diminished noun is implemented in the Spanish source text, they serve to allay the reader's apprehensions about getting tested. The next example (63) from the non-translated Spanish website hosted by Grupo de Trabajo Sobre el Tratamiento del VIH (75, n.d.) reflects a writer convincing the reader that the HIV test is quick and the results ready almost instantly.

(63) *Algunas clínicas emplean otro tipo distinto de prueba, en la que se toma una **pequeña** cantidad de sangre del dedo o saliva de la boca. Los resultados estarán listos en unos **pocos** minutos.* (Some clinics employ another distinct type of test, in which a **small** quantity of blood is drawn from the finger or saliva from the mouth. The results will be ready in **a few** minutes.)

While implemented universally in all three languages, thus acting within the context of situation, diminutives were among the least implemented of the writer-reader relationship markers in this corpus. The diminutives' purpose within the context of culture is mainly to bridge the chasm between the Voice of Medicine and the Voice of Lifeworld. However, considering the potential power of this pragmatic device in the process of persuading the reader to get tested for an infectious disease, diminutives should be implemented more by health communication writers.

#### 5.3.4 Stigma words

Stigma words were among the markers used in the ELF-W fourth question of the writer-reader relationship section to ascertain whether the multilingual health information website texts were generalizable to all readers. Based on the mean proportion, the non-translated English sub-corpus (0.77%) contained more stigma words compared with the Spanish (0.64%) or Catalan

(0.49%) counterparts. The English (0.07 percentage points difference) and the Spanish (0.01 percentage points difference) translated sub-corpus had more stigma words than their non-translated counterparts, while the Catalan non-translated texts featured more stigma words compared with the translated ones (0.14 percentage points difference). The differences between the translated and non-translated texts are minuscule. This lack of contrast could be due to the high number of stigma words already present in all three languages' non-translated texts used within contexts (of situation and of culture) that would convince the reader to get tested without causing offense.

Stigma words reflect the writer's attitude towards the reader by evoking implicit judgment based on evaluating behavior (Martin & White, 2005) such as condemnation, as defined in Section 3.2.4. Whether the writer employs stigma words to evoke the reader's judgment as a means towards the goal of heeding the health message to get tested for HIV or TB (in other words, as fear-based persuasion), such word choices will invariably reflect on the writer regarding their empathy and respect (Tebble, 1999). As such, the writer must proceed with caution, lest the reader receives the stigma word in an unintended way, be it offense or repulsion, that averts them (Daftary, et al., 2018) from getting tested for an infectious disease that they could be spreading even while asymptomatic. When a writer applies stigma words in a non-accusatory way in the persuasion process such as with the use of person-first language in example (37) in Section 5.2.4 or in an inclusive manner as in examples (50) and (51) in Section 5.3.1, or in a list of risk factors in third person form, the reader could be less likely to feel offended and even identify with a stigma word in terms of considering that they might be at risk and should get tested for HIV and TB. This does require the writer's consultation with key informants from target communities to avoid an uproar and ensure the multilingual health information website text's success.

The Centers for Disease Control and Prevention (*HIV*, 2019) writers encouraged the reader to ask their partner about their HIV status and get tested together (64), and to share their HIV-positive status with their partners with the encouragement that it gets easier with practice, in turn reducing stigma (65).

(64) *It is important to be open with your partners and ask them to tell you their HIV status. But keep in mind that your partners may not know or may be wrong about their status, and some may not tell you if they have HIV even if they are aware of their status. Consider getting tested together so you can both know your HIV status and take steps to keep yourselves healthy.*

(65) *It's important to disclose your HIV status to your sex partners even if you're uncomfortable doing it. Communicating with each other about your HIV status means*

*you can take steps to keep both of you healthy. The more practice you have disclosing your HIV status, the easier it will become.*

The Centers for Disease Control and Prevention writers participated in the breaking of the stigma around HIV and AIDS by emphasizing that getting tested to find out one's HIV status is a medical diagnosis and not a moral judgment. In an individualist society, one way a health communication writer can accomplish this is via empowerment, by encouraging the readers to take charge of their health and challenge stigma as exemplified above (65). A health information website would persuade a collective society to challenge stigma by getting tested to protect their community like in examples (50) and (51) in Section 5.3.1. It is critical to place the focus on the disease as opposed to the target audience, especially if they are of a population that is more susceptible to discrimination, such as the LGBTQ+, sex workers, and drug users. These groups have a history of marginalization due to HIV/AIDS stigma and general discrimination, which increases their risk by 25 to 35 times of contracting the virus regardless of location (UNAIDS, 2021).

Culture influences the writer's and the reader's beliefs regarding identity, otherness, and representation. The invisibilization<sup>78</sup> of HIV and AIDS is due to the stigma of testing positive for HIV (see, for example, Squire, 2013). The writer's point of view is influenced by the organization they represent, be it a health care center or a non-profit entity that serves the HIV/AIDS and/or the LGBTIQ+ community or another minority group. The reader may or may not be part of any of these communities and is receiving the information as both an individual and as a representative of their community.

The elimination and prevention of stigma need not be specific to TB (Daftary, et al., 2018) or HIV. Syndemic stigma reduction must involve a collaboration between the writer and the translator with the key informers of the target community to implement synergistic "integrated interventions that fight the criminalization of TB treatment nonadherence, HIV transmission, illicit drug use, and same sex behavior" (Daftary, et al., 2018, p. 1115) along with the prevalent implicit judgment of imprisonment, immigration status, gender, race, and class. Brumwell, et al. (2018) recommended that the writer avoid using stigmatizing terms in future TB information texts.

Prior studies verify that using language that stigmatizes negatively affects the attitudes and conduct of people who represent the Voice of Medicine as well as the Voice of Lifeworld and undermines the motivation of those seeking medical assistance (van Boekel, et al., 2013; van Boekel, et al., 2015). Baker, et al.'s (2022) study shows that "language and labels do have

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<sup>78</sup> "Invisibilization" is a neologism frequently used in social sciences research to refer to the disappearance of populations vulnerable to stigma, inequalities, and injustice via, e.g., data cleansing (see, for example, Squire, 2013, and Rossetto, et al., 2019.).

the power to invoke stigma and oppression” (p. 8) and recommends replacing the stigmatizing pre-modified with the inclusion-fomenting post-modified nouns so that individuals are not defined by their disease and the overall attitude toward these diseases may improve. A health information text that strives to reduce and eliminate stigma through word choice has the potential to improve the reader’s sense of self-determination so they will heed the message’s call to action and get tested. In a different way, so do modal verbs, clauses, and expressions, which are discussed in the next section.

### 5.3.5 Modal verbs, clauses, and expressions

Modal verbs, clauses, and expressions of the deontic obligation type were among the markers that answer the ELF-W writer-reader relationship instrument’s fifth question concerning the clarity and unambiguity of the choices of action. As defined in Section 3.2.4, their use in the lexicogrammatical process of polar – in terms of positive or negative – appraisal can reflect power and status as social indicators of tenor (Tebble, 1999, based on Halliday, 1994, & Martin, 1998a & 1998b).

Based on mean proportion, the Spanish non-translated texts had more modal verbs, clauses, and expressions compared with the English (0.89%) or Catalan (0.65%) counterparts. The Spanish non-translated texts also had more modal verbs, clauses, and expressions than its translated counterpart (0.36 percentage points difference), whereas the translated sub-corpora contained more than the non-translated ones in English (0.04 percentage points difference) and Catalan (0.17 percentage points difference). The translated English and Catalan sub-corpora may reflect the Spanish non-translated texts’ frequent use of modal verbs, clauses, and expressions.

In this respect, it is possible that the translators saw no major need to culturally adapt the English and Catalan texts. An instance of a word-for-word translation from the Spanish source text into English is evident in the next two examples (66) and (67) from SaludMadrid (n.d.).

- (66) *En este caso **hay que** evitar que la enfermedad se active. El tratamiento consiste en tomar una sola pastilla durante varios meses. **Es imprescindible** seguirlo hasta el final.*

In (66), the attitude markers “*hay que*” (“it is necessary”) and “*es imprescindible*” (“it is essential”) mark a necessity regarding propositional content that the writer conveys – or rather, that the writer believes to be necessary to convey (Ho, 2016) – to the reader as described by Hyland (1998b). The writer reinforced the tone set by the modal expression and clause by

highlighting in blue the need for prevention and the importance of completing the treatment. The English translator for SaludMadrid (*Your health*, n.d.) did not alter the writer's original tone (67).

(67) *In this case **it is necessary** to prevent the activation of the disease. The treatment consists of taking a single tablet for several months. **It is essential** to finish the entire treatment.*

The original Spanish text emphasizes the importance, and the English translation reflects this appraisal exactly, no more and no less. As mentioned in Section 5.2.1, the use of deontic modal verbs, clauses, and expressions demonstrate the writer's appraisal of the importance of prevention and medical treatment – thus reflecting the writer's power or status with relation to the reader (Martin, 1998a & 1998b) within the viewpoint of Halliday's interpersonal metafunction (Halliday, 1994). The writer needs to be aware that the reader has the freedom to choose whether to heed the writer's call to action (van Dijk, 2006); therefore, an astute writer would harness their professional status along with the use of deontic modals to change the reader's attitude or behavior to benefit the reader (Harré, 1985) and their community.

Writers use deontic modal verbs, clauses, and expressions not only to persuade the reader, but for the clarity and unambiguity of the choices of action. A discourse analysis of the former German chancellor Merkel compared a speech she had made at the beginning of the Covid-19 pandemic with pre-pandemic speeches found that the pandemic speech included a markedly higher frequency of deontic modals (Jaworska, 2021). Merkel's speech serves as an example of using one's power status to convince the audience to change their attitude and comply with the public health measures to reduce the incidence of the infectious disease. The writer expresses authority in the process of persuading the reader by using deontic modals (Hoey, 1991; Dafouz-Milne, 2008) such as “*deber*” (“must”), as in the next two examples (68) and (69), which also show an absence of cultural adaptation regarding the use of this marker.

(68) *Los familiares y conviventes **deben** acudir al médico para hacerse el test de tuberculina.*  
(SaludMadrid, n.d., bold type mine)

(69) *Relatives and other cohabitants **must** go to the doctor for the tuberculin test.*  
(SaludMadrid, *Your health*, n.d., bold type mine)

Such lack of cultural adaptation in translation concerning modal verbs, clauses, and expressions of deontic obligation appear to reflect the universal need on the part of health communicators to persuade their readers to follow the recommendations and heed the call to

action. It could be argued that the translators were unaware of the existing differences between Spanish and English regarding politeness strategies concerning modal verbs, clauses, and expressions. Ballesteros Martín (2001) observed that Spanish tends towards positive politeness with a focus on friendliness – reflecting collectivism – whereas English towards negative politeness due to their more individualistic traits. However, this contrast did not appear in this study’s corpus where modal verbs, clauses, and expressions are concerned, possibly due to the nature of the field – public health communication.

In the next section, the effects of imperatives on tenor will be discussed. The next section will also address how writers and translators could control the tone to relate to the reader as a trusted authority with reliable information and an appropriately clear call to action through a combination of deontic modals and imperatives.

### 5.3.6 Imperatives

Imperatives,<sup>79</sup> which Hoey (1991) noted serves the purpose of direct appeal, were among the markers to answer the ELF-W writer-reader relationship instrument’s fifth question as to whether the choices of action were clear and unambiguous. Hoey’s “direct appeal” in health communication could be either an order or a suggestion, as differentiated by Portner (2007). Based on the mean proportions, the English non-translated sub-corpus (0.87%) had more imperatives than the Spanish (0.78%) or the Catalan (0.33%) counterparts. While there is a sizable percentage difference between the Catalan non-translated sub-corpus compared with the other two languages, it is not statistically significant. All three languages’ non-translated sub-corpus had more imperatives compared with the translated ones [Spanish (0.23 percentage points difference), English (0.44 percentage points difference), and Catalan (0.13 percentage points difference)]. Whether translators changed a verb from the imperative to a different tense or replaced it to deontic modals, and whether this reflects cultural adaptation, warrants future research.

Some websites retained the imperative in each language version, as illustrated by (70) and (71):

- (70) *Ten days after exposure, **go** to a clinic or hospital and **ask** for a test for new (“acute”) HIV infection. [...] While you wait for your test results, **avoid** having sex.* (NYC Health, 2019)

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<sup>79</sup> Imperatives also signal relational or engagement markers. The difference is whether the writer explicitly addresses the reader to build a relationship (Hyland, 1998b, & Ho, 2016) or directly appeals to the reader to heed the call to action (Hoey, 1991). More on this distinction is explicated in Section 3.2.4.



- (71) *Diez días después de la exposición, **vaya** a una clínica u hospital y **pregunte** por la prueba de infección (“aguda”) por el VIH. [...] **Evite** tener relaciones sexuales mientras espera los resultados. [Ten days after exposure, **go** to a clinic or hospital and **ask** for the HIV infection test (“acute”). [...] **Avoid** having sex while waiting for the results.] (NYC Health, n.d.)*

The message is clear; however, the tenor is ambiguous. The imperatives in the above example could be received by the reader as either an equivalent to an authoritative order or as a suggestion. The reader might understand the message as either an obligation or a recommendation. How the reader receives imperatives-only messages is influenced by their cultural<sup>80</sup> background. Some readers may find the imperative overbearing, even rude, especially when “please” is omitted. There is a difference in the tone of an imperative-heavy text such as in (70) and (71) above, and one that combines imperatives with deontic modals, as exemplified below (72) and (73).

- (72) *If you get an HIV test [...], **get tested** again after the window period for that type of test to be sure. If [...], you **should** get tested again 45 days after your most recent exposure. For other tests, you **should** get tested again at least 90 days [...]. (NYC Health, 2019)*
- (73) *Si se hace la prueba de detección del VIH [...], **hágase** la prueba nuevamente después del periodo de ventana de ese tipo de prueba para estar seguro. Si [...], **deberá** hacerse la prueba nuevamente 45 días después de su exposición más reciente. Para otro tipo de pruebas, **debe** hacerse las pruebas de detección nuevamente al menos 90 días [...]. (If you do an HIV test [...], **get tested** again after the window period for that type of test to be sure. If [...], you **should** do the test again 45 days after the most recent exposure. For other types of tests, you **should** do the tests again at least 90 days [...].) (NYC Health, n.d.)*

The combination softens the tenor so that the reader takes the imperative as advice as opposed to a command. Modals can be a more polite and delicate tactic, compared with the blunter direct appeal characteristic of imperatives (Nga, 2017). The writers of the non-

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<sup>80</sup> Researchers generally consider the English-speaking cultures as “distancing,” whereas Spanish-speaking cultures are deemed “rapprochement” (Ardila, 2004; Hickey, 2005). They explain that while Spanish-speakers link politeness to forming bonds and cooperation, English-speakers implement politeness to show respect and social differentiation (Barros García & Terkourafi, 2014). To this, it is important to add the variations – e.g., ethnicity and nationality – within each language group.

translated English texts preferred imperatives, according to this study's results, whereas those of the non-translated Spanish and Catalan non-translated texts showed a preference for modal verbs, clauses, and expressions. Upon examination of the translated texts in all three languages from Explain TB (*Essentials*, n.d.; *Tuberkulose*, n.d.; *in Catalan*, n.d.), a multilingual tuberculosis information website hosted in Germany, there was a difference in their use which affected the tenor in English (74), Spanish (75), and Catalan (76).

- (74) Nevertheless, **it is important** to early detect people who are infected or even ill. Therefore, **tell** your family, friends and colleagues that everyone **should** be checked for tuberculosis, especially those who notice the typical complaints that point towards tuberculosis: cough for several weeks, fever, night sweats and unintentional weight loss.
- (75) *Por lo tanto, **es muy importante que** si usted está enfermo o alguien presenta los síntomas típicos (tos durante varias semanas, fiebre, sudores nocturnos y pérdida de peso involuntaria) se lo comunique a sus familiares, colegas y amigos.* [Thus, **it is very important that** if you are sick or someone presents the typical symptoms (cough for several weeks, fever, night sweats, and involuntary weight loss) they communicate it to their family members, colleagues, and friends.]
- (76) *No obstant això, **és important** detectar aviat les persones que estan infectades o fins i tot malaltes. Per tant, **informi** a la seva família, amics i companys de treball, que tots **han de** ser revisats per a detectar la Tuberculosi, especialment els que noten els símptomes típics que fan sospitar la Tuberculosi: tos durant diverses setmanes, febre, suors nocturnes i pèrdua de pes involuntària.* (However, **it is important** to quickly detect the people who are infected or even sick. So, **inform** your family, friends, and work colleagues, that everyone **has to** be checked to detect tuberculosis, especially those that notice the typical symptoms that make them suspect tuberculosis: cough during several weeks, fever, night sweats, and involuntary weight loss.)

All three contain the deontic modal expression “it is important that.” The translator of the English text (74) used an imperative followed by a deontic modal verb to advise the reader to “tell” their contacts that they “should be” tested. This combination of deontic modals and an imperative lends a sense of moral urgency to the message. The Catalan text (76) contains the same combination: a deontic modal expression, an imperative, plus a deontic modal verb. The translator’s tone is to suggest, as opposed to require, that the reader “inform” (“*informi*”) their contacts that everyone “has to” (“*ha de*”) get tested for tuberculosis. The Spanish translator,

however, used a more formal tenor within an unclear message (75). They used a deontic modal expression followed by a second person formal subjunctive verb to persuade the reader that “it is very important that” (“*es muy importante que*”) “you communicate it” (“*se lo comuniqué*”) – “it” appears to refer to the possible exposure to tuberculosis, leaving the contacts to figure out what they would have to do about having been exposed to tuberculosis. The presence of only one deontic modal, without any imperatives, reduces the sense of authority and urgency in the message. This comparison of the same section of the multilingual health communication text from Explain TB (n.d.) in English, Spanish, and Catalan demonstrates the usefulness of deontic modals and imperatives for writers and translators to modulate the tenor to convey to the reader of the importance of getting tested for an infectious disease.

Combining deontic modal expressions, clauses, and verbs with imperatives could soften the tone and improve the tenor of a multilingual health information text. While the English non-translated sub-corpus contained more imperatives than the Spanish and the Catalan, and the non-translated texts contained more imperatives than their translated counterpart in all three languages, the findings were not statistically significant. Nevertheless, these findings, together with those related to modal verbs, clauses, and expressions as discussed in the previous section, raise questions for future research. The next section addresses negative imperatives.

### 5.3.7 “Do not”

The last marker discussed in this section, “do not” or negative imperatives, also served in response to the ELF-W writer-reader relationship instrument’s fifth question as to whether the choices of action were clear and unambiguous. As is the case with deontic modals and imperatives, the writer’s authority or status as a social indicator of tenor is reflected in the use of negative imperatives; as noted in Section 3.2.4, the writer chooses between the polar choices (Tebble, 1999, based on Halliday, 1994, & Martin, 1998a & 1998b) to persuade the reader.

Between the non-translated sub-corpora, the Spanish (0.13%) contained more “do not” markers than the English (0.03%) or Catalan (0.03%) ones. The Spanish non-translated texts had more negative imperatives than its translated counterpart (0.06 percentage points difference), while the English (0.02 percentage points difference) and Catalan (0.01 percentage points difference) translated texts contained more than their non-translated ones. Even though these differences are minuscule and not statistically significant, it is still worth noting that the Spanish was the sole non-translated sub-corpus to contain not only more negative imperatives, but more imperatives and deontic modals.

While such observations warrant future research, since the differences between this study's sub-corpora is insignificant, for now it is worth noting the different ways a negative imperative was used in the corpus. "Do not" does not necessarily render a negative tone. For example, the writer may begin a sentence with "do not" to encourage (77) or reassure the reader (78).

(77) Don't be embarrassed: your doctor is there to help, not to judge. (Planned Parenthood, *Should I*, n.d.)

(78) Don't panic. Remember, HIV today is a manageable disease. With good and consistent care, you can live a long and healthy life. (San Francisco AIDS Foundation, *Testing*, n.d.)

The above two examples are negative imperatives which the writer frames positively for the reader: the nonjudgmental helpful doctor (77) and HIV as a manageable infection that, with diligent care, won't shorten the reader's life (78). Halliday (1994) suggested that tone analysis primarily relies on minor and major clauses that are categorized into positive and negative polarity.

Another purpose of the negative imperative found in this study's corpus is to instruct the reader. Instructive imperatives – negative or not – reflect the writer's power distance from the reader as a medical authority who is responsible for informing the reader for the sake of their (the reader's) health, which in turn contributes to improving public health. The instance below (79), from the Boston Public Health website (English version, n.d.), shows the writer expressing their health professional status as a social indicator of tenor in the process of explaining how to care for the test site.

(79) Do not cover the spot with a band-aid or tape.

A writer might use negative expertise, which Minsky (1997) called "negexpertise" and observed comprises a substantial amount of expertise: disaster prevention, or what to avoid or not do.

Like the deontic modals and imperatives discussed in the previous two sections, negative imperatives can be used to persuade the reader, such as in the following instance from the Spanish organization CESIDA (*¿Tienes?*, 2018) (80).

- (80) *Si has tenido una práctica de riesgo, no esperes: acude a tu centro de salud u otro centro donde puedan hacerte la prueba.* (If you had a risky practice, don't wait: go to your health center or another center where they can test you.)

As noted earlier in this section, there were no significant differences between the three languages regarding the use of negative imperatives. However, a discourse analysis of a doctor-patient consultation dialogue performed in Vietnam revealed that a positive overall tone with minimal use of both positive and negative imperatives on the doctor's part in their interaction with the patient resulted in better outcomes (Nga, 2017). While Nga's (2017) analysis concerned spoken dialogue as opposed to written discourse, the point here is that the results of this aspect of this thesis research warrants further scrutiny, perhaps broadening the scope to include additional infectious diseases, to ascertain whether there really is no cultural difference between languages regarding the use of negative imperatives.

The next section will summarize the significant and non-significant results. In addition, an overview of the discussion regarding the first research question, which regards writer-reader relationship is provided.

## 5.4 Summary

This chapter addressed the first research question, which was: in the health information websites on HIV and TB diagnostic testing in English, Spanish and Catalan, are there variations regarding writer-reader relationship between the non-translated texts, the non-translated and the translated texts, and what are the key cross-linguistic similarities and differences? The tenor adopted by the writers and translators of multilingual health information websites on diagnostic HIV and TB testing appears to be a balance between the maintenance of power distance and the expression of solidarity with the reader. The key differences and similarities in the strategies implemented as regards writer-reader relationship – which are listed in Table 24 – will be presented first between the three non-translated sub-corpora to ascertain the characteristics of each one, followed by a comparison between the non-translated and the translated texts to determine whether cross-cultural adaptation occurred.

Table 24 - Similarities and differences between the non-translated (L1) and translated (L2) sub-corpora: Writer-reader relationship.

Markers	English L1	English L2	Spanish L1	Spanish L2	Catalan L1	Catalan L2
<b>Persuasion</b>	Informal tone	Formal tone	Formal tone	Formal tone	Formal tone	Formal tone
<b>Relational &amp; engagement markers</b>	More imperatives & 2 <sup>nd</sup> -person pronouns	More inclusive 1 <sup>st</sup> -person plural pronouns	More inclusive 1 <sup>st</sup> -person plural pronouns	Formal 2nd-person pronouns	More inclusive 1 <sup>st</sup> -person plural pronouns	Formal 2nd-person pronouns
<b>Hedge words</b>	Epistemic auxiliary verbs, epistemic adverbs, epistemic adjectives; hedging projected onto the readers	Epistemic auxiliary verbs, epistemic adverbs, epistemic adjectives	Epistemic adjectives	Cross-cultural adaptation present	Epistemic auxiliary verbs, epistemic adverbs, epistemic adjectives	Cross-cultural adaptation absent
<b>Inclusion words</b>	Genderless words	Lack of cross-cultural adaptation	Person-first language, gender-inclusive language	May have been partially influenced by English L1 (person-first language)	Gender-inclusive language	Lack of cross-cultural adaptation
<b>ID writer</b>	Implicit	Explicit	Implicit	Implicit	Explicit	Implicit
<b>ID reader</b>	Explicit	Implicit	Implicit	Explicit	Explicit	Implicit
<b>Diminutives</b>	Adjectives, adverbs, nouns	Adjectives	Adjectives & diminutive nouns	Cross-culturally adapted: contained diminutive nouns	Adjectives	Adjectives
<b>Person markers &amp; self-mentions</b>	1st-person singular & exclusive 1st-person plural pronoun, name of organization	1st-person singular & exclusive 1st-person plural pronoun, name of organization	1st-person verb conjugation, exclusive 1st-person plural pronoun & verb conjugation	1st-person singular pronoun & verb conjugation, name of organization, exclusive 1st-person plural pronoun	1st-person singular pronoun & verb conjugation, name of organization, exclusive 1st-person plural pronoun & verb conjugation	None
<b>Stigma words</b>	High number of stigma words present in all 3 L1 texts	No major differences between the L1 & L2 texts				
<b>Modal verbs, clauses &amp; expressions</b>		May reflect the Spanish L1 texts' frequent use of modal verbs, clauses, and expressions	More deontic modal verbs, clauses, & expressions than imperatives		More deontic modal verbs, clauses, & expressions than imperatives	May reflect the Spanish L1 texts' frequent use of modal verbs, clauses, and expressions
<b>Imperatives</b>	More imperatives than deontic modal verbs, clauses, & expressions					
<b>"Do not"</b>			Contained more negative imperatives			

*Differences between the non-translated sub-corpora:*

The three non-translated sub-corpora implemented different strategies to balance power distance and solidarity in the process of convincing the reader to get tested for HIV and TB. This resulted in the non-translated sub-corpus in each language possessing its own set of characteristics. These different approaches will be summarized one non-translated sub-corpus at a time.

The non-translated English sub-corpus exhibited more informal persuasion and hedge words, which reduced power distance and increased solidarity with the reader without losing politeness. In fact, the only significant difference between the three non-translated sub-corpora regarded hedge words; the English texts contained more than the Catalan ones. This finding contradicts those in the study by Pujol Dahme and Selfa Sastre (2015), although their results were not statistically significant. Hedge words in the English non-translated sub-corpus were used to engage the reader regarding sensitive topics and for the writer to express empathy towards their audience. Hedge words were also used for depersonalization to reduce stigma, as well as approximation to add subjectivity or so that the writer could distance themselves from responsibility from the verity of the statement. Of the three non-translated sub-corpora, the English one was the only one that projected hedging onto the readers, a strategy that boosted persuasion power.

The English non-translated sub-corpus implemented more genderless words and person-first language to boost solidarity and reduce power distance. However, the relational

and engagement markers in this sub-corpus consisted mainly of imperatives and second-person pronouns to maintain the impression of authority in the process of holding the reader's attention (Herrando-Rodrigo, 2010) and persuading them to get tested for HIV and TB.

The non-translated Spanish sub-corpus appeared to balance power distance with solidarity. There was a preference for the more polite deontic modal verbs, clauses, and expressions as opposed to the English tendency towards imperatives to spell out the call to action. Its proclivity for person-first language boosted solidarity, while the higher frequency of negative imperatives increased the power distance between the writer and the reader. Negative imperatives were implemented to instruct and persuade the reader, as well as to reassure or encourage them. As regards hedging, the Spanish non-translated lacked the epistemic modal verbs and epistemic adverbs that were present in both of the other two non-translated sub-corpora, which somewhat reflects the findings of the study by Salager-Meyer (2011). However, like the other two non-translated sub-corpora, the Spanish non-translated sub-corpus featured epistemic adjectives that were used to modalize possibility to render the health information texts less formal. The Spanish non-translated sub-corpus also expressed solidarity with the reader via inclusive first-person pronouns and gender-inclusive language while expressing formality through persuasion markers. The Spanish non-translated sub-corpus had the most implicit identity of both the writer and the reader and used singular personal deictics, which reflects the findings in the study by De Cock & Serrano (2017), along with third-person singular passive verb tense.

Like the Spanish non-translated sub-corpus, the Catalan non-translated sub-corpus also expressed solidarity with the reader via inclusive first-person pronouns and gender-inclusive language while expressing formality through persuasion markers. The Catalan non-translated sub-corpus contained the most explicit identity of both the writer, using plural personal deictics, which is a finding that reflects the results of the study by De Cock & Serrano (2017). In addition, the Catalan non-translated sub-corpus had the most explicit identity of the reader. The Catalan sub-corpora preferred deontic modal verbs, clauses, and expressions instead of the more authoritative imperatives used by the English non-translated sub-corpus to clarify the call to action.

The qualitative analysis did not detect any cultural differences between the three non-translated sub-corpora where person markers and self-mentions were concerned. The tenor was rendered more informal by adding the second-person singular pronoun (i.e., a relational or engagement marker) in the case of both implicit and explicit identity of the writer. The use of diminutives and stigma words was similar. This indicates the universality of the implementation strategies of these two pragmatic markers in health information websites between the three languages to convince the reader to get tested for HIV and TB.

As regards writer-reader relationship, there exist differences between the three non-translated sub-corpora. The Catalan non-translated sub-corpus adopted the most tactful tenor. The Spanish non-translated sub-corpus expressed a balance between solidarity and power distance. The English non-translated sub-corpus displayed the most authority.

*Differences between the translated and non-translated sub-corpora:*

As regards writer-reader relationship, the three non-translated sub-corpora possess different characteristics resulting from the analysis based on the outcome of the ELF-W questionnaire. The comparison of the mixed methods results between these non-translated sub-corpora with their respective translated sub-corpus revealed a lack of cross-cultural adaptation.

The English translated sub-corpus had more persuasion markers, which rendered the tone more formal, tactical, and polite compared with the English non-translated sub-corpus. This was likely a transferal without any cross-cultural adaptation from the Spanish and the Catalan non-translated source texts, which had a more formal tenor. As regards relational and engagement markers, the English non-translated sub-corpus contained significantly more than the English translated sub-corpus. The relational and engagement markers implemented in the English translated texts consisted of more inclusive first-person plural pronouns. The translated English sub-corpus reflected the tone of their Spanish and Catalan source texts instead of the more authoritative non-translated English sub-corpus, which had more second-person pronouns, as well as imperative and negative imperative verbs to engage the reader while increasing the power distance.

As regards inclusion words, there was some degree of cross-cultural adaptation where person-first language was concerned in the English texts translated from the Spanish source texts, which is a positive indication of the translators' efforts to boost solidarity with the reader.

A lack of cross-cultural adaptation was also evident in the Spanish translated sub-corpus. As regards inclusion words, the Spanish non-translated texts contained significantly more than the Spanish translated ones. The Spanish translated texts contained a frequency of person-first language that was proportional to the English non-translated sub-corpus. Nevertheless, the lack of inclusion words – and thus a lack of solidarity as reflected by the writer via the translator – in the Spanish translated sub-corpus increases power distance in comparison with the Spanish non-translated sub-corpus. As for the relational and engagement markers, the Spanish translated sub-corpus consisted mainly of second-person pronouns, which reflected the English source text. However, the second-person pronouns were in the formal form.

As concerns hedging, cross-cultural adaptation was present in the Spanish translated sub-corpus, but not in the Catalan translated sub-corpus. Hedge words were the only writer-reader relationship marker with two statistically significant results: the English non-translated



sub-corpus contained more than the Catalan non-translated sub-corpora, and the Catalan translated sub-corpus contained more than its non-translated counterpart. The latter significant difference indicates a lack of cross-cultural adaptation on the part of the translators.

In addition to hedging, the results for other markers indicated a lack of cross-cultural adaptation in the Catalan translated sub-corpus. Like the Spanish translated sub-corpus reflecting the English non-translated sub-corpus, the relational and engagement markers increased the power distance between the writer and the reader with second-person pronouns, albeit in the respectful formal form. The Catalan translated sub-corpus also exhibited a lack of cross-cultural adaptation as regards inclusion words and negative imperatives.

As regards the use of stigma words, the differences between the three languages and between their translated and non-translated texts were minuscule. This may be due to the usage in all of the sub-corpora within the context that would convince the readers to get tested. Where diminutives are concerned, no cultural differences were detected between the three non-translated sub-corpora or between the non-translated and translated texts within each of the three languages in this study, indicating that minimization is likely a shared strategy for health communication writers.

The mixed analysis also did not detect any cultural differences where person markers and self-mentions were concerned. Self-mentions, which were kept to a minimum, were used to promote the organization hosting the website as a testing and treatment center. The writers also used the first-person singular pronoun to take on the reader's voice in asking questions in problem-solution patterns, which was also found in prior research on popularized texts (Herrando-Rodrigo, 2010; Diani, 2019). Minimal use of self-mentions with a greater use of relational and engagement markers to connect with the reader reflects prior research findings (Diani, 2019).

The authoritative tenor resulting from the use of imperatives was softened when combined with deontic modal verbs, clauses, and expressions. Future research is recommended for a comparative analysis that focuses on whether cross-cultural adaptations have occurred by comparing between the translated and non-translated texts in English, Spanish, and Catalan concerning imperatives, negative imperatives, along with modal verbs, clauses, and expressions. In the case of both implicit and explicit identity of the writer, adding the second-person singular pronoun (i.e., relational or engagement marker) in the same sentence rendered the tenor more informal. The use of inclusion words in this study's corpus was indicative of the writer and translator reducing power distance and boosting solidarity with the reader. These results should be considered in the writers' and translators' composition of successful cross-culturally adapted multilingual health information texts which would result in the readers' compliance.

The tenor in this study's multilingual health information websites in English, Spanish, and Catalan was defined by a balance between power distance and the expression of solidarity with the reader. This balance differed between the three languages' non-translated texts, as evident in the variations among the markers used by the writers. The treatment of these markers was not always culturally adapted by the translators. Writer-reader relationship includes technicality of vocabulary, as explicated in Section 3.2.3. The next chapter demonstrates how the writer's use of technical vocabulary in multilingual health information on HIV and TB diagnostic testing can affect the authoritative tone, thus affecting whether the reader will respond to the message.

## 6. ANALYSIS: Technicality of vocabulary

*“You can use the power of words to bury meaning or to excavate it. If you lack words for a phenomenon, an emotion, a situation, you can’t talk about it, which means that you can’t come together to address it, let alone change it.” Rebecca Solnit (Solnit, 2014, *Twenty-first century words*, para. 3)*

Rebecca Solnit’s statement refers to the power of words to encourage action on the issue in question – in the case of her article, misogyny, and violence against women. In the case of this study, one of the issues that for a long time lacked a set of much needed nomenclatures was a certain virus that mostly affected gay men. An epidemic affecting gay men in the major cities of the United States surfaced during the summer of 1981. The Centers for Disease Control and Prevention (CDC, 1982) received reports of clusters of rare illnesses: cryptococcal meningitis, Kaposi’s sarcoma, rare lymphomas, and pneumocystis carinii pneumonia (or PCP). In addition to affecting mainly gay men, what this bizarre combination of diseases had in common was a significant collapse of the immune system. The medical world’s attempt to identify this disease immediately resulted in a damning stigma: first labelled “gay compromise syndrome” (Brennan and Durack, 1981, p. 1338), it was also referred to as “GRID (gay-related immune deficiency)” (Centers for Disease Control and Prevention, 1982) and disparagingly by the media as “gay cancer” (Adib and Ostrow, 1991, p. 281). One year later, the disease, which had by then turned up in Europe and Latin America, was permanently named “acquired immune deficiency syndrome,” or “AIDS” (Francioli, P., et al., 1982; Rozemberaum, W., et al., 1982; Vilaseca, J., et al., 1982). In the manifesto *Illness as Metaphor and AIDS and its Metaphors*, Susan Sontag (1990) observed how AIDS extended beyond the realm of medicine as an infectious disease epidemic, particularly one that is not well-understood, into the sociopolitical realm. Used selectively by culturally competent medical writers and translators, words have the power in multilingual health information websites to boost a reader’s health literacy level, persuade them to get tested and treated for an infectious disease – in the case of this study, HIV or TB – as well as eliminate stigma and prevent community spread of the infectious disease.

This chapter discusses the use of certain words – specifically, technicality of vocabulary – in this study’s six sub-corpora. The second and the third research questions of this thesis are addressed:

2. How technical is the vocabulary in the websites about HIV and TB diagnostic testing in the translated and non-translated versions of English, Spanish, and Catalan websites on HIV and TB testing?
3. Are there any differences in the treatment of technicality of vocabulary between the translated and non-translated versions of English, Spanish, and Catalan health information websites on HIV and TB testing?

In light of these two research questions, this chapter will present the statistically significant results and qualitatively analyze the six sub-corpora as regards technicality of vocabulary. The discussion will conclude with a summary with relation to the research questions.

## 6.1 Statistical analysis results

This section presents the statistically significant results<sup>81</sup> based on mean proportion with standard error and linear regression models.

The results of the first question of the ELF-W Technicality of Vocabulary – How technical is the vocabulary used in the text? – are described below. As explained in Section 4.3.3, those data were compared between languages, and between translated (L2) and non-translated (L1) texts within each language. For the comparison between languages, Table 25 displays the data, including the percentage results, for the English, Spanish, and Catalan non-translated (L1) sub-corpora in the second, fourth, and sixth rows. Considering the percentages in the comparison between the non-translated sub-corpora, the Spanish original texts are the most technical while English is the least technical. The same table displays the comparison of technicality of text between translated (L2) and non-translated (L1) texts within each language. Again, comparing the percentages, the English and the Catalan translated texts are between one and 2 percentage points more technical than their non-translated counterpart, whereas the upward shift in translation is absent from the Spanish pair. That is, the Spanish non-translated texts are almost two percentage points more technical than the translated ones. However, one must bear in mind the discrepancy in the number of texts in each sub-corpus which increases the risk of outliers skewing the results. Also, percentages alone do not reflect whether the findings are significant and whether such significance is substantial.

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<sup>81</sup> The complete results from the fitted linear regression models for technicality of text and for all the markers can be found in Appendix 2.

Table 25 - Percentage technical words in the non-translated (L1) and translated (L2) sub-corpora.

<b>Language sub-corpora</b>	<b>Number of texts</b>	<b>Average word count per text</b>	<b>Number of technical words (mean)</b>	<b>Technicality of text (percentage)</b>
<b>English L1</b>	52	660.60	44.77	6.78%
<b>English L2</b>	16	391.56	31.25	7.98%
<b>Spanish L1</b>	7	340.43	29.86	8.77%
<b>Spanish L2</b>	65	668.38	46.20	6.91%
<b>Catalan L1</b>	8	505.88	39.75	7.86%
<b>Catalan L2</b>	2	874.50	79.5	9.09%

Figure 17 shows a mean proportion<sup>82</sup> graph for the number of technical words in each sub-corpora. For each language, the non-translated sub-corpora are shown in dark gray, and the translated sub-corpora are in light gray. At 12.56%, the Spanish non-translated texts had more technical words than either the English or the Catalan non-translated texts. In contrast to the means listed in Table 25 above, the mean proportion in Figure 17 shows that the English translated sub-corpus has 1.35 percentage points more technical words compared with the non-translated sub-corpus, and the Spanish non-translated sub-corpus contained 3.61 percentage points more technical words than the Spanish translated sub-corpus. The Catalan translated sub-corpus contained 1.81 percentage points more technical words than the non-translated sub-corpus. The standard error bars are mostly small, which indicates that the data are close to the mean and is thus more likely to represent the “population.” There is little to no overlap of the standard error bars between the three languages’ non-translated data, nor is there any overlap between the Spanish translated and non-translated data; this signals the chance of significant differences between these sub-corpora.

<sup>82</sup> The percentages for technicality of text were calculated differently (see Section 4.3.4) from the mean proportion percentages (see Section 4.6).

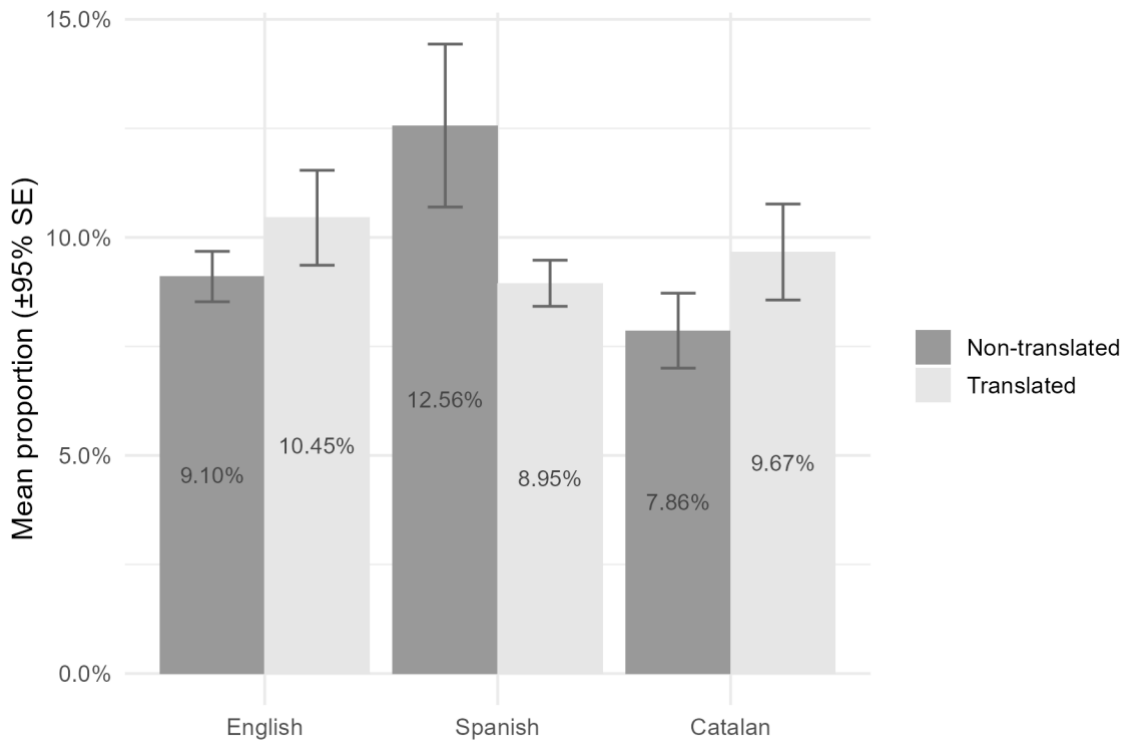


Figure 17 - Comparison of number of technical words in each sub-corpus.

However, the only significant finding in the linear regression model analyses was that the Spanish non-translated sub-corpus contained a higher technicality of vocabulary than the translated one ( $\beta = -0.036$ ,  $SE = 0.017$ ,  $z = -2.131$ ,  $p = 0.033$ ). The mixed models failed to reveal any other significant findings regarding technicality of text.

The second ELF-W question concerned the appropriateness of the technicality of the vocabulary in the texts. One marker used for answering the first part of the second ELF-W question was found to be statistically significant: words accompanied by a definition or explanation. For this marker, Figure 18 below shows the mean proportion with standard error, which shows the mean proportion with 95% standard error. In the comparison between languages, the English and the Catalan non-translated sub-corpora had more words accompanied by a definition or an explanation than the Spanish non-translated sub-corpus. Within each language, apart from English, the translated texts contained more words accompanied by a definition or an explanation than the non-translated texts (differences between translated and non-translated texts: English 0.19 percentage points, Spanish 0.06 percentage points, and Catalan 0.99 percentage points). The standard error bars of the Spanish non-translated sub-corpus and the Catalan translated sub-corpus are larger, meaning that the data vary more from the mean, whose value does not represent the data as much. Specifically, this indicates that these two sub-corpora have variation in the occurrence of words accompanied by a definition, particularly in the Spanish non-translated sub-corpus,

which contained three texts without any words accompanied by a definition. The inverse is the interpretation for the English non-translated sub-corpus and the Spanish translated sub-corpus.

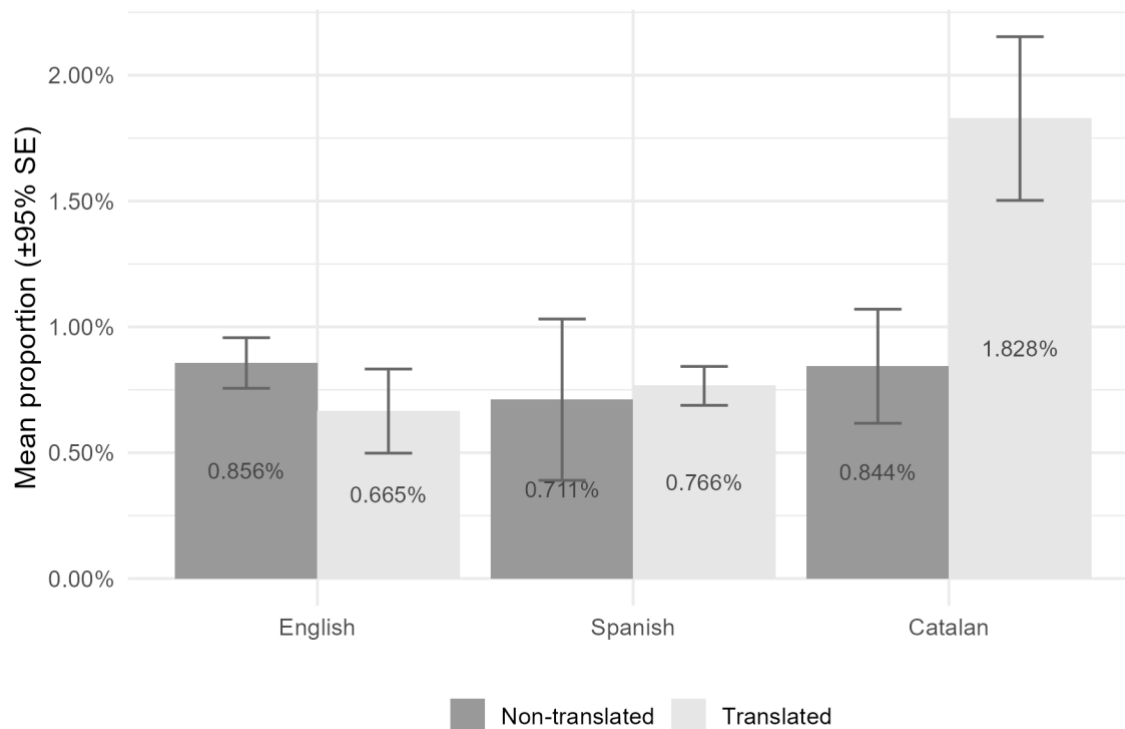


Figure 18 - Comparison of frequency of words accompanied by a definition or explanation in each sub-corpus.

The non-translated sub-corpora for all three languages have overlapping standard error bars, indicating a lower likelihood for significant differences between them. However, there is no overlap between the Catalan non-translated and the translated sub-corpora, which means there is a chance for a significant difference between them. The linear regression models verified this difference. In the comparison between the sub-corpora regarding words accompanied by a definition or explanation, the Catalan translated texts contained more than the non-translated Catalan texts ( $\beta = 0.010$ ,  $SE = 0.004$ ,  $z = 2.240$ ,  $p = 0.025$ ).

The second part of the second ELF-W question concerns the presence of textual multimodality, whose statistical analysis yielded two significant results. The mean proportion graph for textual multimodality is shown below (Figure 19). Comparing between languages, the Spanish non-translated texts contained the most textual multimodality, while the Catalan non-translated texts had the least. Comparing within languages, the English translated sub-corpus, with a difference of 0.41 percentage points, and the Spanish non-translated sub-corpus, with a difference of 1.58 percentage points, had more textual multimodality than their

counterpart within their respective language. The Catalan non-translated and translated texts had nearly the same amount of textual multimodality, with a 0.01 percentage points difference. The data for the Spanish non-translated sub-corpus is widely spread around the mean, which is not representative of its data. A closer examination showed that five of the Spanish non-translated texts contained textual multimodality, most of which was found in two texts. There is a lack of overlap of the standard error between the Spanish non-translated sub-corpus with its translated counterpart and with the other two non-translated ones, indicating the likelihood of significant differences.

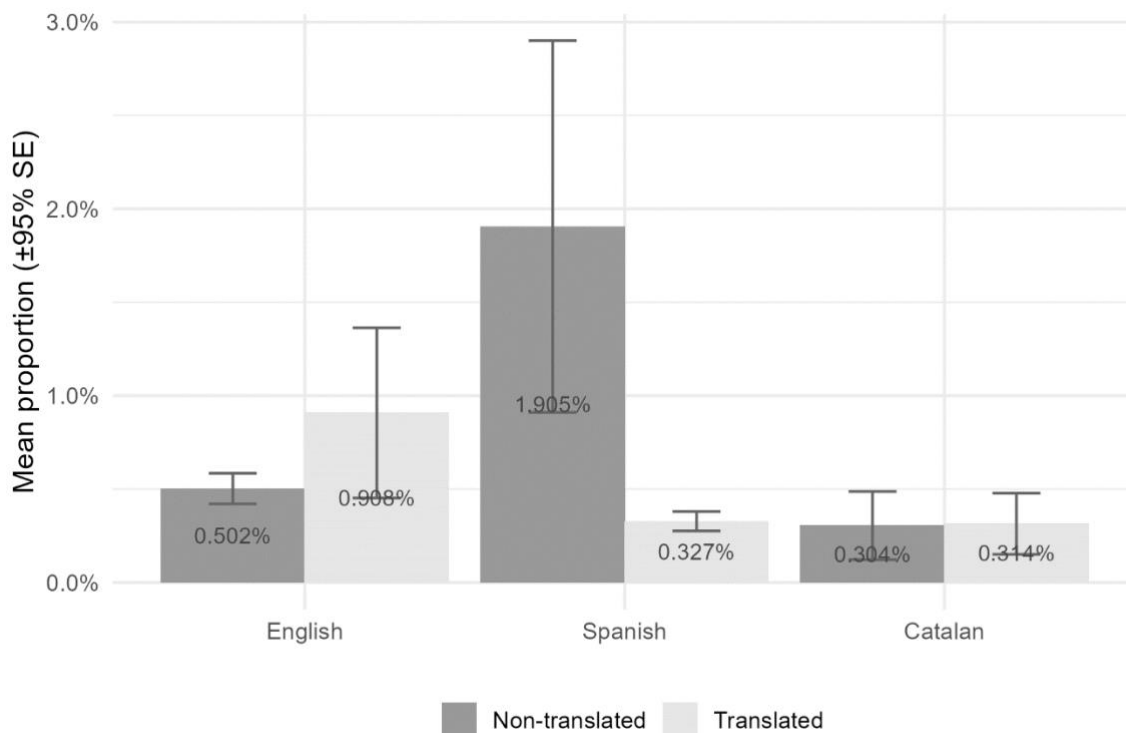


Figure 19 - Comparison of frequency of multimodality in each sub-corpus.

Two significant findings reflecting the non-overlapping standard error bars in Figure 19 resulted from the linear regression models comparing the frequency of textual multimodality between the sub-corpora. For the comparison between non-translated sub-corpora between languages, the findings ( $X^2(2) = 14.303$ ,  $p = .001$ ) can be interpreted as the Spanish having more textual multimodality than the English ( $d = 1.476$ ,  $p = 0.002$ ) and the Catalan ( $d = 1.674$ ,  $p = 0.006$ ), without any significant differences between the latter two. Within languages, the Spanish non-translated texts contained significantly more textual multimodality than the Spanish translated texts ( $\beta = -0.016$ ,  $SE = 0.003$ ,  $z = -4.632$ ,  $p = 0.000$ ).

For the remaining markers used for analyzing technicality of vocabulary, the disparate size of the sub-corpora resulted in statistically insignificant results that still warrant qualitative



analysis. The next section presents the qualitative analysis of the level of technicality in the texts.

## **6.2 Level of technicality**

This section answers the second research question, which is: how technical is the vocabulary in the websites about HIV and TB diagnostic testing in the translated and non-translated versions of English, Spanish, and Catalan websites on HIV and TB testing? This question straightforwardly assesses the level of technicality of the vocabulary in the HIV and TB health information websites in this study's corpus. The word lists, which were created with the words extracted from the corpus in step two (Section 4.3.1), contain the information from the dictionary consultation that was completed in step three (Section 4.3.2) and the TAM-HC classification that was done in step four (Section 4.3.3). These word lists may be viewed in the annex.

The technicality of vocabulary in the texts pertains to the first question in the technicality of vocabulary section of the ELF-W instrument, whose response is based on the results of the analysis using the TAM-HC instrument. One should bear in mind that the methodology for the ELF-W's first question and the TAM-HC instrument, and therefore this section of the discussion, exclude whether the technical words were presented in a way that the reader could understand, whether it was to improve or utilize their health literacy (which is the purpose of the rest of the ELF-W technicality of vocabulary questionnaire and will be discussed in Section 7.3). First, the meaningful findings in the comparison between the English, Spanish, and Catalan sub-corpora will be discussed. Then the translated and non-translated sub-corpora will be discussed based on the significant findings that correspond to this research question.

### **6.2.1 Differences between the non-translated sub-corpora**

There were no significant findings in the statistical analyses comparing the English, Spanish, and Catalan non-translated sub-corpora. This implies that the level of technicality was similar among the original texts in all three languages. The study by Johnson, et al. (2019) reviewed in Section 2.1 exemplified the linguistic bias of readability tests such as the SOL and the SMOG towards Spanish, which could be applicable to Catalan, due to these two languages having more polysyllabic words compared with English. Such a bias as was found in Johnson, et al. (2019) was eliminated with the TAM-HC, an instrument that does not gauge readability by counting the number of syllables per word and the number of multisyllabic words there are

in a text. The TAM-HC seems to have placed the three languages' non-translated sub-corpora on equal footing.

According to the mean proportion, the Spanish non-translated sub-corpus has the most (12.56%) and the Catalan has the least (7.86%) technical terms.<sup>83</sup> The percentages of technicality in the overall texts are above the recommended 5% (Nation, 2001, p. 12), in which the Voice of Lifeworld should be more prominent. This supports the proposal in Section 3.2.3 that textual metafunction correlates with mode *and* it interacts with interpersonal (tenor) and experiential metafunction (field). Since writer-reader relationship is viewed as tenor in SFL, it would be better to consider technicality of vocabulary as forming a part of writer-reader relationship. The writer – the Voice of Medicine – must translate their professional language so that those who communicate in the language of the Lifeworld may understand the message and heed the call to action. There persists a slight excess of the language of the Voice of Medicine in this study's three non-translated sub-corpora, which may have had room for improvement regarding the usage of technical terms. This possibility stems from the circumstances around the technical term instances, which will be discussed in detail in Section 6.3: the nature of the technical words is as critical as the percentage of technicality of a text (Chung & Nation, 2003). The context includes, for example, whether most, if not all, of the technical words have been clearly defined or explained in the text.

Neither the TAM-HC alone nor the ELF-W alone accurately reveals the technicality of vocabulary in a text. The TAM-HC may show that a website contains numerous specialized words. The percentage of technical words in the text answers the first question of the ELF-W. The first question of the ELF-W Technicality of Vocabulary questionnaire only reports how technical the vocabulary is in the text. It can be argued that the TAM-HC instrument is equivalent regarding the extent of information provided by the readability and comprehensibility instruments frequently used in public health. The TAM-HC, however, reveals more information than the SMOG, the Flesch Reading Ease, and the Flesch-Kincaid grade level, as explained in Section 2.4.

The remainder of the ELF-W analysis indicates whether those terms were presented in a way that the reader could understand the message – for example, each technical word or phrase was accompanied by an explanation or a definition and repeated within the context for knowledge reinforcement. Whether these texts contain lexical familiarization devices, including code glosses, that render the text more comprehensible for the public are revealed in the subsequent questions of the ELF-W Technicality of Vocabulary questionnaire.

The differences in the technicality of text between the translated and non-translated texts will be discussed in the next section.

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<sup>83</sup> The lexical similarity between Catalan and Spanish is 85% (Eberhard, et al., 2022).

### 6.2.2 Differences between the translated & non-translated sub-corpora

The linear regression model revealed that the Spanish non-translated sub-corpus contained a higher technicality of vocabulary than the translated one ( $\beta = -0.036$ ,  $SE = 0.017$ ,  $z = -2.131$ ,  $p = 0.033$ ). This result supported that of the mean proportion analysis for the most significant finding of technicality of texts.

Askehave and Zethsen (2014) and Montalt et al. (2018) noted that translations of a health communication text increase the technicality of the vocabulary in the target language, which results in reduced comprehensibility. This was evident in the following mean proportion analysis: the translated texts contained more technical vocabulary in the English (1.35 percentage points difference) and the Catalan (1.81 percentage points difference) sub-corpora.

However, the Spanish non-translated sub-corpus had significantly more technicality than the Spanish translated sub-corpus, with a 3.61 percentage point difference. There are two ways to view this finding: one is as a lack of cultural adaptation on the part of the translators into Spanish from Catalan and English source texts, and the other is as the Spanish translators avoiding an upward shift in the degree of technicality in the text.

The first possible interpretation of this finding is that the Spanish translators from the English and the Catalan source texts failed to cross-culturally adapt the degree of technicality to the same level as the Spanish non-translated texts. The degree of technicality of the Spanish non-translated texts could be perceived as the standard to which the translators should have strived to meet. This failure on the part of the Spanish translators may have resulted in a reproduction of the degree of technicality of vocabulary of the English and Catalan source texts. Another possible cause is the choice of the Spanish translators to reduce the degree of technicality of vocabulary in the process of rendering the target text more comprehensible to accommodate their reader's potentially low health literacy. This would have rendered the Spanish translated texts more comprehensible – thus reducing power distance due to fewer technical terms in the texts – at the expense of cross-cultural adaptation.

The other way to interpret the finding of the Spanish non-translated texts having a higher degree of technicality compared with the translated texts is that the translators did a commendable job on the translation from Catalan and English into Spanish to prevent the upward shift of the degree of technicality. Such an upward shift could render the text less comprehensible and increase the power distance between the reader and the writer. Doak, et al. (1996) suggested that health information texts be edited, restricting the use of specialized words and scientific jargon. The purpose of such editing and restriction would be to suit the more universal third-to-fifth grade reading level as mentioned in Section 2.1. Basavakumar, et

al. (2019) recommended a reduction in the use of technical terms to render online health information more accessible and improve clinical prognoses along with relations between the patient and their health care providers. However, technical words that must be included in the text should be treated with the target reader in mind.

Two specialized terms that stood out due to their treatment in this study's original and translated texts: "antiretroviral treatment" (ART) and "window period." The English "window period," resulted in two different translations in Spanish. The term was either calqued – *período ventana* ("window period") – or a term variation – *período silente* ("silent period") – was implemented. The United States government-based website AIDS Info featured a term variation<sup>84</sup> in the Spanish translation from the original English text's "window period": *período silente* (silent period) (AIDSInfo/infoSIDA, 2019) instead of *período ventana*. One of the origins of term variation is the disparity of usage between speakers from different cultures (Candel Mora & Carrió Pastor, 2012). Neither term appeared in any of the three dictionaries used in the Spanish TAM-HC analysis; an analysis of each word separately resulted in both variations being classified as TAM2-3 (slightly to moderately technical). A consultation with the Spanish general language corpus resulted in three instances of *período ventana* with the first occurrence in 1996, but *período silente* did not appear at all (Real Academia Española, 2022). Perhaps both *período silente* and *período ventana* form a part of the Spanish vocabulary among health professionals (Voice of Medicine), who may use these terms interchangeably. However, the Spanish public (Voice of Lifeworld) might be unfamiliar with multiple terms for the same concept and may refer to the concept using what they know if they are already familiar with either term variation. Candel Mora and Carrió Pastor (2012, p. 34) observed that "the traditional view claimed that terms should be used unambiguously to refer to clearly defined concepts." It may seem obvious that adhering to one technical term per concept for the sake of clarity for the lay reader would be a prudent approach on the writer's part. However, such an altruistic approach in rendering and translating health communication texts can raise issues due to the vocabulary of the language of the medical world, since "[...] translators may actually over-standardize" (Bowker & Hawkins, 2006, p. 80). If the term variation is accompanied by a definition or explanation – AIDS Info's *período silente* was hyperlinked to a definition – there should be no issues with this word choice as opposed to *período (de) ventana*.

Another possible reason for the translator's term variation choice could concern the transfer of the writer's urgent tone of the message to get tested for the potentially fatal infectious disease. The *Oxford English Dictionary* (OED Online, 2022) defines "silent" in the

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<sup>84</sup> "Term variation" is defined as "the use of alternative names for the same concept, i.e., synonymy" (Candel Mora & Carrió Pastor, 2012)

figurative sense as “unobtrusive,” and within the context of medicine as “of a disease, disorder, infection, or infectious agent: present but not (yet) producing symptoms or clinical signs,” and continues with “designating an asymptomatic carrier of a disease or infectious agent, and transmission by such carriers.” “Silent period” contains a more sinister semantic prosody<sup>85</sup> compared with the more neutral “window period.” The *Oxford English Dictionary* (OED Online, 2022) defines “window” in the figurative sense as “an interval of time.” The time frame between contagion and pathogenic replication to the level at which a test could accurately detect the infection is thus personified and gives the reader the sense of a disease possibly taking root in their body, a compelling implication to get tested if they wish to eliminate TB or bring an HIV infection down to undetectable levels.

One English translator treated this technical term differently compared with their Spanish and Catalan professional counterparts. In one of the website texts hosted by Grupo de Trabajo Sobre el Tratamiento del VIH, “período ventana” (32 *VIH*, n.d.) was presented as a proper noun: “Window Period” (32 *HIV*, n.d.). It is possible that this translator was not specialized in biomedicine and was thus unfamiliar with this technical term.

It should be noted that “window period” is more technical in Catalan than in Spanish or English. As opposed to the English and Spanish TAM2-3 classification for “window period,” the Catalan classification for *període finestra* (window period) was TAM4-5 (very to most technical). The term was not found in the *Diccionari de la llengua catalana* and the *Diccionari enciclopèdic de medicina*, and the two words had to be consulted individually in the *Diccionari descriptiu de la llengua catalana* for the TAM-HC classification based on their frequency (see Section 4.3.3 for the classification criteria). However, *període finestra* (window period) is listed in a Catalan search engine for terminological files called *CERCATERM* (Termcat: CERCATERM, 2022) with translations in Spanish and English. The non-translated Catalan text from the Valencian autonomic regional government’s public health department, the Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, included *període finestra* (“window period”) (Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, *Recomanacions*, 2018). Other Catalan texts feature the word with textual multimodality.

The use of textual multimodality is another reason why the technical term “window period” stands out in its treatment by the writers and translators of this study’s corpus. As explicated earlier, “window period” is a technical term in which “window” has a figurative meaning. A non-translated Catalan text – from Govern Illes Balears Direcció General de

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<sup>85</sup> “Semantic prosody” is defined as “a collocational phenomenon whereby a lexical item that, in and of itself, does not contain any evaluative meaning, takes on an attitudinal meaning by virtue of the lexical environment in which it is typically found” (Bowker & Hawkins, 2006, p. 93). A positive semantic prosody would have a favorable meaning and a negative semantic prosody would have an unfavorable meaning (Louw, 1993).

Salut Publica y Participación – added double quotation marks to the colored text to present the technical term “**període finestra**” (“**window period**”) (Govern Illes Balears Direcció General de Salut Publica y Participación, *Infeccions*, n.d.). It was translated into Spanish with the same two multimodality types. “Window period” appeared in nine English non-translated texts.<sup>86</sup> The Spanish translated texts featured various translations of “window period”: “período de ventana” (Greater Than AIDS, *Pruebas*, n.d.; HealthReach, *Con qué frecuencia*, 2018), “período ventana” (GMHC, *VIH*, n.d.; POZ, *Prueba*, 2017; San Francisco AIDS Foundation, *Preguntas*, n.d.), and the misspelled “periodo ventana” (AIDS Info Net, *Análisis*, 2014; Planned Parenthood, *Debería*, n.d.) and “periodo de ventana” (Office on Women’s Health, *VIH*, 2018), [twice in the same text (CDC, *Hágase*, May 2016)]. While multimodality will be discussed in detail in Section 6.3.1, reviewing the treatment of “window period” presents a notable correlation between the term variation of the technicality of vocabulary within the texts and multimodality as a lexical familiarization device.

The second of the two technical terms that stood out in this study, “antiretroviral treatment” (ART), is due to how this term was translated from the original Spanish and Catalan versions. The full word appears in the original Spanish or Catalan text without the acronym or initialism<sup>87</sup> that often accompanies the English version. This term appears once in the Spanish non-translated sub-corpus – in CESIDA’s (*¿Tienes?*, 2018) non-translated Spanish text: *tratamiento antirretroviral* (antiretroviral treatment) – and in two non-translated Catalan texts (BCN Checkpoint, *La prova*, n.d.; Govern Illes Balears Direcció General de Salut, *Infeccions*, n.d.): *tractament antiretroviral* (antiretroviral treatment). In both Spanish versions of the two Catalan websites, *tractament antiretroviral* (antiretroviral treatment) became *tratamiento antirretroviral* (antiretroviral treatment). However, in CESIDA’s (Any questions, 2018) English translation, *tratamiento antirretroviral* (antiretroviral treatment) became “antiretroviral medication.” It is possible that the English translator decided that “medication” was more specific than “treatment.” In none of the Spanish non-translated texts or the Catalan non-translated texts or in the Spanish translations or the English translation did any initialism for this term appear.

Another notable finding is the treatment of the acronym for “antiretroviral treatment” (ART) between the English non-translated texts and the Spanish and Catalan translated texts. Since English is the *lingua franca* of the global science community (Cromer, 2008; Afreh, et

<sup>86</sup> GMHC, *HIV*, n.d.; Greater Than AIDS, *HIV Testing*, n.d.; HealthReach, *How often*, 2018; Kaiser Permanente, *HIV*, 2015; Office on Women’s Health, *HIV*, 2018; Planned Parenthood, *Should I*, n.d.; POZ, *HIV*, 2016.

<sup>87</sup> It is important to remember that, in this study, there were no significant results in either the mean proportion analyses or the linear regression models for the multiple capital letters marker in the comparison between the three non-translated sub-corpora or between the translated and non-translated sub-corpora within each language.

al., 2017), a technical term's original acronym or initialism is usually retained in the translation (Siglas extranjeras, 2020). Two exceptions were found in translated Spanish texts: one from a United States government-based website, which reorganized the letters of the acronym – *tratamiento antiretroviral (TAR)* instead of ART (CDC, *Prueba del VIH*, 2019) and the other from the Greater Than AIDS website (Greater Than AIDS, n.d.) – *antirretrovirales (ARV)* – where several Spanish texts translated from the original English included *por sus siglas en inglés* (by their abbreviation in English). Seventeen additional Spanish translated websites included an initialism accompanied by *por sus siglas en inglés*.<sup>88</sup> AIDSInfo/infoSIDA (2019) altered the acronym for ART, while retaining the original English for NAT.

There is a need to standardize abbreviatory nomenclature (Wren, et al., 2005) in each language to prevent ambiguity among not only the readers, but more importantly, the writers and translators so that they could ensure clarity for the target audience. Acronyms or initialisms found in Spanish and Catalan texts that were transferred over and accompanied by the abovementioned expression included IGRA (interferon-gamma release assay), NAT (nucleic acid test), and PCR [(polymerase chain reaction (test))], the last of which has become a household word due to the COVID-19 pandemic. Initialisms and acronyms will be further discussed in Section 6.4.3.

This section examined the presence of technical terms in this study's corpus. The Spanish non-translated texts contained a significantly higher level of technicality of vocabulary compared with their translated counterparts, indicating that the translators prevented the upward shift in technicality from English and Catalan into Spanish. The next section delves into the ways that the writer handled the specialized words so that the reader may improve their health literacy.

### 6.3 Differences in the treatment of technical words

This section is concerned with the differences in the way that the writer presents the technical terms to the reader, and answers the third research question, which is: are there any differences in the treatment of technicality of vocabulary between the translated and non-translated versions of English, Spanish, and Catalan health information websites on HIV and TB testing? The significant results of the analyses comparing the non-translated English, Spanish, and Catalan sub-corpora will be discussed first, followed by a discussion of the

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<sup>88</sup> American Association for Clinical Chemistry, 2017; Boston Public Health Commission, 2015; Cachay, 2016; CDC, 2012; CDC, *Hágase*, May 2016; CDC, *Pruebas*, 2016; GMHC, n.d.; HealthReach, Confidencial, 2017; National Library of Medicine, 2018; NIA, 2017; NYC Health, n.d.; Office on Women's Health, *VIH*, 2018; POZ, *Prueba*, 2017; Tierney & Nardell, *Diagnóstico*, 2018; Thompson, et al., 2019; Whitman-Walker Health, *Pruebas*, n.d.

significant findings of the comparison between the translated and non-translated sub-corpora within each language. Finally, the non-significant findings will be discussed.

### 6.3.1 Multimodality

Multimodality was the sole marker for the second part of the second question of the ELF technicality of vocabulary instrument. The question concerned the appropriateness of the technicality of the vocabulary in the texts, and was divided into two parts, with the first part querying about the identification methods of the technical terms and the second part concerning the general use of multimodality. As explained in Section 3.2.3, multimodality can be perceived as a type of textual metafunction, which serves to reinforce the writer's intended form of interpretation of the text by the reader. Multimodality extends beyond word choice on the part of the writer to reflect their cultural influences via semiotic devices. Since multimodality in this study focused only on the treatment of specialized vocabulary in the text, the types were limited as described in Section 4.3.1.

#### *Multimodality: Differences between the non-translated sub-corpora*

The mean proportion analyses indicated that the Spanish non-translated texts (1.90%) contained more multimodality compared with the English (0.50%) or the Catalan (0.30%) counterparts. The standard error bar of the Spanish non-translated sub-corpus overlapped only that of the English translated sub-corpus (Figure 19). The mean proportion analyses were supported by the mixed models. There are significant differences between the three languages' original texts – in response to the third research question concerning technicality of vocabulary. Specifically, this regards multimodality according to the linear regression model result  $X^2(2) = 14.303$ ,  $p = .001$  being interpretable as the Spanish non-translated sub-corpus having more than the English ( $d = 1.476$ ,  $p = .002$ ) and Catalan ( $d = 1.674$ ,  $p = .006$ ) ones, without any significant differences between the latter two sub-corpora.

Based on this study's corpus, Spain, more than in Catalonia or in the included English-speaking countries, appears to favor the visual effects of highlighting a technical term through bold type, single quotation marks, or a different color. A more universal reason could be the influence of the writer's work culture in terms of the Voice of Medicine; the Spanish writers may be especially aware of the need to teach specialized words to the readers of the Lifeworld and help the audience improve their health literacy by, for example, hyperlinking a technical term to a glossary. Bold types, underlining, and italics may be used by the writer to call the reader's attention to potentially unfamiliar medical terms, which would hopefully be



accompanied by a hinge word or a definition or an explanation to aid in the reader's ability to comprehend the health information.

For further analysis of textual multimodality, the examples were subcoded with the different lexical familiarization categories found within the three non-translated sub-corpora. Table 26 below displays the frequency of the multimodality types used in the texts in each of the non-translated sub-corpora. The Spanish non-translated sub-corpus mostly highlighted technical terms by using either single quotation marks or all capital letters in bold type and a different color.

Table 26 - Occurrences of textual multimodality type in the non-translated (L1) sub-corpora. The data are shown as [frequency (mean)].

Textual multimodality type	English L1	Spanish L1	Catalan L1
Textual multimodality <sup>89</sup>	202 (3.88)	21 (3.00)	15 (1.88)
Italics	13 (0.25)	0 (0.00)	0 (0.00)
Single quotation marks	5 (0.10)	7 (0.88)	0 (0.00)
Double quotation marks	26 (0.50)	1 (0.13)	1 (0.13)
Double quotation marks & different color	0 (0.00)	0 (0.00)	1 (0.13)
Different color	6 (0.12)	7 (0.88)	9 (1.13)
Different color & asterisk with footnote	4 (0.08)	0 (0.00)	0 (0.00)
Different color & underline	11 (0.21)	0 (0.00)	0 (0.00)
Underline	3 (0.06)	0 (0.00)	0 (0.00)
Underline & bold	1 (0.02)	0 (0.00)	0 (0.00)
Bold	41 (0.79)	6 (0.75)	6 (0.75)
Bold & hyperlink	11 (0.21)	0 (0.00)	0 (0.00)
Hyperlink	80 (1.54)	0 (0.00)	0 (0.00)
All capital letters	2 (0.04)	0 (0.00)	0 (0.00)
All capital letters, bold & different color	0 (0.00)	2 (0.25)	0 (0.00)

For example, the Grupo de Trabajo Sobre el Tratamiento del VIH writer (Grupo de Trabajo Sobre el Tratamiento del VIH, 32, n.d.) explained to the reader that a positive result must be verified – 'prueba confirmatoria' ('confirmatory test') – with the use of single quotation marks to emphasize the technical term. In another website text by the same organization, single quotation marks were implemented to stress the HIV status: 'VIH negativo' and 'VIH positivo'

<sup>89</sup> The total frequency for multimodality is from the coding for all the markers in response to the ELF-W technicality of vocabulary questions. The subcoding was performed later and involved assigning more than one subcode to some of the multimodality codes. As a result, the sum of the subcodes do not equal the total frequency for multimodality.

(‘HIV negative’ and ‘HIV positive’) (75, n.d.). According to Fundéu RAE (2018), single quotation marks (*comillas simples*) can be used to indicate the special characteristics of a word if italics are unavailable, especially if it is from another language.

Using a multimodality device such as quotation marks or italics is the writer’s acknowledgment that the highlighted term may be unfamiliar to the reader (Farkas, 1983). According to Farkas (1983), such multimodality devices are less effective when the highlighted term precedes its definition and is ineffectual when its definition comes before the term. Introducing a term from another language lends the text an alteration in the writer’s voice as though they’re speaking from deeper within the specialized realm of medicine, since doing so compounds the use of technical terms with another language that reader may also be unfamiliar with, such as the presentation of an English acronym or initialism. In one of the websites by Grupo de Trabajo Sobre el Tratamiento del VIH, both ‘VIH negativo’ and ‘VIH positivo’ (‘HIV negative’ and ‘HIV positive’) were accompanied by a definition and later highlighted in bold type and a different color, and once again accompanied by a definition in regular type and a different color (Grupo de Trabajo Sobre el Tratamiento del VIH, 75, n.d.). This repetition risks the reader’s offence by the writer’s assumption of a lower audience intelligence.

Another text consolidated multiple multimodality types to educate and inform the reader in a more concise manner. The writer at SaludMadrid (SaludMadrid, n.d.) combined all capital letters and a different color to guide the reader in differentiating between latent and active tuberculosis in examples (1) and (2):

- (1) INFECCIÓN (el bacilo está dormido): **No** hay enfermedad. **No** se transmite.  
[INFECTION (the bacillus is dormant): There is **no** disease. It is **not** transmissible.]
- (2) ENFERMEDAD (el bacilo está activo) **Sí** hay enfermedad. **Sí** se transmite.  
[DISEASE (the bacillus is active) There **is** disease. It **is** transmissible.]

“Infection” and “disease” in all capital letters highlight the two entities that the writer endeavored to distinguish for the reader. This combination of multimodality types renders a straightforward text that defines each specialized word and clarifies the difference between latent and active tuberculosis.

The Catalan non-translated sub-corpus incorporated a different color to make specialized words stand out. In example (3), the website text produced by Govern Illes Balears Direcció General de Salut Pública y Participación (Govern Illes Balears Direcció General de Salut Pública y Participación, *Infecions*, n.d.) presented a technical term in red, accompanied by an explanation:

- (3) En la majoria dels casos, s'usen **tècniques immunoenzimàtiques** (EIA, ELISA) en una mostra de sang. (In the majority of the cases, immunoenzymatic techniques (EIA, ELISA) in a blood sample.)

This way, the writer emphasized the specialized words in an erudite manner without being pompous, explaining what the reader needs to know and including two examples in case the reader wishes to learn more.<sup>90</sup>

The English non-translated sub-corpus uses the most diverse variety of multimodality types to highlight specialized vocabulary: italics, double quotation marks, a different color with an asterisk and footnote, a different color and underlined, underlined, underlined and bold type, bold type and hyperlinked, hyperlinked, and all capital letters. In fact, two of the websites in the corpus featured multiple types of multimodality to the point of distraction.

The technical terms in the Centers for Disease Control and Prevention HIV Testing text (Centers for Disease Control and Prevention, *HIV Testing*, 2019) had different colors, bold type, and italics. Test types, such as NAT and antigen/antibody test, were highlighted in bold. Blue instead of the usual black highlighted words such as post-exposure prophylactic (PEP). The color choice, while aesthetically pleasing as it matches the organization's logo, is disconcerting for the reader as it resembles a hyperlink without the typical underlining thereof. Italics were used for *undetectable viral load* and *window period*.

*Window period* was also italicized in NYC Health's (NYC Health, *HIV Testing*, 2019) website about HIV testing, whose text additionally featured hyperlinks and double quotation marks. The mootness of using a multimodality device for a technical term that is preceded by a definition (Farkas, 1983) appears to have eluded the writers, especially since the advent of the Internet and the use of hyperlinks.

Whether the mode is interactive – via hyperlinks – or strictly visual, the relationship with the reader is influenced by the writer's use of multimodality. The writer not only chooses the words, but decides (Kress, 2003) which visual and digital multimodal elements to incorporate into the text by hyperlinking a technical term, or using bold type, italics, a different color, or underlining, based on its intended function. In this sense, the writer interacts with the reader not only via words, but on a visual level. Multimodal texts are influenced by culture; the writer is guiding the reader to learn the meaning of unfamiliar medical terms in the process of comprehending the message of the website about diagnostic tests for HIV and TB.

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<sup>90</sup> It could be argued that the writer could have omitted the two immunoenzymatic technique examples to simplify the explanation.

In addition, hyperlinks, which were only used in the English non-translated sub-corpus, bestow more power on the reader, who can choose whether to click on the link and learn more about the new technical term. This decreases the power distance between the writer and the reader and empowers the reader to educate themselves and make an informed decision as to whether they should get tested for HIV or TB. For example, a hyperlink was used to redirect the reader to another page on the organization's website to explain technical terms such as emergency post-exposure prophylactic (PEP). However, the hyperlink was also used to guide the reader to resources such as the contact information for local sexual health clinics and options for preventing HIV. Using a hyperlink for multiple purposes within a text risks sending the reader down a rabbit hole of a potpourri of information, thus limiting the effectiveness of aiding in improving the reader's health literacy.

As such, multimodality must be implemented carefully. An alternative approach to introducing specialized terms to the reader was the use of an asterisk with a footnote, which is how the writer at NYC Health (n.d.) presented two HIV medications. In the text body, they were written in bold type and a different color, with an asterisk after the acronym – **PrEP\*** and **PEP\*** – and, at the bottom of the page, the asterisk preceded the two acronyms, which were also in bold type and a different color: **\*PrEP** and **\*PEP** (NYC Health, n.d.). The writer may have assumed that their target audience might know what these two treatments were but included an explanation in a footnote just in case. The footnote is an interesting example of textual metadiscourse as it serves as an aside on the part of the writer in their consideration of the reader's limited health literacy while being relevant to the main text. In another example (4), one writer applied double quotation marks to present the word "acute" to the reader without a clear definition.

- (4) "An HIV infection takes a few days to become established. Ten days after exposure, go to a clinic or hospital and ask for a test for new ("acute") HIV infection." (NYC Health, *HIV Testing*, 2019).

Instead of expecting the reader to infer the meaning from the context, health literacy would have been facilitated by accompanying "acute" with a definition. Although the use of multiple multimodality types in Center of Disease Control and Prevention (2019) was more orderly than NYC Health's (2019) text, it can distract the reader from the key message of the text. Limiting the multimodality to one or two types within a text would be ideal.

The English non-translated sub-corpus used only slightly more bold type than the Spanish and Catalan non-translated sub-corpora. Both of the latter two used this multimodality form equally. The writer's use of bold type to highlight a specialized term to the reader may

have been either due to language contact between Catalonia, the Balearic Islands, and Valencia, or the usage may have been shared among this study's corpus.

In summary, the Spanish non-translated sub-corpus contained significantly more multimodality than the English and the Catalan counterparts, with no significant differences between the latter two sub-corpora. The Spanish non-translated texts favored bold type, single quotation marks, or a different color to highlight the technical terms to improve the reader's health literacy. The next section compares the use of multimodality between the non-translated and translated sub-corpora.

*Multimodality: Differences between non-translated and translated sub-corpora*

For the comparison between the translated and non-translated sub-corpora within each language, the mean proportion analyses indicated that the Spanish non-translated texts had more multimodality than their translated counterparts (1.58 percentage points difference). The statistical models confirmed the mean proportion analysis: the Spanish non-translated sub-corpus also had significantly more multimodality than its translated counterpart ( $\beta = -0.016$ ,  $SE = 0.003$ ,  $z = -4.632$ ,  $p = 0.000$ ), which contributes to the answer to the third research question, indicating that there indeed are differences between the translated and non-translated texts. Table 27 shows the frequency of the multimodality types used in the texts in each of the two Spanish sub-corpora.

Table 27 - Frequency (mean) of textual multimodality type in the Spanish non-translated (L1) and translated (L2) sub-corpora. The data are shown as [frequency (mean)].

<b>Textual multimodality type</b>	<b>Spanish L1</b>	<b>Spanish L2</b>
Textual multimodality <sup>91</sup>	21 (3.00)	164 (2.52)
Italics	0 (0.00)	10 (0.15)
Single quotation marks	7 (0.88)	4 (0.06)
Double quotation marks	1 (0.13)	30 (0.46)
Double quotation marks & different color	0 (0.00)	1 (0.02)
Different color	7 (0.88)	39 (0.60)
Different color & asterisk with footnote	0 (0.00)	4 (0.06)
Different color & underline	0 (0.00)	0 (0.00)
Underline	0 (0.00)	1 (0.02)

<sup>91</sup> As explained earlier, the total frequency for textual multimodality is from the coding for all the markers in response to the ELF-W technicality of vocabulary questions. The subcoding was performed later and involved assigning more than one subcode to some of the textual multimodality codes. As a result, the sum of the subcodes do not equal the total frequency for textual multimodality.

Underline & bold	0 (0.00)	0 (0.00)
Bold	6 (0.75)	34 (0.52)
Bold & hyperlink	0 (0.00)	7 (0.11)
Hyperlink	0 (0.00)	35 (0.54)
All capital letters	0 (0.00)	2 (0.03)
All capital letters, bold & different color	2 (0.25)	0 (0.00)

As indicated in Table 27, what is also notable is the diversity of the multimodality types in the translated sub-corpus, compared with the non-translated one. The non-translated sub-corpus contained more usage of single quotation marks, a different color, bold type, and the combination of all capital letters in bold type and a different color to highlight specialized words.

The Spanish translated sub-corpus, on the other hand, was more likely to feature more multimodality devices; the technical terms appeared in italics, double quotation marks, double quotation marks and a different color, a different color with an asterisk and a footnote, underlining, bold and hyperlinked, hyperlinked, and all capital letters. In two documents [examples (5) and (6)] published by Population Health Division of San Francisco (San Francisco Department of Public Health Disease Prevention & Control Population Health Division, *Qué es*, 2018 & San Francisco Department of Public Health Disease Prevention & Control Population Health Division, *Estuve*, 2018), the writer differentiated between latent and active tuberculosis using italics:

(5) *Infección Inactiva (Inactive Infection)*

(6) *Enfermedad Activa (Active Disease)*

This use of italics was transferred from the original English text.

The use of double quotation marks in the translated Spanish sub-corpus was also carried over from the original English text in all but one case. The writer of Explain TB (Explain TB, *Tuberkulose*, n.d.), a non-profit organization based in Germany whose mission is produce information on tuberculosis in more than thirty languages, applied double quotation marks to two highlighted words, as shown in example (7):

(7) ... posibles daños en los pulmones, por ejemplo a través de la detección de las llamadas “cavernas” o “infiltrados.” (... possible damage in the lungs, for example, through the detection of so-called “cavities” or “infiltrates.”)

The double quotation marks frame the two words within the context of pulmonary medicine that would potentially be unknown to the lay reader.

However, there was a case in which the translator treated multimodality differently from the source text. In example (8), the writer of the original English version of the Greater Than AIDS / Más Que SIDA (Greater Than AIDS, *HIV Testing*, n.d.) used a code gloss to explain “antiretrovirals.”

(8) Antiretrovirals (ARVs) are prescribed medications used to treat HIV.

The translator added underlining to this sentence. (Greater Than AIDS, *Pruebas*, n.d.) (9):

(9) Los antirretrovirales (ARV) son medicamentos recetados que se usan para tratar el VIH.

Underlining highlights potentially unfamiliar treatment names. Hyperlinking takes this further by displaying either a pop-up definition or links to another web page with additional information. In examples (10), (11), and (12), three translated websites hyperlinked PrEP:

(10) PrEP (Whitman-Walker Health, *Pruebas*, n.d.)

(11) Profilaxis previa a la exposición (PrEP, por sus siglas en inglés) [Prophylaxis prior to exposure (PrEP, by its English acronym)] (NYC Health, n.d)

(12) Profilaxis preexposición o PrEP (Pre-exposure prophylaxis or PrEP) (AIDSInfo/infoSIDA, 2019)

All three of these instances lead the reader to another page within their website which provides a detailed explanation of this preventive treatment. Unfortunately, none of the Spanish translated websites featured the pop-up variation of the hyperlink, which would have better prevented the reader from going down a rabbit hole of potentially overwhelming information instead of quickly transmitting a concise call to action.

Another multimodality type found in the Spanish translated texts was the use of all capital letters. The writer at Florida Health (Florida Health, *Tuberculín*, 2018) capitalized two words – NEGATIVE and POSITIVE – which the translator transferred into the Spanish version (Florida Health, *La prueba*, 2018) – NEGATIVO and POSITIVO – to emphasize the difference between the HIV test results. While this approach makes the words stand out, nowadays with electronic messaging etiquette, capital letters are perceived by the reader as equivalent to shouting. Therefore, it is recommended to use this form of multimodality sparingly, with the

writer being mindful of the tone they are conveying through the online health information text lest they come across as patronizing to the reader.

Shifts in the use of textual multimodality appear in the non-translated Spanish sub-corpora that were enhanced in the English translation. The first instance of two that are exemplified in this subsection will be a revisit of examples (1) and (2) as (13) below. The capitalization was implemented by the writer for emphasis to differentiate between active and latent tuberculosis, as in the following example from SaludMadrid (n.d.) in the original Spanish:

- (13) INFECCIÓN (el bacilo está dormido): No hay enfermedad. No se transmite.  
 ENFERMEDAD (el bacilo está activo) Sí hay enfermedad. Sí se transmite.  
 [INFECTION (the bacillus is dormant): There is no disease. It is not transmissible.  
 DISEASE (the bacillus is active) There is disease. It is transmissible.]

The capitalization for the word “infection” was followed by an explanation in which “no” and “yes” were in color to clarify the definition. As shown in the English version (SaludMadrid, *Your Health*, n.d.) below (14), the translator enhanced the multimodality with capitalization:

- (14) INFECTION (the bacillus is dormant): There is NO disease. It is NOT transmitted.  
 DISEASE (the bacillus is active) The disease IS present. It IS transmitted.

The second instance of the English translator enhancing the source Spanish writer’s textual multimodality choices also distinguishes two concepts, this time regarding HIV test results. The writer of the original Spanish website text (15) of the Grupo de Trabajo Sobre el Tratamiento el VIH (75, n.d.) implemented bold type for emphasis on the differentiation of the two concepts, along with color whose highlighting purpose was to make it stand out from the rest of the website text:

- (15) **VIH negativo = No tienes el VIH**  
**VIH positivo = Tienes el VIH**  
 (HIV negative = You do not have HIV  
 HIV positive = You have HIV)

The bold type gives the writer variation in tone, stressing the difference between positive and negative. The English translator added italics to the two test result words to enhance the differentiation, as shown in the next example (Grupo de Trabajo Sobre el Tratamiento el VIH, *HIV*, n.d.) (16):



- (16) **HIV negative** = You don't have HIV  
**HIV positive** = You have HIV

As mentioned in the previous section, it might be better to limit the multimodality types lest the reader gets distracted by the excessive enhancement.

The Spanish non-translated texts contained significantly more textual multimodality than its translated counterparts as well as the English and Catalan non-translated sub-corpora. The Spanish non-translated sub-corpus favored bold type, italics, underlining, or a hyperlink to empower the reader to improve their health literacy. The English translators of the source Spanish text tended to enhance these textual multimodality devices. In addition to having significantly more textual multimodality, it should be noted that the Spanish non-translated sub-corpus also had significantly more technical terms. The multimodality was not applied to every single specialized word in the Spanish text. Other lexical familiarization techniques were also implemented to render the texts more comprehensible for the lay audience. The next section discusses another technicality of vocabulary marker with a significant result: words accompanied by a definition or explanation.

### 6.3.2 Words accompanied by a definition or explanation

Words accompanied by a definition or explanation is the focus of the first part of the second question in the ELF-W instrument's technicality of vocabulary section. They included the use of code glosses, hinge words, explanations, and double lexical familiarization as an indication of the writer's intention to familiarize the reader with the specialized terminology. The findings are discussed in the next two subsections, first the comparison between non-translated sub-corpora, followed by those between the translated and non-translated sub-corpora.

#### *Words accompanied by a definition or explanation: Differences between the non-translated sub-corpora*

Based on the mean proportion analysis, the English non-translated texts (0.86%) contained more words accompanied by a definition or explanation compared with its Catalan (0.84%) and Spanish (0.71%) counterparts. The standard error bar for the Spanish non-translated sub-corpus was large, indicating that the data varied widely from the mean. There were no statistically significant differences between the non-translated sub-corpora according to the linear regression models. While none of the language sub-corpora lagged in this important task of fomenting health literacy in the readers, further research in the comparison of words accompanied by a definition or explanation between the non-translated health information

websites in English, Spanish and Catalan is warranted to corroborate the results of this thesis' study.

Definitions, denominations, and exemplifications also exist in this thesis' study's non-translated sub-corpora. What Anesa and Fage-Butler (2015) referred to as "definitions" and Mattiello (2019) called "denominations" (see Section 2.6) are the hinge words described in Section 4.3.1, which include cues such as "(is) called." Below are examples using "(is) called" in Catalan (17), Spanish (18), and English (19):

- (17) ... fins que la prova d'anticossos realitzada immediatament després del contagi pot ser negativa, tot i que el/la pacient estigui infectat/da. Aquest fet **s'anomena** "fals negatiu" ... (... until the antibody test performed immediately after the infection may be negative, even though the patient is infected. This **is called** "false negative.") (Antisida Lleida CAT, *Prova*, n.d.)
- (18) Cuando algún agente extraño entra en nuestro organismo, éste responde generando unas proteínas **llamadas** anticuerpos, las cuales se convierten en nuestras defensas contra dicho agente. (When some foreign agent enters our body, it responds by generating proteins **called** antibodies, which become our defenses against said agent.) (Grupo de Trabajo Sobre el Tratamiento del VIH, 32 *VIH*, n.d.)
- (19) Not having sex (**called** abstinence). (TeensHealth, *How to*, 2018)

Another approach to defining or explaining a technical term is what Anesa & Fage-Butler coined "exemplifications," which are referred to in this thesis as a code gloss (see definition in Section 3.2.3). A comparative study of newspaper opinion columns by Dafouz-Milne (2008) noted a higher use of code glosses in Spanish compared with English, such as the use of parentheses to add what the English-speaking culture may perceive as extraneous information. Code glosses were also frequent in this thesis study's Catalan (20) and English (21) non-translated sub-corpora.

- (20) *Haver tingut una infecció de transmissió sexual (per exemple, sífilis o gonorrea).* [Having had a sexually transmitted infection (**for example**, syphilis or gonorrhoea).] (Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, *Recomanacions*, 2018)
- (21) ...and by checking your symptoms (**such as** an ongoing cough, fatigue, fever, or night sweats). (Thompson, et al., English version, 2019)

Code glosses not only provide additional information as defined by Hyland (1998b). Through exemplification, the writers add a persuasive tone to the text by ensuring the clarity of a term. The Spanish non-translated sub-corpus contained exemplifications, but not for a specific technical term. However, the writers included a biomedical word, albeit somewhat familiar (“syringes”), among the examples of drug paraphernalia in the form of an inverse definition along with a second biomedical word (“mucosas”) in the subsequent category referring to body alterations (22):

- (22) *“Si has compartido material para inyectarte drogas (**jeringuillas, agujas, cucharas, filtros...**) o has usado material sin esterilizar para perforaciones en piel o mucosas (**pendientes, piercing, tatuajes...**)”* [If you have shared material for injecting drugs (**syringes, needles, knives, filters...**) o have used unsterilized material for perforations in the skin or mucosas (**earrings, piercings, tattoos**)] (CESIDA, *¿Tienes?*, 2018)

Since body alterations is not a technical term and is therefore not quite relevant to the words accompanied by a definition or explanation section, it is worth highlighting that writers use exemplification to persuade the reader not only by clarifying what a given term means via a code gloss but using this to emphasize the risk of infection.

The Spanish non-translated sub-corpus did not contain any instance of specialized terms accompanied by a definition or explanation like the English and Catalan non-translated sub-corpora did. Particularly since these results are not statistically significant, they should not be considered as a confirmation of the research question regarding differences between the non-translated language sub-corpora. While the above examples reflect differences between health information website texts and online health forums,<sup>92</sup> the Catalan and English ones corroborate Anesa and Fage-Butler (2015)’s study regarding the lexical familiarization tools used in popularized texts in that expert writers implement explanation tools to introduce specialized terms to lay readers. It bears reiteration that future research should perform contrastive analyses between non-translated language sub-corpora regarding the usage of hinge words/definitions, figures of speech, exemplifications, and generalizations, as well as between different types of online health communication texts (Anesa & Fage-Butler, 2015).

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<sup>92</sup> Health information websites exemplify traditional popularization, in which an expert shares medical knowledge using lay language and explanatory tools to introduce technical vocabulary to the public. The popularization of online health forums develops differently; instead of the unidirectional transmission of information, experts and lay participants exchange information in dialogues in which the former is cued to explain specialized knowledge in a way that the public would understand (Anesa & Fage-Butler, 2015).

The next section discusses the comparisons of words accompanied by a definition or explanation between translated and non-translated sub-corpora.

*Words accompanied by a definition or explanation: Differences between the non-translated and the translated sub-corpora*

The mean proportion analysis resulted in the Spanish (0.06 percentage points difference) and Catalan (0.99 percentage points difference) translated texts having more words accompanied by a definition or explanation than their non-translated counterpart, and the inverse was the case for the English sub-corpora (0.19 percentage points difference). The mean proportion results indicate that the English non-translated sub-corpus featured more words accompanied by a definition or explanation compared with the other two non-translated sub-corpora as well as to its translated counterpart. Thus, in this study, it could be stated that such lexical familiarization approaches in the original English were preserved in the Spanish and Catalan translated texts. It should be noted, however, that the standard error bar for the Catalan translated sub-corpus was large, indicating that the value of the data does not represent the mean as much as for the other sub-corpora.

As mentioned in Section 6.1, according to the linear regression models, the Catalan translated sub-corpus featured significantly more words accompanied by a definition ( $\beta = 0.010$ ,  $SE = 0.004$ ,  $z = 2.240$ ,  $p = 0.025$ ) compared with its non-translated counterpart. For further analysis of the words accompanied by a definition or explanation, the examples were sub-coded with the different lexical familiarization categories found within the two Catalan sub-corpora, which are listed in Table 28 below. The sub-coding results in this table show that code glosses and explanations were most frequent in the non-translated Catalan texts, while hinge words and definitions were slightly more frequent in the translated sub-corpus.

Table 28 - Frequency (mean) of types of words accompanied by a definition or explanation in the Catalan non-translated (L1) and translated (L2) sub-corpora.

	<b>Catalan L1</b>	<b>Catalan L2</b>
Total words accompanied by a definition or explanation	37 <sup>93</sup> (4.63)	29 (14.50)
Code glosses	15 (1.88)	9 (4.50)
Hinge words/definitions	9 (1.13)	10 (5.00)
Explanations	14 (1.75)	9 (4.50)
Double lexical familiarization	0 (0.00)	1 (0.50)

<sup>93</sup> One of the examples was sub-coded with two different types, thus the subcodes add up to 38, not 37.

The mean of the sub-coding results of the two sub-corpora reveals that the translated Catalan texts feature more of all the lexical familiarization categories – code glosses, hinge words, explanations, and double lexical familiarization.

The non-translated and the translated Catalan sub-corpora feature identical devices to accompany technical terms with a definition or an explanation. As mentioned in Section 3.2.3, code glosses add extraneous information and come in the form of an enclosure within parentheses or follows a colon, or by exemplification. The AntiSIDA Lleida writer provides two definitions in the example (23) below. The first definition, for “*fals negatiu*” (false negative), is given prior to the introduction of the scientific term, which itself preceded by the hinge word *s’anomena* (is called). The second definition, for “*període finestra*” (window period), is immediately followed by a definition in a clause that could have easily included “which is”:

- (23) ... fins que la prova d’anticossos realitzada immediatament després del contagi pot ser negativa, tot i que el/la pacient estigui infectat/da. Aquest fet s’anomena “fals negatiu” i succeeix durant el període finestra, fase d’infecció que va des del contagi fins a l’aparició d’anticossos. (... until the antibodies test done immediately after contagion can be negative, even if the patient is infected. This is called “false negative” and happens during the window period, an infection phase that goes from the contagion until the appearance of antibodies.) (Antisida Lleida CAT, *Prova*, n.d.)

Describing “false negative” prior to introducing the term itself was an educational approach that clarifies the meaning immediately without any implication that the writer questions the reader’s intelligence. Conversely, following “window period” with its definition risks the reader perceiving the writer as presuming the audience may not be well-read. The Catalan translated sub-corpus contains a similar instance (24):

- (24) Una prova bastant nova és la anomenada IGRA; prova que es realitza sobre una mostra de sang. En el laboratori, es mesura la quantitat d’una substància anomenada interferó-gamma en la sang. (“A somewhat new test is the so-called IGRA; this test is done on a blood sample. In the laboratory, the quantity of a substance called interferon-gamma in the blood is measured.”) (Explain TB, in Catalan, n.d.)

The Catalan translator of Explain TB used a semicolon to follow the new term with additional information.<sup>94</sup> In this case, the writer precedes “IGRA” with “*anomenada*” (so-called) to signal the new word. Instead of stating that “IGRA” was an English acronym for interferon-gamma release assay, the writer provides what they believe would be sufficient information for the lay reader: IGRA is a lab test done on a blood sample. The writer uses the hinge word “called” to introduce the term that the reader could deduce from the first two letters of the previously introduced acronym. This example will be revisited with the focus on multiple capital letters in Section 6.4.3.

In the two examples from the AntiSIDA Lleida website, which is in the Catalan non-translated sub-corpus, the additional information was given within parentheses. The first one explained what syphilis is (25):

(25) *Sífilis (una altra infecció de transmissió sexual)*. [Syphilis (another sexually transmitted infection).] (Antisida Lleida CAT, *Prova*, n.d.)

The second instance, again using a code gloss in the form of parentheses, provided the specific name of the follow-up test that is required to verify a positive result (26):

(26) *Si aquest reactiu al VIH donés un resultat positiu, s’ha de realitzar la prova de confirmació (Western Blot)*. (If this HIV reactant gives a positive result, a confirmatory test (Western Blot) must be done.) (Antisida Lleida CAT, *Prova*, n.d.)

In both above instances, the parentheses offer a tone of the writer giving an aside in the form of providing extraneous information.

That aside tone is also present in the following example from the Catalan translated sub-corpus. The translation into Catalan of this NYC Health website preserves the original English use of the code gloss to exemplify a cause of a weak immune system (27):

(27) *...sistema immunologic és feble (per exemple, si vostè té el VIH)*. [...immune system is weak (for example, if you have HIV)]. (NYC Health, *Tuberculosi*, 2019)

The tone in the code gloss in the next instance differs. The writer from the Explain TB website, which is included in the Catalan translated sub-corpus, explained the specialized word within parentheses instead of saying “which is” (28):

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<sup>94</sup> This is either an unorthodox way to introduce a definition or a punctuation error. In addition, the comma after “*laboratori*” is unnecessary, raising the thesis author’s suspicion that this website may have lacked copy-editing.

- (28) *l'esput (terme medic per flegma)*. [the sputum (medical term for phlegm)] (Explain TB, in Catalan, n.d.)

It is as though the writer were offering the explanation for those among the readers who were unfamiliar with the word, instead of an outright assumption that none of the readers would know the word “sputum.” The Catalan version was a departure from the punctuation choices that the English and the Spanish translators made in their respective Explain TB text (29) and (30):

- (29) ‘sputum’ – which is the medical word for ‘phlegm’ – (Explain TB, *Essentials*, n.d.)
- (30) ‘esputo’ – *que es el término médico para la ‘flema’* – (‘sputum’ – which is the medical term for ‘phlegm’ –) (Explain TB, *Tuberkulose*, n.d.)

The English and the Spanish versions are identical in terms of punctuation use: single quotation marks and hyphens to enclose the explanatory aside.

Double lexical familiarization occurs when two devices are found in one instance (Handee, 1996), as in the following example (31) from the Catalan translated sub-corpus:

- (31) Des del<sup>95</sup> pitjor enemic de la tuberculosi és un sistema immune fort, les persones amb VIH o una altra malaltia que debilita el sistema immunològic ha<sup>96</sup> de fer-se la prova per a la tuberculosi amb regularitat. (Since the worst enemy of tuberculosis is a strong immune system, people with HIV or another disease that weakens the immune system must take the tuberculosis test regularly.) (NYC Health, Tuberculosi, 2019)

The NYC Health writer, in the process of clarifying “*sistema immune*” (immune system) as our body’s defense against tuberculosis, also introduces “*VIH*” (HIV) as an example of (32):

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<sup>95</sup> It should be noted that “des del” should have been written “com que.” This is a grammatical error due to a suspected case of automated machine translation built into the website at the time this study’s corpus was built and which no longer appears. Email correspondence with NYC Health informed that “In NYC all public-facing government agencies are mandated by law to translate materials into the top 10 languages. At the NYC Health Dept we expanded the list to 13: Arabic, Bengali, French, Haitian Creole, Italian, Korean, Polish, Russian, Spanish, Traditional Chinese, Simplified Chinese, Urdu, Yiddish. We only use professional translators for all linguistic work.” (A. Kuzmin (NYC Health), personal communication, August 31, 2022). This could indicate that the department learned from their mistake of allowing error-ridden automated machine translation in public health communication, which can negatively affect information quality and accuracy, and moved forward with improvements.

<sup>96</sup> This word, which should have been written as “han,” was an error on the website.

- (32) una malaltia que debilita el sistema immunològic (a disease that weakens the immune system) (NYC Health, Tuberculosi, 2019)

The second clause clarifies the first. Thus, this instance of double lexical familiarization contains clarification of the immune system and exemplification (HIV as a disease that weakens the immune system). Considering that the use of double and complex lexical familiarization may result in unacceptable readability levels (Handee, 1996), its presence suggests that the writer did not anticipate reading comprehension or cross-cultural adaptation issues in its target readership. In fact, the Catalan translation of NYC Health (Tuberculosi, 2019) is an outlier due to having double the frequency of words accompanied by a definition or explanation compared with the original English text.

It is critical to identify and apply the most effective lexical familiarization devices in the original language text that are culturally adaptable to the target language readers, so that everyone learns the medical terminology and fully comprehends the health information. That this category of the ELF-W Technicality of Vocabulary is called “words accompanied by a definition or explanation” and not “lexical familiarization” is due to the importance that specialized and technical terms are introduced clearly to the reader. There exist lexical familiarization devices which force the reader to deduce from the context. In a study of an English medical textbook in the context of English for Specific Purposes, Handee (2020, p. 48) stated, “it seems rather dangerous to teach students to infer or guess from context because technical or specialist vocabulary, especially in the field of medicine, usually has a precise meaning which must be understood precisely.” How writers introduce technical and specialized terminology in multilingual health information websites to the reader is crucial to successfully transmitting the key message.

The English non-translated sub-corpus contained more words accompanied by a definition or explanation compared with the Spanish non-translated and Catalan non-translated sub-corpora. Overall, the Spanish translated sub-corpus and the Catalan translated sub-corpus appeared to have preserved these forms of lexical familiarization from the English non-translated sub-corpus. The Catalan translated sub-corpus had statistically significantly more words accompanied by a definition or explanation compared with the Catalan non-translated sub-corpus, although the large standard error bar for the Catalan translated sub-corpus indicated that the data varies widely from the mean due to the abovementioned outlier. The Catalan translated sub-corpus contained more definitions, explanations, code glosses, and hinge words, plus instances of double lexical familiarization, compared with the Catalan non-translated sub-corpus. This lent a tone of defining or explaining extraneous information as an aside.



In addition to words accompanied by a definition or explanation, this section presented the discourse analysis findings for multimodality, which had two statistically significant results. The next section will show the discourse analysis for the markers for which no statistical significance was found.

## 6.4 Other noteworthy findings

The lack of statistical significance for the remaining technicality of vocabulary markers does not necessarily imply that they should be disregarded by future researchers along with health communication writers and translators. The mean proportion results of each of the remaining technicality of vocabulary markers will be discussed for the differences between the three non-translated sub-corpora, followed by the differences between the translated and non-translated sub-corpora. These markers are avoidance of technical terms, multiple capital letters and numerical symbols, and Greek or Latin affixes.

### 6.4.1 Greek or Latin affixes

The Greek or Latin affixes are among the markers that answer the ELF-W question 2a regarding how the technical terms were identified. This section discusses the comparison between the three non-translated sub-corpora together with the comparison between the non-translated and the translated ones within each language.

The mean proportion results showed that the Catalan (0.33%) non-translated sub-corpus contained more than the English (0.20%) or the Spanish (0.16%) counterpart. The mean proportion results also showed that the translated texts had more Greek or Latin affixes compared with the non-translated ones for English (0.19 percentage points difference) and Spanish (0.14 percentage points difference), but the inverse was the case for Catalan (0.14 percentage points difference). Although standard error bars in the mean proportion graph for the two Catalan sub-corpora did not overlap, the linear regression analysis did not result in a significant difference.

In addition to “tuberculosis,” three of the most frequent Greek and Latin affix words in this study’s corpus are in Table 29 below, all with the same Greek prefix meaning “against”:

Table 29 - Three of the most frequent Greek and Latin affixes in this study’s corpus.

English	Spanish	Catalan
Antibodies	Anticuerpos	Anticossos
Antigen	Antígeno	antigen

Antiretroviral	Antirretroviral	Antiretroviral
----------------	-----------------	----------------

One advantage of Greek and Latin affixes is their similarity across languages. However, this is not useful for the reader if the text is not in a language that they understand, since they would not be able to understand the overall message, even less so if the specialized word with a Greek or Latin affix is unfamiliar to the Voice of the Lifeworld.

A similar result to the comparison between the non-translated English and the translated Spanish texts above was attained in a study by Jiménez-Crespo & Tercedor Sánchez (2017), whose comparable corpus study of websites hosted in the United States translated into Spanish evaluated the frequency of Greek and Latin medical terms. Both the results from their study and in this thesis' study reflect the inclination of the English speakers to use lay terms without Latin or Greek affixes, while the Latin and Greek-based technical terms are more often the norm in Romance languages, since "Northern European languages possess a layered medical terminology in which many scientific [Latin and Greek] words have lay or lower register counterparts" (Jiménez-Crespo & Tercedor Sánchez, 2017, p. 3). Due to this, the use of Greek and Latin affixes as a measure of technicality of vocabulary turns out to have more disadvantages than advantages.

Among the advantages is the potential to spot cultural differences between the sub-corpora of non-Romance versus Romance languages, as in Table 29 above. However, the fact that English has taken the place of the language of medicine once held by Greek and Latin (Wermuth & Verplaetse, 2019; Daniele, 2021) could be a disadvantage in this particular field. This specialized English language contains a large amount of compound words comprising of Greek and Latin affixes which are then translated into other languages<sup>97</sup> (Montalt & González Davies, 2014).

These advantages and disadvantages must be considered in designing future contrastive studies between languages as well as between translated and non-translated texts within each language methodology using Greek and Latin affixes. The next section discusses an oxymoron technicality of vocabulary category: avoidance of technical terms.

#### 6.4.2 Avoidance of technical terms

"Avoidance of technical terms" as a technicality of vocabulary category is an oxymoron since, unlike the previously discussed markers, it does not indicate the presence but the absence of

<sup>97</sup> For example, the English anatomical word for the insertion of the medial knee tendons into the anteromedial proximal tibia, "pes anserinus," which is Latin for "goose foot," has two variations in Catalan: the lay term *pota d'ànec* ("duck foot") and the technical term *pes anserinus*. These conjoined tendons resemble the webbed foot of a duck or a goose.

a technical word through the avoidance of its use. For the third question of the ELF-W technicality of vocabulary instrument regarding ways that technical terms were avoided, there were two markers: the implementation of layman’s terms and the use of an explanation. According to the linear regression models, there were no statistically significant results for either marker between the non-translated and translated texts within each of the languages, or between the three languages’ non-translated sub-corpora, which will be discussed next.

*Avoidance of technical terms: Differences between the non-translated sub-corpora*

The mean proportion analysis for implementing an explanation to avoid the use of a technical term showed that the Catalan non-translated sub-corpus (38%) contained more than the English (24%) and the Spanish (17%) ones. Upon closer scrutiny of these sub-corpora, it is noted that the avoidance of technical terms was practiced in eight Catalan websites, i.e., all the Catalan websites. Only five of the English (out of fifty-two total in the sub-corpus) and three of the Spanish (out of seven total in the sub-corpus) non-translated websites, however, made a clear point of avoiding technical terms. This finding is even more compelling by the observation that these English and Spanish non-translated websites avoided technical terms not only once, but multiple times in a conscious effort to communicate health information in the language of the Lifeworld. Whether this is a routine strategy among the Catalan writers compared with the Spanish and the English requires further research using a larger corpus of health information websites covering a broader range of biomedical topics.

Such avoidance of technical terms may void the text of precision. However, the distance between the writer – representing the Voice of Medicine – and the reader – of the Lifeworld – is reduced. Moreover, the reader benefits through understanding the message. However, the reader is deprived of the opportunity to improve their health literacy. Table 30 below exemplifies the avoidance of two specialized terms, “window period” and “confirmatory test,” in each of the three languages. These examples were extracted from the non-translated sub-corpora.

Table 30 - Comparison of avoidance of two specialized terms between the non-translated sub-corpora.

	“Window period”	“Confirmatory test”
<b>English</b>	It takes time for your body to develop these antibodies – usually up to 12 weeks. (Mayo Clinic, <i>HIV/AIDS</i> , 2019)	If you test positive, you’ll need a second HIV test to be sure. (United States Department of Health & Human Services Office of Disease Prevention and Health Promotion, <i>Get tested</i> , 2019)

<b>Spanish</b>	Desde que el VIH entra en contacto con nosotros/as hasta que se producen los anticuerpos que se detectan en la prueba pueden pasar hasta 3 meses. (From the time HIV comes into contact with us until the antibodies that are detected in the test are produced, it can take up to 3 months.) (CESIDA, <i>¿Tienes?</i> , 2018)	No se puede dar un diagnóstico de ‘VIH positivo’ únicamente con la prueba rápida, hay que confirmarlo con una prueba estándar. (A diagnosis of ‘HIV positive’ cannot be made with the rapid test alone, it must be confirmed with a standard test.) (Grupo de Trabajo Sobre el Tratamiento del VIH, 75, n.d.)
<b>Catalan</b>	S’ha de tenir en compte que en la producció d’anticossos pot transcórrer entre tres i sis mesos des de que la persona s’infecta. (It must be taken into account that regarding the production of antibodies it can take between three and six months after the person becomes infected.) (Antisida Lleida CAT, <i>Prova</i> , n.d.)	En cas que el resultat sigui positiu, es realitza una tècnica més específica per confirmar el resultat, sent el Western Blot el mètode més emprat. (If the result is positive, a more specific technique is performed to confirm the result, the Western Blot being the most used method.) (Govern Illes Balears Direcció General de Salut Pública y Participación, <i>Infeccions</i> , n.d.)

In the process of explaining the window period without stating the term itself, the use of technical terms was not completely avoided; “antibodies” was mentioned in all three languages. As for the avoidance of “confirmatory test,” the English example demonstrates an explanation in plain and simple language, while the Spanish includes a semi-technical term – “rapid test” – and the Catalan exemplifies a confirmatory test (“Western Blot”). The details may at times seem superfluous yet useful for the lay reader.

Using a plain language word to avoid a specialized one is another way to clarify the message for readers. For implementation of layman’s terms to avoid the use of a technical term, the mean proportion analysis revealed that the non-translated English sub-corpus (0.10%) contained more than either the Spanish (0.02%) or the Catalan ones (0%). The next two examples show how the specialized word “pathogen” was avoided with the use of a plain language word.

The first example is from the non-translated Spanish sub-corpus (33):

- (33) Cuando algún **agente extraño** entra en nuestro organismo, éste responde generando unas proteínas llamadas anticuerpos, las cuales se convierten en nuestras defensas contra **dicho agente**. Una vez generados los anticuerpos, como parte del proceso de “lucha” contra los patógenos, pueden producirse síntomas parecidos a los de la gripe, a veces acompañados de fiebre alta y ganglios inflamados. Lo mismo ocurre cuando el virus del VIH entra en nuestro cuerpo. (When some **foreign agent** enters our body,

it responds by generating proteins called antibodies, which become our defenses against **said agent**. Once the antibodies are generated, as part of the process of “fighting” against the pathogens, flu-like symptoms can occur, sometimes accompanied by a high fever and swollen glands. The same thing happens when the HIV virus enters our body.) (Grupo de Trabajo Sobre el Tratamiento del VIH, 32 *VIH*, n.d.)

The “foreign agent” is introduced to the readers in the process of explaining the infection process and the body’s immune response. The writer then introduces the reader to the “said agent,” the specialized word “pathogen,” and exemplifies it with “virus.” This approach boosts the reader’s health literacy by explaining the concept and then presenting the technical terms. Herein lies an issue with the readability tests: they do not reflect whether the health information websites with a higher readability grade incorporate lexical familiarization strategies. A disadvantage of having a low readability grade is the dearth of opportunities for the reader to improve their health literacy, such as in the next examples.

In the next example (34), from the English non-translated sub-corpus, the writer of Boston Public Health evaded the microbiological name “*M. tuberculosis*” or the biological words “pathogen” or “bacteria” by writing “TB germ.”

(34) If you know you have the **TB germ**, you can take medication to fight off the **germ** and stay healthy! (Boston Public Health Commission, *What is*, 2015)

Using lay terms to avoid specialized words renders the text more appropriate for the third-to-fifth grade reading level, but the reader misses the opportunity to expand their health vocabulary with a new word like “pathogen.” In addition to the “germ” example (34) from the Boston Public Health website, the writers of the Mayo Clinic text avoided the clinical anatomical term “anterior” by writing, “*inside of your forearm*” (Mayo Clinic, *Diagnosis*, 2019). The NIH writers avoided the clinical terms “vertical transmission” or “perinatal transmission” by writing “*mother-to-child transmission*” (AIDSinfo, *HIV overview*, 2019) to render the text more appropriate for the third-to-fifth grade reading level.

While there were no statistically significant differences between the English, Spanish, and Catalan sub-corpora, this section presented the contrast between the non-translated Catalan texts, all of which featured the avoidance of technical words, whereas only certain non-translated English and Spanish texts have either used an explanation or a lay term instead of a specialized word. The next section will discuss the results of the comparison between the translated and non-translated sub-corpora along with an ongoing argument as to whether the

practice of entirely avoiding technical terms in a multilingual health information website benefits the reader or puts them at a disadvantage.

*Avoidance of technical terms: Differences between the non-translated and translated sub-corpora*

Regarding the strategy of using an explanation to avoid technical terms, in the comparison within each language, the English and the Spanish translated texts used explanation to avoid a technical term more than the English and the Spanish non-translated texts, with a difference of 0.14 percentage points and 0.04 percentage points respectively. The Catalan non-translated texts used an explanation to avoid technical terms more than the Catalan translated texts with a difference of 0.10 percentage points.

Most of the instances were preserved by the translators, avoiding technical terms such as “window period,” “false negative,” and “confirmatory test.” In one instance, the writer avoided naming the various blood tests (35):

- (35) *En la mayoría de las pruebas del VIH, se toma sangre del brazo.* (In most of the HIV tests, blood is taken from the arm.) (Grupo de Trabajo Sobre el Tratamiento del VIH, 75, n.d.)

The writer assumed that the reader only needed to know that a blood test would be required. Thus, the procedure was explained without incorporating “ELISA” or “EIA,” or “antibody test” or “antibody/antigen test” or “fourth-generation test.” The translator preserved this (36):

- (36) For most HIV tests, blood is taken from your arm. (Grupo de Trabajo Sobre el Tratamiento del VIH, *HIV*, n.d.)

By avoiding the highly technical blood test names, the translator preserved the reduced power distance between the writer and the reader via the low readability level of the text.

To render the text more appropriate for the third to fifth grade reading level, the writer of the Nemours Foundation’s TeensHealth (2018) website avoided the clinical terms “vertical transmission” or “perinatal transmission” by explaining the concept (37):

- (37) A pregnant woman who is infected can get treatment to try to prevent passing HIV to her baby.

The Spanish translator of this website not only preserved this strategy, but went further (38):

- (38) *Una mujer embarazada que esté infectada por este virus puede recibir tratamiento para tratar de impedir que se contagie su bebé.* (A pregnant woman who is infected by this virus can receive treatment to try to prevent her baby from catching it.)

The translator omitted “HIV,” which was in the English source text, by replacing it with “this virus.” Furthermore, the translator changed the wording to avoid blaming the woman for possibly transmitting HIV to the baby. Instead of “passing HIV to her baby,” the translator opted for “prevent her baby from catching it.” This reflects the Spanish non-accusatory language through the use of a verb with the reflexive pronoun “se,” which is used to allay blame in an unplanned event (González, 2022). Explained in this manner, the pregnant woman would not be the cause of the transmission, but she would be affected by it. This is done by the translator designating the pregnant woman – who is the perpetrator, albeit unintentional, in the English version – as the beneficiary in the Spanish version. In the absence of responsibility, the solution to the problem becomes collective with the implication of the health care professionals helping the pregnant woman by providing treatment to prevent the baby from getting infected. In this instance, the translator may have been aware of the potential consequences of a lack of cross-cultural adaptation – that a Spanish-speaking pregnant woman might not heed the call to action and put her baby at risk – in the process of preserving the English source text writer’s intention to maintain the low readability grade level. Such an interpretation of this finding can only be hypothesized, since only one of the Spanish source texts addressed pregnancy, and this was rendered in the third person. A contrastive study with a larger corpus would need to be performed to draw a more definitive conclusion as to whether Spanish translators use non-accusatory language as a form of cross-cultural adaptation.

The English non-translated texts contained more implementation of layman’s terms to avoid the use of a technical word compared with the translated ones (0.09 percentage points difference), whereas the inverse was the case with the Spanish sub-corpora (0.01 percentage point difference). The Catalan sub-corpora did not contain any instances of this approach to avoid a technical term. In the previous section, it was observed that all the Catalan non-translated texts featured avoidance of technical terms; this was exclusively via explanation. The mean proportion analysis also revealed that the Catalan non-translated texts contained more use of an explanation to avoid a technical term compared with translated texts (0.10 percentage points difference), whereas the inverse was the case for both Spanish (0.04 percentage points difference) and English (0.14 percentage points difference). In this corpus, the Catalan health communication writers avoided the use of a technical term primarily by using an explanation, while the Spanish and English translators have occasionally opted for lay terms or explanations instead of a technical term.

Equivalence in the meaning of the message can be achieved even when the translator opts for a different lay term. A frequent technical term that was substituted with a lay term along with another technical term, “induration,” was used to describe the lump that indicates a positive Mantoux (PPD or TB skin) test, as exemplified in English (39) and Spanish (40) below:

(39) A positive test will look like a raised **bump** on your arm where the **test** was placed. (Boston Public Health Commission, *What is*, 2015)

(40) El resultado es positivo cuando se levanta un **bulto** en el antebrazo donde se inyectó el **líquido**. (The result is positive when a lump is raised on the forearm where the liquid was injected.) (Boston Public Health Commission, *Qué es*, 2015)

While it was the writer who chose to use a lay term to avoid “induration” and the translator maintained this avoidance, it is worth noting how the technical term “purified protein derivative (PPD)” was avoided. In English, the writer referred to the testing fluid as “the test,” while the Spanish translator opted to refer to the PPD as the “liquid” that had been injected. While the wording differed between the English and the Spanish version, the objective of avoiding “induration” and “PPD” were achieved, and the meaning of the sentence is equivalent.

Implementing an explanation to avoid the epidemiological term “aerosol” (or “airborne”) is exemplified in English (41) with its Spanish translation (42) below:

(41) Active TB can spread from person to person through the air, like when someone with active TB sneezes or coughs. (United States Department of Health and Human Services, *Testing*, 2019)

(42) La tuberculosis activa se puede transmitir de una persona a otra a través del aire, por ejemplo, si la persona enferma estornuda o tose. (Active tuberculosis can be transmitted from one person to another through the air, for example, if the sick person sneezes or coughs.) (United States Department of Health and Human Services, *Preguntas*, 2019)

The specialized word is avoided by the writer through explanation and exemplification. The translator maintained this strategy.

On the one hand, using a lay term or an explanation to avoid a technical term renders the text closer to the third-to-fifth grade reading level and a better performing website regarding readability and comprehensibility instruments such as the SMOG and the Flesch Reading



Ease as described in Section 2.1. On the other hand, however, the lack of repetition of the new term deprives the reader of reinforcement that could improve their health literacy.

To improve comprehensibility, the writer should replace more of the technical terms by explaining or defining the concepts, as they did for “window period” and “confirmatory test” (Hochberg, 2021) as shown in the previous section and “aerosol” in this section, or with a lay term as demonstrated with “induration” and “PPD,” albeit such avoidance should not be absolute. Implementing lay terms to avoid specialized words is desirable on the part of surveyed health website users, according to a study by Moore, et al. (2009). The disadvantage of this technique for rendering texts at a level that would be appropriate for readers of the Lifeworld is the deprivation of chances to improve health literacy. By avoiding the technical terms altogether, the writers do not teach the readers useful medical vocabulary like “virus” or “bacteria.” In other words, the text is dumbed down without any learning opportunities. Moore, et al. (2009) recommended that health communicators take the following into consideration in the process of writing content in lay terms without losing credibility: information density, prominent listing of credentials and/or host of the website, clarity of the identity of the target audience, taking their health literacy level into consideration regarding the use of vocabulary.

### 6.4.3 Multiple capital letters & numerical symbols

Multiple capital letters and numerical symbols were two of the markers for the ELF-W technicality of vocabulary question 2a, which concerned the appropriateness of the technicality of the vocabulary in the texts in terms of the identification of the technical terms in the texts. Multiple capital letters, which include abbreviations and acronyms, are one of the ways to identify technical vocabulary (Hoste, et al., 2010; Liu & Lei, 2019). Another way to identify technical vocabulary is if a lexeme contains numerical symbols, which include letters combined with numbers (Hoste, et al., 2010; Liu & Lei, 2019). Numerical symbols and multiple capital letters are two orthographic features included in this study to identify technical terms, which can defy the morphological convention that specialized words are long, multisyllabic lexemes and are thus missed by readability formulae such as the Flesch Reading Ease (Flesch, 1948).

#### *Multiple capital letters and numerical symbols: Differences between the non-translated sub-corpora*

According to the mean proportion with standard error, the Spanish non-translated sub-corpus (1.03%) contained more multiple capital letters than the English non-translated sub-corpus (0.80%) and the Catalan non-translated sub-corpus (0.62%). The large standard error bar for

the Spanish non-translated sub-corpus limits the accuracy of these data as representative of the mean. It is nevertheless worth discussing the differences between languages in the use of multiple capital letters.

Five examples of multiple capital letters, shown in Table 31 below, stand out in the comparison between the three non-translated (L1) sub-corpora. Bowker and Hawkins (2006) found linguistic, conceptual, and social motives regarding choice of variants in technical terms. For example, “VIH” instead of “HIV.” In terms of language, each letter is spelled in the order of appearance of the term in each language: “*VIH*” in Spanish and Catalan (“HIV”) which is the abbreviation of “*virus de inmunodeficiencia humana*” (“human immunodeficiency virus”). In terms of capitalizing all the letters, all three languages in the non-translated sub-corpora share the same presentation. However, there is variation in the treatment of the acronym for “*síndrome de inmunodeficiencia adquirida*” in Spanish or “*síndrome de immunodeficiència adquirida*” in Catalan (“acquired immunodeficiency syndrome” or “AIDS”). The Spanish non-translated texts either capitalized all the letters (“*SIDA*”) or only capitalized the first letter of the acronym (“*Sida*”). The Catalan non-translated texts either, like in Spanish, capitalized only the first letter, or wrote the acronym in all lower-case letters (“*sida*”). Whether to capitalize all, some, or none of the letters tended to depend on the rules of the language (Wermuth & Verplaeste, 2019), and could result in confusion when no such rules have been established. It is possible that the Spanish and Catalan writers who opted for more lower cases for the word “*SIDA*” intended to reduce the stigma of the disease by reducing its volume – or in terms of SFL, its tone. Instead of shouting the name in an alarming way, “*Sida*” or “*sida*” moderates the tone so that the name of this infectious disease with its long history of stigma is less scary and more approachable. This justification is in line with a study of health information websites by Witchel, et al. (2020), who found that shouting capitalization<sup>98</sup> results in the readers’ reduced trust in the online health information because such textual shouting is deemed rude and melodramatic. Bowker and Hawkins (2006) noted that different characteristics of a concept – in this case, the presentation of “AIDS” in Spanish and Catalan – can be prioritized by the writers for sociocultural rationales.

Table 31 - Comparison of frequent multiple capital letters between the non-translated (L1) sub-corpora.

English L1	Spanish L1	Catalan L1
HIV	VIH	VIH

<sup>98</sup> While their UK-based study was conducted in English and focused on intentional yet unnecessary capitalization of complete words and did not specifically refer to abbreviations and acronyms written in all capital letters, future research should explore the possibility of a cultural consideration in the Spanish and Catalan writers’ decision who chose to write “*SIDA*” as “*Sida*” or “*sida*.”

AIDS	SIDA or Sida	Sida or sida
STD or STI	ITS	ITS
ELISA	ELISA	ELISA
TB	TB	
LTBI		
PCR		PCR

Another noteworthy abbreviation, “STD” or “STI” in English – which stands for “sexually transmitted diseases” or “sexually transmitted infections,” respectively – was written as “ITS” in both the Spanish (“*infecciones de transmisión sexual*”) and the Catalan (“*infeccions de transmissió sexual*”) non-translated texts. Initialisms and acronyms vary between countries, both within a language and between languages (González Bernaldo de Quirós, et al., 2018). Depending on the reader’s cultural perception of “disease” and “infection,” both of which carry a negative figurative meaning (e.g., as a euphemism for a perceived aberration that would be taboo in their community) that could influence their decision to heed the health message. However, whether the English, Spanish, and Catalan writers opted for “infection” over “disease” or vice versa for sociocultural reasons is not feasible to ascertain from this study and warrants future investigation.

One exception to the variation of multiple capital letters in this study is “ELISA.” This “made-up word” as opposed to an initialism or acronym (Wermuth & Verplaetse, 2019, p. 88) was used identically in all three languages’ non-translated texts. In the example (43) from the English non-translated sub-corpus, from a website hosted by a magazine for and about HIV-positive people, this biomedical laboratory test name is spelled out prior to presenting its acronym and abbreviation.

(43) There are several different tests that can be used to determine if you have HIV. The first test developed is still the most frequently used for the initial detection of HIV infection: the enzyme-linked immunosorbent assay, or as it’s more commonly known, the **ELISA** or EIA. (POZ, *HIV*, 2016)

The examples from the Spanish non-translated sub-corpus (44) and the Catalan non-translated sub-corpus (45), however, do not provide the full name of the test. In the Spanish example, the writer cautions that the ELISA is not one-hundred percent accurate. The writer of the Catalan example explains what the ELISA tests for, naming the specific antigen which is a numerical symbol that will be discussed later in this section.

- (44) *La prueba que se realiza con mayor frecuencia es la conocida como **ELISA**. Esta prueba no tiene una precisión perfecta, por lo que existe la posibilidad de que arroje falsos positivos en ocasiones.* (The most frequently used test is the one known as **ELISA**. This test does not have a perfect precision, so there exists the possibility of occasionally causing false positives.) (Grupo de Trabajo Sobre el Tratamiento del VIH, 32 VIH, n.d.)
- (45) *En Gais Positius utilitzem un test **ELISA** de quarta generació facilitat pel Departament de Salut de la Generalitat que permet detectar l'antigen **p24** (una proteïna del VIH) [...]* [In Gais Positius we use a fourth generation **ELISA** test provided by the Generalitat Department of Health which permits the detection of the **p24** antigen (an HIV protein) (...)] (Gais Positius, Servei, n.d.; bold type mine)

The initialism for tuberculosis, “TB,” occurred frequently in the English non-translated sub-corpus, but only once in the Spanish non-translated sub-corpus. “TB” does not appear in either the Real Academia Española dictionary or the *Gran Diccionario de Uso del Español Actual*, however, it was listed in the *Diccionario de Términos Médicos*. In the TAM-HC analysis, the Spanish “TB” was ranked TAM4-5, the most technical. In contrast, the English “TB” was ranked TAM2-3; this abbreviation was listed in the *Oxford English Dictionary* (although no usage frequency was indicated, nor was it labeled a medical term) and the *Merriam-Webster Medical Dictionary*. In *Stedman’s Online Medical Dictionary*, the English “TB” was listed under “tuberculosis.” The sole Spanish non-translated text in which the abbreviation appears was presented clearly (46):

- (46) *La tuberculosis (TB) es una enfermedad producida por una bacteria, conocida como bacilo de Koch, que suele afectar a los pulmones.* [Tuberculosis (TB) is a disease produced by a bacterium, known as Koch’s bacillus,<sup>99</sup> which usually affects the lungs.] (SaludMadrid, n.d.)

The next initialism in Table 31 worth noting, “LTBI” (“latent tuberculosis infection”), the Spanish and Catalan non-translated sub-corpora did not shorten this term. “Latent tuberculosis infection” was written out in the Spanish and Catalan non-translated texts as “*infección tuberculosa latente*” and “*infecció tuberculosa latent*,” respectively. Evidently, economy (Bowker and Hawkins, 2006) along with well-established usage of “TB” and “LTBI” motivated

<sup>99</sup> “Koch’s bacillus” is rarely ever used in English. It was not found in this study’s English non-translated sub-corpus. Instead, the microbiological name is used for the tuberculosis bacterium: *mycobacterium tuberculosis*.

the English writers to implement these initialisms, a frequently applied approach for the sake of efficiency, as explicated by House (1938):

The elegance of maundering Latin terms is clipped into mere abbreviations and symbols, saving the precious time of both doctor and nurse; and even prosaic standard words are warped into new and fearful connotations. (p. 227)

In addition to facilitating the language of the busy health care providers' *Voice of Medicine*, it behoves the writers to boost the readers' health literacy with terminology that they would need to be familiar with in the process of a diagnostic test.

As for the last initialism in Table 31, "PCR" ("polymerase chain reaction") refers to a laboratory technique to replicate genetic material, including in tests for a virus such as HIV or, more recently, SARS-CoV-2. This word was ranked TAM4-5 in the English and the Catalan technicality of vocabulary TAM-HC analysis, which was completed prior to the Covid-19 lockdown. During the first year of the Covid-19 pandemic, the usage of "PCR" not only became more ubiquitous in clinics and laboratories that announced Covid-19 test sites. It became a household word, appearing in newspaper articles. Were dictionaries to update the word usage frequency based on their respective up-to-date general language corpus during the second year of the Covid-19 pandemic (in 2021), "PCR" probably would have been downgraded to TAM2-3. The question is: when the Covid-19 pandemic joins the Spanish flu pandemic and the SARS and MERS epidemics in the annals of epidemiological history, would "PCR" continue to be more familiar to the lay reader, or would it fade into technical obscurity and resume its TAM4-5 ranking? Fortunately, or ideally, health information websites are frequently updated, and with each update, such considerations need to be given to technical vocabulary. That is, writers need to consider whether their target reader would (still) be familiar with certain specialized words, and when such terms should (once again) be accompanied by a form of lexical familiarization. "PCR" is an example of the dynamic nature of the culturally dependent language of the biomedical field (Wermuth & Verplaetse, 2019).

For the use of numerical symbols in the text according to the mean proportion with standard error, the Catalan non-translated sub-corpus contained more (0.10%) than the Spanish non-translated sub-corpus (which had none) and the English non-translated sub-corpus (0.05%). The large standard error bar for the Catalan non-translated sub-corpus indicates that the data varies widely around the mean: only three of the eight texts in this sub-corpus contained numerical symbols. Three examples of numerical symbols, shown in Table 32 below, stand out in the comparison between the English non-translated (L1) sub-corpora and the Catalan non-translated (L1) sub-corpora.

Table 32 - Comparison of numerical symbols between the non-translated (L1) sub-corpora.

English	Spanish	Catalan
	(No numerical symbols)	
HIV-1 and HIV-2		VIH-1 and VIH-2
p24		p24
CD4		

First, the two types of HIV are labelled with a number. “HIV-1” and “HIV-2” in the English non-translated sub-corpus and “*VIH-1*” and “*VIH-2*” in the Catalan non-translated sub-corpus follow the same pattern as earlier in this section, this time with the virus type number added.

The second numerical symbol found in the English non-translated sub-corpus and the Catalan non-translated sub-corpus is “p24,” the name of the antigen that is found in positive HIV blood samples. In the two languages, this word is identical both orthographically and in technicality ranking – TAM4-5. The English analysis showed that “p24” was not listed in the *Oxford English Dictionary* or the *Merriam-Webster Medical Dictionary*, but it was listed in *Stedman’s Medical Dictionary*. In the Catalan analysis, “*p24*” is not listed in the *Diccionari de la llengua catalana*, the *Diccionari descriptiu de la llengua catalana*, or the *Diccionari enciclopèdic de Medicina*. The use of “p24” is an example of uniformity across languages in the use of biomedical words.

“CD4,” a type of white blood cell whose number diminishes when HIV is left undetected and untreated, is only found in the English non-translated sub-corpus. This numerical symbol is also ranked TAM4-5. It was listed as a specialized word in the *Oxford English Dictionary*, and it was listed in the *Merriam-Webster Medical Dictionary* and in *Stedman’s Medical Dictionary*. While this highly technical word forms a part of the vocabulary of a person who is HIV-positive, the question is whether it is even necessary to mention it in health information about diagnostic testing. To boost comprehensibility of the website text and the reader’s likelihood to heed the call to action to get tested, the word “CD4” could have been avoided in the four English non-translated website text by using a lay term such as “white blood cells” or even the more vague “immune system” in terms of how HIV attacks the body. Each mention was about follow-up tests should a positive result be confirmed for HIV, one of which measures the amount of CD4 cells. AIDS Info Net (*HIV*, 2014) almost achieved this approach (47):

- (47) People who already know they are infected with HIV might get other “HIV” tests. These measure how much virus is in the blood (a “viral load” test, see fact sheet 125) or the strength of your immune system (a CD4 count, see fact sheet 124).

The writer used multiple approaches in this example: an explanation prior to introducing the technical word within parentheses (a code gloss) with a cross-reference. For information on HIV diagnostic testing, it probably would have sufficed if the writer had omitted the code glosses containing the specialized words.

Overall, it would be prudent for the writer to avoid the use of highly technical, i.e., TAM4-5, words in a health information website text for lay readers unless it was absolutely necessary, and even then, only when accompanied by a clear definition or explanation. This section explored the comparison of the use of multiple capital letters and numerical symbols between this study’s three language’s non-translated sub-corpora. The next section compares these two markers between the translated and non-translated sub-corpora within each of the three languages.

*Multiple capital letters and numerical symbols: Differences between the non-translated and translated sub-corpora*

According to the mean proportion, the Spanish non-translated sub-corpus contained more multiple capital letters compared with the Spanish translated sub-corpus (0.40 percentage points difference). The inverse was the case for the two English sub-corpora, with a 0.11 percentage point difference. The Catalan non-translated and translated sub-corpora had the same amount of multiple capital letters, with a less than 0.01 percentage point difference.

Table 33 - Comparison of frequent multiple capital letters between the non-translated (L1) and translated (L2) sub-corpora.

English L1	English L2	Spanish L1	Spanish L2	Catalan L1	Catalan L2
HIV	HIV	VIH	VIH	VIH	VIH
AIDS	AIDS	SIDA / Sida	SIDA / Sida / sida	Sida / sida	SIDA
TB	TB	TB	TB		TB
STD / STI	STI	ITS	ETS / ITS	ITS	None
IGRA, BCG	IGRA, BCG		IGRA, BCG		IGRA, BCG
PPD			PPD		

According to Montalt and González Davies (2014), generally, in texts translated from English, “HIV” is “normally left in English” (pp. 648-649). As mentioned in Section 6.2.2 while discussing another case of initialism (the treatment of “ART” in Spanish and Catalan), English is the *lingua franca* of the global science community (Cromer, 2008), therefore, a technical term’s original acronym or initialism is usually retained in the translation. As indicated in Table 33, this was

not the case with this study's Spanish and Catalan translated sub-corpora. As explained earlier in this section, The translation from the English "HIV" into the Spanish and Catalan "VIH" may be sociocultural in that the initialism of "*virus de inmunodeficiencia humana*" as opposed to that of "human immunodeficiency virus") may be deemed by the translators to be more acceptable in terms of familiarity by the lay readers. While "VIH" was consistent throughout the Spanish and Catalan sub-corpora, the same cannot be said of "SIDA" ("AIDS"). Wermuth & Verplaeste (2019) observed that international inconsistency is especially prominent in the translation of medical acronyms and initialisms. The Spanish translated sub-corpora featured three different forms of "SIDA" as shown in Table 33.

There were two instances of "sida" in the Spanish translated sub-corpus, both from Catalan government-based websites (Generalitat de Catalunya, *A Catalunya*, n.d.; Govern Illes Balears Direcció General de Salut Pública y Participación, *Infeccions*, n.d.). The translators did not change the letter cases of the acronym to either "SIDA" or "Sida," but transferred the Catalan variation of the lack of capitalization of this word. The translators could have been avoiding online shouting per Witchel, et al. (2020), or perhaps they were unaware that "sida" is not typically written differently in Spanish and thus committed a misspelling. However, considering that both instances were in Catalan government websites, that the translators could have had a sociopolitical motive per Bowker and Hawkins (2006) by "Catalanizing" the Spanish text cannot be ruled out.

Transferring the multiple capital lettered word into the translated text could also be done with the intention to improve the reader's health literacy in the language of the host country. "TB" is not present in the Catalan non-translated sub-corpus, and – as mentioned earlier in this section – only one instance was found in the Spanish non-translated sub-corpus. However, two instances were found in the Catalan translated sub-corpus, and twelve instances in the Spanish translated sub-corpus. All these instances were found in websites hosted by predominantly English-speaking countries. Therefore, it would seem logical that the translators transferred the abbreviation for "tuberculosis" with the intention of familiarizing those living in English-speaking countries with terminology they may require in clinical settings for communication with health professionals.

The question mentioned earlier in this section – in the comparison between the non-translated sub-corpora – about whether there is a sociocultural preference for "infection" over "disease" in Spanish resurfaces upon examination of the Spanish translated sub-corpus. All ten instances of "ETS" occur in websites based in the United States, including those belonging to well-established national organizations such as the Centers for Disease Control and Prevention (CDC). One example is in this translation from the English "STD" (48) to the Spanish "ETS" (49) in the Nemours Foundation's TeensHealth (2018) website:



- (48) Some reasons to get tested again include if you: [...] get an **STD** (sexually transmitted disease).
- (49) *Algunos de los motivos para volvértela a hacer son los siguientes: [...] has contraído una **ETS** (enfermedad de transmisión sexual) [Some reasons for retaking it are the following: ... you have contracted an **STD** (sexually transmitted disease)]*

There were twelve instances of “STD” in the English non-translated sub-corpus, which correspond with the websites in which “ETS” was found in the Spanish translation, while there were 33 instances of “STI” in the English non-translated sub-corpus and five instances of “ITS” in the Spanish translated sub-corpus. For a better understanding of whether there exists a regional preference of “diseases” and “*enfermedades*” or “infections” and “*infecciones*,” a future study should compile a large corpus in English and Spanish, both translated and non-translated, of health information websites on a broad range of infectious diseases.

A similar motive to that of “TB” – to familiarize non-English speakers with English biomedical terms frequently used in clinical settings – may have been in play for the terms “IGRA” and “BCG” in the Spanish and the Catalan translated sub-corpus, along with the translators’ intention to retain the uniformity in terms of monosemy of such highly technical terms (Wermuth & Verplaeste, 2019). The Germany-based Explain TB (n.d.) presents these two terms with lexical familiarization devices in the English (50), Spanish (51), and Catalan (52) translations:

- (50) A newer test is the so called **IGRA** test that is performed on a blood sample. In the laboratory, the amount of a substance called interferon-gamma is measured in the blood. [...] One advantage of the **IGRA** test is that its result is not influenced by a previous **BCG** vaccination against tuberculosis.

The English translator accompanied “IGRA” with a definition using a hinge word for the technical term required to help explain the acronym. In addition to a definition in the Spanish translation (51), a code gloss is applied to introduce the reader to the English term both spelled out and in acronym form. Neither of the examples explain “BCG” other than that it is a tuberculosis vaccine, although that the vaccine is specifically against tuberculosis is less clear in the Spanish version.

- (51) *El ensayo de liberación de interferón gamma (interferon-gamma release assay, **IGRA**) es un análisis de sangre que puede detectar la tuberculosis. [...] Una ventaja de este ensayo es que el resultado no es influenciado por vacunaciones previas con **BCG**.*

[The interferon gamma release assay (**IGRA**) is a blood test that can detect tuberculosis. [...] An advantage of this test is that the result is not influenced by previous **BCG** vaccinations.]

In comparison with the translated Spanish version above (51), the Catalan version (52) resembles the English text (50) more closely. The Catalan translator made clear that the BCG vaccine was specifically against tuberculosis. However, only the purpose of “IGRA” is explained.

(52) *Una prova bastant nova és la anomenada **IGRA**; prova que es realitza sobre una mostra de sang. [...] Un dels avantatges de la prova **IGRA** és que el seu resultat no està influenciat per una prèvia vacunació de **BCG** contra la Tuberculosi. (A fairly new test is the so called **IGRA**; a test that is performed on a blood sample. [...] One of the advantages of the **IGRA** test is that its result is not influenced by a previous **BCG** vaccination against tuberculosis.)*

In all three versions, the acronym “IGRA” is preserved instead of being translated into a new acronym or initialism like “*SIDA*” / “*Sida*” / “*sida*” for “AIDS.” The English and the Catalan translations both implement repetition of “IGRA,” which promotes the reader’s health literacy through reinforcement, and explain the purpose of the test without detailing what the acronym stands for. While the Spanish translation was less clear about the purpose of the BCG vaccine, it contained an explicit definition of “IGRA.”

A biomedical term that was frequently used in the non-translated English texts that was maintained in five instances in the Spanish translated sub-corpus was “PPD.” One of the instances, extracted from Merck Manual (Tierney & Nardell, *Diagnóstico*, 2018), stands out due to the translator’s treatment of the abbreviation (53):

(53) *La prueba cutánea de la tuberculina (también denominada prueba de Mantoux o **PPD**, por las siglas en inglés correspondientes a derivado proteico purificado) se realiza inyectando una pequeña cantidad de proteína derivada de las bacterias de la tuberculosis entre las capas de la piel, por lo general en el antebrazo. [The tuberculin skin test (also called the Mantoux test or PPD, by its abbreviation in English corresponding with purified protein derivative) is done by injecting a small quantity of protein derived from tuberculosis bacteria between the layers of the skin, usually in the forearm.]*

For comparison, below is the original English text (Tierney & Nardell, *TB*, 2018) (54):

- (54) A tuberculin skin test (also called a Mantoux test or **PPD** for purified protein derivative) is done by injecting a small amount of protein derived from tuberculosis bacteria between the layers of the skin, usually on the forearm.

The writers of the original English version, Tierney and Nardell (2018), presented the test for tuberculosis using a technical term, “the tuberculin skin test,” accompanied it with a code gloss in the form of parentheses in which an eponymic synonym was included and spelled out what “PPD” stood for, and then explained how the test was administered. In other words, Tierney and Nardell (2018) provided three technical names for the same test, in a text intended for the lay reader.

The Spanish version resembles the original English text, with the addition of “*por sus siglas en inglés*” (by its abbreviation in English) for “PPD” without spelling out the complete term in English. The translator instead explicitly linked it to the complete term in Spanish: “*PPD, por las siglas en inglés correspondientes a derivado proteico purificado*” (“PPD, by its abbreviation in English corresponding with purified protein derivative”). By omitting the spelled out English term for “PPD,” the translator was not only economical in terms of text length but anticipated that their reader would prefer only the Spanish translation from which they could infer the English word order from which “PPD” originates.

Regarding the comparison of numerical symbols within each language according to the mean proportion, the Catalan non-translated sub-corpus contained more than the Catalan translated sub-corpus, which had none, thus the difference is 10 percentage points. Both the English translated sub-corpus and the Spanish translated sub-corpus contained more numerical symbols compared with their respective non-translated sub-corpora. The Spanish non-translated sub-corpus, in fact, contained none. The English translated sub-corpus has only 5 percentage points more than the English non-translated sub-corpus. Therefore, the English pair is almost equivalent, while the Spanish and the Catalan pairs are markedly more disparate.

As indicated in Table 34, consistency is present in the translated texts regarding p24 and CD4, along with “HIV-1” and “*VIH-1*,” and “HIV-2” and “*VIH-2*,” which were the same throughout the English and Spanish non-translated and translated sub-corpora.

Table 34 - Comparison of frequent numerical symbols between the non-translated (L1) and translated (L2) sub-corpora.

English L1	English L2	Spanish L1	Spanish L2	Catalan L1	Catalan L2
HIV-1 / HIV-2	HIV-1 / HIV-2 / HIV-1/2	None	VIH-1 / VIH-2	VIH-1 / VIH-2	None
p24	p24		p24	p24	
CD4			CD4		

However, one exception stood out in the English translated sub-corpus, which had the numerical symbol “HIV-1/2.” This variation was found in one of the World Health Organization’s three websites (World Health Organization, HIV/AIDS, 2018) in the English translated sub-corpus (55):

- (55) Serological tests, such as RDTs or enzyme immunoassays (EIAs), detect the presence or absence of antibodies to **HIV-1/2** and/or HIV p24 antigen.

In the Spanish translation (56) of the same website (World Health Organization, VIH/sida, 2018), the two types of HIV are distinct and clear:

- (56) *Las pruebas serológicas, entre ellas los análisis rápidos y los enzimoimmunoanálisis (EIA), detectan la presencia o ausencia de anticuerpos contra el **VIH-1**, el **VIH-2** y el antígeno p24 del virus.*

This consolidation of “HIV-1” and “HIV-2” could confuse the reader who is unaware that there exist only two different types of the human immunodeficiency virus and read “HIV-1/2” as “HIV-and-a-half.” Wermuth & Verplaeste (2019) viewed international inconsistency as a problem, as exemplified above (56) as well as regarding the variations in the capitalization of “*SIDA*” (“AIDS”) as discussed earlier in this section.

Multiple capital letters and numerical symbols are usually highly technical terms that are sometimes translated from the source text into the target language so that the reader may better understand the concept, and sometimes transferred as is for the sake of international consistency. This study’s corpus contains differences, albeit not statistically significant, in the use of multiple capital letters and numerical symbols. As demonstrated in this section, the use of devices to clearly define the abbreviations, acronyms, and numerical symbols is paramount for comprehensibility.

## 6.5 Summary

This chapter provided the mixed analysis of technicality of vocabulary to answer the second and the third research questions. There exist differences between the English, Spanish, and Catalan non-translated sub-corpora. The only non-translated sub-corpus to feature hyperlinks was the English, which also had the highest tendency to use lay terms in lieu of specialized words containing Greek or Latin affixes. These characteristics softened the authoritative tone as found in the writer-reader relationship analysis of the English non-translated sub-corpus (see Section 5.4). However, the English was the least likely among the non-translated sub-corpora to implement an explanation to avoid a technical term, which would have further reduced the power distance and rendered the texts more comprehensible.

The Spanish non-translated texts were the most technical and implemented multiple multimodality devices. This does not imply that textual multimodality was applied to every technical term; other lexical familiarization devices were also implemented to render the Spanish non-translated texts more comprehensible for the lay audience. Nearly half of the Spanish non-translated texts implemented an explanation to avoid a technical term, as well as term variations for multiple capital letters. These findings, combined with those outlined in the writer-reader relationship analysis (Section 5.4), maintain the balance between authoritativeness and solidarity with the reader in the Spanish non-translated sub-corpus.

The Catalan non-translated texts were the least technical, even though they contained the most specialized words with Greek or Latin affixes. All the websites in the Catalan non-translated sub-corpus used explanations to avoid a technical term, and none of these websites implemented a lay term to avoid a technical term. The Catalan non-translated sub-corpus featured term variations for both multiple capital letters and numerical symbols. Together with the findings in the writer-reader relationship analysis, the technicality of vocabulary results maintains the Catalan non-translated sub-corpus as having the least power distance and may be the most comprehensible.

Overall, the technicality of vocabulary findings does not affect the hierarchy of the three non-translated sub-corpora in terms of power distance, whose effects on comprehensibility and health literacy must also be considered in the translation process. A list of the similarities and differences between the six sub-corpora may be viewed in Table 35.

Table 35 - Similarities and differences between the non-translated (L1) and translated (L2) sub-corpora: Technicality of vocabulary.

Markers	English L1	English L2	Spanish L1	Spanish L2	Catalan L1	Catalan L2
<b>Level of technicality in text</b>		More technical than English L1	Most technical	Less technical than Spanish L1	Least technical	More technical than Catalan L1
<b>Multimodality</b>	The only L1 sub-corpus to use hyperlinks, bold type		Bold type, single quotation marks, different color, multiple textual multimodality devices	Italics, double quotation marks, underlining, hyperlinks, all capital letters, multiple textual multimodality devices	Bold type	
<b>Words accompanied by a definition or an explanation</b>				Preserved English L1 usage		Used more definitions, hinge words, code glosses, explanations, and double lexical familiarization. Preserved English L1 usage
<b>Greek or Latin affixes</b>	Tends to use lay terms				Had the most Greek or Latin affixes	
<b>Implementation of an explanation to avoid a technical term</b>	In 5 of 52 websites	More than English L1	In 3 of 7 websites	More than Spanish L1	In all 8 websites	Less than Catalan L1
<b>Implementation of a lay term to avoid a technical term</b>	More than English L2			More than Spanish L1	None	None
<b>Multiple capital letters</b>			Contained term variations		Contained term variations	
<b>Numerical symbols</b>			None	Contained term variations	Contained term variations	None

As regards the second research question, the vocabulary in the websites about HIV and TB diagnostic testing in the translated and non-translated versions of English, Spanish, and Catalan websites is more technical than the 5% recommended by Nation (2001, p. 12). The Spanish non-translated sub-corpus was the most technical at 12.56%, and the Catalan non-translated sub-corpus was the least technical at 7.86%. An upward shift in technicality of vocabulary occurred in the translated English and Catalan texts, possibly due to the Spanish non-translated texts being the most technical. On the one hand, the Spanish translated sub-corpus may have reflected the commendable job performed by the translators in significantly reducing the number of specialized terms – thus avoiding an upward shift in the degree of technicality – from the non-translated English and Catalan source texts. However, the improved comprehensibility of the Spanish translated texts, while reducing power distance due to fewer technical terms, would be at the expense of cross-cultural adaptation. On the other hand, these translators may have failed to culturally adapt the texts to meet the standard of expected comprehensibility levels of their Spanish readers, instead reproducing the degree of technicality of vocabulary from the English and Catalan source texts.

Term variations were detected in the Spanish translations from the English source texts, which should not be problematic if a clear definition accompanies the term. It is important to avoid the upward shift mentioned in Section 6.2.2 in technicality of vocabulary when

translating health information from the original into multiple translated versions, so that the non-L1 readers of multicultural communities can equally access health information in their host country, region, or city. The writer's choices in the treatment of medical terminology influences the readers' ability to improve their health literacy to bridge between the Voice of Medicine and the Voice of Lifeworld. These texts would be clearer and more comprehensible with wording in the target community's own language, incorporating only the absolutely necessary technical words (Ardasheva & Tretter, 2017) accompanied by an explanation (Hochberg, 2021).

In Section 6.2, the varying viewpoints regarding what qualifies a term as specialized or technical was addressed. Another point to consider is Zipf's law (Zipf, 1949; Sorell, 2012), which – as mentioned in Section 4.3.1 of the Methodology chapter – concerns the frequency of the word in the text. In health communication texts, certain specialized words and phrases may be repeated multiple times while the rest of the text does adhere to Zipf's law, which states that more commonly used words appear more frequently than technical terms (Zipf, 1949). Repetition was originally among the markers considered to answer the first part of the second ELF-W technicality of vocabulary question, since repetition was considered helpful for those learning English for Specific Purposes (ESP) to reinforce their memory with the new vocabulary (see for example Nation, 2001; Bazzanella, 2011). However, it was eliminated after the pilot test because the repetition of specialized words in health information texts tends to be irregular and therefore would not serve this study in the way that the selected markers have.

In response to the third research question, there exist differences between the translated and non-translated sub-corpora as regards the treatment of technicality of vocabulary. The Spanish non-translated sub-corpus has more multimodality compared with the translated counterpart. The Spanish non-translated sub-corpus displayed a preference for bold type, single quotation marks, and a different color. The Spanish writers' proclivity for multimodality devices may be influenced by their work culture (the Voice of Medicine) accompanied by a heightened awareness to teach specialized words to readers (the Voice of Lifeworld) to boost health literacy. This reduces the power distance between the writer and the reader. Another health literacy improvement technique, hyperlinked technical terms, were only evident in the non-translated English sub-corpus. Bold type, which was used equally in the Spanish non-translated and the Catalan non-translated sub-corpora and slightly more in the English non-translated sub-corpora, could be a shared form of multimodality for this study's source text writers.

As regards the use of multimodality in translation, the Spanish non-translated sub-corpus contained significantly more compared with the Spanish translated sub-corpus. To present a technical term, the Spanish non-translated sub-corpus featured more single

quotation marks, different colors, bold type, and multiple textual multimodality types. The Spanish non-translated sub-corpus featured more instances, but the Spanish translated sub-corpus had a larger variety of multimodality devices: italics, double quotation marks, underlining, hyperlinks, all capital letters, and various combinations thereof.

A shift was present in the Spanish to English translation: the English translators tended to enhance the multimodality devices present in the Spanish source texts. Multimodality figured prominently in this study's Spanish non-translated health information websites and should be considered by Spanish translators when culturally adapting a text from another language as Spanish readers may be accustomed to this feature whenever technical terms are necessary to aid in improving health literacy. Since the Spanish non-translated sub-corpus has two statistically significant results in this study, this feature in health information websites merits further research to determine whether it is unique to this corpus or characteristic in Spanish multilingual health information websites.

As regards the use of a definition or explanation to accompany technical words, the English non-translated sub-corpus contained more compared with the Spanish non-translated sub-corpus and the Catalan non-translated sub-corpus, with no statistical significance. Although the English non-translated and the Catalan non-translated sub-corpora had more instances of defining or explaining specialized terms, further research is necessary to corroborate this study's results.

The Catalan translated texts feature significantly more words accompanied by a definition or explanation than the Catalan non-translated texts. The Spanish translated sub-corpus also had more words accompanied by a definition or an explanation, whereas the inverse was the case for the English sub-corpora. The Catalan and the Spanish translators preserved this lexical familiarization tactic from the English non-translated sub-corpus. The Catalan translated texts featured more definitions, hinge words, explanations, code glosses, and double lexical familiarization devices. The English translators apparently were less diligent about the use of lexical familiarization devices to render the texts more comprehensible and boost their target audience's health literacy.

As regards Greek or Latin affixes, the Catalan non-translated sub-corpus contained more than the Spanish non-translated and the English non-translated sub-corpora. The Catalan non-translated sub-corpus also had more Greek or Latin affixes than the Catalan translated sub-corpus, which suggests that the translators opted for less technical words in the English and Spanish versions. The English writers tended towards lay terms whereas the Spanish and the Catalan writers included words with Greek or Latin affixes, which are probably comprehensible to the Romance language readers. This finding is ironic due to English being the *lingua franca* of biomedicine, whose specialized terms contain Greek and Latin affixes (Montalt & González Davies, 2014). These issues must be considered in future research on



the use of specialized biomedical terms with Greek or Latin affixes in multilingual health information websites when comparing non-translated sub-corpora as well as between non-translated and translated sub-corpora.

As regards implementing an explanation to avoid using a technical term, the Catalan non-translated sub-corpus contained more compared with the Spanish non-translated sub-corpus or the English non-translated sub-corpus. While all the Catalan non-translated texts reflected this tactic, only five out of fifty-two English non-translated texts and three out of seven Spanish non-translated texts did this. Future research with a larger corpus should determine whether this strategy is routine among Catalan writers compared with Spanish and English writers of health information websites. The Catalan non-translated sub-corpus implemented explanations to avoid a technical term more frequently than the Catalan translated sub-corpus. The inverse was the case for the Spanish and the English sub-corpora. While this strategy may reduce the precision of the message and keep the readability grade level low, it reduces the power distance between the writer (and translator) and the reader, who benefits by understanding the message at the expense of health literacy.

As for using a lay term to avoid a technical term, the mean proportion showed that the English non-translated sub-corpus contained more of this tactic compared with the Spanish non-translated sub-corpus or the Catalan non-translated sub-corpus. However, the differences are almost nil. This tactic was used more frequently in the English non-translated sub-corpus compared with the English translated sub-corpus. The inverse was the case for the Spanish sub-corpora, indicating that some of the Spanish translators preserved this tactic from the source English texts, even if they avoided the same term in different ways. This approach to avoiding the use of technical terms was not found in either the Catalan non-translated sub-corpus or the Catalan translated sub-corpus. The Catalan writers and translators implemented explanations as the only tactic to avoid a technical term. Doing so also reduces the power distance of the writer, who is using the Voice of Lifeworld to communicate with the reader. Using a lay term or an explanation to avoid a technical term reduces the readability grade level, but it comes with sacrificing the reader's opportunity to improve their health literacy. This highlights the disadvantage of low readability grade levels: without introducing the reader to specialized terms using lexical familiarization devices, the reader lacks the chance to improve their health literacy.

As regards multiple capital letters, the Spanish non-translated sub-corpus contained more than the English non-translated sub-corpus and the Catalan non-translated sub-corpus. The Spanish non-translated sub-corpus also features more multiple capital letters compared with the Spanish translated sub-corpus, while the inverse was the case for the two English sub-corpora. The two Catalan sub-corpora had an equal amount of multiple capital letters. Discourse analysis found that term variations were implemented for some initialisms and

acronyms by the writers and translators for sociocultural reasons. International inconsistency of specialized terms is particularly prominent with initialisms and acronyms. In some instances, translators may aim to familiarize non-native readers with the host country's terminology to facilitate interaction with health care professionals. Future research is required to ascertain whether different languages implement term variations regularly and the rationales behind such usage.

Similar term variations were detected in the discourse analysis of numerical symbols. The Catalan non-translated sub-corpus contained more numerical symbols than the English non-translated sub-corpus or the Spanish non-translated sub-corpus, the latter of which had none. The Catalan non-translated sub-corpus also had more than the Catalan translated sub-corpus, which had no numerical symbols. The Spanish non-translated sub-corpus also had none, but translators had preserved numerical symbols in the Spanish translated sub-corpus. The English translated sub-corpus had slightly more numerical symbols compared with the non-translated counterpart. Whether it is necessary to include these highly technical numerical symbols in health information websites on diagnostic testing for the lay readers is questionable. If they absolutely must be included, then they should be clearly defined or explained.

As mentioned in Section 6.2, the TAM-HC seems to have placed the three languages' non-translated sub-corpora on level with one another. The TAM-HC has been proven through this study to be effective in comparing between different language corpora. This instrument holds a clear advantage over readability tests such as the SOL and the SMOG, as exemplified in the study by Johnson, et al. (2019) as reviewed in Section 2.1 along with the Flesch Reading Ease and the Flesch-Kincaid grade level, as demonstrated in the study by Petkovic, et al. (2015) as reviewed in Section 2.3. One of the disadvantages of such readability tests is due to linguistic variation. For example, there is a bias towards English due to Spanish and Catalan having more polysyllabic words compared with English. The results of this thesis would have been invalid to answer the second research question had the technicality of the texts been analyzed by a readability test that only examined text complexity by counting the number of syllables per word and the number of multisyllabic words there are in a text.

Moreover, the TAM-HC methodology, with its use of dictionaries, not only reduced the bias concerning the chronologically dynamic nature of the general language corpora, but it also stabilized the results within a fixed point in time. As noted in Section 4.3.2, the more dynamic general language corpora would have skewed this study's TAM-HC analysis results due to the onset of the COVID-19 pandemic with its sharp increase in usage frequency of epidemiological and medical terminology that also pertains to HIV and tuberculosis.

The other instrument implemented in this thesis, the ELF-W, served as a guideline with its questions pertaining to writer-reader relationship and to technicality of vocabulary.

Clerehan, et al. (2005) created the ELF to overcome five issues, which are listed in Section 2.3, with the application of readability formulas in the process of evaluating the quality of health communication texts intended for the lay audience. As this thesis aimed to analyze comprehensibility – which included information density and the use of appropriate language – and to ascertain whether cross-cultural adaptation occurred in the translated health information websites, the ELF was the appropriate instrument.

This thesis marks the first time that two sections of the ELF were adapted specifically for health information website textual analysis. The markers selected to assess this corpus were a result of pilot testing and the subsequent process of elimination to narrow down to an effective set. Nevertheless, overlapping relevance to multiple ELF-W questions was inevitable. Therefore, distinguishing the purpose of their use in the study is key.

This set of markers may be applicable to perform a mixed-methods analysis on the diagnostic testing section of other multilingual health information websites about infectious diseases, and perhaps for other types of diseases as well. Since this is the first time the ELF has been applied in this manner, pilot testing the ELF-W with different combinations of markers is recommended prior to executing the methodology for this genre. Implementing the ELF-W with a relevant set of markers, together with the TAM-HC, effectively reveals the comprehensibility not only through the language and the vocabulary that appear in the texts, but the clarity of their function (e.g., the clarity of the message) and the cultural features in a comparative inter- and intralingual analysis of health information website texts. The TAM-HC and the ELF-W, complemented by the Voice of Medicine and the Voice of Lifeworld, focuses on the needs of the target audience, and ascertains whether the writers and translators meet these needs.

In the process of analyzing the corpus, suspicion arose of poor usage of machine translation in some of the texts. Machine translation is here to stay and will continue to improve. However, it will never replace human translators, who must ensure quality in the form of correct word choices, text flow, cross-cultural adaptation, and the writer's tone. Machine translation that is heavily relied upon instead of employing professional human translators to render multilingual website texts could backfire on the website hosts and jeopardize public health. When a specialized human translator implements machine translation to speed up their work to free up time for the remaining tasks – correction and finetuning the text to meet the needs of the website host and the target audience – the chances of the multilingual health information website having its objectives met is improved.

This chapter revealed that the six sub-corpora are more technical than the 5% recommended by Nation (2001, p. 12). In addition, there were differences in the use of technicality of vocabulary between the English, Spanish, and Catalan non-translated sub-corpora as well as between the non-translated and translated sub-corpora within each of these

three languages. These differences affected the comprehensibility of the six sub-corpora. In addition, the differences in the use of lexical familiarization devices have an impact on the potential for the reduction of power distance along with opportunities to empower the readers to improve their health literacy. The next chapter presents the limitations, recommendations for future research and practice, concluding with a cumulative discussion.

## 7. DISCUSSION AND CONCLUSION

“The Universe doesn’t allow perfection.” – Stephen Hawking (Bergstrand, 2018, p. 42)

To paraphrase Stephen Hawking, nothing is perfect, and this study is no exception despite the efforts: the limitations will be addressed. Then the didactic and professional applicability potentials will be presented. This chapter – and this thesis – will end with a summary.

### 7.1 Limitations

The methodology is not without limitations, which have been addressed throughout the thesis, particularly in Chapter 4. This section revisits the most important ones and recommendations for future research are provided.

#### 7.1.1 Sole researcher bias

The most glaring limitation is sole researcher bias. The methodology contains a subjective textual analysis appropriate for its text genre – multilingual health information website texts on diagnostic tests for TB and HIV - performed by one researcher. This places this study at risk of bias due to its subjectivity as well as a delay about the forecasted timeline due to the high text density of websites as well as the downloadable PDFs included therein. However, the benefits of a sole researcher implementing instruments typically used in collaborative investigations is the potential for depth and breadth of the study.

The ELF questionnaire has been applied in studies conducted by a group of researchers (Clerehan, et al., 2005; Clerehan & Buchbinder, 2006; Hirsch, et al., 2009; Sand, et al., 2012; Petkovic, et al., 2015; Clerehan, et al., 2016; Cavalieri, et al., 2019). In multilingual studies, the group included researchers and survey subjects who were native to their respective culture, including language (see for example: Clerehan, et al., 2016; Cavalieri, et al., 2019). Initial testing of the ELF methodology in this study of writer-reader relationship and technicality of vocabulary in multilingual health information websites revealed an important limitation. Due to the subjectivity of the qualitative method, a sole researcher using the ELF methodology risks weakening the study. The problem can be ameliorated by using instruments like dictionaries and word lists as objective measures in ranking technicality without compromising the SFL framework. This approach will benefit individual researchers.

In addition, the study's results should be compelling to researchers and professionals in the translation and language sciences as well as the public health field for future studies and techniques to improve the composition of multilingual health information texts (Cavalieri, et al., 2019). This would not be possible without the incorporation of ELF, which is based on SFL.

It should be noted that the TAM study by Ha & Hyland (2017, p. 40) was conducted by a pair of researchers and "several" graduate students. However, in this thesis study, pairing this quantifiable instrument with the ELF-W and the use of clues in the text to analyze technicality of vocabulary improves the reliability.

In addition to the advantages and disadvantages of a sole researcher using instruments typically used by investigation teams, the interdisciplinary nature of this investigation by a sole researcher reveals a conflict between the desire for rigidly measurable results in public health research and the acceptability of – or at least concession to - the subjectivity of discourse analysis in translation and language sciences. There are multiple ways to respond to a health communications text, and these variations reflect "the different discourses used to represent them" (Saldanha & O'Brien, 2014, p. 53).

As a sole researcher who hails from the culturally diverse New York City metropolitan area, native in American English with frequent exposure through the formative years to British English and Spanish, this bias is taken into consideration in the analysis of non-US-based websites, as well as in the non-US English versions of US-based websites. Knowledge about cultures other than one's own does not equal extensive immersion therein. Future research should replicate this study by a group of researchers using corpora and recruiting subjects that represent the native heritage of all those included to reduce bias. Including more languages and cultures within a corpus will ultimately benefit a broader range of readers through the application of the future study's findings. Furthermore, the methodology tailored to this study should be applied to ensure optimal comprehensibility and cross-cultural competence in future multilingual health information websites.

### 7.1.2 Building the corpus

The search for health information websites on HIV and TB diagnostic testing organically replicates a typical online consultation by the average reader to a point (Alioshkin Ceneguín, et al., 2020); that is, most of the websites were found using this method. The rest of the websites were found using references within those found via search engines and via recommendations from colleagues in the public health field. It is quite possible that the latter methods also mirror how a typical reader might access health information on TB and HIV diagnostic testing, were they specifically referred to a particular link via a testing center's

website or provided a URL by another person, thus not using a search engine at all (Cisu, et al., 2019).

The search efforts bore an unequal number of websites per sub-corpus. Most noticeably, the Spanish non-translated and the Catalan translated sub-corpora were disproportionately small compared with the other four sub-corpora. This issue was anticipated as difficult to avoid. Normalizing the data set for the statistical analysis served to overcome this inequality in the number of texts between the sub-corpora. Nevertheless, the large 95% standard error bars for the Spanish non-translated sub-corpus in many of the mean proportion graphs was a reminder that the results involving the Spanish non-translated sub-corpus should be treated cautiously.

### 7.1.3 Text only

This study was limited to texts. Any visual contents, apart from textual multimodality, within the websites were excluded from the analysis of writer-reader relationship and technicality of vocabulary. Omitting the non-textual visual contents from the cross-cultural competence analysis results in a partial picture. While this is not an issue in terms of the objectives of this study, the fact remains that the results are limited to the textual contents. Additional evaluation for cross-cultural competence would be required to include the visual contents, which could be a more subjective analysis and thus recommended for a study by a research team that includes inter-rater agreement as opposed to a sole researcher.

### 7.1.4 Dictionaries versus general language corpora

Using general language corpora instead of dictionaries may have been ideal for this study. However, the general language corpora available for each language were not level with each other, resulting in the problems described in the TAM pilot test described in Section 4.3.2 and putting into question the accuracy of comparison of the results between languages. While the Spanish and the Catalan dictionaries were more similar to each other than either of them was to the English, it was feasible to adapt the TAM-HC classification rubrics accordingly.

For a large-scale study with a big picture observation that is objective like this one, the use of dictionaries has proven to be the appropriate choice due to – as mentioned in Section 4.3.2 – their stability regarding word usage frequency data. General language corpora are updated more frequently than dictionaries. Therefore, word usage frequency data could change during the study and complicate the analysis, as would have happened to this study, whose analysis was completed during the COVID-19 pandemic (with words in common, such as “PCR test,” “viral load,” and “antibodies”). However, the use of general language corpora

would still be recommended for studies with a small sample size with the goal of evaluating the comprehensibility of every multilingual health information website within the sample corpus. Having stated that, an important caveat is that such a small sample size study would have to include only the languages whose general corpus comprised the same types of text genres, including biomedicine, for the word usage frequency data to be accurately comparable. In addition, a similar large study using general language corpora would be feasible if it were conducted by a group who could complete the analysis within a shorter time frame, reducing the risk of adverse world events affecting the data.

### 7.1.5 “Non-translated” versus “translated”

It is important to consider that the sub-category names may mask different sub-types of texts, and thus communication strategies. A “translated” health information website text in Spanish hosted by a New York City public health department caters to a different readership – e.g., Latin American immigrants from multiple culturally diverse developing regions and their descendants in a predominantly English-speaking developed country – from a “non-translated” website text in Spanish hosted by a non-profit organization based in Madrid, where a similar immigrant population might anticipate a lack of cross-cultural adaptation for the Latin American population. In addition, the health literacy levels among the target audience in Spain may differ from the health literacy levels among the Latin American population (see, for example, Rodríguez Álvarez, et al., 2014; Sørensen, et al., 2015; Howe, et al., 2016; and Johnson, et al., 2019<sup>100</sup>).

### 7.1.6 Applicability

While the combined approach of the use of clues in the text, the TAM-HC rating scale, and the ELF-W using a mixed-methods data analysis software boost the strength of the results, integrating more computerized methods to identify technical words could improve such research even more (Liu & Lei, 2019). Bilingual and multilingual word lists would prove useful for research, writing health communication texts, and teaching a language course within the context of health and medicine.

The focus on TB and HIV diagnostic testing information restricts the applicability of this study’s findings to websites providing information about other aspects of HIV and TB, such as etiology and treatments, as well as about other infectious diseases and health issues.

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<sup>100</sup> Johnson, et al. (2019) cited Howe, et al. (2016), who stated that, compared with 28% of White adults, 65% of Hispanics have limited health literacy levels. In Spain, 58.3% of the population has limited (“low” to “problematic”) health literacy (Sørensen, et al, 2015).



Therefore, it would be prudent to apply this thesis' results only to the diagnostic testing section of health information websites on infectious diseases in a very general sense and more specifically to HIV and TB.

This section addressed the limits of the applicability of this thesis study. The next section presents more ways in which this study can benefit researchers and professionals in academia and industry.

## **7.2 Implications for future research and benefits for professionals**

As far as could be determined from the available literature, this is the first study to incorporate the qualitative ELF approach combined with quantitative instruments in the form of dictionaries and word lists as applied by the TAM approach, conducted by an individual researcher. With the improvements recommended in the previous section, this methodology could have potential to become the standard for ongoing research to determine whether differences exist between languages in online health information websites and identify such differences. While the mixed methods approach certainly strengthens the methodology, its reliability and validity conducted by an individual, as opposed to a team of researchers, should be tested beyond pilot studies in a future project.

Future studies should continue to push corpus linguistics methodology into new territory to create more sophisticated approaches that could shed light on pragmatic and semantic features that could influence the target audience's reception of health information. For example, a study to explore whether the medical term, "window period," is presented in quotation marks in a universal manner – that is, ubiquitous in as many languages as can be included – as well as the origin of this phenomenon and whether this is beneficial for the reader. Meanwhile, the combination of human-driven qualitative assessment with technology-driven quantitative analysis – essentially, a mixed methods approach – carries great potential for further research.

Having stated this, balancing the corpora is challenging when it comes to health information websites. As pointed out in the Methodology chapter (Section 4.2), there exist far fewer multilingual health information websites in Spanish and Catalan than in English. Including more sections of the website text that the majority of them have in common, perhaps the etiology and pathophysiology sections, may or may not balance the sub-corpora due to the number of words. Alternatively, excluding more website host types may improve the balance between the sub-corpora, although it would diminish the overall size.

Delving into the sub-categories of this study's markers would be worthwhile. Future research should compare between languages for sub-categories such as the inclusive first-

person plural. A study by De Cock (2011) observed general similarities between Spanish and English of this relational and engagement marker usage, however her English corpus showed that in the question form, there was more hearer activation. This should be applied using the SFL / interpersonal metadiscourse theoretical framework to a multilingual corpus of health information websites.

As hinted at in Sections 5.3.6 and 5.3.7, another potentially valuable project could focus on a comparison between the use of imperatives – both positive and negative – and of deontic modal verbs in health information websites. Since the research questions – what are the differences in the tenor of imperatives-dominant health communication texts compared with that of a deontic modals-dominant ones? What is the tenor of the health communication texts that contain a more balanced combination of imperatives and deontic modals? – have the potential for complexity, such research should first be performed within each language, focusing on the region(s) in which the website hosts are based, e.g., separating the texts according to the different predominantly English-speaking cities. Once information is obtained from such a study, it would be interesting to compare the findings within the same language among the demographics such as age groups. Ultimately, multilingual comparisons on this subject would be very useful in improving the tenor of health information website texts composed and translated for culturally diverse audiences.

Research such as the abovementioned ideas can solve a problem as well as raise new issues for future investigation (Borja Albi, García Izquierdo, & Montalt, 2009). Future research along this interdisciplinary track could identify additional pragmatic determinants in health communication texts that could be improved. The effect of adaptations regarding cross-cultural competence should be gauged, to ensure that patients across the board, as opposed to only certain communities within the overall population, feel empowered by the website information to make educated health decisions. The end goal of compliance drives the research on how translation and language sciences play a key role in health communications to identify successful as well as potentially harmful pragmatic determinants and cultural features on health information websites.

Furthermore, future research should extend beyond the evaluation of cross-cultural competence and its adaptation process to consider whether health information texts are culturally responsive, a term added to the glossary assembled by the Joint Committee on Health Education and Promotion Terminology (2021) which is defined as “a positive, strengths-based, approach to health education that is rooted in respect and appreciation for the role of culture in learning and development” (U.S. Department of Health and Human Services, n.d.). To this end, it might be worthwhile to combine one of the health behavioral theories from Section 3.1 with SFL and Voice of Medicine and Voice of Lifeworld.

It is critical that the quality of multilingual health information websites is optimal. The pragmatic perspective based on Systemic Functional Linguistics (SFL) has proven successful for the work of translation professionals (Suau Jiménez, 2001). Attention to writer-reader relationship and careful treatment of technicality of vocabulary ensures that the meaning beyond the words is unquestionably clear. Clear multilingual health communication is one of the goals of the European Commission (European Commission, 2019) in collaboration with the World Health Organization (WHO eHealth, 2019). While it is an attainable goal, a substantial amount of work remains to be done. This study contributes towards this end with the key differences found between the English, Spanish, and Catalan websites on HIV and TB diagnostic testing. These key differences provide a glimpse that could shape the practical guidelines for quality multilingual health information.

The texts were more technical in the English translated sub-corpus and the Catalan translated sub-corpus compared with their respective non-translated counterpart, putting their comprehensibility into question. A well-written multilingual health information website presumes a low health literacy level of its target readers while keeping in mind their ability to learn, which can help reduce health disparities. One constructive approach is to preserve the accompaniment of specialized words with a definition or an explanation, as the translators of the Spanish translated sub-corpus and the Catalan translated sub-corpus did. Additional aspects of linguistic and cultural elements require research to reduce health disparities and empower readers to make informed decisions regarding their wellbeing. For example, would the readers of the English translated sub-corpus receive the message better if the tone was less formal like the English non-translated texts, instead of the translators having preserved the formality of the tone in found in the Spanish non-translated sub-corpus and the Catalan sub-corpus? Culturally competent multilingual health information websites with acceptable readability have great potential to figure prominently in disease prevention and treatment, ultimately meeting three of the seventeen goals of the United Nations' sustainable development to transform our world achieving a healthy society: good health and well-being, gender equality, and reduced inequality (United Nations, 2021).

As apparent in the disparate sub-corpora sizes in this study, language inclusion is needed in multilingual health information websites. With increasing global mobility, people who speak minority languages travel and relocate to other countries. It is paramount to ensure that health information is accessible to these people in their own language. For critical matters such as public health issues that directly affect lives and the economy, it would be prudent for governments to take their language policies seriously. For example, Spain must include all the regional language translations – including Catalan, Aranès, Gallego, and Euskadi, for their

health information websites<sup>101</sup>. In addition, it should be kept in mind that learning the language of the host country requires time. Therefore, providing culturally adapted, comprehensible multilingual health information that includes the languages of the immigrants is crucial to foment compliance on their part in protecting the population – including their own communities – from infectious diseases.

### 7.3 Summary

Different language communities in cities, regions, and countries have varying levels of health literacy. When health information is not available in each language spoken within these areas, health disparities result that can put the entire society at risk of infection, disability, and mortality. People seek health information online, including about culturally sensitive topics. Multilingual health information websites are a form of popularized text - written by an expert to inform and persuade the lay reader, in the case of this thesis' corpus, to get tested for two of the world's most prevalent infectious diseases: HIV and tuberculosis. Prior readability analyses have implemented instruments that do not consider cross-cultural adaptation, which is crucial for successful health information websites. Cross-cultural adaptation includes an appropriate tone for the different target language communities. In addition, texts with excess usage of specialized terms impedes the comprehensibility of health information websites, and their translation risks rendering these texts even more difficult to understand via increased technicality of vocabulary.

Writer-reader relationship and technicality of vocabulary – both of which influence comprehensibility and reveal the writer's as well as the translator's cross-cultural competence – in multilingual health information websites about HIV and tuberculosis diagnostic testing in English, Spanish, and Catalan have not been previously studied. The two pragmatic determinants have been analyzed within the framework of Systemic Functional Linguistics. It was proposed that technicality of vocabulary be viewed not as a separate entity from but forming an integral part of writer-reader relationship. This framework was complemented by Mishler's (1984) *Voice of Medicine* and *Voice of Lifeworld*. Two reliable instruments – the ELF-Q (Clerehan, et al., 2016) and the TAM (Ha and Hyland, 2017) – were adapted to qualitatively and quantitatively analyze a corpus of seventy-three multilingual websites with texts in

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<sup>101</sup> It could be argued that the citizens of Spanish regions with a co-official language should have a sufficient knowledge of Spanish and therefore providing multilingual health information is moot. However, there exist people in these regions who cannot understand Spanish nearly as well as their other language. Central governments have a responsibility to make health information accessible for all of their citizens globally, regardless of linguistic politics.

English, Spanish, and Catalan. In addition to descriptive statistics, the results were analyzed using R to fit linear regression models.

The first part of the first research question asked whether, as regards writer-reader relationship, there were key variations between the non-translated texts in the health information websites on HIV and TB diagnostic testing in English, Spanish, and Catalan. As summarized in Section 5.4, the English non-translated sub-corpus expressed the most authority. The Spanish non-translated sub-corpus balanced power distance with solidarity with the readers. The Catalan non-translated sub-corpus showed the most tactful tenor.

Hedge words (Section 5.2.3) were the only writer-reader relationship markers to have more than one statistically significant result: one between the non-translated sub-corpora and the other between the translated and non-translated sub-corpora. The English non-translated texts featured hedging strategies to tone down the texts to reduce the formality while persuading effectively. The Catalan translated texts reflected the English non-translated sub-corpus; there were no cross-cultural adaptations regarding hedge words from English to Catalan. This risks an unnatural writing style in the Catalan translation since the Catalan non-translated texts showed no preferred approach to hedging and an absence of the hedging strategies that were found in the English non-translated sub-corpus. However, having a group sample of Catalan lay readers give feedback on a translated draft containing the strategy of projecting the hedging onto the reader prior to publishing the translated version would be prudent and could turn out to be effective.

The second part of the first research question was concerned with whether there existed any key cross-linguistic variations regarding writer-reader relationship between the translated and non-translated health information websites on HIV and TB diagnostic testing in English, Spanish, and Catalan. The overarching theme in this comparison is the lack of cross-cultural adaptation during the translation process.

The Spanish non-translated sub-corpus contained significantly more inclusion words (Section 5.2.4) than its translated counterpart. This may reflect the lack of cross-cultural adaptation in the translated texts regarding diversity and equity, an issue of which translators may need to be more mindful, along with the use of relational and engagement markers (Section 5.2.2). The non-translated English sub-corpus featured significantly more relational and engagement markers compared with its translated counterpart. Health promoters in English appear to be aware of the positive influence of collectivism reflected by the inclusive first-person plural in the text in persuading the reader to heed the message. There may be cross-cultural adaptation issues for the writers and translators regarding the choice of the formal or informal second-person pronouns and verb conjugations. Implementing the second-person formal form to err on the cautious side where cross-cultural adaptation is concerned renders the Spanish texts more acceptable to a broader audience, who would perceive the

writer as showing respect. The translated English sub-corpus had significantly more persuasion markers (Section 5.2.1) compared with the non-translated counterpart. It is possible that insufficient cross-cultural adaptation occurred in the translation process, since the translated texts featured a more formal tone compared with the non-translated ones.

Overall, the translation process for multilingual health information websites on HIV and TB diagnostic testing in English, Spanish, and Catalan lacked cross-cultural adaptation that resulted in differences in the use of most of the writer-reader relationship markers – and therefore in the tone – between the translated and non-translated texts within each language. The use of stigma words, person markers and self-mentions, and diminutives was shared among the six sub-corpora. To sum up the tenor of multilingual health information websites on HIV and TB diagnostic testing in English, Spanish, and Catalan, it was defined by a balance between power distance and the expression of solidarity with the reader. This balance differed between the three non-translated sub-corpora and were not always culturally adapted by the translators.

The second research question regards the level of technicality of the vocabulary in the websites about HIV and TB diagnostic testing in the translated and non-translated versions of English, Spanish, and Catalan websites on HIV and TB testing. The Spanish non-translated sub-corpus possessed a higher level of technicality of vocabulary compared with its translated counterpart (Section 6.2.2). This indicates that the translators prevented the upward shift in technicality of vocabulary in the process of transferring the message into their respective language. This in turn maintained or improved the comprehensibility so that the health information was more accessible to the target reader, who would then be more likely to heed the call to action.

The third research question regards whether there exist any differences in the treatment of technicality of vocabulary between the translated and non-translated versions of English, Spanish, and Catalan health information websites on HIV and TB testing. Textual multimodality (Section 6.3.1), which is a vital health literacy aid, was the only technicality of vocabulary marker to have more than one statistically significant result. The Spanish non-translated sub-corpus contained more multimodality compared with its English and Catalan counterparts. While this result occurred in a sub-corpus that also contained significantly more technical terms compared with the English and the Catalan non-translated sub-corpora, this does not imply that multimodality was applied to every specialized word. Careful implementation of textual multimodality and other lexical familiarization devices can render popularized texts containing a large amount of technical terms more comprehensible for the lay audience. Bold type was found in all three non-translated sub-corpora, indicating the possibility that this is a culturally shared textual multimodality device in popularized health communication.

The Spanish non-translated sub-corpus also had significantly more multimodality than its translated counterpart. However, the Spanish translated sub-corpus featured a greater variety of multimodality types, probably due to the translators transferring them from the original text. Limiting the multimodality types to a select few within a text would prevent overwhelming the reader and should be balanced with other lexical familiarization aids that provide clarity.

One such lexical familiarization aid is words accompanied by a definition or explanation (Section 6.3.2), the last of the markers with a statistically significant result in this study. The translated Catalan texts contained more than the non-translated ones, likely due to having been transferred from the original texts, which were written in English.

Based on the significant findings presented in Chapters 5 and 6, the English, Spanish, and Catalan writers adopted different approaches to tackle the ideational need to present medical content to the lay audience in a comprehensible manner. These writers, particularly the Spanish ones, included technical terms accompanied with lexical familiarization methods such as definitions and explanations. Such methods were frequently implemented by way of code glosses, hinge words, and textual multimodality devices. This reflects not only the expectations of a sufficiently high literacy level among their target readers, but also the writers' intent to improve their audience's health literacy. Such expectations are reflected in the balance between expressing authority and solidarity in the Spanish non-translated sub-corpus. The English non-translated texts were the only ones to feature hyperlinks to definitions or explanations, which reflects an additional expectation of a higher computer literacy among the English lay readers. Hyperlinks, being an interactive lexical familiarization device, could be perceived as a form of reducing power distance in this study's most authoritative sub-corpus.

The Spanish writers also intended to improve their lay audience's health literacy, but through less interactive multimodality devices such as enclosing the specialized word in single quotation marks. While both the Spanish and the Catalan writers incorporated term variations, the Catalan writers were the least likely to include technical terms in their texts, which reflects their consideration of lay readers with a lower literacy level. In fact, all the non-translated Catalan texts featured an implementation of an explanation to avoid a technical term. The Catalan writers' primary goal was to communicate the health information in a way that the lay reader would understand and act on. Improving the Catalan lay readers' health literacy was less of a priority than expressing solidarity, compared with the objectives of the English and the Spanish writers for their respective target audience. A shift occurred in the translation from the Spanish source texts into English, which featured enhanced textual multimodality devices. However, the English translators were less diligent overall about implementing lexical familiarization devices to boost health literacy and improve the comprehensibility of the texts.

As concerns cross-cultural adaptation, the English, Spanish, and Catalan translators largely failed with few exceptions. As exemplified with the results for level of technicality in the comparison between the translated and non-translated sub-corpora (Section 6.2.2), a seemingly contradictory issue for the translators arose: whether to strive for comprehensibility at the expense of cross-cultural adaptation, or to maintain equivalence at register level (e.g., a more authoritative tone or a decreased power distance with a greater expression of solidarity) at the expense of comprehensibility. The translators might have found themselves confronted with choices that may have caused an unfortunate conundrum.

The study serves as an example of how, via the TAM-HC instrument and the ELF-W questionnaire, the level of comprehensibility as defined in Section 1.1.2 can serve as a measure of cultural adaptation as defined in Section 1.1.4. This study has demonstrated how technicality of vocabulary can be perceived as part of writer-reader relationship (Section 3.2.3), as opposed to two separate entities, via the effects of the writer's word choices and whether to explain specialized terms. This affects the reader's perception of the writer's choices to use and explain specialized terms, which in turn influences the reader's perception of the writer's authority versus expression of solidarity. The translators are then faced with not only transferring the message from the source text into their respective target language, but the potentially difficult choices between meeting the power distance standard typical of their target language or ensuring comprehensibility.

In conclusion, the findings affirm that comprehensibility and cross-cultural adaptation vary between the non-translated texts in English, Spanish, and Catalan, and between the translated and non-translated texts within each of these three languages. Writers and translators need to be more culturally aware of how they engage and relate to their target readers to persuade them, tailoring the hedge words and inclusion words as appropriate according to the findings of the non-translated language, i.e., hedging is expected in English more than in Catalan, and genderless words are expected in English whereas gender-inclusive language is more frequent in Spanish and Catalan. Comprehensibility is also a concern in this study's corpus, considering that the Spanish non-translated texts contained a significantly high level of technicality of vocabulary in the texts, which may have been mitigated by a significant use of textual multimodality. Future research should gauge whether the technical terms in multilingual health information websites are accompanied by lexical familiarization devices and textual multimodality, as well as their effectiveness on readers with a low literacy level. The Catalan translators set a good example by accompanying additional technical terms with a definition or explanation to improve the comprehensibility and help boost their target readers' health literacy compared with the source language text (Section 6.3.2).



Due to the increase in online health communication and the need to reduce health disparities in linguistic communities, there is growing interest in research focusing on the implementation of strategies to improve universal access to medical information. This study sheds light on the key cross-cultural and comprehensibility differences between the features of writer-reader relationship and technicality of vocabulary in multilingual health communication in English, Spanish, and Catalan. Translation and language sciences teachers and researchers, along with those in biomedicine, will benefit from this contribution to knowledge of the cross-cultural and comprehensibility differences in multilingual health information websites between non-translated and translated English, Spanish, and Catalan as well as other forms of online medical communication with lay audiences. For multiple traditions of language education that focus on organizational and occupational discourse studies, including Language for Specific Purposes (LSP), Professional Practice Studies (PPS), and Professional Discourse Studies (PDS), this thesis provides insight on writing and translation approaches to improve health literacy that can be transferred into the classroom to enhance the students' familiarity with technical vocabulary.

To reduce health disparities in access to online medical information written for the public, it is important for writers and translators to implement strategies to foment health literacy and empower the reader to make informed decisions about getting tested and treated. These strategies must prevent the upward shift in technicality of vocabulary in translated texts, as well as linguistically cross-culturally adapt the translation to the ideology of the target community. This is particularly important when dealing with potentially sensitive or taboo topics. This includes adjusting the writer's attitude as perceived by the reader using, as exemplified in this study, hedge words, relational and engagement markers, and inclusion words. Moreover, stigma words should be used sparingly and sensitively to persuade the reader to heed the call to action.

Access to health information in a language that the reader understands, and whose cultural background is respected by health care writers and translators, can reduce health disparities. Stephen Hawking's quote at the beginning of this chapter serves as a reminder that perfection does not exist; however, constant improvement and continuous progress are requisite for a healthy society.



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## APPENDIX 1: The Corpus

### English non-translated (L1)

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## **Catalan translated (L2)**

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## APPENDIX 2.1 ENGLISH WORD LIST

Word	Websites in which it appears	Oxford Dictionary	Merriam-Webster Medical Dictionary	Stedman's Online Medical Dictionary	TAM-HC ranking
Abstinence	TeensHealth from Nemours Foundation	General 5*	Listed	Listed	TAM2-3
Accredited pharmacies	Fundació Lluita Contra la SIDA	Not listed	Not listed. Accredited (no medical definition), pharmacy (3 senses, 1 of which is relevant)	Not listed	TAM2-3
Acquired Immunodeficiency Syndrome	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), National Library of Medicine, AIDSinfo.nih.gov	Specialized (Listed under acquired, no usage frequency provided)	Listed	Listed	TAM2-3
Activation (disease)	SaludMadrid TB	General & specialized 6*	Listed (3 senses, 2 of which are relevant)	Listed (6 senses, 1 of which is relevant)	TAM2-3
Active	Healthfinder, NYC Health, SaludMadrid TB, BCN Checkpoint, Explain TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual TB, AIDS Info Net (IAPAC), Florida Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation, American Association for Clinical Chemistry, Kaiser Permanente TB, POZ, World Health Organization (WHO) TB	General & specialized (see definition 12) 6*	Listed	Listed (SOAP <sup>104</sup> , no definition)	TAM2-3

<sup>104</sup> Medical documentation acronym (Subjective, Objective, Assessment, Plan) for terminology, abbreviations, & acronyms written in medical records.

APPENDIX 2: English word list

Active disease	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Not listed (Active 6*, disease 7*)	Not listed. Active (listed), disease (listed)	Listed (SOAP, no definition)	TAM2-3
Active lung TB	World Health Organization (WHO) TB	Not listed (active 6*, lung 6*, TB no usage frequency)	Not listed. Active (listed), lung (listed, 3 senses, 1 of which is relevant), TB (listed, 3 senses, 2 of which are relevant)	Not listed	TAM2-3
Active TB	NYC Health, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Kaiser Permanente TB	Not listed (Active 6*, TB no usage frequency)	Not listed. Active (listed), TB (listed, 3 senses, 2 of which are relevant)	Not listed	TAM2-3
Active TB disease	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Not listed (Active 6*, TB no usage frequency, disease 7*)	Not listed. Active (listed), TB (listed, 3 senses, 2 of which are relevant), disease (listed)	Not listed	TAM2-3
Active TB infection	American Association for Clinical Chemistry	Not listed (Active 6*, TB no usage frequency, infection 6*)	Not listed. Active (listed), TB (listed, 3 senses, 2 of which are relevant), infection (Listed, 4 senses, all of which are relevant)	Not listed	TAM2-3
Active tuberculosis	Explain TB, Mayo Clinic (TB), Merck Manual TB, Florida Health, Kaiser Permanente TB	Not listed (Active 6*, tuberculosis 5*)	Not listed. Active (listed), tuberculosis (listed).	Not listed	TAM2-3
Active tuberculosis (sic) disease	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Not listed. (Active 6*, tuberculosis 5*, disease 7*)	Not listed. Active (listed), tuberculosis (listed), disease (listed).	Not listed	TAM2-3

Acute	Centers for Disease Control & Prevention HIV, NYC Health – HIV, POZ	Specialized 6*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, both relevant)	TAM2-3
Aerosols	American Association for Clinical Chemistry	Specialized 5*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, 1 relevant)	TAM2-3
AFB (acid-fast bacillus)	American Association for Clinical Chemistry	Not listed	Listed	Listed	TAM4-5
AFB laboratory testing	American Association for Clinical Chemistry	Not listed (AFB not listed, laboratory 6*, testing – no frequency given)	Not listed. AFB (listed), laboratory (listed), testing (listed, 2 senses, both relevant).	Not listed	TAM4-5
AFB testing	American Association for Clinical Chemistry	Not listed (AFB not listed, testing – no frequency given)	Not listed. AFB (listed), testing (listed, 2 senses, both relevant).	Not listed	TAM4-5
AIDS	US Department of Health & Human Services NIH, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid VIH subsahariana, Xunta de Galicia Consellería de Sanidade VIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA, Explain TB, National Library of Medicine, Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual HIV, AIDS Info Net (IAPAC), NY State Department of Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting5, HealthReach HIVtesting3, HealthReach Pregnancy3, HealthReach HIVtesting1, HealthReach HIVtesting2, HealthReach - Sexual risks 4, HealthReach	General 5*	Listed	Listed	TAM2-3

APPENDIX 2: English word list

	SubstanceAbuse6, HealthReach HIVtesting7, Planned Parenthood, American Association for Clinical Chemistry, Kaiser Permanente HIV, POZ				
AIDS test	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid VIH subsahariana	Listed as general attributive (no frequency given).	Not listed [AIDS listed, test listed (noun 3 senses)]	Not listed	TAM2-3
Airways	Merck Manual TB	Specialized 5*	Listed	Listed (2 senses, 1 relevant)	TAM2-3
Anal	TeensHealth from Nemours Foundation, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	General & specialized 5*	Listed (2 entries, 1 of which is relevant with 3 senses, 1 of which is relevant)	Listed	TAM2-3
Anal test	NYC Health - HIV-again	Not listed (anal 5*, test 7*)	Not listed. Anal (2 entries, 1 of which is relevant with 3 senses, 1 of which is relevant), Test (5 senses, 3 of which are relevant)	Not listed	TAM2-3
Analysis	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Fundació Lluita Contra la SIDA, Explain TB, NAM AIDSmap, Greater Than AIDS / Más Que SIDA, POZ	General & specialized 7*	Listed (3 senses, 2 of which are relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3
Analytical	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	General & specialized 6*	Listed under <b>analytic</b> (2 senses, 1 of which is relevant)	Not listed	TAM2-3
Anaphylactic shock	Centers for Disease Control & Prevention TB	Listed under anaphylaxis (specialized, no frequency given) as a derivative	Listed	Listed	TAM4-5
Anemia	Merck Manual HIV	Specialized, no frequency given	Listed (2 senses, both relevant)	Listed	TAM2-3

Anergy	Centers for Disease Control & Prevention TB	Specialized, 4*	Listed	Listed (2 senses, 1 relevant)	TAM4-5
Antenatal (British)	NAM AIDSmap	General 4*	Listed	Listed	TAM2-3
Antenatal care	NAM AIDSmap	Not listed (antenatal 4*, care 7*)	Not listed, antenatal (listed), care (listed)	Not listed	TAM2-3
Antibiotic / antibiotics	Explain TB, Merck Manual TB, Kaiser Permanente TB	General, no frequency indicated)	Listed (3 senses, all relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3
Antibiotic therapy	Merck Manual TB	Not listed (antibiotic, no frequency indicated; therapy 6*)	Not listed, antibiotic (listed, 3 senses, all relevant), therapy (2 senses, both relevant)	Listed (SOAP, no definition)	TAM2-3
Antibody / antibodies	WHO, CESIDA, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Fundació Lluita Contra la SIDA, BCN Checkpoint, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC), GMHC, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting3, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ	Specialized (no frequency indicated)	Listed	Listed	TAM2-3
Anti-bodies (sic)	Xunta de Galicia Consellería de Sanidade VIH	(refers to antibody, see above)	(refers to antibody, see above)	(refers to antibody, see above)	TAM2-3
Antibody test / antibody tests	Centers for Disease Control & Prevention HIV, National Library of Medicine, Merck Manual HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach	Not listed. Antibody (no frequency	Not listed. Antibody (Listed), Test (5 senses, 3 of which are relevant)	Not listed	TAM2-3

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	HIVtesting4, San Francisco AIDS Foundation, Whitman-Walker Clinic	indicated), test 7*			
Antibody/antigen test (or antibody-antigen tests)	National Library of Medicine, HealthReach HIVtesting4	Not listed. Antibody (no frequency indicated), antigen (no frequency indicated), test 7*	Not listed. Antibody (listed), antigen (listed), test (5 senses, 3 of which are relevant)	Not listed	TAM2-3
Antigen / antigens	WHO, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC), NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting4, American Association for Clinical Chemistry, POZ	General (no frequency indicated)	Listed	Listed	TAM2-3
Antigen/antibody test / antigen/antibody tests	Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	Not listed. Antigen (no frequency indicated), antibody (no frequency indicated), test 7*	Not listed. Antigen (listed), antibody (listed), test (5 senses, 3 of which are relevant)	Not listed	TAM2-3
Anti-HIV-1	Fundació Lluita Contra la SIDA	Not listed	Not listed, but <b>anti-HIV</b> listed	Not listed	TAM4-5
Anti-HIV-2	Fundació Lluita Contra la SIDA	Not listed	Not listed, but <b>anti-HIV</b> listed	Not listed	TAM4-5
Antiretroviral (also: anti-retroviral)	BCN Checkpoint, Explain TB, Merck Manual HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting1, Greater Than AIDS / Más Que SIDA	Specialized 4*	Listed (2 senses, both relevant)	Refers to <b>highly active antiretroviral therapy</b>	TAM4-5



Antiretroviral drug / antiretroviral drugs	Merck Manual HIV	Not listed. Antiretroviral 4*, drug 7*	Not listed. Antiretroviral (Listed, 2 senses, both relevant), drug (Listed (6 senses, all relevant)	Not listed	TAM4-5
Antiretroviral therapy	Explain TB, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting1	Not listed. Antiretroviral 4*, therapy 6*	Listed as <b>highly active antiretroviral therapy</b> (HAART); Antiretroviral Listed (2 senses, both relevant), therapy (2 senses, both relevant)	Listed (SOAP, no definition)	TAM4-5
Antiretroviral treatments	BCN Checkpoint	Not listed. Antiretroviral 4*, treatment 7*	Not listed. Antiretroviral (Listed, 2 senses, both relevant), treatment (Listed, 2 senses, both relevant)	Listed (SOAP, no definition)	TAM4-5
Antiviral	Office on Women's Health - US Department of Health & Human Services	Specialized (no frequency indicated)	Listed (2 senses, 1 relevant)	Listed	TAM2-3
Anxiety	NYC Health - HIV-again	General & specialized 6*	Listed (4 senses, all relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Appointment	Health Service Executive, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), BCN Checkpoint, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), NYC Health - HIV-again, Whitman-Walker Clinic, Kaiser Permanente HIV	General 6*	Not listed	Listed (SOAP, no definition)	TAM1
ART (antiretroviral therapy)	Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting1, The American Foundation for AIDS Research (AmFAR)	Not listed	Listed (2 senses, neither of which are relevant)	Listed (SOAP, no definition)	TAM4-5
ARVs (antiretrovirals)	Greater Than AIDS / Más Que SIDA	Specialized (no frequency indicated)	Listed	Listed (SOAP, no definition)	TAM4-5
At-home HIV test kits	National Library of Medicine	Not listed (at-home 1*, HIV 6*, Test 7*, kit 5*)	Not listed	Not listed	TAM2-3

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At-home HIV testing kit	Planned Parenthood	Not listed (at-home 1*, HIV 6*, Testing – no frequency indicated, kit 5*)	Not listed	Not listed	TAM2-3
At-home testing	National Library of Medicine	Not listed (At-home 1*, testing – no frequency indicated)	Not listed	Not listed	TAM2-3
At-home testing kits	US Department of Health & Human Services NIH,	Not listed (At-home 1*, testing – no frequency indicated, kit 5*)	Not listed	Not listed	TAM2-3
Autotesting	Fundació Lluita Contra la SIDA	Not listed (auto- - no frequency indicated, testing – no frequency indicated)	Not listed	Not listed	TAM2-3
Bacille Calmette-Guérin	American Association for Clinical Chemistry, Kaiser Permanente TB	Not listed	Listed	Listed	TAM4-5
Bacillus	SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Mayo Clinic (TB)	Specialized 5*	Listed (2 senses, both relevant)	2 listings: <b>Bacillus (specific: genus) &amp; bacillus</b> (general, 2 senses, both relevant)	TAM2-3
Bacillus Calmette-Guerin	Mayo Clinic (TB)	Not listed	Listed	Listed as “bacillus Calmette-Guérin vaccine”	TAM4-5
Bacterium / Bacteria	Centers for Disease Control & Prevention, Explain TB, Centers for Disease Control & Prevention HIV, National Library of Medicine, Mayo Clinic (TB), Merck Manual TB, Florida Health, Centers for Disease Control and	General 6*	Listed (2 senses, both relevant)	Listed	TAM2-3

	Prevention 2, American Association for Clinical Chemistry, Kaiser Permanente TB, World Health Organization (WHO) TB				
Bacterial	American Association for Clinical Chemistry	Specialized 6*	Listed	Listed	TAM2-3
Band-aid	Boston Public Health Commission, Boston Public Health Commission TB2	General 4*	Listed	Not listed	TAM2-3
Barrier method	Greater Than AIDS / Más Que SIDA	Specialized (no frequency indicated)	Not listed	Not listed	TAM2-3
BCG	Explain TB, Centers for Disease Control & Prevention, Centers for Disease Control & Prevention TB, Mayo Clinic (TB), American Association for Clinical Chemistry, Kaiser Permanente TB	General (no frequency indicated)	Refers to <b>BCG vaccine</b>	Refers to <b>bacille Calmette-Guérin</b>	TAM2-3 (??? This should be TAM4-5!)
BCG-vaccinated	Centers for Disease Control & Prevention	Not listed	Not listed, but <b>BCG vaccine</b> (noun) listed	Not listed, but <b>BCG vaccine</b> (noun) listed	TAM2-3
BCG vaccination	Explain TB	Not listed	Not listed, but <b>BCG vaccine</b> listed	Not listed, but <b>BCG vaccine</b> listed	TAM2-3
BCG vaccine	American Association for Clinical Chemistry	Not listed	Listed	Listed	TAM2-3
Benefit / benefits (insurance)	Centers for Disease Control and Prevention 2	General 7*	Not listed	Listed	TAM1
Biological	BCN Checkpoint	General 6*	Listed (3 senses, 1 of which is relevant)	Listed	TAM2-3
Biopsy	Merck Manual HIV, Kaiser Permanente TB	Specialized 5*	Listed (2 senses, 1 relevant)	Listed (2 senses, both relevant)	TAM2-3
Birth	WHO, National Library of Medicine, HealthReach Pregnancy3	General 6*	Listed (3 senses, 2 relevant)	Listed (2 senses, both relevant)	TAM2-3
Birth control	NYC Health - HIV-again	General (no frequency indicated)	Listed (2 senses, 1 relevant)	Listed (2 senses, both relevant)	TAM2-3
Bleeding	Explain TB	General 5*	Listed (2 senses, 1 relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Blister (noun)	Explain TB, American Association for Clinical Chemistry	General & specialized 5*	Listed (2 senses, 1 relevant)	Listed (2 sense, 1 of which is relevant)	TAM2-3
Blistering	Centers for Disease Control & Prevention TB, Florida Health	General, 4*	Not listed	Listed	TAM2-3
Blood	Centers for Disease Control & Prevention, US Department of Health & Human Services	General 7*	Listed	Listed	TAM2-3

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	<p>NIH, Health Information Translations, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid prueba sangre VIH, SaludMadrid VIH subsahariana, Xunta de Galicia Consellería de Sanidade VIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control &amp; Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), NYC Health – HIV, GMHC, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention &amp; Control, Population Health Division - San Francisco Department of Public Health Disease Prevention &amp; Control 2, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health &amp; Human Services, HealthReach HIVtesting4, HealthReach HIVtesting3, HealthReach HIVtesting7, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, World Health Organization (WHO) TB</p>				
Blood cell counts	Merck Manual HIV	Not listed (Blood 7*, cell 7*, count 6*)	Not listed	Refers to “blood count”	TAM2-3

Blood draw	TeensHealth from Nemours Foundation, Whitman-Walker Clinic, Greater Than AIDS / Más Que SIDA	Not listed (Blood 7*, draw – no frequency indicated)	Not listed	Not listed	TAM2-3
Blood sample / blood samples	US Department of Health & Human Services NIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach HIVtesting7, Planned Parenthood, POZ	General (no frequency indicated)	Not listed	Listed (SOAP, no definition)	TAM2-3
Blood test / blood tests	Centers for Disease Control & Prevention, Health Information Translations, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid prueba sangre VIH, SaludMadrid VIH subsahariana, Explain TB, TeensHealth from Nemours Foundation, National Library of Medicine, Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), NYC Health – HIV, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, HealthReach HIVtesting4, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB	General 4*	Listed	Listed (SOAP, no definition)	TAM2-3
Body	Healthfinder	General 7*	Listed (3 senses, 2 of which are relevant)	Listed (multiple senses)	TAM1
Bone marrow aspiration	Merck Manual HIV	Not listed (bone marrow	Not listed (bone marrow – listed, 2	Not listed	TAM2-3

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		– no frequency indicated, aspiration 6*)	senses, both relevant; aspiration – listed, 3 senses, 1 relevant)		
Boosted reaction	Centers for Disease Control & Prevention TB, American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM4-5
Brain	Merck Manual TB, Merck Manual HIV, Kaiser Permanente TB	General 6*	Listed (2 senses, 1 relevant)	Listed	TAM2-3
Brain damage	Merck Manual TB	General, frequency not indicated	Not listed	Listed (SOAP, no definition)	TAM2-3
Breastfeeding	HealthReach Pregnancy3, The American Foundation for AIDS Research (AmFAR)	General, frequency not indicated (Listed as <b>breast-feeding</b> )	Listed (3 senses, all relevant)	Listed (SOAP, no definition)	TAM2-3
Breast milk	The American Foundation for AIDS Research (AmFAR)	General, no frequency given	Not listed	Listed (SOAP, no definition)	TAM1
Breath	Explain TB	General 6*	Listed (4 senses, 2 of which are relevant)	Listed (2 senses, both relevant)	TAM2-3
Breathe / breathing	Explain TB, Mayo Clinic (TB), American Association for Clinical Chemistry, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	General 6*	Listed (2 senses, both relevant)	Listed under <b>breathing</b>	TAM2-3
Breathing space	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General, no frequency indicated (listed as <b>breathing-space</b> )	Not listed	Not listed	TAM2-3 (based on “breathing” which is TAM2-3)
Bronchial	Merck Manual TB	General 5*	Listed	Listed	TAM2-3
Bronchial tubes	Merck Manual TB	Specialized, listed under <b>tube</b> (II.9.a.),	Listed	Listed (2 senses, both relevant)	TAM2-3

		no frequency indicated			
Bronchoscope	Merck Manual TB	General 4*	Listed	Listed	TAM2-3
Bronchoscopy	Explain TB, European Lung Foundation	Specialized, listed under <b>bronchoscope</b> (general 4*)	Listed, refers to <b>bronchoscope</b>	Listed	TAM2-3
Bruising	National Library of Medicine	Listed under <b>bruise</b> , General 5*	Listed under <b>bruise</b> (4 senses, 2 relevant)	Refers to <b>bruise</b> or <b>contusion</b>	TAM2-3
Bump (noun)	Boston Public Health Commission, Boston Public Health Commission TB2	General 5*	Not listed	Not listed	TAM1
Calmette-Guerin	Mayo Clinic (TB), American Association for Clinical Chemistry	Not listed	Listed (refers to <b>bacille Calmette-Guérin</b> )	Refers to <b>bacille Calmette-Guérin</b> or <b>bacillus Calmette-Guérin</b> or <b>BCG vaccine</b> or <b>Calmette-Guérin bacillus</b> or <b>Calmette-Guérin vaccine</b>	TAM4-5
Cancer / cancers	National Library of Medicine, Merck Manual TB, Merck Manual HIV, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry	Specialized 6*	Listed (2 senses, both relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Care (noun)	WHO, CESIDA, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), NYC Health – HIV, NYC Health - HIV-again, NAM AIDSmap, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach SubstanceAbuse6,	General 7*	Listed	Listed	TAM1

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	HealthReach HIVtesting7, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
Care coordination	NYC Health - HIV-again	Not listed (Care 7*, coordination 6*)	Not listed	Not listed	TAM1
Cavity / cavities	Explain TB, Kaiser Permanente TB	General 6*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
CD4	Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC)	Specialized, no frequency indicated	Listed	Listed	TAM4-5
CD4 count	Merck Manual HIV, AIDS Info Net (IAPAC)	Not listed (CD4 – no frequency indicated, count 6*)	Not listed	Not listed	TAM4-5
CD4 T cells	Mayo Clinic (HIV)	Not listed (CD4 – no frequency indicated, T cell – not listed, Cell 7*)	Not listed (CD4 – listed, T cell – listed)	Not listed	TAM4-5
CD4 T cell count	Mayo Clinic (HIV)	Not listed (CD4 – no frequency indicated, T cell – not listed, Cell 7*, count 6*)	Not listed	Not listed	TAM4-5
Cells	Explain TB, National Library of Medicine, Mayo Clinic (HIV), Merck Manual TB, GMHC, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA	General & specialized 7* (9 a.&b., 15 a.)	Listed (2 senses, both relevant)	Listed (3 senses, 2 of which are relevant)	TAM2-3
Centers for the prevention and control of sexually	Fundació Lluita Contra la SIDA	Not listed	Not listed	Not listed	TAM1



transmitted infections					
Central nervous system	American Association for Clinical Chemistry	Specialized, no frequency indicated	Listed	Listed	TAM2-3
Centros de planificación familiar (sic)	Fundació Lluita Contra la SIDA	Not listed	Not listed	Not listed	TAM4-5 <i>Additional notes: should have been translated into "family planning centers"</i>
Checkup	SaludMadrid TB, Planned Parenthood	Specialized 4*, Refers to <b>check-up</b>	Listed	Refers to <b>assessment</b> or <b>evaluation</b>	TAM2-3
Check-up	NY State Department of Health, NAM AIDSmap	Specialized 4*	Listed. Refers to <b>checkup</b>	Refers to <b>assessment</b> or <b>evaluation</b>	TAM2-3
Chemotherapy	Merck Manual TB	Specialized 5*	Listed	Listed	TAM2-3
Chest	NYC Health, Xunta de Galicia Consellería de Sanidade TB, Explain TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, European Lung Foundation, World Health Organization (WHO) TB	General 6*	Listed (2 senses, 1 of which is relevant)	Listed	TAM2-3
Chicken pox	Centers for Disease Control & Prevention TB	Refers to <b>chickenpox</b>	Listed	Refers to <b>chickenpox</b> or <b>varicella</b>	TAM2-3
Chickenpox	American Association for Clinical Chemistry	General 4*	Refers to <b>chicken pox</b>	Listed	TAM2-3
Childbirth	AIDSinfo.nih.gov, HealthReach Pregnancy3	General 5*	Listed	Listed (2 senses, 1 relevant)	TAM2-3
Chills	American Association for Clinical Chemistry	General 5*	Listed (6 senses, 2 of which are relevant)	Listed (2 senses, both relevant)	TAM2-3

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Chlamydia	HealthReach HIVtesting2, Whitman-Walker Clinic	Specialized 4*	Listed (2 senses, both relevant)	Listed	TAM2-3
Clinic / clinics	US Department of Health & Human Services NIH, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Merck Manual HIV, NY State Department of Health, GMHC, NYC Health - HIV-again, NAM AIDSmap, HealthReach HIV/AIDS101-7, Office on Women's Health - US Department of Health & Human Services, HealthReach Pregnancy3, Whitman-Walker Clinic, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ	General 6*	Listed (2 senses, 1 of which is relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3
Clinical	CESIDA, Fundació Lluita Contra la SIDA, BCN Checkpoint, Centers for Disease Control & Prevention TB, Centers for Disease Control and Prevention 2, American Association for Clinical Chemistry	General & specialized 6*	Listed (2 senses, 1 of which is relevant)	Listed (3 senses, all relevant)	TAM2-3
Clinical analysis laboratories	Fundació Lluita Contra la SIDA	Not listed	Not listed	Not listed	TAM2-3
Clinical laboratories	CESIDA	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Clinical treatment	BCN Checkpoint	Not listed	Not listed	Not listed	TAM2-3
Clinically		General 5*; <b>clinic</b> general 6*	Listed; <b>clinic</b> listed	Not listed; <b>clinic</b> listed	TAM2-3
Co-insurance	Centers for Disease Control and Prevention 2	General 3*	Listed, refers to <b>coinsurance</b>	Listed, refers to <b>coinsurance</b>	TAM4-5
Combination screening test / combination screening tests	Centers for Disease Control & Prevention HIV, Merck Manual HIV	Not listed	Not listed	Not listed	TAM2-3

Combination test / combination tests	Centers for Disease Control & Prevention HIV, Merck Manual HIV, HealthReach HIVtesting6, HealthReach HIVtesting4	Not listed	Not listed	Not listed	TAM2-3
Community health center / community health centers	US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	Not listed	Not listed	Listed (SOAP, no definition)	TAM1
Community health clinic	Planned Parenthood	Not listed	Not listed	Not listed	TAM2-3
Community health organisations	NAM AIDSmap	Not listed	Not listed	Not listed	TAM1
Community testing project	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2	Not listed	Not listed	Not listed	TAM2-3
Complications	WHO, CESIDA, Mayo Clinic (HIV), Merck Manual HIV	General 6*	Listed	Listed	TAM2-3
Computed tomography	Explain TB, Merck Manual HIV	Specialized, listed under <b>computed</b>	Listed	Listed	TAM2-3
Condition (noun)	Healthfinder, Florida Health	General 7*	Listed (2 senses, both relevant)	Listed (3 senses, 1 of which is relevant)	TAM1
Condom / condoms	CESIDA, SaludMadrid VIH subsahariana, Xunta de Galicia Consellería de Sanidade VIH, BCN Checkpoint, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), NY State Department of Health, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach HIVtesting3, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV	General 5*	Listed (2 senses, both relevant)	Listed	TAM2-3
Confirmation test	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Not listed	Not listed	Not listed	TAM2-3
Contact tracing	Health Service Executive	Not listed	Not listed	Not listed	TAM2-3

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Contagion		General 5*	Listed (3 senses, all relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3
Contagious	NYC Health, Xunta de Galicia Consellería de Sanidade TB, Explain TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General 5*	Listed (3 senses)	Listed	TAM2-3
Contaminate / contaminated (verb)	Xunta de Galicia Consellería de Sanidade VIH, POZ	General 5*	Listed (2 senses, both relevant)	Listed	TAM2-3
Contract / contracting (verb - disease)	BCN Checkpoint, POZ	General (def 5.a.) 6*	Listed (3 senses, 1 of which is relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3
Contraindicated	Centers for Disease Control & Prevention TB	Specialized 5* (under <b>contraindicate</b> )	Listed under <b>contraindicate</b>	Listed (SOAP, no definition)	TAM2-3
Contraindication	Centers for Disease Control & Prevention TB	Specialized 5* (listed as <b>contraindication</b> )	Listed	Listed	TAM2-3
Contrast agent (for CT scan)	Merck Manual HIV	Specialized, listed under <b>contrast</b>	Listed	Listed	TAM2-3
Contrast medium (for CT scan)	Explain TB	Specialized, listed under <b>contrast</b>	Listed	Listed	TAM2-3
Conventional test (as opposed to rapid test)	Fundació Lluita Contra la SIDA	Not listed	Not listed	Not listed	TAM2-3
Co-pay	NY State Department of Health, Centers for Disease Control and Prevention 2	Specialized 3*	Listed	Refers to <b>out-of-pocket costs</b>	TAM4-5
Corticosteroid / corticosteroids	Merck Manual TB, American Association for Clinical Chemistry	Specialized 5*	Listed	Listed	TAM2-3
Cost sharing	Office on Women's Health - US Department of Health & Human Services	General, no frequency indicated	Not listed	Listed	TAM1

Cough (noun)	Explain TB, Kaiser Permanente TB, European Lung Foundation, World Health Organization (WHO) TB	General 5*	Listed (2 senses, both relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Coughs / coughing [cough (verb)]	Healthfinder, NYC Health, SaludMadrid TB, Explain TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry	General 5*	Listed	Listed (2 senses, 1 of which is relevant)	TAM2-3
Cough up (phrasal verb)	NYC Health, Explain TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Not listed; <b>cough (verb)</b> general with definition 3.a. <i>with out, up.</i> 5*	Not listed; <b>cough (verb)</b> listed	Not listed; <b>cough (noun &amp; verb under same listing)</b> listed (2 senses)	TAM2-3
Counseling / Counselling	WHO, US Department of Health & Human Services NIH, BCN Checkpoint, Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), GMHC, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, Whitman-Walker Clinic, Planned Parenthood	General 5*	Listed	Listed	TAM2-3
Counselor / counselors	TeensHealth from Nemours Foundation, National Library of Medicine, Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), POZ	General 6*	Listed	Not listed	TAM1
CT	Explain TB, Mayo Clinic (TB), Merck Manual HIV, Kaiser Permanente TB, European Lung Foundation	Specialized	Listed (5 senses, 1 of which is relevant)	Listed (refers to <b>CT scan</b> )	TAM4-5
CT scan	Explain TB, Mayo Clinic (TB), Kaiser Permanente TB	Specialized, no frequency indicated, listed under <b>CT</b>	Listed	Listed	TAM4-5

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CT-scans	European Lung Foundation	Specialized, no frequency indicated, listed as <b>CT</b>	Listed (as <b>CT scan</b> )	Refers to <b>CT scan</b>	TAM4-5
Cultures (tests)	NYC Health, Explain TB, Merck Manual TB, American Association for Clinical Chemistry, Kaiser Permanente TB	Specialized (3.a.&b.) 7*	Listed (2 senses, 1 of which is relevant)	Listed (4 senses, 2 of which are relevant)	TAM2-3
Cure (noun)	Xunta de Galicia Consellería de Sanidade VIH, National Library of Medicine, AIDSinfo.nih.gov, Kaiser Permanente HIV, POZ, European Lung Foundation	General 6*	Listed (5 senses, 3 of which are relevant)	Listed (3 senses, 2 of which are relevant)	TAM2-3
Cure (verb) / cured	NYC Health, SaludMadrid TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	General 6*	Listed (4 senses, 3 of which are relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3
Cutaneous	Centers for Disease Control & Prevention TB	General 5*	Listed	Listed	TAM2-3
Cutaneous anergy	Centers for Disease Control & Prevention TB	Not listed	Not listed	Not listed	TAM4-5
Cytology	Kaiser Permanente TB	Specialized 4*	Listed, (3 senses, 1 of which is relevant)	Listed	TAM2-3
Deductible / deductibles	Office on Women's Health - US Department of Health & Human Services	General 5*	Not listed	Listed	TAM1
Delivery (giving birth)	National Library of Medicine, HealthReach Pregnancy3, The American Foundation for AIDS Research (AmFAR)	General 6*	Listed (2 senses, 1 of which is relevant)	Listed	TAM2-3
Demographic	POZ	General 5*	Listed (2 senses, both relevant)	Refers to <b>demography</b>	TAM2-3
Dental dams	Kaiser Permanente HIV	General, no frequency indicated	Listed	Listed as <b>rubber dam</b> (2 senses, neither relevant)	TAM2-3
Department / departments	NYC Health, TeensHealth from Nemours Foundation, AIDS Info Net (IAPAC), GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach	General 6*	Not listed	Listed (SOAP, no definition)	TAM1

	SubstanceAbuse6, HealthReach HIVtesting7, Planned Parenthood, POZ				
Department of health	POZ	Not listed	Not listed	Not listed	TAM1
Depression	NYC Health - HIV-again	General & specialized 6*	Listed (4 senses, 2 of which are relevant)	Listed (4 senses, 2 relevant)	TAM2-3
Developer vial	POZ	Not listed	Not listed	Not listed	TAM2-3
Diabetes	Merck Manual TB	Specialized 6*	Listed	Listed	TAM2-3
Diabetics	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General 5*	Listed (5 senses, 4 of which are relevant)	Listed (2 senses, both relevant)	TAM2-3
Diagnose (diagnosing / diagnosed)	WHO, Health Service Executive, National Library of Medicine, Mayo Clinic (HIV), Merck Manual TB, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting7, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, World Health Organization (WHO) TB	General 6*	Listed (2 senses, both relevant)	Listed	TAM2-3
Diagnosis	WHO, Centers for Disease Control & Prevention, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Xunta de Galicia Consellería de Sanidade VIH, BCN Checkpoint, Explain TB, National Library of Medicine, Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info, Centers for Disease Control and Prevention 2, American Association for Clinical Chemistry, European Lung Foundation, World Health Organization (WHO) TB	Specialized 6*	Listed (3 senses, 2 of which are relevant)	Listed	TAM2-3
Diagnostic (tool or test)	Mayo Clinic (TB), Merck Manual HIV, POZ, World Health Organization (WHO) TB	General & specialized 6*	Listed (3 senses, 2 relevant)	Listed (2 senses, both relevant)	TAM2-3
Dialysis	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Specialized 5*	Listed (3 senses, 2 relevant)	Listed (3 senses, 2 relevant)	TAM2-3
Disease / diseases (noun)	Healthfinder, Centers for Disease Control & Prevention, NYC Health, SaludMadrid TB,	General 7*	Listed	Listed (3 senses, 2 relevant)	TAM1

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	Xunta de Galicia Consellería de Sanidade TB, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Merck Manual TB, Florida Health, AIDS Info, NY State Department of Health, HealthReach - Sexual risks 4, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting5, San Francisco AIDS Foundation, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, European Lung Foundation				
Disease-causing	National Library of Medicine	General, no frequency indicated	Not listed	Not listed	TAM1
Disease-fighting proteins	HealthReach HIVtesting4	Not listed	Not listed	Not listed	TAM2-3
Disorder / disorders	Merck Manual TB	General 6*	Listed (2 senses, 1 relevant)	Listed (2 senses, 1 relevant)	TAM2-3
DNA	Merck Manual TB	Specialized 6*	Listed	Listed (SOAP, no definition; referred to <b>deoxyribonucleic acid</b> )	TAM4-5
Doctor / doctors (noun)	Healthfinder, Health Service Executive, US Department of Health & Human Services NIH, Health Information Translations,	General 6*	Listed (3 senses, 1 of which is relevant)	Listed (2 senses, both relevant)	TAM2-3



	Massachusetts Department of Public Health, Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid VIH subsahariana, SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Fundació Lluita Contra la SIDA, Explain TB, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Office on Women's Health - US Department of Health & Human Services, HealthReach Pregnancy3, San Francisco AIDS Foundation, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, POZ				
Doctor's office / doctors' offices	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office on Women's Health - US Department of Health & Human Services, Planned Parenthood	Not listed	Not listed	Not listed	TAM2-3
Doctor's surgery (British)	NAM AIDSmap	Not listed	Not listed	Not listed	TAM2-3
Dormant	SaludMadrid TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General 5*	Not listed	Not listed	TAM1
Drug / drugs	CESIDA, Xunta de Galicia Consellería de Sanidade VIH, Explain TB, TeensHealth from	General 7*	Listed (6 senses, all relevant)	Listed (3 senses, 2 of which are relevant)	TAM1

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	Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, NYC Health – HIV, HealthReach - Sexual risks 4, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting2, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente HIV, POZ, World Health Organization (WHO) TB				
Drug resistance	Explain TB, Mayo Clinic (HIV)	Listed under <b>drug 7*</b> , specialized	Not listed	Listed	TAM2-3
Drug-resistance	World Health Organization (WHO) TB	Specialized, no frequency indicated, listed under <b>drug</b>	Not listed	Listed, referred to <b>drug resistance</b>	TAM2-3
Drug-resistant	Mayo Clinic (TB), World Health Organization (WHO) TB	Specialized, no frequency indicated, listed under <b>drug</b>	Not listed	Listed (SOAP, no definition)	TAM2-3

Drug store / drug stores	HealthReach HIV/AIDS101-7, Greater Than AIDS / Más Que SIDA	General 5* (refers to <b>drugstore</b> )	Listed (refers to <b>drugstore</b> )	Listed (SOAP, no definition)	TAM2-3
Drugstore / drugstores	US Department of Health & Human Services NIH, The American Foundation for AIDS Research (AmFAR)	General 5*	Listed	Not listed	TAM2-3
Drug susceptibility	American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM2-3
Drug-use	Centers for Disease Control and Prevention 2, HealthReach HIVtesting2	General, no frequency indicated, listed as <b>drug use</b> under <b>drug</b>	Not listed	Not listed	TAM1
Drug-using	Centers for Disease Control and Prevention 2, POZ	General, no frequency indicated, listed as <b>drug using</b> under <b>drug</b>	Not listed	Not listed	TAM1
Eczema	Xunta de Galicia Consellería de Sanidade VIH	Specialized 4*	Listed	Listed	TAM2-3
EIA / EIAs (Enzyme Immunoassay)	WHO, AIDS Info Net (IAPAC), POZ	Not listed	Listed (3 senses, 1 of which is relevant)	Listed (refers to <b>enzyme immunoassay</b> )	TAM4-5
ELISA	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Merck Manual HIV, AIDS Info Net (IAPAC), POZ	Specialized 4*	Listed	Listed (refers to <b>enzyme-linked immunosorbent assay</b> )	TAM2-3
Emergency	NYC Health - HIV-again, POZ	General 6*	Listed (3 senses, all relevant)	Listed	TAM2-3
Emergency department	NY State Department of Health	General, no frequency indicated, listed under <b>emergency</b>	Not listed	Listed	TAM2-3
Emergency room	NYC Health – HIV, NYC Health - HIV-again, POZ	General, no frequency indicated, listed under <b>emergency</b>	Listed	Listed	TAM2-3

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Enzyme	WHO, Merck Manual HIV	Specialized 6*	Listed	Listed	TAM2-3
Enzyme immunoassays	WHO	Not listed	Listed	Listed	TAM4-5
Enzyme-linked immunosorbent assay	Merck Manual HIV, POZ	Specialized, no frequency indicated, listed under <b>immunosorbent</b>	Listed	Listed	TAM4-5
Epidemic	NY State Department of Health	General 5*	Listed (4 senses, 3 of which are relevant)	Listed	TAM2-3
Erythema	Centers for Disease Control & Prevention TB	Specialized 5*	Listed	Listed	TAM2-3
Ethambutol	Kaiser Permanente TB	Specialized 4*	Listed	Not listed	TAM2-3
Exam / exams (medical)	Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB	General (2.b.) 5*	Listed	Listed (SOAP, no definition)	TAM2-3
Examination (medical / cytology)	Xunta de Galicia Consellería de Sanidade TB, Merck Manual TB, American Association for Clinical Chemistry, European Lung Foundation	General (5.a.&b.) 6*	Listed	Listed (2 senses, 1 of which is relevant)	TAM2-3
Examine (verb)	Xunta de Galicia Consellería de Sanidade TB, Explain TB	General (4.a.&c.) 6*	Listed (2 senses, both relevant)	Not listed	TAM1
Expose / exposing / exposed (verb)	Xunta de Galicia Consellería de Sanidade VIH, BCN Checkpoint, Centers for Disease Control & Prevention HIV, AIDS Info Net (IAPAC), NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach Pregnancy3, HealthReach HIVtesting3, San Francisco AIDS Foundation, Whitman-Walker Clinic, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente HIV, POZ	General 6*	Listed (3 senses, 1 of which is relevant)	Listed	TAM2-3

Exposure	WHO, US Department of Health & Human Services NIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Centers for Disease Control & Prevention HIV, Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting3, San Francisco AIDS Foundation, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, POZ	General 6*	Listed (3 senses, 1 of which is relevant)	Listed (4 senses, 1 of which is relevant)	TAM2-3
Extrapulmonary	Kaiser Permanente TB	Not listed	Listed	Listed	TAM4-5
Extrapulmonary TB	Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM4-5
False negative	Centers for Disease Control & Prevention TB, Florida Health, HealthReach HIVtesting4, POZ	General, no frequency indicated, listed under <b>false 6*</b>	Listed, refers to <b>false-negative</b>	Listed (3 senses, all relevant)	TAM2-3
False-negative	Mayo Clinic (TB), Merck Manual TB, American Association for Clinical Chemistry	General, refers to <b>false negative</b> , no frequency indicated, listed under <b>false 6*</b>	Listed	Listed, refers to <b>false negative</b>	TAM2-3
False positive	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Centers for Disease Control & Prevention TB, AIDS Info Net (IAPAC), POZ	General (no frequency given, listed under <b>false 6*</b> )	Listed, refers to <b>false-positive</b>	Listed (3 senses, all relevant)	TAM2-3
False-positive	Mayo Clinic (TB), Merck Manual TB, American Association for Clinical Chemistry	General, refers to <b>false positive</b> , listed under <b>false 6*</b>	Listed	Listed, refers to <b>false positive</b>	TAM2-3
Family doctor	Fundació Lluita Contra la SIDA	General (no frequency)	Listed (2 senses, both relevant)	Listed (refers to <b>family physician</b> )	TAM2-3

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		given, listed under <b>family 7*</b> )			
Fast HIV tests	CESIDA	Not listed	Not listed	Not listed	TAM2-3
Fatigue	Merck Manual HIV, Kaiser Permanente TB	General 6*	Listed (5 senses, 2 relevant)	Listed (3 senses, 1 relevant)	TAM2-3
Female condom / female condoms	NY State Department of Health, Centers for Disease Control and Prevention 2	General, no frequency indicated, listed under <b>female 6*</b>	Not listed	Listed	TAM2-3
Fever	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid TB, Explain TB, Merck Manual TB, NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry, Kaiser Permanente TB, World Health Organization (WHO) TB	Specialized 6*	Listed (3 senses, 2 relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Fibrotic (changes)	Centers for Disease Control & Prevention TB	Specialized, listed under <b>fibrosis 5*</b>	Listed, refers to <b>fibrosis</b>	Listed	TAM2-3
Filter (s) (refers to drug paraphernalia)	CESIDA	General 6*	Listed (4 senses, 1 of which is relevant)	Listed (7 senses, 1 of which is relevant)	TAM2-3
First-line (TB medicine)	World Health Organization (WHO) TB	General 5*, listed as <b>first line</b>	Listed	Not listed	TAM1
Flu-like	HealthReach HIV/AIDS101-7	General, listed under <b>flu 5*</b>	Listed (under <b>flu</b> )	Not listed	TAM1
Fluid / fluids	Boston Public Health Commission, Boston Public Health Commission TB2, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Xunta de Galicia Consellería de Sanidade VIH, Explain TB, Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health	General 6*	Listed	Listed (2 senses, both relevant)	TAM2-3

	Promotion ODPHP Healthfinder (VIH), Merck Manual TB, AIDS Info Net (IAPAC), GMHC, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, Kaiser Permanente TB				
Fluorescence	Explain TB	General 5*	Listed	Listed	TAM2-3
Fluorescence microscopy	Explain TB	Listed under <b>fluorescence</b> , general	Not listed	Listed	TAM2-3
Follow up	US Department of Health & Human Services NIH	General (no frequency indicated), listed under <b>follow</b>	Listed (3 senses, all relevant)	Listed	TAM2-3
Follow-up	Centers for Disease Control & Prevention HIV, National Library of Medicine, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach Pregnancy3, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry	General, listed under <b>follow</b> , no frequency indicated	Listed (3 senses, all relevant), listed as <b>follow up</b>	Listed (refers to <b>follow up</b> )	TAM2-3
Follow-up test	NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach Pregnancy3, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM2-3
Follow-up testing	Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
Foreign substances	Merck Manual HIV	Not listed	Not listed	Not listed	TAM2-3
Fourth generation HIV tests	POZ	Not listed	Not listed	Not listed	TAM2-3
Fourth generation test	AIDS Info Net (IAPAC)	Not listed	Not listed	Not listed	TAM2-3
Fourth-generation test	Centers for Disease Control & Prevention HIV	Not listed	Not listed	Not listed	TAM2-3

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4 <sup>th</sup> -generation (test)	Merck Manual HIV	Listed as <b>fourth generation</b> under <b>fourth 6*</b>	Not listed	Not listed	TAM1
Gamma interferon	American Association for Clinical Chemistry	Not listed	Listed	Not listed	TAM4-5 (justification: see interferon & interferon gamma)
Gene / genes	Merck Manual TB	Specialized 6*	Listed	Listed	TAM2-3
Genetic	Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC)	Specialized 6*	Listed (2 senses, both relevant)	Listed	TAM2-3
Genetic material	Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC)	Not listed	Listed under <i>genetic</i>	Listed	TAM4-5
Genetic tests	Merck Manual TB	General, no frequency indicated, listed under <b>genetic 6*</b>	Not listed	Not listed	TAM2-3 (justification: see genetic & test)
Genitals	NYC Health - HIV-again	General 5*	Listed	Listed	TAM2-3
Genitourinary (medicine)	NAM AIDSmap	Specialized 4*	Listed	Listed	TAM2-3
Germ / germs	Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, National Library of Medicine, AIDS Info Net (IAPAC), Florida Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	General 5*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Glands	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), NYC Health - HIV-again	Specialized 6*	Listed (2 senses, both relevant)	Listed	TAM2-3
Gonorrhea	HealthReach HIVtesting2, San Francisco AIDS Foundation, Whitman-Walker Clinic	Specialized 5*	Listed	Listed	TAM2-3



GP (British)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2	General 5*	Listed (2 senses, 1 of which is relevant)	Listed (SOAP, no definition)	TAM2-3
GP surgery (British)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2	General (no frequency given, listed under <b>GP 5*</b> )	Not listed	Not listed	TAM2-3 <i>(justification: based on GP &amp; surgery)</i>
GUM (genitourinary medicine – British)	NAM AIDSmap	General, no frequency indicated	Listed, 5 senses, none relevant	Listed (3 senses, none relevant)	TAM2-3
Gum / gums (mouth)	NAM AIDSmap	General 4*	Listed, 5 senses, 2 of which are relevant	Listed (3 senses, 1 relevant)	TAM2-3
GUM clinic	NAM AIDSmap	Not listed	Not listed	Not listed	TAM2-3
Gynecologist	Planned Parenthood	General 4* (listed under gynaecology)	Listed	Listed	TAM2-3
Harm (noun)	NY State Department of Health	General 6*	Not listed	Not listed	TAM1
Harm reduction	NY State Department of Health	Not listed ( <b>reduction: general 6*</b> )	Not listed	Not listed	TAM1
Health	Healthfinder, WHO, CESIDA, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid VIH subsahariana, Fundació Lluita Contra la SIDA, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (TB), AIDS Info Net (IAPAC), NY State Department of Health, NYC Health – HIV, GMHC, HealthReach - Sexual risks 4, NYC Health - HIV-again, NAM AIDSmap, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on	General 7*	Listed (2 senses, both relevant)	Listed (3 senses, all relevant)	TAM1

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	Women's Health - US Department of Health & Human Services, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
Health agencies	POZ	Not listed ( <b>agency:</b> general 6*)	Not listed	Not listed	TAM1
Health authority	Explain TB	Not listed ( <b>authority:</b> general 7*)	Not listed	Not listed	TAM1
Health card	SaludMadrid VIH subsahariana	Listed under <b>health 7*</b> , but with irrelevant sense	Not listed	Not listed	TAM1
Healthcare	US Department of Health & Human Services NIH, NY State Department of Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, HealthReach HIVtesting6, HealthReach SubstanceAbuse6, American Association for Clinical Chemistry, POZ, WHO, US Department of Health & Human Services NIH	Listed under <b>health 7*</b> , as <b>health care</b> , general	Listed (either <b>healthcare</b> or <b>health care</b> )	Listed as <b>health care</b>	TAM1
Health care	Centers for Disease Control & Prevention, CESIDA, NYC Health, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of Disease Prevention and Health	Listed under <b>health 7*</b> , as <b>health care</b> , general	Listed (either <b>healthcare</b> or <b>health care</b> )	Listed as <b>health care</b>	TAM1

	Promotion ODPHP Healthfinder (VIH), Mayo Clinic (TB), AIDS Info Net (IAPAC), NY State Department of Health, NYC Health – HIV, HealthReach - Sexual risks 4, NYC Health - HIV-again, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, Greater Than AIDS / Más Que SIDA, POZ				
Health care clinic	HealthReach Pregnancy3	Not listed	Not listed	Not listed	TAM2-3
Health care facility	AIDS Info Net (IAPAC)	Not listed <b>(facility:</b> general 6*)	Not listed	Not listed	TAM1
Healthcare practitioner	American Association for Clinical Chemistry	Not listed <b>(practitioner:</b> general 6*)	Not listed	Not listed	TAM1
Health care professional	National Library of Medicine, Mayo Clinic (TB), Centers for Disease Control and Prevention 2	Not listed <b>(professional:</b> general 6*)	Not listed	Not listed	TAM1
Health care provider	NYC Health, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, AIDS Info Net (IAPAC), NY State Department of Health, NYC Health – HIV, HealthReach - Sexual risks 4, NYC Health - HIV-again, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6,	Not listed <b>(provider:</b> general 6*)	Not listed	Listed	TAM2-3

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	HealthReach HIVtesting7, Greater Than AIDS / Más Que SIDA, POZ				
Healthcare provider	HealthReach HIVtesting6, HealthReach SubstanceAbuse6, WHO, US Department of Health & Human Services NIH	Not listed	Not listed	Listed as <b>health care provider</b>	TAM2-3
Healthcare settings	NAM AIDSmap	Not listed ( <b>setting:</b> general 6*)	Not listed	Not listed	TAM1
Health care setting	HealthReach HIVtesting4	Not listed ( <b>setting:</b> general 6*)	Not listed	Not listed	TAM1
Health care staff	Explain TB	Not listed; <b>staff</b> general 5*	Not listed	Not listed	TAM1
Healthcare system	POZ	Not listed; <b>system</b> general 7*	Not listed	Listed as <b>health care system</b>	TAM2-3
Healthcare worker / healthcare workers	American Association for Clinical Chemistry	Not listed; <b>worker:</b> general 7*	Not listed	Refers to <b>health care provider</b>	TAM1
Health care worker / health care workers	Explain TB, Centers for Disease Control & Prevention TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, POZ	Not listed; <b>worker:</b> general 7*	Not listed	Refers to <b>health care provider</b>	TAM1
Health center / health centre	US Department of Health & Human Services NIH, Fundació Lluita Contra la SIDA, Explain TB, TeensHealth from Nemours Foundation, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, World Health Organization (WHO) TB	General, listed under <b>health</b> 7*	Not listed	Listed	TAM1
Health check	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2	Not listed; <b>check</b> general 6*	Not listed	Not listed	TAM1
Health clinic	US Department of Health & Human Services NIH, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Office of Disease Prevention and Health Promotion ODPHP	Not listed	Not listed	Not listed	TAM2-3

	Healthfinder (VIH), Planned Parenthood, The American Foundation for AIDS Research (AmFAR)				
Health coverage	NY State Department of Health	Not listed; <b>coverage</b> general 6*	Not listed	Not listed	TAM1
Health department	NYC Health, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting5, Planned Parenthood, POZ	Not listed	Listed	Not listed	TAM1
Health expert / health experts	NYC Health - HIV-again	Not listed; <b>expert</b> 6* general	Not listed	Not listed	TAM1
Health insurance	CESIDA, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services	General (no frequency indicated)	Listed	Listed	TAM2-3
Health insurance company	Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
Health personnel	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Not listed; <b>personnel</b> general 6*	Not listed	Listed (refers to <b>health care provider</b> )	TAM1
Health-related	CESIDA	Not listed; <b>related</b> general 6*	Not listed	Not listed	TAM1
Healthier	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Merck Manual HIV, NYC Health - HIV-again, AIDSinfo.nih.gov, HealthReach HIVtesting1	General 6*	Listed, 3 senses, all relevant	Not listed	TAM1
Healthy	Massachusetts Department of Public Health, Boston Public Health Commission TB2, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), AIDS Info Net (IAPAC), NY State Department of	General & specialized 6*	Listed (3 senses, all relevant)	Listed	TAM2-3

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	Health, NYC Health – HIV, GMHC, NYC Health - HIV-again, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation, San Francisco AIDS Foundation, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
Hepatitis	CESIDA, Mayo Clinic (HIV), Centers for Disease Control and Prevention 2, AIDSinfo.nih.govHealthReach HIVtesting2, Kaiser Permanente TB, POZ	Specialized 5*	Listed (2 senses, 1 of which is relevant)	Listed	TAM2-3
Heroin	National Library of Medicine	General 5*	Listed	Listed	TAM2-3
Herpes	POZ	General 5*	Listed	Listed	TAM2-3
High-risk	HealthReach HIVtesting4	General, no frequency indicated, listed under <b>high 7*</b>	Not listed	Listed (SOAP, no definition)	TAM1
HIV	Healthfinder, WHO, CESIDA, US Department of Health & Human Services NIH, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid prueba sangre VIH, SaludMadrid VIH subsahariana, Xunta de Galicia Consellería de Sanidade VIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA, BCN Checkpoint, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, AIDS	General 6*	Listed	Listed	TAM2-3

	Info, NY State Department of Health, NYC Health – HIV, GMHC, HealthReach - Sexual risks 4, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, POZ, World Health Organization (WHO) TB				
HIV-1	Fundació Lluita Contra la SIDA, National Library of Medicine, Merck Manual HIV, Whitman-Walker Clinic, POZ	Listed under <b>HIV 6*</b>	Listed	Listed	TAM2-3
HIV-1 p-24 antigen	POZ	Not listed	Not listed	Not listed	TAM4-5
HIV-2	Fundació Lluita Contra la SIDA, National Library of Medicine, Merck Manual HIV, Whitman-Walker Clinic, POZ	Listed under <b>HIV 6*</b>	Listed	Listed	TAM2-3
HIV-1/2	WHO	Not listed	Not listed	Not listed	TAM4-5
HIV/AIDS	Xunta de Galicia Consellería de Sanidade VIH, Mayo Clinic (HIV), HealthReach - Sexual risks 4, HealthReach HIV/AIDS101-7, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3,	Listed under <b>HIV 6*</b>	Not listed	Listed	TAM2-3

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	HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, Kaiser Permanente HIV, POZ				
HIV-1/HIV-2	Whitman-Walker Clinic, POZ	Not listed	Not listed	Not listed	TAM2-3
HIV-1/HIV-2 antibody differentiation immunoassay	POZ	Not listed	Not listed	Not listed	TAM4-5
HIV analysis	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Not listed	Not listed	Not listed	TAM2-3
HIV antibody / HIV antibodies	Merck Manual HIV, San Francisco AIDS Foundation, Kaiser Permanente HIV	Not listed	Not listed	Not listed	TAM2-3
HIV antibody test	San Francisco AIDS Foundation, Kaiser Permanente HIV	Not listed	Not listed	Not listed	TAM2-3
HIV antibody/antigen test	National Library of Medicine	Not listed	Not listed	Not listed	TAM2-3
HIV antigens	Merck Manual HIV	Not listed	Not listed	Not listed	TAM2-3
HIV-associated TB	World Health Organization (WHO) TB	Not listed	Not listed	Not listed	TAM2-3
HIV blood test	HealthReach HIVtesting4	Not listed	Not listed	Not listed	TAM2-3
HIV-exposed	WHO	Not listed	Not listed	Not listed	TAM2-3
HIV-free	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH)	Not listed	Not listed	Not listed	TAM2-3
HIV home self-testing	Fundació Lluita Contra la SIDA	Not listed	Not listed	Not listed	TAM2-3
HIV home test / HIV home tests	Office on Women's Health - US Department of Health & Human Services	Not listed	Not listed	Not listed	TAM2-3
HIV-infected	Centers for Disease Control & Prevention TB, National Library of Medicine	Not listed	Not listed	Not listed	TAM2-3
HIV infection	Merck Manual TB, AIDS Info Net (IAPAC), NYC Health – HIV, Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3
HIV negative	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, GMHC, NAM AIDSmap, AIDSinfo.nih.gov, HealthReach HIVtesting6, POZ	Listed as <b>HIV-negative</b>	Not listed	Not listed	TAM2-3
HIV-negative	Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH),	General, listed under <b>HIV 6*</b>	Not listed	Not listed	TAM2-3



	GMHC, HealthReach - Sexual risks 4, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach SubstanceAbuse6				
HIV p24 antigen	WHO	Not listed	Not listed	Not listed	TAM4-5
HIV positive	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, NAM AIDSmap, AIDSinfo.nih.gov, The American Foundation for AIDS Research (AmFAR), POZ	Listed as <b>HIV-positive</b>	Not listed	Not listed	TAM2-3
HIV-positive	WHO, CESIDA, Xunta de Galicia Consellería de Sanidade VIH, Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), GMHC, HealthReach - Sexual risks 4, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting7, POZ	General, listed under <b>HIV 6*</b>	Not listed	Not listed	TAM2-3
HIV RNA	Mayo Clinic (HIV), Merck Manual HIV	Not listed	Not listed	Not listed	TAM2-3
HIV RNA test / HIV RNA tests	Merck Manual HIV	Not listed	Not listed	Not listed	TAM2-3
HIV screening	Office on Women's Health - US Department of Health & Human Services, National Library of Medicine	Not listed	Not listed	Not listed	TAM2-3
HIV services ("specialist HIV services")	NAM AIDSmap	Not listed; <b>service</b> general no frequency indicated	Not listed	Not listed	TAM2-3

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HIV specialised hospital	BCN Checkpoint	Not listed	Not listed	Not listed	TAM2-3
HIV specialist	TeensHealth from Nemours Foundation, Kaiser Permanente HIV	Not listed; <b>specialist</b> general 6*	Not listed	Not listed	TAM2-3
HIV/STI	Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3
HIV/STI testing	Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3
HIV test / HIV tests	CESIDA, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Fundació Lluita Contra la SIDA, BCN Checkpoint, Explain TB, Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), AIDS Info Net (IAPAC), NY State Department of Health, NYC Health – HIV, GMHC, HealthReach - Sexual risks 4, NAM AIDSmap, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), POZ	Not listed	Not listed	Not listed	TAM2-3
HIV test kit / HIV test kits	National Library of Medicine	Not listed (HIV , test 7*, kit 5*)	Not listed	Not listed	TAM2-3
HIV-tested	Fundació Lluita Contra la SIDA	Not listed	(502 bad gateway)	Not listed	TAM2-3
HIV testing	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), AIDS Info Net (IAPAC), NYC Health –	Not listed	Not listed	Not listed	TAM2-3

	HIV, HealthReach - Sexual risks 4, NYC Health - HIV-again, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, Whitman-Walker Clinic, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
HIV testing center	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH)	Not listed	Not listed	Not listed	TAM2-3
HIV testing site	HealthReach SubstanceAbuse6	Not listed	Not listed	Not listed	TAM2-3
HIV viral load	National Library of Medicine, Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
HIV viral load test	Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
HIV virus	Merck Manual HIV, Florida Health	General, listed under <b>HIV 6*</b>	Not listed	Not listed	TAM2-3
Hoarseness	Explain TB	General 4*	Listed (2 senses, both relevant)	Listed	TAM2-3
Home collection kit / home collection kits	Centers for Disease Control and Prevention 2, POZ	Not listed (home 7*, collection 6*, kit 5*)	Not listed	Not listed	TAM1
Home HIV test / home HIV tests	AIDS Info Net (IAPAC), HealthReach HIVtesting4	Not listed (home 7*, HIV 6*, test 7*)	Not listed	Not listed	TAM2-3
Home HIV testing	NAM AIDSmap	Not listed (home 7*, HIV 6*, testing – no frequency indicated)	Not listed	Not listed	TAM2-3

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Home self-testing	Fundació Lluita Contra la SIDA	Not listed (home 7*, self- - no frequency indicated, testing – no frequency indicated)	Not listed	Not listed	TAM1
Home test / home tests	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), AIDS Info Net (IAPAC), GMHC, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), POZ	Not listed (home 7*, test 7*)	Not listed	Not listed	TAM2-3
Home testing	Mayo Clinic (HIV), HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	Not listed (home 7*, testing – no frequency indicated)	Not listed	Not listed	TAM2-3
Home test kit / home test kits	AIDS Info Net (IAPAC), NYC Health – HIV, The American Foundation for AIDS Research (AmFAR)	Not listed (home 7*, test 7*, kit 5*)	Not listed	Not listed	TAM2-3
Home testing kit / home testing kits	HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	Not listed (home 7*, testing – no frequency indicated, kit 5*)	Not listed	Not listed	TAM2-3
Home use tests	AIDSinfo.nih.gov	Not listed (home 7*, use 7*, test 7*)	Not listed	Not listed	TAM2-3
Hormones	POZ	Specialized 6*	Listed (3 senses, all relevant)	Listed	TAM2-3
Hospital / hospitals	US Department of Health & Human Services NIH, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid VIH subsahariana, Fundació Lluita Contra la	General, 6*	Listed (3 senses, 2 of which are relevant)	Listed	TAM2-3

	SIDA, BCN Checkpoint, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), NAM AIDSmap, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Planned Parenthood, POZ				
Human immunodeficiency virus	National Library of Medicine, Merck Manual HIV, AIDS Info Net (IAPAC), AIDSinfo.nih.gov	General, Listed under <b>human 7*</b> & refers to <b>HIV 6*</b>	Listed	Listed	TAM2-3
Hypersensitivity	American Association for Clinical Chemistry	Specialized 5*	Listed, 2 senses, both relevant; referred to <b>hypersensitive</b>	Listed (2 senses, both relevant)	TAM2-3
IFA	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Not listed	Not listed	Listed (SOAP, no definition)	TAM4-5
IGRA (interferon-gamma release assay)	Explain TB, Merck Manual TB, American Association for Clinical Chemistry, Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM4-5
IGRA test / IGRA tests	Explain TB, American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM4-5
Ill (adj)	Explain TB, Merck Manual TB	General 6*	Listed (2, 1 of which is relevant)	Not listed	TAM1
Illness / illnesses	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Centers for Disease Control & Prevention TB, National Library of Medicine, American Association for Clinical Chemistry	General 6*	Listed	Listed (refers to <b>disease &amp; syndrome</b> )	TAM2-3
Imaging (test - gerund)	Mayo Clinic (TB)	General 5* (7), refers to <b>image</b>	Listed, 2 senses, 1 of which is relevant, refers to <b>image</b>	Listed	TAM2-3
Immune	Healthfinder, Health Information Translations, NYC Health, Xunta de Galicia Consellería de Sanidade VIH, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info	General & specialized 6*	Listed (3 senses, all of which are relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3

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	Net (IAPAC), HealthReach - Sexual risks 4, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting3, Planned Parenthood, American Association for Clinical Chemistry, Kaiser Permanente TB				
Immune cells	Explain TB, National Library of Medicine	Specialized, listed under <b>immune</b>	Not listed	Not listed	TAM2-3
Immune compromised	American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM2-3
Immune response	National Library of Medicine, Merck Manual HIV, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting3, American Association for Clinical Chemistry	Specialized, listed under <b>immune 6*</b>	Listed	Listed (2 senses, both relevant)	TAM2-3
Immune suppressive drugs	American Association for Clinical Chemistry	Not listed; <b>suppressive 4*</b>	Not listed	Not listed	TAM2-3
Immune system	Healthfinder, WHO, Health Information Translations, NYC Health, Xunta de Galicia Consellería de Sanidade VIH, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), HealthReach - Sexual risks 4, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, Planned Parenthood, American Association	Listed under <b>immune</b> , "immune system" is specialized	Listed	Listed	TAM2-3

	for Clinical Chemistry, Kaiser Permanente HIV, Kaiser Permanente TB				
Immunity	Florida Health	Specialized (5) 5*	Listed	Listed (2 senses, both relevant)	TAM2-3
Immunoassay / immunoassays	WHO, POZ	Listed under <b>immuno-</b> , specialized (no frequency indicated)	Listed	Listed	TAM4-5
Immunodeficiency	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), National Library of Medicine, Merck Manual HIV, AIDS Info Net (IAPAC), AIDSinfo.nih.gov	Specialized 5*	Listed	Listed	TAM2-3
Immunosorbent	Merck Manual HIV	Specialized 4*	Listed (2 senses, both relevant)	Listed	TAM2-3
Immunosuppressed	Centers for Disease Control & Prevention TB	Specialized 3*	Listed under <b>immunosuppression</b>	Not listed	TAM4-5
Inactive	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry	General, no frequency indicated	Listed (5 senses, 1 of which is relevant)	Listed (SOAP, no definition)	TAM2-3
Incidence (epidemiology)	American Association for Clinical Chemistry	General (7.a.), 6*	Listed (4 senses, 1 of which is relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Indurated	Centers for Disease Control & Prevention TB	General 4*	Listed	Listed	TAM2-3
Induration	Centers for Disease Control & Prevention TB	General & specialized 4*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, both relevant)	TAM2-3
Infect / Infected (participle)	WHO, Centers for Disease Control & Prevention, Health Information Translations, SaludMadrid VIH subsahariana, SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Xunta de Galicia Consellería de Sanidade VIH, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention TB, National Library of Medicine, Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, GMHC, Population Health Division - San Francisco Department of Public Health	General 5*	Listed (3 senses, all of which are relevant)	Listed (2 senses, both relevant)	TAM2-3

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	Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, HealthReach HIVtesting4, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente HIV, POZ				
Infection / infections	Healthfinder, WHO, Health Service Executive, CESIDA, Massachusetts Department of Public Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid TB, Xunta de Galicia Consellería de Sanidade VIH, Fundació Lluita Contra la SIDA, BCN Checkpoint, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), NYC Health – HIV, GMHC, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health	General 6*	Listed (4 senses, all of which are relevant)	Listed	TAM2-3



	& Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach HIVtesting3, San Francisco AIDS Foundation, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ				
Infectious	Xunta de Galicia Consellería de Sanidade VIH, Explain TB, American Association for Clinical Chemistry	General 5*	Listed (3 senses, all of which are relevant)	Listed (3 senses, all relevant)	TAM2-3
Infectious agent	Xunta de Galicia Consellería de Sanidade VIH	Not listed; <b>agent</b> general & specialized 6*	Not listed	Not listed	TAM2-3
Infectious disease	Explain TB	Not listed	Listed	Listed	TAM4-5
Infectiousness	Xunta de Galicia Consellería de Sanidade TB	General 3*	Listed under <b>infectious</b> (3 senses, all of which are relevant)	Listed	TAM4-5
Infectivity	WHO	General 4*	Listed under <b>infective</b> (2 senses, both relevant)	Listed (2 senses, both relevant)	TAM2-3
Infiltration	Explain TB	General & specialized 5*	Listed under <b>infiltrate</b>	Listed (4 senses, 2 of which are relevant)	TAM2-3
Influenza	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), American Association for Clinical Chemistry	General 5*	Listed (3 senses, 2 of which are relevant)	Listed	TAM2-3
Informed consent	WHO	Listed under <b>informed</b> , specialized	Listed	Listed	TAM2-3
In-home HIV test	AIDS Info Net (IAPAC)	Not listed	Not listed	Not listed	TAM2-3
Inject (injecting, injected)	WHO, CESIDA, Boston Public Health Commission, Boston Public Health Commission TB2, Xunta de Galicia Consellería de Sanidade TB, Xunta de Galicia Consellería de Sanidade VIH, Explain TB, TeensHealth from Nemours Foundation,	General 5*	Listed (2 senses, 1 of which is relevant)	Listed	TAM2-3

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	Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, San Francisco AIDS Foundation, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), POZ				
Injectable (drugs)	NYC Health - HIV	General 4*	Listed (2 senses, 1 relevant), refers to <b>inject</b>	Listed (2 senses, 1 relevant)	TAM2-3
Injection	Health Service Executive, Boston Public Health Commission, Boston Public Health Commission TB2, SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Explain TB, Centers for Disease Control & Prevention TB, Mayo Clinic (TB), NY State Department of Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry	General 6*	Listed (4 senses, 3 of which are relevant)	Listed (3 senses, 2 of which are relevant)	TAM2-3
Injection drugs	Centers for Disease Control & Prevention TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Not listed	Not listed	Not listed	TAM2-3
Injection drug users	Centers for Disease Control & Prevention TB	Not listed	Not listed	Listed	TAM2-3
Insect bite	Xunta de Galicia Consellería de Sanidade TB	Not listed; <b>insect</b> 6*, <b>bite</b> no frequency indicated	Not listed	Not listed	TAM1
Insurance	CESIDA, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), AIDS Info Net (IAPAC), NY State Department	Specialized 6*	Not listed	Listed	TAM2-3

	of Health, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, Planned Parenthood, Greater Than AIDS / Más Que SIDA				
Insurance company / insurance companies	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), AIDS Info Net (IAPAC), Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Planned Parenthood	Not listed; <b>company 7*</b>	Not listed	Not listed	TAM2-3
Insurance plan / insurance plans	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH)	Not listed; <b>plan 7*</b>	Not listed	Not listed	TAM2-3
Insurer	Centers for Disease Control and Prevention 2	General 5*	Not listed	Not listed	TAM1
Intercourse (sexual)	Xunta de Galicia Consellería de Sanidade VIH, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General (2.d.) 5*	Listed (2 senses, 1 of which is relevant)	Listed	TAM2-3
Interferon / interferons	Merck Manual TB, American Association for Clinical Chemistry	Specialized 5*	Listed	Listed	TAM2-3
Interferon-gamma	Explain TB, Merck Manual TB, Kaiser Permanente TB	Not listed	Listed as <b>interferon gamma</b>	Listed as <b>interferon gamma</b>	TAM4-5
Interferon gamma release assay	American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM4-5
Interferon-gamma release assay	Explain TB, Merck Manual TB, Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM4-5
Intervention	Fundació Lluita Contra la SIDA	General 6*	Listed	Listed	TAM1
Intradermal	Centers for Disease Control & Prevention TB	General, no frequency indicated, listed under <b>intra-</b>	Listed (2 senses, both relevant)	Listed	TAM2-3
Joint / joints (musculoskeletal)	American Association for Clinical Chemistry	General 6*	Listed	Listed	TAM2-3
Kaposi sarcoma	National Library of Medicine, Merck Manual HIV	Specialized 4*, listed under <b>Kaposi</b>	Listed as <b>Kaposi’s sarcoma</b>	Listed as <b>Kaposi sarcoma</b>	TAM2-3

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Kidney / kidneys	Mayo Clinic (HIV), Merck Manual TB, Kaiser Permanente TB	General 6*	Listed (2 senses, 1 of which is relevant)	listed	TAM2-3
Kidney disease	Merck Manual TB	General, no frequency indicated, listed under <b>kidney</b>	Listed (3 senses, all relevant), refers to <b>polycystic kidney disease</b>	Not listed	TAM2-3
Kit / kits	US Department of Health & Human Services NIH, Fundació Lluita Contra la SIDA, Centers for Disease Control & Prevention HIV, National Library of Medicine, AIDS Info Net (IAPAC), HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Whitman-Walker Clinic, Planned Parenthood, The American Foundation for AIDS Research (AmFAR)	General 5*	Not listed	Not listed	TAM1
Lab / labs	Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach HIVtesting7, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB	General 5* ( <b>lab n.2</b> )	Listed	Listed (SOAP, no definition; & referred to <b>laboratory</b> )	TAM2-3
Lab test / lab tests	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV)	General, no frequency indicated, listed under <b>lab, n.2</b> 5*	Listed	Not listed	TAM2-3
Labor (as in giving birth)	Centers for Disease Control and Prevention 2, HealthReach Pregnancy3	General (8.a.) 7*	Listed (3 senses, 2 of which are relevant)	Listed	TAM2-3
Labor and delivery	HealthReach Pregnancy3	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Laboratory / laboratories	CESIDA, NYC Health, SaludMadrid VIH subsahariana, Xunta de Galicia Consellería de Sanidade VIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació	General 6*	Listed	Listed	TAM2-3

	Lluita Contra la SIDA, Explain TB, Centers for Disease Control & Prevention HIV, Merck Manual HIV, AIDS Info Net (IAPAC), NYC Health – HIV, NAM AIDSmap, Centers for Disease Control and Prevention 2, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), POZ, World Health Organization (WHO) TB				
Laboratory tests	Xunta de Galicia Consellería de Sanidade VIH, NAM AIDSmap	General, listed under <b>laboratory 6*</b>	Listed	Not listed	TAM2-3
Laboratory testing	American Association for Clinical Chemistry	Not listed	Listed, refers to <b>laboratory test</b>	Not listed	TAM2-3
Latent	Healthfinder, Health Service Executive, Centers for Disease Control & Prevention, Explain TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual TB, AIDS Info, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Kaiser Permanente TB	General & specialized 5*	Listed	Listed	TAM2-3
Latent infection	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry	Not listed	Not listed	Listed	TAM2-3
Latent TB	AIDS Info, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry, Kaiser Permanente TB	Not listed	Not listed	Listed (SOAP, no definition)	TAM4-5
Latent TB infection	Centers for Disease Control & Prevention, Population Health Division - San Francisco Department of Public Health Disease	Not listed	Not listed	Not listed	TAM4-5

APPENDIX 2: English word list

	Prevention & Control, American Association for Clinical Chemistry				
Latent tuberculosis	Explain TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual TB, American Association for Clinical Chemistry	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Latent tuberculosis infection	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), American Association for Clinical Chemistry	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Latent tuberculosis skin test	American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM2-3
Latex (condoms)	NYC Health - HIV-again	General 5*	Listed	Listed (2 senses, both relevant)	TAM2-3
Lesion (noun)	Xunta de Galicia Consellería de Sanidade TB	General & specialized 6*	Listed	Listed (3 senses, all relevant)	TAM2-3
Life expectancy	BCN Checkpoint	General, listed under <b>life 7*</b>	Listed	Not listed	TAM1
Life-threatening	National Library of Medicine	General, no frequency indicated, listed under <b>life 7*</b>	Listed	Not listed	TAM1
Liver	Mayo Clinic (HIV), Kaiser Permanente TB	General 6*	Listed (4 senses, 1 of which is relevant)	Listed	TAM2-3
Liver function tests	Kaiser Permanente TB	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Live-virus vaccination	Centers for Disease Control & Prevention TB	Not listed	Not listed	Not listed; <b>live virus</b> listed/SOAP	TAM2-3
LTBI	Healthfinder, Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM4-5
Lube (lubricant)	NYC Health - HIV-again	Colloquial 4*	Not listed	Not listed	TAM1
Lumbar	Merck Manual TB, Kaiser Permanente TB	Specialized 5*	Listed (2 senses, 1 of which is relevant)	Listed	TAM2-3
Lumbar puncture	Merck Manual TB, Kaiser Permanente TB	Not listed; <b>lumbar</b> specialized 5*;	502 Bad Gateway	Listed	TAM2-3

		<b>puncture</b> specialized (1.c.) 5*			
Lungs (lung)	Healthfinder, NYC Health, Xunta de Galicia Consellería de Sanidade TB, Explain TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Kaiser Permanente TB, World Health Organization (WHO) TB	General 6*	Listed (3 senses, 1 of which is relevant)	Listed	TAM2-3
Lung cavities	Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3
Lymph	Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV	Specialized 5*	Listed	Listed	TAM2-3
Lymph node / lymph nodes	Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV	General, no frequency indicated, listed under <b>lymph</b> 5*	Listed	Listed	TAM2-3
Lymphomas	Merck Manual HIV	Specialized 5*	Listed	Listed	TAM2-3
M. tuberculosis	Centers for Disease Control & Prevention TB, American Association for Clinical Chemistry	Not listed	Not listed	Listed (refers to <b><i>Mycobacterium tuberculosis</i></b> )	TAM4-5
Magnetic resonance imaging	Merck Manual HIV	Specialized, no frequency indicated, listed under <b>magnetic</b> 6*	Listed	Listed	TAM2-3
Male condom / male condoms	NY State Department of Health, Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
Mantoux	SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Centers for Disease Control & Prevention TB, Merck	Specialized 4*	Search refers to <b>Mantoux test</b>	Listed	TAM2-3

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	Manual TB, American Association for Clinical Chemistry, Kaiser Permanente TB				
Mantoux test	Health Service Executive, Merck Manual TB, Kaiser Permanente TB	Listed under <b>Mantoux</b>	Listed	Listed (refers to <b>tuberculin test</b> )	TAM2-3
Mantoux tuberculin skin test	Centers for Disease Control & Prevention TB	Not listed	Not listed	Not listed	TAM2-3
Measles	Centers for Disease Control & Prevention TB, American Association for Clinical Chemistry	General 5*	Listed (3 senses, 2 relevant)	Listed (3 senses, 1 relevant)	TAM2-3
Medical	Health Service Executive, CESIDA, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid TB, Xunta de Galicia Consellería de Sanidade VIH, Explain TB, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), AIDS Info Net (IAPAC), Florida Health, NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting5, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, POZ, European Lung Foundation	General 6*	Listed (2 senses, both relevant)	Listed (2 senses, both relevant)	TAM2-3
Medical care	CESIDA, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, TeensHealth from Nemours Foundation, Centers for Disease Control and Prevention 2, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV	Not listed	Not listed	Listed	TAM2-3
Medical center	Kaiser Permanente HIV	Not listed	Not listed	Not listed	TAM2-3
Medical checkups	SaludMadrid TB	Not listed	Not listed	Not listed	TAM2-3



Medical clinic / medical clinics	HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	Not listed	Not listed	Not listed	TAM2-3
Medical examination	European Lung Foundation	Listed under <b>medical</b>	Not listed	Not listed	TAM2-3
Medical history	Health Service Executive, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Kaiser Permanente TB	Not listed	Not listed	Listed	TAM2-3
Medical insurance	Centers for Disease Control and Prevention 2	Not listed	Not listed	Listed	TAM2-3
Medical professional	HealthReach HIVtesting7	Not listed	Not listed	Not listed	TAM2-3
Medical provider	NYC Health – HIV, NYC Health - HIV-again, San Francisco AIDS Foundation	Not listed	Not listed	Not listed	TAM2-3
Medical record / medical records	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting5, Planned Parenthood, POZ	Not listed	Listed	Listed	TAM2-3
Medical services	AIDS Info Net (IAPAC)	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Medically	HealthReach SubstanceAbuse6	General 5*	Listed (3 senses, 2 of which are relevant), listed under <b>medical</b>	Not listed	TAM2-3
Medication / medications	Boston Public Health Commission TB2, Explain TB, Mayo Clinic (HIV), Mayo Clinic (TB), AIDS Info Net (IAPAC), NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, San Francisco AIDS Foundation, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ	General 6*	Listed (2 senses, both relevant)	Listed (2 senses, both relevant)	TAM2-3

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Medication-resistant strain	Kaiser Permanente HIV	Not listed	Not listed	Not listed	TAM2-3
Medicine / medicines	Health Service Executive, Massachusetts Department of Public Health, TeensHealth from Nemours Foundation, National Library of Medicine, Florida Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting1, HealthReach Pregnancy3, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente TB, World Health Organization (WHO) TB	General 6*	Listed (3 senses, 1 of which is relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3
Membranes	CESIDA	General & specialized 6*	Listed (2 senses, both relevant)	Listed (2 senses, both relevant)	TAM2-3
Meningitis	Merck Manual TB, Kaiser Permanente TB	Specialized 5*	Listed	Listed	TAM2-3
Microliter	Merck Manual HIV	General 4*	Listed	Listed	TAM2-3
Microscope	Explain TB, World Health Organization (WHO) TB	General 5*	Listed (2 senses, both relevant)	Listed	TAM2-3
Microscopic	Merck Manual TB	General 5*	Listed (2 senses, 1 relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Microscopy	Explain TB, World Health Organization (WHO) TB	General 5*	Listed	Listed	TAM2-3
Miliary	Kaiser Permanente TB	Specialized 4*	Listed (2 senses, 1 relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Miliary TB	Kaiser Permanente TB	Not listed	Not listed	Listed (referred to <b>miliary tuberculosis</b> )	TAM4-5
Mobile testing trailers	Planned Parenthood	Not listed; <b>mobile 6*</b> , <b>trailer 5*</b>	Not listed	Not listed	TAM2-3
Mobile testing vans	US Department of Health & Human Services NIH, POZ	Not listed; <b>van 5*</b>	Not listed	Not listed	TAM2-3
Molecular	World Health Organization (WHO) TB	General & specialized 6*	Listed (2 senses, 1 relevant)	Listed	TAM2-3

Mouth swab	US Department of Health & Human Services NIH, The American Foundation for AIDS Research (AmFAR)	Not listed; <b>mouth</b> 6*	Not listed	Not listed	TAM2-3
MRI	Merck Manual HIV, Kaiser Permanente TB	Specialized, no frequency indicated	Listed	Listed (SOAP, referred to <b>magnetic resonance imaging</b> )	TAM4-5
Mucosal	GMHC	Specialized 5*	Listed, referred to <b>mucosa</b>	Listed	TAM2-3
Mucosal fluid	GMHC	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Mucous	CESIDA, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Specialized 5*	Listed (3 senses, all of which are relevant)	Listed	TAM2-3
Mucous membranes	CESIDA	Specialized 5*	Listed	Listed	TAM2-3
Mucus	NYC Health, Explain TB, Mayo Clinic (TB), Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Kaiser Permanente TB	General 5*	Listed	Listed	TAM2-3
Multidrug-resistant	World Health Organization (WHO) TB	Specialized, no frequency indicated, listed under <b>multidrug</b> 4*	Listed	Listed (SOAP, no definition)	TAM2-3
Mumps	American Association for Clinical Chemistry	General 4*	Listed	Listed	TAM2-3
Mutations	Merck Manual TB	General & specialized (7 a-c) 6*	Listed (2 senses, 1 relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Mycobacteriology	Centers for Disease Control & Prevention TB	Not listed	Listed	Not listed	TAM4-5
Mycobacterium / mycobacteria	Centers for Disease Control & Prevention TB, Merck Manual TB, American Association for Clinical Chemistry	Specialized 4*	Listed (2 senses, both relevant)	Listed	TAM2-3
Mycobacterium kansasii	American Association for Clinical Chemistry	Not listed	Not listed	Listed	TAM4-5

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Mycobacterium tuberculosis	Centers for Disease Control & Prevention TB, Merck Manual TB, American Association for Clinical Chemistry	Not listed	Not listed	Listed	TAM2-3
Name-based reporting	POZ	Not listed; <b>name 7*</b> , <b>based 7*</b> , <b>reporting 5*</b>	Not listed	Not listed	TAM1
NAT (nucleic acid test) / NATs	Centers for Disease Control & Prevention HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting4	Not listed	Not listed	Listed (SOAP, no definition)	TAM4-5
NAT test / NAT tests	HealthReach HIVtesting4	Not listed	Not listed	Not listed	TAM4-5
Nebulised / nebulized (adj) (fluid)	Explain TB	General 3*	Listed	Listed	TAM4-5
Necrosis	Centers for Disease Control & Prevention TB	Specialized 5*	Listed	Listed	TAM2-3
Needle / needles	CESIDA, NYC Health, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (TB), Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting2, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, Planned Parenthood, American Association for Clinical Chemistry, Kaiser Permanente HIV, POZ	General & specialized (5.a.&b.) 6*	Listed (2 senses, 1 of which is relevant)	Listed (4 senses, 1 of which is relevant)	TAM2-3
Negative	Health Service Executive, Health Information Translations, Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento	General 6*	Listed (9 senses, 1 of which is relevant)	Listed (2 senses, both relevant)	TAM2-3

	del VIH (gTt-VIH) 2, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), BCN Checkpoint, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, NY State Department of Health, NYC Health – HIV, GMHC, HealthReach - Sexual risks 4, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach SubstanceAbuse6, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
Newborn	AIDS Info Net (IAPAC)	General 5*	Listed (3 senses, 2 relevant)	Listed	TAM2-3
Night sweat / night sweats / night sweating	Explain TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry, Kaiser Permanente TB, World Health Organization (WHO) TB, European Lung Foundation	General 4*	Listed	Listed	TAM2-3
Nitrile (condoms)	NYC Health - HIV-again	General & specialized 4*	Listed	Listed	TAM2-3
Node / nodes	Mayo Clinic (TB), Merck Manual HIV	Specialized (2.a&b) 6*	Listed (3 senses, 1 relevant)	Listed (3 senses, 2 relevant)	TAM2-3

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Nodule	Explain TB	Specialized 5*	Listed (2, 1 relevant)	Listed	TAM2-3
Nonclinical (settings)	Centers for Disease Control and Prevention 2	General 3*, listed as <b>non-clinical</b>	Not listed	Not listed	TAM2-3 ( <i>clinical is TAM2-3</i> )
Non-sterile (incorrect: <i>unsterile</i> would've been correct)	CESIDA	Not listed	Not listed	Not listed	Not rated – poor translation
Nontuberculosis mycobacteria	Centers for Disease Control & Prevention TB	Not listed	Not listed	Referred to <b>nontuberculous mycobacteria</b>	TAM4-5
Nostril	Merck Manual TB	General 5*	Listed, 2 senses, both relevant	Listed	TAM2-3
Nucleic acid	Centers for Disease Control & Prevention HIV, Merck Manual TB, Merck Manual HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting4, POZ	Specialized, no frequency indicated, listed under <b>nucleic</b> 5*	Listed	Listed	TAM2-3
Nucleic acid amplification	Merck Manual HIV	Not listed; <b>amplification</b> no frequency indicated	Not listed	Listed (SOAP, no definition)	TAM2-3
Nucleic acid amplification tests	Merck Manual TB	Not listed	Not listed	Not listed	TAM2-3
Nucleic acid test / nucleic acid tests	Centers for Disease Control & Prevention HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting4, POZ	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Nurse (noun)	Healthfinder, Boston Public Health Commission, Boston Public Health Commission TB2, Explain TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Planned Parenthood	General 6*	Listed	Listed (3 senses, 2 of which are relevant)	TAM2-3
Nursing home / nursing homes	Centers for Disease Control & Prevention TB, Population Health Division - San Francisco	General, no frequency indicated,	Listed	Listed	TAM2-3

	Department of Public Health Disease Prevention & Control	listed under <b>nursing 6*</b>			
Opportunistic	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Merck Manual HIV	Specialized 5*	Listed (2 senses, both relevant)	Listed (2 senses, both relevant)	TAM2-3
Opportunistic diseases	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Not listed	Not listed	Not listed	TAM2-3
Opportunistic infections	Merck Manual HIV	Not listed	Not listed	Listed	TAM2-3
Oral	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, NYC Health – HIV, GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Whitman-Walker Clinic, Kaiser Permanente HIV, POZ	General 6*	Listed (6 senses, 3 of which are relevant)	Listed	TAM2-3
Oral fluid sample	Centers for Disease Control & Prevention HIV	Not listed	Not listed	Not listed	TAM2-3
Oral swab	NYC Health – HIV, Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3
Oral swab test / oral swab tests	NYC Health - HIV	Not listed	Not listed	Not listed	TAM2-3
Oral test	GMHC	Not listed	Not listed	Not listed	TAM2-3
Organ / organs	Explain TB, Centers for Disease Control & Prevention TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry	General & specialized 6*	Listed	Listed	TAM2-3
Organ transplant	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General, no frequency indicated, listed under <b>organ 6*</b>	Not listed	Not listed	TAM2-3
Organism	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	General 6*	Listed	Listed	TAM2-3
Oxygen	Explain TB	Specialized 6*	Listed	Listed (3 senses, all relevant)	TAM2-3
P24	WHO, Centers for Disease Control & Prevention HIV, National Library of Medicine, Merck Manual HIV, NAM AIDSmap, Centers for Disease Control and Prevention 2, Office	Not listed	Not listed	Listed	TAM4-5

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	on Women's Health - US Department of Health & Human Services				
p-24	POZ	Not listed	Not listed	Listed (refers to <b>p24</b> )	TAM4-5
P24 antigen	Merck Manual HIV, NAM AIDSmap, Office on Women's Health - US Department of Health & Human Services	Not listed	Not listed	Not listed	TAM4-5
p-24 antigen	POZ	Not listed	Not listed	Not listed	TAM4-5
P24 antigen test	Merck Manual HIV	Not listed	Not listed	Not listed	TAM4-5
PAP	Greater Than AIDS / Más Que SIDA	General, no frequency indicated (n.4)	Listed, but sense is not relevant	Listed, but sense is not relevant	TAM4-5
PAP smear	Greater Than AIDS / Más Que SIDA	General, no frequency indicated	Listed (correct sense)	Listed (as <b>Pap smear</b> )	TAM4-5
Pathogens	WHO, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Specialized 5*	Listed	Listed	TAM2-3
Patient / patients	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General 7*	Listed (2 senses, both relevant)	Listed	TAM1
PCR (polymerase chain reaction)	Explain TB, Merck Manual TB	Specialized, no usage frequency listed	Listed	Listed under <b>polymerase chain reaction</b>	TAM4-5
Pelvic	Greater Than AIDS / Más Que SIDA	General 5*	Listed (2 senses, 1 relevant)	Listed	TAM2-3
PEP	Centers for Disease Control & Prevention HIV, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, Greater Than AIDS / Más Que SIDA, POZ	General, no frequency indicated (n.2)	Listed (sense not relevant)	Listed (SOAP, no definition)	TAM4-5
Perforation (s)	CESIDA	General & specialized 5*	Listed (3 senses, 2 of which are relevant)	Listed	TAM2-3
Pharmacies / Pharmacy	CESIDA, Fundació Lluita Contra la SIDA, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention	General 5*	Listed (3 senses, 1 of which is relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3



	HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, POZ				
Phlegm	Explain TB, American Association for Clinical Chemistry, European Lung Foundation	General 4*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Physical exam	Mayo Clinic (TB), Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3 <i>(based on physical examination)</i>
Physical examination	Merck Manual HIV, American Association for Clinical Chemistry	Not listed	Listed	Listed	TAM2-3
Physician	The American Foundation for AIDS Research (AmFAR), Kaiser Permanente HIV	General 6*	Listed	Listed (2 senses, both relevant)	TAM2-3
Pill / pills	NY State Department of Health, NYC Health - HIV-again, Whitman-Walker Clinic, Greater Than AIDS / Más Que SIDA	General 5*	Listed (2 senses, both relevant)	Listed (2 senses, both relevant)	TAM2-3
Pneumonia	National Library of Medicine	Specialized 5*	Listed	Listed	TAM2-3
Polymerase chain reaction	Merck Manual TB	Specialized, no frequency indicated, listed under <b>polymerase 5*</b>	Listed	Listed	TAM2-3
Positive	WHO, Centers for Disease Control & Prevention, Health Information Translations, Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Xunta de Galicia Consellería de Sanidade TB, Xunta de Galicia Consellería de Sanidade VIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA, BCN Checkpoint, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of	General 7*	Listed (9 senses, 2 of which are relevant)	Listed (3 senses, 2 of which are relevant)	TAM1

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	Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, NY State Department of Health, NYC Health – HIV, GMHC, HealthReach - Sexual risks 4, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, POZ				
Post exposure prophylaxis	Centers for Disease Control & Prevention HIV, Whitman-Walker Clinic, Greater Than AIDS / Más Que SIDA	Specialized, no frequency indicated, listed as post-exposure prophylaxis under <b>post-exposure 3*</b>	Not listed	Listed (SOAP, no definition)	TAM2-3
Post-exposure prophylaxis	NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation, POZ	Specialized, no frequency indicated, listed under <b>post-exposure 3*</b>	Not listed	Listed (SOAP, no definition)	TAM2-3

PPD (purified protein derivative)	Centers for Disease Control & Prevention TB, Mayo Clinic (TB), Merck Manual TB, American Association for Clinical Chemistry, Kaiser Permanente TB	Specialized, no frequency indicated	Listed	Listed (SOAP, no definition)	TAM4-5
PPD test	Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM4-5
PPD tuberculin	Mayo Clinic (TB)	Not listed	Not listed	Not listed	TAM4-5
Prednisone	Centers for Disease Control & Prevention TB	Specialized 4*	Listed	Listed	TAM2-3
Pre-exposure prophylaxis	Centers for Disease Control & Prevention HIV, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting1, San Francisco AIDS Foundation, Kaiser Permanente HIV, POZ	Not listed	Not listed (Listed in general dictionary but not in medical dictionary)	Not listed	TAM2-3
Pregnancy / pregnancies	Centers for Disease Control & Prevention, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting2, HealthReach Pregnancy3, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA	General 6*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Pregnant	CESIDA, Xunta de Galicia Consellería de Sanidade VIH, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Merck Manual HIV, AIDS Info Net (IAPAC), NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting2, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente HIV, POZ	General 6*	Listed	Listed	TAM2-3

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Prenatal	HealthReach Pregnancy3, Planned Parenthood, Greater Than AIDS / Más Que SIDA	General 5*	Listed (2 senses, both relevant)	Listed	TAM2-3
Prenatal care	HealthReach Pregnancy3, Greater Than AIDS / Más Que SIDA	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
PrEP	NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting1, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ	General, no frequency indicated (n.4)	Listed (2 senses, neither relevant)	Listed (SOAP, not relevant)	TAM2-3
PrEP15	Centers for Disease Control & Prevention HIV	Not listed	Not listed	Not listed	TAM4-5
Prescribe / Prescribed	Centers for Disease Control and Prevention 2	General 6*	Listed	Listed	TAM2-3
Prescription	Fundació Lluita Contra la SIDA, TeensHealth from Nemours Foundation, Greater Than AIDS / Más Que SIDA	General 6*	Listed (4 senses, 2 of which are relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Prevalence	WHO	General 5*	Listed	Listed	TAM2-3
Prevent (verb - preventing)	WHO, NYC Health - HIV	General 6*	Not listed	Listed (SOAP, no definition)	TAM1
Prevention / preventions	Fundació Lluita Contra la SIDA, NY State Department of Health, NYC Health - HIV	General 6*	Not listed	Listed	TAM1
Prick (noun – needle)	BCN Checkpoint, TeensHealth from Nemours Foundation, NAM AIDSmap, POZ	General 4*	Not listed	Listed, refers to <b>puncture</b>	TAM2-3
Prick / pricking (verb)	HealthReach HIVtesting4	General 5*	Not listed	Not listed	TAM2-3
Primary care	Fundació Lluita Contra la SIDA, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), NY State Department of Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Kaiser Permanente HIV	Listed under <b>primary</b> , specialized	Listed	Listed	TAM2-3
Primary care center	Fundació Lluita Contra la SIDA	Not listed	Not listed	Not listed	TAM2-3

Primary care doctor	Fundació Lluita Contra la SIDA, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Not listed	Not listed	Not listed	TAM2-3
Primary care physician	Kaiser Permanente HIV	Not listed	Not listed	Listed	TAM2-3
Private clinic	NAM AIDSmap	Not listed	Not listed	Not listed	TAM2-3
Private clinical laboratories	CESIDA	Not listed	Not listed	Not listed	TAM2-3
Private medical practices	POZ	Not listed	Not listed	Not listed	TAM2-3
Probability	WHO	General & specialized 6*	Not listed	Listed (2 senses, both relevant)	TAM2-3
Procedure / procedures	Fundació Lluita Contra la SIDA, Centers for Disease Control & Prevention TB, Centers for Disease Control and Prevention 2	General & specialized 7*	Listed (2 senses, both relevant)	Listed	TAM2-3
Prophylaxis	Centers for Disease Control & Prevention HIV, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting1, San Francisco AIDS Foundation, Whitman-Walker Clinic, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ	General 5*	Listed	Listed	TAM2-3
Prostate	Greater Than AIDS / Más Que SIDA	Specialized 5*	Listed (2 senses, both relevant)	Listed	TAM2-3
Protein / proteins	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Centers for Disease Control & Prevention TB, Mayo Clinic (HIV), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, AIDSinfo.nih.gov, HealthReach HIVtesting4, American Association for Clinical Chemistry	General 6*	Listed (2 senses, both relevant)	Listed	TAM2-3
Protocol	POZ	Specialized (4.a&b) 6*	Listed (2 senses, both relevant)	Listed	TAM2-3

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Provider	US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV	General 6*	Not listed	Listed	TAM1
Psychological (support / care)	Xunta de Galicia Consellería de Sanidade VIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC)	General 6*	Listed (3 senses, 1 of which is relevant)	Listed (2 senses, both relevant)	TAM2-3
Public health	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), AIDS Info Net (IAPAC), NY State Department of Health, HealthReach - Sexual risks 4, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, POZ	General 5*	Listed	Listed	TAM2-3
Public health care centers	CESIDA	Not listed	Not listed	Not listed	TAM1
Public health centres	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Not listed	Not listed	Not listed	TAM2-3
Public health clinics	POZ	Not listed	Not listed	Not listed	TAM2-3
Public health department	HealthReach - Sexual risks 4, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7	Not listed	Not listed	Not listed	TAM2-3
Public health office	AIDS Info Net (IAPAC)	Not listed	Not listed	Not listed	TAM2-3
Public health officials	Centers for Disease Control and Prevention 2, HealthReach HIVtesting5	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Pulmonary	Kaiser Permanente TB	Specialized 6*	Listed	Listed	TAM2-3

Pulmonary TB	Kaiser Permanente TB	Not listed	Not listed	Refers to <b>phthisis &amp; pulmonary tuberculosis</b>	TAM2-3
Purified protein derivative	Centers for Disease Control & Prevention TB, Merck Manual TB, American Association for Clinical Chemistry	Not listed	Listed	Listed (SOAP, no definition)	TAM4-5
Quality of life	BCN Checkpoint	Mentioned under <b>quality 7*</b> (8.a.), general	Not listed	Listed	TAM1
Radiograph	Centers for Disease Control & Prevention TB	General 5*	Listed (2 senses, 1 relevant)	Listed	TAM2-3
Rapid antibody test	Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3
Rapid antibody screening test	Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
Rapid antigen/antibody test	Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
Rapid assays	POZ	Not listed; <b>rapid 6*</b> , <b>assay 6*</b>	Not listed	Not listed	TAM2-3
Rapid blood tests	Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3
Rapid HIV test / rapid HIV testing	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Fundació Lluita Contra la SIDA, AIDS Info Net (IAPAC), HealthReach Pregnancy <sup>3</sup> , Whitman-Walker Clinic, Planned Parenthood, The American Foundation for AIDS Research (AmFAR)	Not listed	Not listed	Not listed	TAM2-3
Rapid home test / rapid home tests	Centers for Disease Control & Prevention HIV	Not listed; <b>rapid 6*</b> , <b>home 7*</b>	Not listed	Not listed	TAM2-3
Rapid molecular test	World Health Organization (WHO) TB	Not listed	Not listed	Not listed	TAM2-3
Rapid screening test	HealthReach HIVtesting <sup>7</sup>	Not listed	Not listed	Not listed	TAM2-3
Rapid sputum test	Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3
Rapid test / rapid tests	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Associació Ciutadana Anti-	Not listed	Not listed	Not listed	TAM2-3 (rapid =

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	SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, World Health Organization (WHO) TB				general, test = TAM2-3)
Rash / rashes	Explain TB, Merck Manual HIV, NYC Health – HIV, NYC Health - HIV-again	General 5*	Listed	Listed (colloquial)	TAM2-3
RDTs (rapid diagnostic test)	WHO	Not listed	Not listed	Listed (SOAP, no definition)	TAM4-5
Reaction	Centers for Disease Control & Prevention TB, Kaiser Permanente TB	General & specialized (1.a.) 7*	Listed (10 senses, 4 relevant)	Listed (4 senses, 3 relevant)	TAM2-3
Reactive	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Xunta de Galicia Consellería de Sanidade TB	General & specialized 5*	Listed (4 senses, all relevant)	Listed (SOAP, no definition)	TAM2-3
Rectal	Whitman-Walker Clinic	Specialized 5*	Listed	Listed	TAM2-3
Redness	Centers for Disease Control & Prevention TB, Merck Manual TB, Florida Health	General 5*	Not listed	Not listed	TAM2-3
Referral	Centers for Disease Control & Prevention HIV, Centers for Disease Control and Prevention 2, Whitman-Walker Clinic	Specialized (2.a.) 5*	Listed (2 senses, 1 of which is relevant)	Listed	TAM2-3
Reinfect / reinfected	Kaiser Permanente HIV	General 3*	Listed	Not listed	TAM2-3 (based on collocates)
Reinfection (s)	CESIDA	General 4*	Listed	Listed	TAM2-3
Renal	Kaiser Permanente TB	General 6*	Listed	Listed	TAM2-3
Renal TB	Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3
Respiratory	American Association for Clinical Chemistry	General & specialized 6*	Listed (4 senses, 2 of which are relevant)	Listed	TAM2-3
Result / results (noun)	Healthfinder, Health Service Executive, CESIDA, US Department of Health & Human Services NIH, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid prueba sangre	General 7*	Not listed	Not listed	TAM1



	VIH, SaludMadrid VIH subsahariana, Xunta de Galicia Consellería de Sanidade VIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA, BCN Checkpoint, Explain TB, TeensHealth from Nemours Foundation, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, AIDS Info, NY State Department of Health, NYC Health – HIV, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, POZ				
Retest (noun)	WHO	General 4*	Not listed	Not listed	TAM2-3
Retested	HealthReach HIVtesting6, Greater Than AIDS / Más Que SIDA	General 4*	Not listed	Not listed	TAM2-3
Re-tested	Florida Health	General 4* (listed as <b>retested</b> under <b>retest</b> )	Not listed	Not listed	TAM2-3
Rifampicin	World Health Organization (WHO) TB	Specialized 4*	Listed	Not listed	TAM2-3

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Risk (noun)	Healthfinder, CESIDA, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), BCN Checkpoint, Explain TB, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, NY State Department of Health, HealthReach - Sexual risks 4, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, San Francisco AIDS Foundation, Whitman-Walker Clinic, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ	General 7*	Listed (2 senses, 1 of which is relevant)	Listed	TAM1
Risk behavior	CESIDA	Not listed; behavior 7*	Not listed	Not listed	TAM1
Risk factor / risk factors	Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, Merck Manual TB, Merck Manual HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, HealthReach HIVtesting3,	General, no frequency indicated, listed under <b>risk 7*</b>	Listed	Listed	TAM1

	American Association for Clinical Chemistry, POZ				
RNA	Mayo Clinic (HIV), Merck Manual HIV, HealthReach HIVtesting6, HealthReach HIVtesting4, San Francisco AIDS Foundation	Specialized 6*	Listed	Listed (SOAP, no definition; referred to <b>ribonucleic acid</b> )	TAM2-3
RNA test / RNA tests	HealthReach HIVtesting4, San Francisco AIDS Foundation	Not listed	Not listed	Not listed	TAM2-3
Routine health care	National Library of Medicine, Centers for Disease Control and Prevention 2, HealthReach HIVtesting3, Greater Than AIDS / Más Que SIDA	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Routine screenings	Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3
Routine test	CESIDA	Not listed	Not listed	Not listed	TAM2-3
Rule out	WHO	Phrasal verb listed under <b>rule, general</b>	Not listed	Listed (SOAP, no definition)	TAM2-3
Safe sex	Merck Manual HIV	General, no frequency indicated, listed under <b>safe 6*</b>	Listed	Listed	TAM2-3
Safer sex	HealthReach - Sexual risks 4, Whitman-Walker Clinic, Kaiser Permanente HIV	General, no frequency indicated, listed under <b>safe sex / safe 6*</b>	Listed, referred to <b>safe sex</b>	Not listed	TAM2-3 ( <i>exception to rubric, based on collocate</i> )
Saliva	TeensHealth from Nemours Foundation, National Library of Medicine, Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC)	General 5*	Listed	Listed	TAM2-3
Sample / samples	Centers for Disease Control & Prevention, US Department of Health & Human Services NIH, NYC Health, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, NAM	General 7*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, 1 of which is relevant)	TAM1

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	AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach HIVtesting7, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, Kaiser Permanente TB, POZ, World Health Organization (WHO) TB				
Sarcoma	National Library of Medicine, Merck Manual HIV	Specialized 5*	Listed	Listed	TAM2-3
Screen (verb) / screened (participle)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry	General (11.a.) 5*	Listed (2 senses, 1 relevant)	Listed (6 senses, 1 relevant)	TAM2-3
Screening (noun)	Healthfinder, Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual TB, Merck Manual HIV, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting7, Whitman-Walker Clinic, American Association for Clinical Chemistry, Kaiser Permanente TB	General & specialized 5*	Not listed	Listed (3 senses, 2 of which are relevant)	TAM2-3
Screening test / screening tests	Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual TB, Merck Manual HIV, Centers for Disease Control and Prevention 2, HealthReach HIVtesting7	General, no frequency indicated, listed under screening 5*	Not listed	Listed	TAM2-3
Second-line (TB medicine)	World Health Organization (WHO) TB	Not listed	Listed	Listed (SOAP, no definition for <b>second-line drug</b> )	TAM4-5

Secretions	American Association for Clinical Chemistry	General & specialized (1. & 2.a.) 6*	Listed (2 senses, both relevant)	Listed (2 senses, both relevant)	TAM2-3
Sedative (medication) (adj / noun)	Explain TB	Specialized 5*	Listed	Listed (2 senses, both relevant)	TAM2-3
Self-test	Fundació Lluita Contra la SIDA, Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3
Self-test kit / self-test kits	Whitman-Walker Clinic	Not listed (self- - no frequency indicated, test 7*, kit 5*)	Not listed	Not listed	TAM2-3
Self-testing	WHO, Fundació Lluita Contra la SIDA	Not listed (self- - no frequency indicated, testing – no frequency indicated)	Not listed	Not listed	TAM2-3
Semen	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	General 5*	Listed	Listed (2 senses, 1 of which is relevant)	TAM2-3
Sensitive (with regard to test)	Explain TB	General 6* (6.b.)	Listed (8 senses, 2 of which are relevant)	Listed (6 senses, 3 of which are relevant)	TAM2-3
Sensitivity (with regard to test)	American Association for Clinical Chemistry	Specialized (4.e.) 6*	Listed (2 senses, neither relevant)	Listed (3 senses, 1 relevant)	TAM2-3
Sensitivity testing	American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM2-3
Serological	WHO	General 4*	Listed	Not listed	TAM2-3
Serological tests	WHO	Not listed	Not listed	Listed, refers to <b>serologic test</b>	TAM2-3
Sex	CESIDA, Xunta de Galicia Consellería de Sanidade VIH, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Merck Manual HIV, NY State Department of Health, NYC Health – HIV, HealthReach - Sexual risks 4, NYC Health - HIV-again, Centers for Disease Control and Prevention 2,	General 6*	Listed (5 senses, 2 of which are relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3

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	AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach SubstanceAbuse6, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, Kaiser Permanente HIV, POZ				
Sex partner / sex partners	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Merck Manual HIV, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation	General, no frequency indicated, listed under <b>sex 6*</b> (n.1)	Not listed	Not listed	TAM2-3
Sexual	WHO, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid VIH subsahariana, National Library of Medicine, NY State Department of Health, NYC Health – HIV, HealthReach - Sexual risks 4, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, HealthReach HIVtesting2, HealthReach HIVtesting3, San Francisco AIDS Foundation, Whitman-Walker Clinic, Kaiser Permanente HIV, POZ	General 6*	Listed (2 senses, both relevant)	Listed	TAM2-3
Sexual health	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, NYC Health – HIV, NAM AIDSmap, San Francisco AIDS Foundation, Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3
Sexual health check-up	NAM AIDSmap	Not listed	Not listed	Not listed	TAM2-3
Sexual health clinic / sexual health clinics	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, NYC Health – HIV, NAM AIDSmap, Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3

Sexual history	HealthReach - Sexual risks 4, Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
Sexual intercourse	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General, no frequency indicated, listed under <b>sexual 6*</b>	Listed (2 senses, both relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Sexual partners	TeensHealth from Nemours Foundation, Kaiser Permanente HIV, POZ, WHO	Listed under <b>sexual 6*</b> , general	Not listed	Not listed	TAM2-3 ( <i>sexual is TAM2-3</i> )
Sexual relation	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Not listed	Not listed	Not listed	TAM2-3
Sexual relationships	SaludMadrid VIH subsahariana	Not listed	Not listed	Not listed	TAM2-3
Sexually	CESIDA, Fundació Lluita Contra la SIDA, BCN Checkpoint, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC), NY State Department of Health, HealthReach - Sexual risks 4, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, San Francisco AIDS Foundation, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente HIV, POZ	General 5*	Listed (2 senses, both relevant)	Not listed	TAM2-3 ( <i>based on collocate</i> )
Sexually active	BCN Checkpoint, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Merck Manual HIV, AIDS Info Net (IAPAC), Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente HIV, POZ	Not listed	Not listed	Not listed	TAM2-3

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Sexually assaulted	HealthReach HIVtesting2, POZ	Not listed	Not listed	Not listed	TAM2-3
Sexually transmitted disease / sexually transmitted diseases	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), NY State Department of Health, HealthReach - Sexual risks 4, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV	General, no frequency indicated, listed under <b>sexually</b> 5*	Listed	Listed	TAM2-3
Sexually-transmitted infections	San Francisco AIDS Foundation	Not listed	Not listed	Not listed	TAM2-3
Sexually transmitted infection (s)	CESIDA, Fundació Lluita Contra la SIDA, Mayo Clinic (HIV), NYC Health - HIV-again, POZ	Not listed	Not listed	Listed	TAM2-3
Shooting drugs	Planned Parenthood	Not listed; <b>shoot</b> 6*	Not listed	Not listed	TAM1
Shortness of breath	Explain TB	General, listed under <b>shortness</b>	Listed	Listed, refers to <b>dyspnea</b>	TAM2-3
Sick	Healthfinder, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), AIDS Info Net (IAPAC), Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, HealthReach HIV/AIDS101-7, San Francisco AIDS Foundation, Greater Than AIDS / Más Que SIDA	General 6*	Listed (4 senses, 2 of which are relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Side effects	Explain TB, NY State Department of Health	General & specialized 5*	Listed	Listed	TAM2-3
Signs [sign (noun)]	Healthfinder, US Department of Health & Human Services NIH, Health Information Translations, NYC Health, Explain TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual HIV, American Association for	General & specialized 6*	Listed (2 senses, 1 of which is relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3



	Clinical Chemistry, World Health Organization (WHO) TB				
Silicone	NYC Health - HIV-again	General & specialized 5*	Listed	Listed	TAM2-3
Skin (noun)	Health Service Executive, Health Information Translations, Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, Centers for Disease Control & Prevention TB, Mayo Clinic (TB), Merck Manual TB, Florida Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Kaiser Permanente TB	General 6*	Listed	Listed	TAM2-3
Skin test (noun)	Health Service Executive, Health Information Translations, Boston Public Health Commission, NYC Health, Explain TB, Centers for Disease Control & Prevention TB, Mayo Clinic (TB), Merck Manual TB, Florida Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Kaiser Permanente TB	Listed under <b>skin</b> , general	Listed	Listed	TAM2-3
Skin-test (verb)	Health Information Translations	Not listed	Not listed	Not listed	TAM2-3
Skin testing	Centers for Disease Control & Prevention TB	General, no frequency indicated, listed under <b>skin</b> 6*	Listed	Not listed	TAM2-3
Sleeping (gerund)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General 5*	Listed (4 senses, 1 relevant)	Refers to <b>sleep</b> – definition not relevant	TAM1
Smallpox	Centers for Disease Control & Prevention TB	Specialized 5*	Listed	Listed	TAM2-3

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Smear / smears (lab testing)	American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, World Health Organization (WHO) TB	General 5*	Listed (2 senses, both relevant)	Listed	TAM2-3
Sneezes / sneezing [sneeze (verb)]	Healthfinder, American Association for Clinical Chemistry	General 4*	Listed	Listed (2 senses, both relevant)	TAM2-3
Social service provider / social service providers	Centers for Disease Control and Prevention 2	Not listed; <b>social service</b> 5*	Not listed	Not listed	TAM1
Social worker	TeensHealth from Nemours Foundation	General 5*	Listed	Listed (SOAP, no definition)	TAM2-3
Solution (as in “test solution”)	NYC Health, HealthReach HIVtesting4, American Association for Clinical Chemistry	General (6.a.) 7*	Listed (5 senses, 4 relevant)	Listed (5 senses, 3 relevant)	TAM1
Sores (noun)	Xunta de Galicia Consellería de Sanidade VIH, NYC Health - HIV-again	General 5*	Listed	Listed (2 senses, 1 relevant)	TAM2-3
Sore (adj)	Explain TB, NYC Health - HIV	General 5*	Listed	Listed (2 senses, 1 relevant)	TAM2-3
Sore throat	Explain TB, NYC Health - HIV	Not listed	Listed	Listed	TAM2-3
Specialized care centers	Fundació Lluita Contra la SIDA	Not listed; <b>specialized</b> 6*	Not listed	Not listed	TAM1
Specialty centers (sic – refers to specialized centers)	Fundació Lluita Contra la SIDA	Not listed	Not listed	Not listed	Not rated – poor translation
Species	American Association for Clinical Chemistry	General 5*	Listed (3 senses, 1 relevant)	Listed (2 senses, 1 relevant)	TAM2-3
Specimen	WHO	General 6*	Listed (2 senses, 1 relevant)	Listed	TAM2-3
Spinal	Merck Manual TB, Merck Manual HIV	General 6*	Listed (5 senses, 2 relevant)	Listed (2 senses, both relevant)	TAM2-3
Spinal cord	Merck Manual HIV	General, listed under <b>spinal</b> 6*	Listed	Listed	TAM2-3
Spinal fluid	Merck Manual TB	Not listed	Listed	Listed (SOAP, no definition; refers to <b>cerebrospinal fluid</b> )	TAM2-3
Spinal tap	Merck Manual TB	General, listed under <b>spinal</b> 6*	Listed	Listed	TAM2-3

Spine	Kaiser Permanente TB	General 6*	Listed (2 senses, 1 relevant)	Listed (2 senses, both relevant)	TAM2-3
Spit	TeensHealth from Nemours Foundation	General 4*(n.2)	Listed (2 senses, both relevant)	Not listed	TAM2-3
Spread (noun)	WHO, TeensHealth from Nemours Foundation, Mayo Clinic (HIV), NYC Health - HIV-again, Greater Than AIDS / Más Que SIDA	General 6*	Not listed	Not listed	TAM1
Spread (verb) / spreading	NYC Health, Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), HealthReach HIV/AIDS101-7, HealthReach SubstanceAbuse6, Planned Parenthood, Kaiser Permanente HIV	General 6*	Not listed	Not listed	TAM1
Sputum	Centers for Disease Control & Prevention, Health Information Translations, NYC Health, SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Explain TB, Mayo Clinic (TB), Merck Manual TB, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Kaiser Permanente TB, World Health Organization (WHO) TB	Specialized 5*	Listed	Listed (2 senses, both relevant)	TAM2-3
Sputum analysis	Explain TB	Not listed	Not listed	Not listed	TAM2-3
Sputum culture / sputum cultures	NYC Health, Explain TB, Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3
Sputum cytology	Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3
Sputum sample	Explain TB	Not listed	Not listed	Not listed	TAM2-3
Sputum smear microscopy	World Health Organization (WHO) TB	Not listed	Not listed	Not listed	TAM2-3
Sputum tests	Health Information Translations, SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Mayo Clinic (TB)	Not listed	Not listed	Not listed	TAM2-3

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Stage / stages (noun)	WHO, Mayo Clinic (HIV)	Specialized (11.b.) 7*	Listed (6 senses, 1 of which is relevant)	Listed (3 senses, 1 of which is relevant)	TAM2-3
Standard HIV test / standard HIV tests	GMHC	Not listed	Not listed	Not listed	TAM2-3
Standard laboratory blood test / standard laboratory blood tests	NYC Health - HIV	Not listed	Not listed	Not listed	TAM2-3
Statistical reports	AIDS Info Net (IAPAC), AIDSinfo.nih.gov	Not listed; <b>statistical 6*</b> , <b>report 7*</b>	Not listed	Not listed	TAM1
Status	WHO, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, NY State Department of Health, NYC Health – HIV, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting2, HealthReach HIVtesting1, San Francisco AIDS Foundation, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ	General & specialized 7*	Listed	Listed	TAM2-3
STD / STDs	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), HealthReach - Sexual risks 4, AIDSinfo.nih.gov, HealthReach HIVtesting2, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV	General, no frequency indicated	Listed	Listed (SOAP, no definition; referred to <b>sexually transmitted disease</b> )	TAM2-3
Sterile	NY State Department of Health	General 5*	Listed (2 senses, 1 relevant)	Listed	TAM2-3
Steroid / steroids (medication)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, POZ	Specialized 5*	Listed	Listed (3 senses, all relevant)	TAM2-3
Stethoscope	Mayo Clinic (TB)	General 4*	Listed	Listed	TAM2-3

STI / STIs (sexually transmitted infection)	CESIDA, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA, NYC Health - HIV-again, San Francisco AIDS Foundation, Whitman-Walker Clinic, POZ	Specialized (no frequency indicated)	Not listed	Listed (SOAP, no definition)	TAM2-3
STI centers	CESIDA	Not listed	Not listed	Not listed	TAM2-3
STI self-test kits	Whitman-Walker Clinic	Not listed (STI – no frequency indicated, self- - no frequency indicated, test 7*, kit 5*)	Not listed	Not listed	TAM2-3
STI testing	NYC Health - HIV-again, Whitman-Walker Clinic	Not listed (STI – no frequency indicated, testing – no frequency indicated)	Not listed	Not listed	TAM2-3
Strain / strains (noun – virus type)	Mayo Clinic (HIV), Mayo Clinic (TB), Kaiser Permanente HIV	General 6*	Listed (8 senses, 1 relevant)	Listed (8 senses, 1 relevant)	TAM2-3
Street drugs	Merck Manual HIV, NYC Health - HIV	General, no frequency indicated, listed under <b>street</b> 6*	Not listed	Listed	TAM1
Streptomycin	Kaiser Permanente TB	Specialized 4*	Listed	Listed	TAM2-3
Stressful (stress)	Healthfinder, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB)	General 5*	Listed	Not listed	TAM1
Substance / substances	Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, San Francisco AIDS Foundation	General (8.d.) 6*	Listed (3 senses, 1 relevant)	Listed	TAM2-3
Substance abuse	HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, HealthReach SubstanceAbuse6	General, no frequency indicated,	Not listed	Listed	TAM2-3

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		listed under <b>substance 6*</b> , <b>abuse 6*</b>			
Substance abusers	HealthReach SubstanceAbuse6	General, no frequency indicated, listed under <b>substance 6*</b>	Not listed	Not listed	TAM2-3
Substance use	AIDSinfo.nih.gov, San Francisco AIDS Foundation	Not listed	Not listed	Not listed	TAM2-3
Support (noun)	WHO, Centers for Disease Control and Prevention 2	General 7*	Listed (2 senses, both relevant)	Listed (3 senses, 2 of which are relevant)	TAM2-3
Support group	Centers for Disease Control and Prevention 2	General, no frequency indicated, listed under support 7*	Listed	Listed (refers to <b>support system</b> )	TAM2-3
Surgeon	Centers for Disease Control and Prevention 2	General 6*	Listed (2 senses, 1 relevant)	Listed	TAM2-3
Surgery (British sense)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, NAM AIDSmap	General 6*	Listed (5 senses, 1 of which is relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Swab (noun)	US Department of Health & Human Services NIH, National Library of Medicine, AIDS Info Net (IAPAC), NYC Health – HIV, HealthReach HIVtesting4, Whitman-Walker Clinic, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA	General 4*	Listed (2 senses, both relevant)	Listed	TAM2-3
Swab / swabbing (verb)	Centers for Disease Control & Prevention HIV, Centers for Disease Control and Prevention 2, POZ	General (v.1) 4*	Listed (3 senses, 1 relevant)	Not listed as a verb	TAM2-3
Swell (verb)	SaludMadrid TB	General 5*	Listed	Not listed	TAM1
Swelling	Centers for Disease Control & Prevention TB, Mayo Clinic (TB), Merck Manual TB, Florida Health	General 5*	Listed	Listed (3 senses, 2 relevant)	TAM2-3
Swollen	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Merck Manual HIV, NYC	General 5*	Listed	Not listed	TAM1

	Health - HIV-again, American Association for Clinical Chemistry				
Symptoms (symptom)	Healthfinder, WHO, US Department of Health & Human Services NIH, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid prueba sangre VIH, SaludMadrid TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, European Lung Foundation, World Health Organization (WHO) TB	General & specialized 6*	Listed	Listed	TAM2-3
Syndrome	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), National Library of Medicine, AIDSinfo.nih.gov	Specialized 6*	Listed	Listed	TAM2-3
Synthetic nitrile (condoms)	NYC Health - HIV-again	Not listed; <b>synthetic</b> 6*, <b>nitrile</b> specialized 4*	Not listed	Not listed	TAM2-3
Synthetic proteins	Merck Manual TB	Not listed	Not listed	Not listed	TAM2-3
Syphilis	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), NYC Health - HIV-again, AIDSinfo.nih.gov, HealthReach HIVtesting2,	Specialized 5*	Listed	Listed	TAM2-3

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	San Francisco AIDS Foundation, Whitman-Walker Clinic, POZ				
Syringe (s)	CESIDA, Xunta de Galicia Consellería de Sanidade VIH, Centers for Disease Control & Prevention TB, AIDSinfo.nih.gov, HealthReach HIVtesting2, American Association for Clinical Chemistry, POZ	General 5*	Listed (4 senses, 2 of which are relevant)	Listed	TAM2-3
System	Healthfinder, Health Information Translations, NYC Health, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, AIDS Info Net (IAPAC), HealthReach - Sexual risks 4, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, Planned Parenthood, American Association for Clinical Chemistry, Kaiser Permanente TB, POZ	General & specialized 7*	Listed (3 senses, 1 of which is relevant)	Listed (6 senses, 3 of which are relevant)	TAM2-3
Tablet (medication)	SaludMadrid TB	General 5* (3.a.)	Listed	Listed	TAM2-3
Tarjeta sanitaria (referring to health insurance card on a website based in Spain)	CESIDA	Not listed	Not listed	Not listed	Not rated - untranslated
TB	Healthfinder, Health Service Executive, Centers for Disease Control & Prevention, Health Information Translations, Massachusetts Department of Public Health, Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, SaludMadrid TB, Centers for Disease Control & Prevention TB, Office of Disease	General (no frequency indicated)	Listed (3 senses, 2 of which are relevant)	Listed under <b>tuberculosis</b>	TAM2-3



	Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Florida Health, AIDS Info, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, American Association for Clinical Chemistry, Kaiser Permanente TB, World Health Organization (WHO) TB				
TB bacillus	SaludMadrid TB	Not listed	Not listed	Listed, refers to <b><i>Mycobacterium tuberculosis</i></b>	TAM2-3
TB blood tests	Centers for Disease Control & Prevention, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Not listed	Not listed	Not listed	TAM2-3
TB disease	Centers for Disease Control & Prevention, AIDS Info	Not listed	Not listed	Not listed	TAM2-3
TB infection	Massachusetts Department of Public Health, Mayo Clinic (TB), AIDS Info, Kaiser Permanente TB	Not listed	Not listed	Not listed	TAM2-3
TB meningitis	Kaiser Permanente TB	Not listed	Not listed	Not listed (referred to <b>tuberculous meningitis</b> )	TAM2-3
TB screening	American Association for Clinical Chemistry	Not listed	Not listed	Not listed	TAM2-3
TB skin test	Centers for Disease Control & Prevention, Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, Mayo Clinic (TB), American Association for Clinical Chemistry, Kaiser Permanente TB	Not listed	Not listed	Listed, refers to <b>Mantoux / Mantoux test / tuberculin test</b>	TAM2-3
TB test	NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Not listed	Not listed	Listed, refers to <b>Mantoux / Mantoux test / tuberculin test</b>	TAM2-3
Test / tests (noun) [text (sic) by Associació Ciutadana Anti-	WHO, Health Service Executive, Centers for Disease Control & Prevention, CESIDA, US Department of Health & Human Services NIH, Health Information Translations,	General & specialized 7*	Listed (5 senses, 3 of which are relevant)	Listed (4 senses, 1 of which are relevant)	TAM2-3

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<p>SIDA de Catalunya (ACASC)]</p>	<p>Massachusetts Department of Public Health, Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, SaludMadrid prueba sangre VIH, SaludMadrid VIH subsahariana, SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Xunta de Galicia Consellería de Sanidade VIH, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA, BCN Checkpoint, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control &amp; Prevention HIV, Centers for Disease Control &amp; Prevention TB, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual TB, Merck Manual HIV, Florida Health, AIDS Info, NY State Department of Health, NYC Health – HIV, GMHC, HealthReach - Sexual risks 4, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention &amp; Control, Population Health Division - San Francisco Department of Public Health Disease Prevention &amp; Control 2, NAM AIDSmap, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health &amp; Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach</p>				
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	HIVtesting5, HealthReach HIVtesting7, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, World Health Organization (WHO) TB				
Tested / Testing [Test (verb) – including be tested, get tested]	Healthfinder, WHO, Centers for Disease Control & Prevention, US Department of Health & Human Services NIH, Health Information Translations, Boston Public Health Commission, Boston Public Health Commission TB2, NYC Health, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH) 2, Xunta de Galicia Consellería de Sanidade VIH, Fundació Lluita Contra la SIDA, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), AIDS Info Net (IAPAC), Florida Health, AIDS Info, NY State Department of Health, NYC Health – HIV, GMHC, HealthReach - Sexual risks 4, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6,	General & specialized	Listed (2 senses, both relevant)	Listed (4 senses, 1 of which are relevant)	TAM2-3

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	HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
Test solution	NYC Health	General, listed as “test-solution” under <b>test 7*</b>	Not listed	Listed	TAM2-3
Test strip	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Listed with irrelevant sense – treat as not listed	Not listed	Not listed	TAM2-3 ( <i>test = TAM2-3, strip = general; term has a specific scientific sense</i> )
Test tube	Explain TB, National Library of Medicine, HealthReach HIVtesting4	General 5*	Listed	Listed	TAM2-3
Testing center	HealthReach HIVtesting5	Not listed	Not listed	Not listed	TAM2-3
Testing fluid	Boston Public Health Commission, Boston Public Health Commission TB2	Not listed	Not listed	Not listed	TAM2-3
Testing lab	Centers for Disease Control & Prevention HIV, Centers for Disease Control and Prevention 2	Not listed	Not listed	Not listed	TAM2-3
Testing site / testing sites	TeensHealth from Nemours Foundation, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, The American Foundation for AIDS Research (AmFAR)	Not listed	Not listed	Not listed	TAM2-3

Tester	Florida Health	General & specialized (n.4) 4*	Not listed	Not listed	TAM2-3
Text (sic - <i>test</i> ) HIV	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Listed with irrelevant senses -treat as not listed	Not listed	Not listed	Not rated – poor translation
Therapeutic	Xunta de Galicia Consellería de Sanidade VIH	General 6*	Listed (2 senses, both relevant)	Listed	TAM2-3
Therapy	Explain TB	General 6*	Listed (3 senses, 2 of which are relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Throat	Explain TB, NYC Health – HIV, NYC Health - HIV-again	General 6*	Listed (2 senses, both relevant)	Listed (3 senses, 2 of which are relevant)	TAM2-3
Throat test	NYC Health - HIV-again	Not listed	Not listed	Not listed	TAM2-3
Thrush	Merck Manual HIV	General 3*	Listed (2 senses, 1 relevant)	Listed (2 senses, 1 relevant)	TAM4-5
Tiredness	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General 4*	Listed (referred to <b>tired</b> )	Not listed	TAM2-3
Tissue / tissues	Explain TB, Merck Manual TB	Specialized 6*	Listed	Listed	TAM2-3
Tissue samples	Explain TB	Not listed	Not listed	Not listed	TAM2-3
TNF-a antagonists	Centers for Disease Control & Prevention TB	Not listed	Not listed	Not listed	TAM4-5
Toxoplasmosis	Mayo Clinic (HIV)	Specialized, no frequency indicated, listed under <b>toxoplasma</b> 3*	Listed	Listed	TAM4-5
Transmission	WHO, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid VIH subsahariana, Explain TB, NYC Health – HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting1, San Francisco AIDS Foundation	General & specialized 6*	Listed	Listed (4 senses, 1 of which is relevant)	TAM2-3
Transmit (transmitting, transmitted)	CESIDA, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid TB, Fundació Lluita Contra la SIDA, TeensHealth from Nemours Foundation,	General 6*	Listed	Listed (SOAP, no definition)	TAM2-3

APPENDIX 2: English word list

	Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC), NY State Department of Health, HealthReach - Sexual risks 4, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, San Francisco AIDS Foundation, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
Transplant (noun)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	General & specialized 5*	Listed (3 senses, 2 relevant)	Listed (2 senses, both relevant)	TAM2-3
Treat (verb) Includes treated (participle)	Healthfinder, SaludMadrid TB, Centers for Disease Control & Prevention HIV, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual TB, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting1, HealthReach SubstanceAbuse6, Planned Parenthood, Greater Than AIDS / Más Que SIDA	General 7*	Listed	Listed	TAM1
Treatment / treatments	WHO, CESIDA, US Department of Health & Human Services NIH, NYC Health, SaludMadrid VIH subsahariana, SaludMadrid TB, BCN Checkpoint, Explain TB, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Mayo Clinic (HIV), Merck Manual TB, Merck Manual HIV, NY State Department of Health, NYC Health - HIV, NYC Health - HIV-again, NAM AIDSmap, Centers for Disease Control and Prevention 2, Office on Women's Health - US	General 7*	Listed (2 senses, both relevant)	Listed	TAM1

	Department of Health & Human Services, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, POZ				
TST (tuberculin skin test)	Centers for Disease Control & Prevention, Explain TB, Centers for Disease Control & Prevention TB	Not listed	Not listed	Listed (SOAP, no definition)	TAM4-5
Tube / tubes (medical testing)	SaludMadrid VIH subsahariana, National Library of Medicine, HealthReach HIVtesting4	General 6*	Listed (5 senses, 2 of which are relevant)	Listed (2 senses, both relevant)	TAM2-3
Tuberculin	SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Explain TB, Centers for Disease Control & Prevention TB, Mayo Clinic (TB), Merck Manual TB, Florida Health, American Association for Clinical Chemistry, Kaiser Permanente TB	General & specialized 4*	Listed	Listed (2 senses, both relevant)	TAM2-3
Tuberculin protein	Florida Health	Not listed	Not listed	Not listed	TAM2-3
Tuberculin skin test	Explain TB, Merck Manual TB, American Association for Clinical Chemistry, Kaiser Permanente TB	Not listed	Listed under <b>tuberculin test</b>	Refers to <b>Mantoux, Mantoux test, &amp; tuberculin test</b>	TAM2-3
Tuberculin test	SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Florida Health	General, listed under tuberculin 4*	Listed	Listed	TAM2-3
Tuberculosis	Healthfinder, Centers for Disease Control & Prevention, CESIDA, NYC Health, Xunta de Galicia Consellería de Sanidade TB, Explain TB, Centers for Disease Control & Prevention TB, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual TB, Florida Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco	General 5*	Listed	Listed	TAM2-3

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	Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, American Association for Clinical Chemistry, Kaiser Permanente TB, POZ, European Lung Foundation, World Health Organization (WHO) TB				
Tuberculosis bacillus	Xunta de Galicia Consellería de Sanidade TB	Not listed	Not listed	Not listed	TAM2-3
Tuberculous (sic)	Xunta de Galicia Consellería de Sanidade TB, Merck Manual TB	Specialized 4*	Listed (2 senses, both relevant)	Listed	TAM2-3
Tuberculous meningitis	Merck Manual TB	Not listed	Not listed	Listed	TAM2-3
Two-step testing	Centers for Disease Control & Prevention TB	Not listed	Not listed	Not listed	TAM2-3
Ulcerate	Explain TB	General 4*	Listed	Listed	TAM2-3
Ulceration / ulcerations	Centers for Disease Control & Prevention TB	Specialized 5*	Listed	Listed (2 senses, both relevant)	TAM2-3
Undetectable (viral load)	Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation	General 4*	Not listed	Not listed	TAM2-3
Undiagnosed	WHO, POZ	General 4*	Listed	Not listed	TAM2-3
Unsterilized	POZ	General 3*	Not listed	Not listed	TAM4-5
Untreated	Greater Than AIDS / Más Que SIDA	General 5*	Listed	Listed (SOAP, no definition)	TAM2-3
Urgent care center	NY State Department of Health	Not listed; <b>urgent 6*</b>	Not listed	Listed (SOAP, no definition)	TAM1
Urinary tract	American Association for Clinical Chemistry	General, no frequency indicated, listed under <b>urinary 5*</b>	Listed	Listed	TAM2-3
Urinary tract infection	Mayo Clinic (HIV)	General, no frequency indicated, listed under <b>urinary 5*</b>	Not listed	Listed	TAM2-3
Urine	US Department of Health & Human Services NIH, Centers for Disease Control &	General 6*	Listed	Listed	TAM2-3



	Prevention HIV, AIDS Info Net (IAPAC), NYC Health - HIV-again, Centers for Disease Control and Prevention 2, Whitman-Walker Clinic, Kaiser Permanente TB				
Urine culture	Kaiser Permanente TB	Not listed	Not listed	Listed (SOAP, no definition)	TAM2-3
Urine sample	US Department of Health & Human Services NIH, Whitman-Walker Clinic	Not listed	Not listed	Not listed	TAM2-3
Urine test	NYC Health - HIV-again	Not listed	Not listed	Referred to <b>urinalysis</b>	TAM2-3
Vaccinate (vaccinated)	Mayo Clinic (TB), Merck Manual TB	General 4*	Listed (4 senses, 2 relevant)	Listed	TAM2-3
Vaccination	Xunta de Galicia Consellería de Sanidade VIH, Centers for Disease Control & Prevention TB, American Association for Clinical Chemistry, Kaiser Permanente TB	General 5*	Listed (2 senses, 1 of which is relevant)	Listed (2 senses, 1 of which is relevant)	TAM2-3
Vaccine	Mayo Clinic (TB), American Association for Clinical Chemistry	General 5*	Listed (2 senses, 1 of which is relevant)	Listed	TAM1
Vagina	Greater Than AIDS / Más Que SIDA	General & specialized 5*	Listed	Listed (2 senses, both relevant)	TAM2-3
Vaginal	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), TeensHealth from Nemours Foundation, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	General & specialized 5*	Listed	Listed	TAM2-3
Valid	Explain TB	General 6*	Not listed	Listed	TAM1
Vein	Explain TB, National Library of Medicine, NYC Health – HIV, NAM AIDSmap, Centers for Disease Control and Prevention 2, POZ	General 6*	Listed (14 senses, 2 of which are relevant)	Listed	TAM2-3
Vial	National Library of Medicine, POZ	General 5*	Listed	Listed	TAM2-3
Viral	CESIDA, Centers for Disease Control & Prevention HIV, Centers for Disease Control & Prevention TB, National Library of Medicine, Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC), Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting4, HealthReach HIVtesting3, San Francisco	General 5*	Listed	Listed	TAM2-3

APPENDIX 2: English word list

	AIDS Foundation, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), POZ				
Viral hepatitis	CESIDA	Not listed	Listed	Listed (2 senses, both relevant)	TAM4-5
Viral load / viral loads	Centers for Disease Control & Prevention HIV, National Library of Medicine, Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC), Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting3, San Francisco AIDS Foundation, The American Foundation for AIDS Research (AmFAR), POZ	Specialized (found under viral 5*)	Not listed	Listed	TAM2-3
Viral load test / viral load tests	Centers for Disease Control & Prevention HIV, AIDS Info Net (IAPAC), AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting4	Not listed	Not listed	Not listed	TAM2-3
Virally (suppressed)	Centers for Disease Control and Prevention 2	General, no frequency indicated, listed under <b>viral 5*</b>	Listed (listed under <b>viral</b> )	Not listed	TAM2-3
Virological	WHO	Listed under <b>virology</b> , general	Listed	Listed, refers to <b>virology</b>	TAM2-3
Virus / viruses	WHO, US Department of Health & Human Services NIH, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), BCN Checkpoint, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention HIV, National Library of Medicine, Mayo Clinic (HIV), Merck Manual HIV, AIDS Info Net (IAPAC), Florida Health, NY State Department of Health, NYC Health – HIV, Population Health Division - San Francisco	Specialized 6*	Listed (4 senses, 3 of which are relevant)	Listed (4 senses, 2 of which are relevant)	TAM2-3

	Department of Public Health Disease Prevention & Control, HealthReach HIV/AIDS101-7, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting3, HealthReach HIVtesting7, San Francisco AIDS Foundation, Greater Than AIDS / Más Que SIDA, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
Wasting	Merck Manual HIV	General 3*	Listed (2 senses, both relevant)	Listed (2 senses, both relevant)	TAM4-5
Western Blot	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Merck Manual HIV, AIDS Info Net (IAPAC), POZ	Specialized, listed under <b>western 6*</b>	Listed	Listed	TAM2-3
Western Blot test	Merck Manual HIV, POZ	Not listed	Not listed	Listed	TAM2-3
Wheal	Centers for Disease Control & Prevention TB	General 4*	Listed (3 senses, all relevant)	Listed	TAM2-3
White blood cells	Mayo Clinic (HIV), Merck Manual TB, American Association for Clinical Chemistry	General, no frequency indicated, listed under white 7*	Listed	Listed	TAM2-3
Window period	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Centers for Disease Control & Prevention HIV, AIDS Info Net (IAPAC), NYC Health – HIV, GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting3, San Francisco AIDS Foundation, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ	Not listed	Not listed	Listed (3 senses, all relevant)	TAM2-3

APPENDIX 2: English word list

X-ray (noun)	Health Service Executive, Centers for Disease Control & Prevention, Health Information Translations, NYC Health, SaludMadrid TB, Xunta de Galicia Consellería de Sanidade TB, Explain TB, Mayo Clinic (TB), Merck Manual TB, Florida Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Kaiser Permanente TB, European Lung Foundation	General & specialized (physics) 5*	Listed (3 senses, all relevant)	Listed (3 senses, all relevant)	TAM2-3
Ziehl-Neelsen (microbiological lab stain)	Explain TB	Listed under <b>Ziehl</b> , specialized 3*	Listed as <b>Ziehl-Neelsen stain</b>	Listed (SOAP, no definition)	TAM4-5

## APPENDIX 2.2 SPANISH WORD LIST

Palabra (word)	Sitios web en que aparece (websites in which it appears)	Real Academia Española	Gran diccionario de uso del español actual	Diccionario de Términos Médicos	TAM-HC ranking (TAM-HC ranking)
Abstener (se) (abstiéndote)	TeensHealth from Nemours Foundation	Divulgativa	Aparece sin número, divulgativa	No aparece	TAM1
Abuso de sustancias	Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7, HealthReach SubstanceAbuse6	No aparece	abuso = 3 (divulgativa), sustancia = 4	No aparece	TAM2-3 (sustancia es TAM2-3)
Ácido nucleico	Centers for Disease Control & Prevention, Merck Manual, Merck Manual (HIV), Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, POZ	Especializada	ácido = 4 (divulgativa y especializada), nucleico = 1 especializada	Aparece	TAM4-5
Actividad sexual	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	No aparece	actividad = 5, sexual = 5	No aparece	TAM2-3
Activar (active) - verbo	SaludMadrid	Divulgativa	4	Aparece (6 acepciones)	TAM2-3
Activo / activa / as - adj	Healthfinder, HealthlinkBC, SaludMadrid, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual, Gais Positius, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, American Association for Clinical Chemistry, Kaiser Permanente HIV, Kaiser Permanente TB, POZ, COCQ-SIDA, World Health	Divulgativa	4	Aparece (2: una con 5 acepciones y la otra con una acepción)	TAM2-3

APPENDIX 2.2 Spanish word list

	Organization (WHO) TB, Explain TB, BCN Checkpoint				
Acupuntura	Govern Illes Balears Direcció General de Salut Pública y Participació	Divulgativa	1 especializada	Aparece	TAM2-3
Adquirir (adquirida)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), NYC Health - HIV-again, AIDSinfo.nih.gov	Divulgativa	3 divulgativa	Aparece	TAM2-3
ADN	Merck Manual	Especializada	No aparece como siglas, pero aparece como "ácido desoxirribonucleico" sin número, especializada	Aparece	TAM4-5
Aerosoles	American Association for Clinical Chemistry	Divulgativa	1 especializada	Aparece	TAM2-3
Afección (afecciones)	Centers for Disease Control & Prevention, Centers for Disease Control and Prevention 2	Especializada	2 especializada	Aparece	TAM4-5
Agencia de salud gubernamentales	POZ	No aparece	agencia = 3 divulgativa, salud = 5, gubernamental = 4	No aparece	TAM2-3
Aglutinación	Govern Illes Balears Direcció General de Salut Pública y Participació	Especializada	Aparece sin número, divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Agresión sexual	POZ	Especializada	agresión = 3 divulgativa, sexual = 5	"Agresión" aparece (2 acepciones, 1 del cual se aplica en este contexto)	TAM2-3
Aguda	HealthlinkBC, NYC Health - HIV	Divulgativa	4	No aparece	TAM1
Aguja / agujas	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (TB), CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participació, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting2, HealthReach HIVtesting3, HealthReach SubstanceAbuse6,	Divulgativa	2 divulgativa y especializada	Aparece (4 acepciones)	TAM2-3

	Planned Parenthood, American Association for Clinical Chemistry, Kaiser Permanente HIV, POZ				
ALIG	Norwegian Institute of Public Health - TB test migrants	No aparece	No aparece	No aparece	TAM4-5
Amplificación (de ácidos nucleicos / génica)	Merck Manual (HIV)	Especializada	amplificación = 2 divulgativa	Aparece (3 acepciones)	TAM2-3
Ampolla (s)	Centers for Disease Control & Prevention, Florida Health, American Association for Clinical Chemistry, Explain TB	Divulgativa	1 divulgativa	Aparece (3 acepciones)	TAM2-3
Anafiláctico	Centers for Disease Control & Prevention	Especializada	Aparece sin número, especializada	Aparece	TAM4-5
Anal (anales)	TeensHealth from Nemours Foundation, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	Divulgativa	1 especializada	Aparece	TAM2-3
Análisis	WHO, HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, Centers for Disease Control & Prevention, Mayo Clinic (HIV), Mayo Clinic (TB), Health Information Translations, Merck Manual, AIDS Info Net (IAPAC), CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Centers for Disease Control and Prevention 2, HealthReach HIV/AIDS101-7, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3,	Divulgativa	5	Aparece (4 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

	HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, Norwegian Institute of Public Health, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, Explain TB				
Análisis de anticuerpos	HealthReach HIVtesting4	No aparece	análisis = 5, anticuerpos = 2 especializada	No aparece	TAM2-3
Análisis de carga viral	AIDS Info Net (IAPAC)	No aparece	análisis = 5, carga = 4, viral = 1 divulgativa	No aparece	TAM2-3
Análisis combinados	HealthReach HIVtesting6, HealthReach HIVtesting4	No aparece	análisis = 5, combinado = 2 divulgativa	No aparece	TAM2-3
Análisis de detección de anticuerpos del VIH	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	análisis = 5, detección = 2 divulgativa, anticuerpos = 2 especializada, VIH = no aparece como siglas (consulta VIH abajo)	No aparece	TAM4-5
Análisis de detección rápida	HealthReach HIVtesting7	No aparece	análisis = 5, detección = 2 divulgativa, rápida = 5	No aparece	TAM2-3
Análisis domésticos	Mayo Clinic (HIV)	No aparece	análisis = 5, doméstico = 4	No aparece	TAM2-3
Análisis de esputo	SaludMadrid	No aparece	análisis = 5, esputo = 1 divulgativa	No aparece	TAM2-3
Análisis estándar de laboratorio	HealthlinkBC	No aparece	análisis = 5, estándar = 3 divulgativa, laboratorio = 4	No aparece	TAM2-3
Análisis inmunológico de diferenciación de anticuerpos VIH-1/VIH-2	POZ	No aparece	análisis = 5, inmunológico = 2 especializada, diferenciación = 2 divulgativa, anticuerpos = 2 especializada, VIH-1/VIH-2 = consulta abajo	No aparece	TAM4-5



Análisis de laboratorio	Mayo Clinic (HIV)	No aparece	análisis = 5, laboratorio = 4	No aparece	TAM2-3
Análisis rápido	Kaiser Permanente TB, WHO, AIDS Info Net (IAPAC)	No aparece	análisis = 5, rápido = 5	No aparece	TAM2-3
Análisis rápido de VIH	HealthReach Pregnancy3, AIDS Info Net (IAPAC)	No aparece	análisis = 5, rápido = 5, VIH (consulta abajo)	No aparece	TAM4-5
Análisis rutinario (sic)	CESIDA	No aparece	análisis = 5, rutinario = 2 divulgativa	No aparece	TAM2-3
Análisis de sangre	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, Mayo Clinic (TB), Health Information Translations, Merck Manual, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, HealthReach HIVtesting4, HealthReach HIVtesting7, Kaiser Permanente TB, Norwegian Institute of Public Health, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, Explain TB	No aparece	análisis = 5, sangre = 4	No aparece	TAM2-3
Análisis sanguíneo	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	análisis = 5, sanguíneo = 2 divulgativa	No aparece	TAM2-3
Análisis de seguimiento	HealthReach HIVtesting7, HealthReach HIVtesting4	No aparece	análisis = 5, seguimiento = 3 divulgativa	No aparece	TAM2-3
Análisis de VIH	HealthReach HIV/AIDS101-7, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting5, HealthReach SubstanceAbuse6	No aparece	análisis = 5, VIH (consulta abajo)	No aparece	TAM4-5
Análisis del VIH	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), AIDS Info Net (IAPAC), HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach	No aparece	análisis = 5, VIH (consulta abajo)	No aparece	TAM4-5

APPENDIX 2.2 Spanish word list

	HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7				
Analítica (s)	SaludMadrid, Associació Ciutadana Anti-SIDA de Catalunya (ACASC)	Divulgativa	1 divulgativa	Aparece (3 acepciones)	TAM2-3
Analizar	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Planned Parenthood, POZ	Divulgativa	5	Aparece	TAM2-3
Anergia (cutánea)	Centers for Disease Control & Prevention	No aparece	No aparece	Aparece (2 acepciones)	TAM4-5
Anestesia	Explain TB	Divulgativa	2 divulgativa	Aparece (6 acepciones)	TAM2-3
Anómala (s)	Merck Manual	Divulgativa	1 divulgativa	No aparece	TAM1
Anomalía (s)	Merck Manual	Especializada	2 divulgativa y especializada	Aparece (3 acepciones)	TAM2-3
Ansiedad	NYC Health - HIV-again	Divulgativa y especializada	3 divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Antagonistas (de-TNF-a)	Centers for Disease Control & Prevention	Especializada	1 divulgativa	Aparece (3 acepciones)	TAM4-5
Antibacterianas	Explain TB	Divulgativa	aparece sin número, divulgativa	Aparece (2 acepciones)	TAM2-3
Antibiótico	Merck Manual, Explain TB	Divulgativa	2 especializada	Aparece (6 acepciones)	TAM2-3
Anticonceptivo (s)	NYC Health - HIV-again	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Anticuerpo / anticuerpos	WHO, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Generalitat de Catalunya / CanalSalut – CAT, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (HIV), Merck Manual (HIV), AIDS Info Net (IAPAC), CESIDA, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, GMHC, Centers for Disease Control and Prevention 2,	Especializada	2 especializada	Aparece	TAM2-3

	AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting3, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ				
Anticuerpo anti-VIH	San Francisco AIDS Foundation	No aparece	anticuerpo = 2 especializada, anti-VIH = no aparece [anti- = aparece sin número - divulgativa, consulta VIH abajo]	No aparece	TAM4-5
Antígeno	WHO, HealthlinkBC, Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (HIV), Merck Manual (HIV), Govern Illes Balears Direcció General de Salut Pública y Participación, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting4, American Association for Clinical Chemistry, POZ	Especializada	1 especializada	Aparece	TAM4-5
Antígeno p24	HealthlinkBC, Merck Manual (HIV), Govern Illes Balears Direcció General de Salut Pública y Participación, Office on Women's Health - US Department of Health & Human Services	No aparece	antígeno = 1 especializada, p24 = no aparece	Aparece	TAM4-5
Antirretroviral	HealthlinkBC	No aparece	No aparece [anti- = aparece sin número - divulgativa, retro = aparece sin número - divulgativa, viral = 1 divulgativa]	Aparece (refiere a "antirretroviral")	TAM4-5
Antirretroviral (es)	HealthlinkBC, Merck Manual (HIV), Govern Illes Balears Direcció General de Salut Pública y Participación, NAM AIDSmap, AIDSinfo.nih.gov, Greater Than AIDS / Más Que SIDA, Explain TB, BCN Checkpoint	No aparece	No aparece [anti- = aparece sin número - divulgativa, retro = aparece sin número - divulgativa, viral = 1 divulgativa]	Aparece (2 acepciones)	TAM4-5

APPENDIX 2.2 Spanish word list

Antirretrovírico	HealthReach HIVtesting1	No aparece	No aparece [anti- = aparece sin número - divulgativa, retro = aparece sin número - divulgativa, vírico = 1 divulgativa]	Aparece	TAM4-5
Antituberculosis	Norwegian Institute of Public Health	No aparece	No aparece [anti- = aparece sin número - divulgativa, tuberculosis = 2 especializada]	No aparece	TAM2-3 (decision based on cognate: tuberculosis)
Antituberculosa / antituberculosos (adj)	Mayo Clinic (TB), World Health Organization (WHO) TB	Divulgativa	Aparece sin número, divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Antituberculosos (fármacos de primera línea / de segunda línea)	World Health Organization (WHO) TB	Divulgativa	No aparece [anti- = aparece sin número - divulgativa, tuberculosos (sustantivo) no aparece]	Aparece (2 acepciones)	TAM2-3
Anti VIH-1 (anticuerpo)	Fundació Lluita Contra la SIDA	No aparece	No aparece [anti- = aparece sin número - divulgativa, VIH-1 no aparece]	No aparece	TAM4-5
Anti VIH-2	Fundació Lluita Contra la SIDA	No aparece	No aparece [anti- = aparece sin número - divulgativa, VIH-2 no aparece]	No aparece	TAM4-5
Archivo médico	POZ	No aparece	archivo = 4, médico = 5	No aparece	TAM2-3
ARN	Mayo Clinic (HIV), Merck Manual (HIV), HealthReach HIVtesting6, HealthReach HIVtesting4	Especializada	Las siglas no aparecen, [ácido = 4 divulgativa y especializada, ribonucleico = 1 especializada]	Aparece	TAM4-5
Articulación (articulaciones)	American Association for Clinical Chemistry	Divulgativa	3 especializada	Aparece (2 acepciones)	TAM2-3

ARV (antirretrovirales)	Greater Than AIDS / Más Que SIDA	No aparece	No aparece (consulta antirretroviral)	No aparece	TAM4-5
Aseguradora	Centers for Disease Control and Prevention 2, Greater Than AIDS / Más Que SIDA	Divulgativa	2 especializada	No aparece	TAM2-3
Asesor (es)	Planned Parenthood	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Asesoramiento	WHO, BCN Checkpoint, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, Planned Parenthood	Divulgativa	2 divulgativa	No aparece	TAM1
Asesoría	Whitman-Walker Clinic	Divulgativa	2 divulgativa	No aparece	TAM1
Asilo (s) (de ancianos)	Centers for Disease Control & Prevention	Divulgativa	2 divulgativa	Aparece	TAM2-3
Asintomáticos	Antisida Lleida CAT	Especializada	Aparece sin número, especializada	Aparece	TAM4-5
Asistencia	WHO, HealthlinkBC	Divulgativa	4	Aparece (4 acepciones)	TAM2-3
Asistente de salud	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	No aparece	No aparece [asistente = 3 divulgativa, salud = 5]	"asistente" aparece (4 acepciones) pero "asistente de salud" no aparece	TAM2-3
Aspirar (aspirado)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
Atención médica	Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (TB), CESIDA, NY State Department of Health, NYC Health, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting3, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ	No aparece	No aparece [atención = 5, médica = 5]	No aparece	TAM2-3

APPENDIX 2.2 Spanish word list

Atención médica habitual	NY State Department of Health	No aparece	No aparece [atención = 5, médica = 5, habitual = 4]	No aparece	TAM2-3
Atención médica de rutina	Centers for Disease Control & Prevention, National Library of Medicine, Centers for Disease Control and Prevention 2, HealthReach HIVtesting3, Greater Than AIDS / Más Que SIDA	No aparece	No aparece [atención = 5, médica = 5, rutina = 3 divulgativa]	No aparece	TAM2-3
Atención prenatal	HealthReach Pregnancy3	No aparece	No aparece [atención = 5, prenatal = 1 divulgativa]	No aparece	TAM2-3
Atención primaria	HealthlinkBC, Fundació Lluita Contra la SIDA, NY State Department of Health, Xunta de Galicia Consellería de Sanidade	Especializada	No aparece (atención 5, primaria 4)	Aparece	TAM2-3
Atención psicológica	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	No aparece	No aparece (atención 5, psicológica 4)	No aparece	TAM2-3
Atención de salud de rutina	AIDSinfo.nih.gov	No aparece	No aparece [atención = 5, salud = 5, rutina = 3 divulgativa]	No aparece, pero "atención de salud" aparece	TAM2-3
Autoanálisis	WHO	No aparece	1 divulgativa	Aparece, pero la acepción no coincide con el texto (introspección)	TAM2-3
Autocomprobación	Centers for Disease Control and Prevention 2	Divulgativa	No aparece [auto- = aparece sin número, comprobación = 2 divulgativa]	No aparece	TAM1
Auto-prueba	Whitman-Walker Clinic	No aparece	No aparece [auto- = aparece sin número, prueba = 4 especializada]	No aparece	TAM2-3
Autoridad de salud	HealthlinkBC	No aparece	Autoridad = 5, salud = 5	No aparece	TAM2-3
Autoridad sanitaria	Explain TB	No aparece	Autoridad = 5, sanitaria = 4	No aparece	TAM2-3
Autotest	Fundació Lluita Contra la SIDA	No aparece	No aparece [auto- = aparece sin número, test = 3 divulgativa]	No aparece	TAM2-3

Auto-test	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No aparece	No aparece [auto- = aparece sin número, test = 3 divulgativa]	No aparece	TAM2-3
Axila	Norwegian Institute of Public Health - TB test migrants	Divulgativa	2 especializada	Aparece	TAM2-3
Bacilo (bacilos)	SaludMadrid, Mayo Clinic (TB), American Association for Clinical Chemistry, Kaiser Permanente TB	Especializada	1 especializada	Aparece (2 acepciones)	TAM4-5
Bacilo de Calmette-Guérin	American Association for Clinical Chemistry	No aparece	No aparece	Aparece (con "Bacilo de Calmette y Guérin")	TAM4-5
Bacilo de Calmette y Guérin	Mayo Clinic (TB), Kaiser Permanente TB	No aparece	No aparece	Aparece	TAM4-5
Baciloscopia (de esputo)	World Health Organization (WHO) TB	No aparece	No aparece	Aparece	TAM4-5
Bacteria (bacterias)	Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (TB), Merck Manual, Boston Public Health Commission, Florida Health, Centers for Disease Control and Prevention 2, American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB, Explain TB	Divulgativa	3 especializada	Aparece	TAM2-3
Bacteriano / bacteriana	Merck Manual, American Association for Clinical Chemistry	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Barreras bucales	Kaiser Permanente HIV	No aparece	No aparece (barrera = aparece sin número, divulgativo; bucal = 2 divulgativa)	No aparece	TAM2-3
Base de datos	HealthlinkBC	Especializada	Aparece en "base" y "dato" pero no numbrado. (Base 5, datos 5)	Aparece	TAM2-3
BCG	Centers for Disease Control & Prevention, Mayo Clinic (TB), American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health, Explain TB	No aparece	No aparece	Aparece (2 acepciones)	TAM4-5

APPENDIX 2.2 Spanish word list

Bienestar	NYC Health - HIV	Divulgativa	4	No aparece	TAM1
Biología	Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa	3 divulgativa	Aparece	TAM2-3
Biología molecular	Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa	biología = 3 divulgativa, molecular = 2 especializada	Aparece	TAM2-3
Biológico	BCN Checkpoint	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
Biopsia	Kaiser Permanente TB	Especializada	1 especializada	Aparece (4 acepciones)	TAM4-5
Bisel (de la aguja)	Centers for Disease Control & Prevention	Divulgativa	Aparece sin número, divulgativa	No aparece	TAM1
Broncoscopia	Explain TB	Especializada	Aparece sin número, especializada	Aparece	TAM4-5
Broncoscopio	Merck Manual	Especializada	Aparece sin número, especializada	Aparece	TAM4-5
Bronquio (s)	Merck Manual, Explain TB	Divulgativa	1 especializada	Aparece	TAM2-3
Bronquiscopia (sic – mal escrito)	Explain TB	No aparece	No aparece	No aparece	TAM4-5
Bucal (~ oral)	US Department of Health & Human Services NIH, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Whitman-Walker Clinic, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Bulto (bultito)	Mayo Clinic (TB), Boston Public Health Commission, Norwegian Institute of Public Health - TB test migrants	Divulgativa	3 divulgativa	Aparece (dice “coloq. = tumoración”)	TAM2-3
Camionetas móviles	US Department of Health & Human Services NIH	“camioneta” aparece – divulgativa / coloq.	camioneta = 2 divulgativa, móvil = 4	No aparece	TAM1
Cáncer	National Library of Medicine, Merck Manual, Merck Manual (HIV), Population Health Division - San Francisco Department of Public Health Disease Prevention & Control (“cancer” sin tilde), Greater Than AIDS / Más Que SIDA, Norwegian Institute of Public Health +IGRA	Divulgativa	4 especializada	Aparece (2 acepciones)	TAM2-3



Candidiasis	Merck Manual (HIV)	Especializada	Aparece sin número, divulgativa	Aparece	TAM2-3
Candidiasis oral	Merck Manual (HIV)	No aparece	candidiasis = aparece sin número, divulgativa; oral = 3 divulgativa	Aparece	TAM2-3
Cansancio	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Divulgativa	3 divulgativa	Aparece	TAM2-3
Capilar	Antisida Lleida CAT	Divulgativa	2	Aparece	TAM2-3
Carga viral	Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (HIV), Merck Manual (HIV), AIDS Info Net (IAPAC), Antisida Lleida CAT, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, San Francisco AIDS Foundation, POZ	No aparece	carga = 4, viral = 1 divulgativa	Aparece	TAM2-3
Carga vírica	HealthReach HIVtesting3	No aparece	carga = 4, vírica = 1 divulgativa	Aparece	TAM4-5
Cavernas	Explain TB	Especializada	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Cavidad (pulmonar)	Kaiser Permanente TB	Divulgativa	2 divulgativa y especializada	Aparece	TAM2-3
CD4	Mayo Clinic (HIV), Merck Manual (HIV), AIDS Info Net (IAPAC)	No aparece	No aparece	Aparece (2 acepciones)	TAM4-5
Cefalorraquídeo	Merck Manual	Especializada	1 especializada	Aparece (2 acepciones)	TAM4-5
Célula (s)	National Library of Medicine, AIDS Info Net (IAPAC), GMHC, Planned Parenthood, American Association for Clinical Chemistry, Explain TB	Especializada	4 especializada	Aparece (3 acepciones)	TAM2-3
Célula (s) inmunitaria (s)	National Library of Medicine	No aparece	Célula = 4 especializada, inmunitaria = 1 divulgativa	No aparece	TAM4-5
Centro de análisis	HealthReach HIVtesting5	No aparece	Centro = 5, análisis = 5	No aparece (pero sí "centro" con 6 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

Centro de atención especializada	Fundació Lluita Contra la SIDA	No aparece	Centro = 5, atención = 5, especializada = 4	No aparece	TAM2-3
Centro de atención primaria	Fundació Lluita Contra la SIDA	No aparece	Centro = 5, atención = 5, primaria = 4	Aparece	TAM2-3
Centro de atención de urgencia	NY State Department of Health	No aparece	Centro = 5, atención = 5, urgencia = 4	No aparece (pero sí "centro" con 6 acepciones; "atención de urgencia" tampoco aparece)	TAM2-3
Centro comunitario de detección	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	Centro = 5, comunitario = 4, detección = 2 divulgativa	No aparece	TAM2-3
Centros de especialidades	Fundació Lluita Contra la SIDA	No aparece	Centro = 5, especializada = 4	No aparece	TAM1
Centros de ITS	CESIDA	No aparece	Centro = 5, ITS = no aparece	No aparece	TAM4-5
Centro local de salud comunitaria (CLSC)	COCQ-SIDA	No aparece	Centro = 5, local = 5, salud = 5, comunitaria = 4	No aparece	TAM2-3
Centro médico	Centers for Disease Control and Prevention 2, Planned Parenthood	No aparece	Centro = 5, médico = 5	No aparece (pero sí "centro" con 6 acepciones)	TAM2-3
Centro móvil de prueba	POZ	No aparece	Centro = 5, móvil = 4, prueba = 4 especializada	No aparece	TAM2-3
Centros de planificación familiar	Fundació Lluita Contra la SIDA	No aparece	Centro = 5, planificación = 4, familiar = 5	No aparece	TAM1
Centro de prevención y control de las infecciones de transmisión sexual	Generalitat de Catalunya / CanalSalut – CAT, Fundació Lluita Contra la SIDA	No aparece	Centro = 5, prevención = 4, control = 5, infección = 3 divulgativa, transmisión = 4, sexual = 5	No aparece	TAM2-3

Centro de pruebas	HealthReach SubstanceAbuse6	No aparece	Centro = 5, prueba = 4 especializada	No aparece	TAM2-3
Centro público de salud	TeensHealth from Nemours Foundation	No aparece	Centro = 5, público = 5, salud = 5	No aparece	TAM2-3
Centro de rehabilitación de salud	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	No aparece	Centro = 5, rehabilitación = 3 divulgativa, salud = 5	No aparece	TAM2-3
Centro de salud	Office of Disease Prevention and Health Promotion ODPHP Healthfinder, CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7, Planned Parenthood, World Health Organization (WHO) TB, Explain TB	No aparece	Aparece sin número, divulgativa	Aparece	TAM2-3
Centro de salud comunitario	US Department of Health & Human Services NIH, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7	No aparece	Centro de salud = aparece sin número/ divulgativa, comunitario = 4	No aparece	TAM2-3
Centro de salud periférico (centros de salud periféricos)	World Health Organization (WHO) TB	No aparece	Centro de salud = aparece sin número/ divulgativa, periférico = 3 divulgativa	No aparece	TAM2-3
Centros de salud de la red pública	Govern Illes Balears Direcció General de Salut Pública y Participación	No aparece	Centro de salud = aparece sin número/ divulgativa, red = 5, pública = 5	No aparece	TAM2-3
Centros sanitarios	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), CESIDA, Fundació Lluita Contra la SIDA	No aparece	Centro = 5, sanitario = 4	No aparece	TAM2-3
Centros sanitarios de la red pública	CESIDA, Fundació Lluita Contra la SIDA	No aparece	Centro = 5, sanitario = 4, red = 5, pública = 5	No aparece	TAM2-3
Centros sanitarios de la red pública de la salud	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	Centro = 5, sanitario = 4, red = 5, pública = 5, salud = 5	No aparece	TAM2-3

APPENDIX 2.2 Spanish word list

Centro de VIH/ITS	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No aparece	Centro = 5, VIH/ITS (consulta cada siglas abajo)	No aparece	TAM4-5
Cepa (s) (EN: strain of a microbe)	Mayo Clinic (TB), Mayo Clinic (HIV), Kaiser Permanente HIV	Especializada	2 especializada	Aparece (2 acepciones)	TAM2-3
Cerebral	Merck Manual	Divulgativa	3 divulgativa	Aparece (3 acepciones)	TAM2-3
Cerebro	Kaiser Permanente TB	Divulgativa	4 especializada	Aparece	TAM2-3
Chequeo	NY State Department of Health, Planned Parenthood	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Choque anafiláctico	Centers for Disease Control & Prevention	No aparece	Choque = no aparece, anafiláctico = aparece sin número, especializada	Aparece	TAM4-5
Cirujano	Centers for Disease Control and Prevention 2	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Cita	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Antisida Lleida CAT, Govern Ílles Balears Direcció General de Salut Pública y Participación, BCN Checkpoint, Gais Positius, NYC Health – HIV, NYC Health - HIV-again, Whitman-Walker Clinic, Kaiser Permanente HIV, COCQ-SIDA	Divulgativa	3 divulgativa	No aparece	TAM1
Citología (de esputo)	Kaiser Permanente TB	Especializada	1 especializada	Aparece (4 acepciones)	TAM4-5
Clamidia	HealthReach HIVtesting2, Whitman-Walker Clinic	No aparece	No aparece	Aparece (2 acepciones)	TAM4-5
Clínica	HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder, NY State Department of Health, NYC Health, NYC Health – HIV, NYC Health - HIV-again, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health &	Divulgativa	2 divulgativa	Aparece	TAM2-3

	Human Services, HealthReach Pregnancy <sup>3</sup> , San Francisco AIDS Foundation, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, COCQ-SIDA				
Clínica de salud	US Department of Health & Human Services NIH, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Planned Parenthood, Greater Than AIDS / Más Que SIDA, POZ	No aparece	Clínica = 2 divulgativa, salud = 5	No aparece	TAM2-3
Clínico / clínica (adj)	Centers for Disease Control and Prevention 2, American Association for Clinical Chemistry	Divulgativa	4	Aparece	TAM2-3
Cobertura	NY State Department of Health, NYC Health - HIV	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Colapso pulmonar	Explain TB	No aparece	Colapso = 2 divulgativa, pulmonar = 2 divulgativa	Aparece (una manera divulgativa para "atelectasia")	TAM2-3
Colonias (de bacterias)	Explain TB	No aparece	4	Aparece	TAM2-3
Columna vertebral	Kaiser Permanente TB	Divulgativa	Columna = 4, vertebral = 2 divulgativa	Aparece	TAM2-3
Compañía de salud (compañías de salud)	Centers for Disease Control and Prevention 2	No aparece	Compañía = 5 especializada (commerce), salud = 5	No aparece	TAM2-3
Compañía de seguro (s)	TeensHealth from Nemours Foundation, AIDS Info Net (IAPAC), NY State Department of Health, GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Planned Parenthood	No aparece	Compañía = 5 especializada (commerce), seguro = 5	No aparece	TAM2-3
Compañía de seguro médico	Office of Disease Prevention and Health Promotion ODPHP Healthfinder	No aparece	Compañía = 5 especializada (commerce), seguro = 5, médico = 5	No aparece	TAM2-3
Complicaciones	WHO, Mayo Clinic (HIV), Merck Manual (HIV), CESIDA	Divulgativa	3 especializada	Aparece (3 acepciones)	TAM2-3
Condiciones (condición)	Healthfinder, Florida Health	Divulgativa	5	Aparece (6 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

Condón (condones) (Note: "condon" (sic) found in TeensHealth from Nemours Foundation HIV website)	TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, BCN Checkpoint, NY State Department of Health, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, The American Foundation for AIDS Research (AmFAR), COCQ-SIDA	Divulgativa	2 divulgativa	Aparece	TAM2-3
Confirmación	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participació, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	2 divulgativa	No aparece	TAM1
Confirmatoria (de "prueba confirmatoria")	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), San Francisco AIDS Foundation	Divulgativa	Aparece sin número - divulgativa	No aparece	TAM1
Consejería	US Department of Health & Human Services NIH	Divulgativa	2 (el sentido "acción de dar consejo a alguien" se aplica en AMERICA)	No aparece	TAM2-3
Consejero	National Library of Medicine	Divulgativa	4	No aparece	TAM1
Consentimiento informado	WHO	Especializada	Consentimiento: 2 (D y E), informado 2	Aparece	TAM2-3
Consulta	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Planned Parenthood, Norwegian Institute of Public Health - TB test migrants	Divulgativa	3 divulgativa	Aparece (5 acepciones)	TAM2-3
Consultorio	Mayo Clinic (TB), Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Office on Women's Health - US Department of Health & Human Services, HealthReach HIV/AIDS101-7, Planned Parenthood, Greater Than AIDS / Más Que SIDA	Divulgativa	2 divulgativa	Aparece	TAM2-3
Consultorio del doctor	Office of Disease Prevention and Health Promotion ODPHP Healthfinder	No aparece	Consultorio = 2 divulgativa, doctor = 3 divulgativa	No aparece	TAM2-3
Consultorio de un médico	US Department of Health & Human Services NIH	No aparece	Consultorio = 2 divulgativa, médico = 5	No aparece, pero sí "consultorio médico", que refiere a "consultorio"	TAM2-3

Consunción	Merck Manual (HIV)	Divulgativa	1 especializada	Aparece	TAM2-3
Contagiar (se) (contagiado / a)	Healthfinder, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Health Information Translations, Florida Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, HealthReach HIVtesting6, Norwegian Institute of Public Health +IGRA	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Contagio (sujetivo)	SaludMadrid, TeensHealth from Nemours Foundation, Mayo Clinic (HIV), Antisida Lleida CAT, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Explain TB	Divulgativa	2 divulgativa (contagiar) 3 divulgativa)	Aparece (2 acepciones)	TAM2-3
Contagioso	NYC Health, Explain TB	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Contaminación	Norwegian Institute of Public Health	Divulgativa	3 divulgativa	Aparece (4 acepciones)	TAM2-3
Contaminado / contaminar	POZ, Norwegian Institute of Public Health	Divulgativa	3 divulgativa	Aparece	TAM2-3
Contraer (se) (contraído, contraído)	WHO, TeensHealth from Nemours, Mayo Clinic (HIV) Foundation, Centers for Disease Control & Prevention, Merck Manual, Merck Manual (HIV), BCN Checkpoint, NY State Department of Health, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach Pregnancy3, HealthReach HIVtesting3, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, COCQ-SIDA	Divulgativa	3 divulgativa	Aparece (4 acepciones)	TAM2-3
Contraindicar (contraídicada)	Centers for Disease Control & Prevention	Divulgativa	1 divulgativa	Aparece	TAM2-3
Control	Norwegian Institute of Public Health	Divulgativa	5	Aparece (6 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

Copago	NY State Department of Health, Centers for Disease Control and Prevention 2	No aparece	No aparece	Aparece	TAM4-5
Corporal	Centers for Disease Control and Prevention 2	Divulgativa	3 divulgativa	Aparece	TAM2-3
Corticoesteroide	American Association for Clinical Chemistry	Especializada	No aparece	Aparece	TAM4-5
Coseguro	Centers for Disease Control and Prevention 2	No aparece	No aparece	No aparece	TAM4-5
Cribado	American Association for Clinical Chemistry	Divulgativa (pero cribar es especializada)	Aparece sin número (divulgativa), pero cribar 1 divulgativa	Aparece (5 acepciones)	TAM2-3
Crónico / crónica	Norwegian Institute of Public Health - TB test migrants	Divulgativa	3 divulgativa	Aparece (7 acepciones)	TAM2-3
CT	Kaiser Permanente TB	No aparece	Aparece pero su significado no coincide con el contexto	No aparece	TAM4-5
Cuarta generación (4 <sup>a</sup> generación)	Gais Positius, POZ	No aparece	Cuarta = 5, generación = 5	No aparece (Nota: esta prueba fue disponible desde 2010, y el diccionario fue publicado en 2012 – qué raro)	TAM4-5
Cuarta generación ensayo ELISA	Merck Manual (HIV)	No aparece	Cuarta = 5, generación = 5, ensayo = 4, ELISA = no aparece (consulta ELISA abajo)	No aparece (mira arriba)	TAM4-5
Cuidados	HealthlinkBC, TeensHealth from Nemours Foundation, AIDS Info Net (IAPAC), NAM AIDSmap, COCQ-SIDA	Divulgativa	4	No aparece	TAM1
Cuidados médicos	TeensHealth from Nemours Foundation, AIDS Info Net (IAPAC)	No aparece	Cuidado = 4, médico = 5	No aparece	TAM2-3
Cuidados sanitarios	HealthlinkBC	No aparece	Cuidado = 4, sanitario = 4	No aparece	TAM2-3
Cultivo	Merck Manual, Govern Illes Balears Direcció General de Salut Pública y Participación, American Association for Clinical Chemistry, Kaiser Permanente TB, Explain TB	Divulgativa y especializada	4	Aparece (3 acepciones)	TAM2-3
Culturas (~ cultivo)	NYC Health	Divulgativa	5	No aparece	TAM1



Cura (sujetivo)	National Library of Medicine, Kaiser Permanente HIV, POZ	Divulgativa	3 divulgativa	Aparece (4 acepciones)	TAM2-3
Curable	Greater Than AIDS / Más Que SIDA	Divulgativa	1 divulgativa	Aparece	TAM2-3
Curación	European Lung Foundation	Divulgativa	2 divulgativa	Aparece	TAM2-3
Curarse (se cure)	SaludMadrid, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, AIDSinfo.nih.gov, Norwegian Institute of Public Health - TB test migrants	Divulgativa	4	Aparece (5 acepciones)	TAM2-3
Curita	Boston Public Health Commission	Divulgativa (de Curitas, una marca americana de tira adhesiva)	1 divulgativa	Aparece (de uso preferente en América ~ tirita)	TAM2-3
Cutánea (cutáneo)	Health Service Executive, Centers for Disease Control & Prevention, Mayo Clinic (TB), Health Information Translations, Merck Manual, Merck Manual (HIV), Boston Public Health Commission, Florida Health, NYC Health, Norwegian Institute of Public Health, Norwegian Institute of Public Health - TB test migrants, Explain TB	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Deducible (deducibles)	Office on Women's Health - US Department of Health & Human Services	Divulgativa	1 divulgativa	No aparece	TAM1
Defensa (Sistema de) / defensas	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Divulgativa	5 especializada	Aparece (3 acepciones, que incluye coloq. ~ inmunidad)	TAM2-3
Demográficos	POZ	Divulgativa	3 divulgativa	Aparece	TAM2-3
Departamento (de salud / de salud pública)	TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, AIDS Info Net (IAPAC), NYC Health, GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3,	Divulgativa	5	Aparece (3 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

	HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, Planned Parenthood, Greater Than AIDS / Más Que SIDA, POZ, Explain TB				
Depresión	NYC Health - HIV-again	Especializada	4	Aparece (7 acepciones, 3 de los cuales se aplican en este contexto)	TAM2-3
Derivación	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Divulgativa	2 divulgativa	Aparece (4 acepciones)	TAM2-3
Derivación médica	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	No aparece	Derivación = 2 divulgativa, médica = 5	No aparece	TAM2-3
Derivado	Centers for Disease Control & Prevention, Mayo Clinic (TB), Merck Manual, American Association for Clinical Chemistry	Divulgativa y especializada	3 divulgativa y especializada	Aparece (4 acepciones)	TAM2-3
Derivado proteico purificado (de la tuberculina)	Centers for Disease Control & Prevention, Mayo Clinic (TB), Merck Manual, American Association for Clinical Chemistry	No aparece (pero "derivado" aparece y es especializada en este contexto)	Derivado = 3 divulgativa y especializada, proteico = 2 divulgativa, purificado (purificar) = 2 divulgativa	No aparece	TAM4-5
Dérmica	American Association for Clinical Chemistry	Divulgativa	1 especializada	Aparece (2 acepciones)	TAM2-3
Detección	WHO, Centers for Disease Control & Prevention, Antisida Lleida CAT	Divulgativa	2 divulgativa	Aparece	TAM2-3
Diabetes	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Divulgativa y especializada	2 especializada	Aparece (2 acepciones)	TAM2-3
Diagnosis	San Francisco AIDS Foundation	Divulgativa y especializada	1 divulgativa y especializada	Aparece	TAM2-3
Diagnosticar (diagnosticado)	WHO, HealthlinkBC, Generalitat de Catalunya / CanalSalut – CAT, National Library of Medicine, Mayo Clinic (HIV), Merck Manual (HIV), GMHC, NAM AIDSmap, AIDSinfo.nih.gov, San Francisco AIDS Foundation, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, European Lung	Especializada	2 especializada	Aparece	TAM2-3

	Foundation, POZ, World Health Organization (WHO) TB, Explain TB				
Diagnóstico (diagnóstica)	WHO, Health Service Executive, Centers for Disease Control & Prevention, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual, Merck Manual (HIV), Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, BCN Checkpoint, NYC Health – HIV, Centers for Disease Control and Prevention 2, AIDS Info, HealthReach HIVtesting7, San Francisco AIDS Foundation, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, European Lung Foundation, Xunta de Galicia Consellería de Sanidade, POZ, World Health Organization (WHO) TB	Divulgativa y especializada	4 divulgativa y especializada	Aparece (4 acepciones)	TAM2-3
Diagnóstico definitivo	WHO	No aparece	Diagnóstico = 4 divulgativa y especializada, definitivo = 5	Aparece (2 acepciones)	TAM2-3
Diálisis	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Especializada	1 especializada	Aparece (4 acepciones)	TAM4-5
Discapacidad (discapacidades)	Centers for Disease Control and Prevention 2	Divulgativa	2 divulgativa	Aparece	TAM2-3
Dispositivo	National Library of Medicine, HealthReach HIVtesting4	Divulgativa	4	Aparece	TAM2-3
Doctor	Healthfinder, Health Service Executive, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), AIDS Info Net (IAPAC), GMHC, POZ, Explain TB	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Donante (s)	Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Dormido (dormir)	SaludMadrid	Divulgativa	4	No aparece	TAM1

APPENDIX 2.2 Spanish word list

Drogas	WHO, HealthlinkBC, Generalitat de Catalunya / CanalSalut – CAT, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual (HIV), CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting2, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), POZ	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
Drogas callejeras	NYC Health - HIV	No aparece	Drogas = 4, callejeras = 2 divulgativa	No aparece	TAM2-3
Drogas inyectadas	Merck Manual (HIV)	No aparece	Drogas = 4, inyectada (inyectar) = 2 divulgativa y especializada	Aparece (3 acepciones)	TAM2-3
Efecto de refuerzo (EN: booster effect)	Centers for Disease Control & Prevention	No aparece	Efecto = 5, refuerzo = 2 divulgativa	Aparece (2 acepciones)	TAM4-5
Efecto secundario	NY State Department of Health, Explain TB	Especializada	Efecto = 5, secundario = 4 especializada	Aparece (2 acepciones)	TAM2-3
Eficacia	Gais Positius	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
EIA (enzimoinmunoa nálisis)	WHO, AIDS Info Net (IAPAC), Govern Illes Balears Direcció General de Salut Pública y Participación, POZ	No aparece	No aparece (consulta “enzimoinmunoanálisis”)	Aparece	TAM4-5

ELISA	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Merck Manual (HIV), AIDS Info Net (IAPAC), Govern Ílles Balears Direcció General de Salut Pública y Participación, San Francisco AIDS Foundation, POZ	No aparece	No aparece (consulta "Ensayo de liberación de interferón gamma")	Aparece	TAM4-5
Embarazada (embarazadas)	HealthlinkBC, Generalitat de Catalunya / CanalSalut – CAT, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual (HIV), AIDS Info Net (IAPAC), CESIDA, Govern Ílles Balears Direcció General de Salut Pública y Participación, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting2, HealthReach Pregnancy3, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Embarazo	Centers for Disease Control & Prevention, National Library of Medicine, CESIDA, NYC Health - HIV-again, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting2, HealthReach Pregnancy3, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, COCQ-SIDA	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Emergencia	NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again	Divulgativa	3 divulgativa	Aparece (3 acepciones)	TAM2-3
Encías	Planned Parenthood	Divulgativa	2 especializada	Aparece	TAM2-3
Enfermar	NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Norwegian Institute of Public Health +IGRA	Divulgativa	4	No aparece	TAM1

APPENDIX 2.2 Spanish word list

Enfermedad / enfermedades	Healthfinder, Centers for Disease Control & Prevention, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Merck Manual, Florida Health, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health, NYC Health – HIV, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, AIDS Info, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting5, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, European Lung Foundation, Norwegian Institute of Public Health, Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB, Explain TB	Divulgativa	5	Aparece (2 acepciones)	TAM2-3
Enfermedad activa	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	No aparece	Enfermedad = 5, activa = 4	No aparece	TAM2-3
Enfermedad infecciosa / enfermedades infecciosas	SaludMadrid, Explain TB	No aparece	Enfermedad = 5, infecciosa = 2 divulgativa	Aparece	TAM4-5

Enfermedades oportunistas	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	Enfermedad = 5, oportunistas = 2 divulgativa	No aparece	TAM4-5
Enfermedad de transmisión sexual	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, NY State Department of Health, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach - Sexual risks 4, HealthReach HIVtesting2, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV	No aparece	Enfermedad = 5, transmisión = 4, sexual = 5	Aparece	TAM2-3
Enfermedad tuberculosa	AIDS Info	No aparece	Enfermedad = 5, tuberculosa = 1 divulgativa	No aparece	TAM2-3
Enfermedad de tuberculosis (~ active TB)	Centers for Disease Control & Prevention	No aparece	Enfermedad = 5, tuberculosis = 2 especializada	No aparece	TAM2-3
Enfermedad (es) viral (es)	Centers for Disease Control & Prevention	No aparece	Enfermedad = 5, viral = 1 divulgativa	Aparece	TAM2-3
Enfermero / enfermera	Healthfinder, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Boston Public Health Commission, Planned Parenthood, Explain TB	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Enfermo / enferma	Healthfinder, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual, AIDS Info Net (IAPAC), NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, HealthReach HIV/AIDS101-7, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Norwegian Institute of Public Health +IGRA, Explain TB	Divulgativa	4 divulgativa	Aparece (2 acepciones)	TAM2-3
Enrojecimiento	Centers for Disease Control & Prevention, Merck Manual	Divulgativa	1 divulgativa	No aparece	TAM1

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Ensayo	Merck Manual, Merck Manual (HIV), American Association for Clinical Chemistry, Kaiser Permanente TB, POZ, Explain TB	Divulgativa	4	Aparece (4 acepciones)	TAM2-3
Ensayo de inmunoabsorción enzimática	POZ	No aparece	Ensayo = 4, inmunoabsorción = no aparece, enzimática = 1 divulgativa	Aparece debajo "ensayo de inmunoabsorción enzimática" como una forma incorrecta	TAM4-5
Ensayo de inmunoabsorción enzimática	Merck Manual (HIV)	No aparece	Ensayo = 4, inmunoabsorción = no aparece, enzimática = 1 divulgativa	Aparece	TAM4-5
Ensayo de liberación de interferón-gamma	Explain TB	No aparece	Ensayo = 4, liberación = 4, interferón-gamma = [interferón = aparece sin número, divulgativa, gamma = 1 divulgativa]	No aparece	TAM4-5
Ensayo de liberación de interferón gamma	Merck Manual, American Association for Clinical Chemistry, Kaiser Permanente TB	No aparece	Ensayo = 4, liberación = 4, interferón = aparece sin número, divulgativa, gamma = 1 divulgativa	No aparece	TAM4-5
Enzimas	AIDS Info Net (IAPAC)	Especializada	2 Especializada	Aparece	TAM2-3
Enzimática	Merck Manual (HIV), POZ	Especializada	1 divulgativa	Aparece	TAM4-5
Enzimo-inmunoanálisis	WHO	No aparece	No aparece [enzimo- = no aparece, inmuno- = no aparece, análisis = 5]	Aparece	TAM4-5
Epidemia	NY State Department of Health, COCQ-SIDA	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Equipo (~ kit)	POZ	Divulgativa	5	No aparece	TAM1
Eritema	Centers for Disease Control & Prevention	Especializada	Aparece sin número, especializada	Aparece	TAM4-5
Erupción cutánea (erupciones cutáneas)	Merck Manual (HIV)	"Erupción" = divulgativa, "erupción cutánea" no aparece	Erupción = 2 divulgativa, cutánea = 2 divulgativa	Aparece "erupción cutánea"	TAM2-3



Escalofríos	American Association for Clinical Chemistry	Divulgativa	2 divulgativa	Aparece	TAM2-3
Escáner	Explain TB	Especializada	1 especializada	Aparece (7 acepciones)	TAM4-5
Esnifar	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa (jerga del ámbito de usuarios de drogas)	1 divulgativa	No aparece	TAM1
Espacio respiratorio	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	No aparece	Espacio = 5, respiratorio = 3 divulgativa	No aparece	TAM2-3
Especificidad (en cuanto a pruebas de laboratorio)	Antisida Lleida CAT	Divulgativa	2 divulgativa	Aparece (5 acepciones)	TAM2-3
Espujo	Centers for Disease Control & Prevention, SaludMadrid, Mayo Clinic (TB), Health Information Translations, Merck Manual, NYC Health, American Association for Clinical Chemistry, Kaiser Permanente TB, European Lung Foundation, World Health Organization (WHO) TB, Explain TB	Divulgativa	1 divulgativa	Aparece	TAM2-3
Estadificar (to determine the stage the disease)	Mayo Clinic (HIV)	Especializada	No aparece	Aparece	TAM4-5
Estadio (en cuanto a la enfermedad; como etapa – EN: stage)	Mayo Clinic (HIV)	Divulgativa u especializada	3 especializada	Aparece	TAM2-3
Estado	WHO, NY State Department of Health, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Kaiser Permanente HIV, POZ, Explain TB	Divulgativa	5	Aparece (4 acepciones)	TAM2-3
Estado de infección por el VIH	AIDSinfo.nih.gov	No aparece	Estado = 5, infección = 3 divulgativa, VIH = consulta "VIH" abajo	No aparece	TAM4-5

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Estado de VIH	Centers for Disease Control and Prevention 2, POZ	No aparece	Estado = 5, VIH = consulta "VIH" abajo	No aparece	TAM4-5
Estatus	NY State Department of Health	Divulgativa	2 divulgativa	Aparece (2 acepciones, un de cual se aplica en este contexto)	TAM2-3
Estériles	NY State Department of Health	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Esterilizar (esterilizados)	CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participación, POZ	Divulgativa	1 divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Esteroides (s)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, POZ	Especializada	1 divulgativa y especializada	Aparece (2 acepciones)	TAM4-5
Estetoscopio	Mayo Clinic (TB)	Especializada	Aparece sin número, especializada	Aparece (3 acepciones)	TAM4-5
Estornuda (estornudar)	Healthfinder, American Association for Clinical Chemistry	Divulgativa	1 divulgativa	Aparece	TAM2-3
Estreptomina	Kaiser Permanente TB	Especializada	1 divulgativa	Aparece	TAM4-5
Estresante	Healthfinder, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB)	Divulgativa	1 divulgativa	Aparece	TAM2-3
Estuches	The American Foundation for AIDS Research (AmFAR)	Divulgativa	2 divulgativa	No aparece	TAM1
Estuche de pruebas domiciliarias	AIDSinfo.nih.gov	No aparece	Estuche = 2 divulgativa, prueba = 4 divulgativa y especializada, domiciliaria = 1 divulgativa	No aparece	TAM2-3
Estudios (exámenes)	European Lung Foundation	Divulgativa	5	Aparece (4 acepciones, 2 de las cuales se aplican en este contexto)	TAM2-3
Estudios de variabilidad genética	Govern Illes Balears Direcció General de Salut Pública y Participación	No aparece	Estudio = 5, variabilidad = 1 divulgativa, genética = 4	No aparece	TAM2-3
Etambutol	Kaiser Permanente TB	No aparece	No aparece	Aparece	TAM4-5
ETS	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP	No aparece	Las siglas no aparecen. Consulta "Enfermedades de	Aparece	TAM4-5

	Healthfinder, AIDSinfo.nih.gov, HealthReach - Sexual risks 4, HealthReach HIVtesting2, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV		Transmisión Sexual” arriba		
EV	Whitman-Walker Clinic	No aparece	No aparece	Aparece, pero la definición no coincide con estas siglas	TAM4-5
Evaluaciones de VIH	Office on Women’s Health - US Department of Health & Human Services	No aparece	Evaluación = 4, VIH = consulta “VIH” abajo	No aparece, pero “evaluación” sí.	TAM4-5
Examen / exámenes	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Mayo Clinic (TB), Health Information Translations, Merck Manual, Boston Public Health Commission, NYC Health – HIV, GMHC, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, European Lung Foundation, Norwegian Institute of Public Health, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA, World Health Organization (WHO) TB, Explain TB	Divulgativa	4	Aparece (2 acepciones)	TAM2-3
Examen cutáneo	Health Information Translations	No aparece	Examen = 4, cutáneo = 2 divulgativa	No aparece	TAM2-3
Examen físico	Mayo Clinic (TB), Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB	No aparece	Examen = 4, físico = 5	Aparece	TAM2-3
Exámenes médicos	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Norwegian Institute of Public Health	No aparece	Examen = 4, médico = 5	Aparece (2 acepciones)	TAM2-3
Examen de VIH	GMHC, Planned Parenthood	No aparece	Examen = 4, VIH = consulta “VIH” abajo	No aparece	TAM4-5
Examinar (se)	NYC Health - HIV-again	Divulgativa	4	Aparece (4 acepciones)	TAM2-3
Expectorar	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Divulgativa	Aparece sin número, especializada	Aparece	TAM2-3
Expediente médico	AIDSinfo.nih.gov	No aparece	Expediente = 3 divulgativa, médico = 5	No aparece	TAM2-3

APPENDIX 2.2 Spanish word list

Exploración	Norwegian Institute of Public Health	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Exploración física (completa)	Merck Manual (HIV)	No aparece	Exploración = 3 divulgativa, física = 2 divulgativa	Aparece	TAM2-3
Exponer / exponerse (expuesto / expuestas)	Generalitat de Catalunya / CanalSalut – CAT, National Library of Medicine, AIDS Info Net (IAPAC), Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, BCN Checkpoint, NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach Pregnancy3, HealthReach HIVtesting3, San Francisco AIDS Foundation, Whitman-Walker Clinic, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ	Divulgativa	5	Aparece (5 acepciones)	TAM2-3
Exposición	HealthlinkBC, Generalitat de Catalunya / CanalSalut – CAT, US Department of Health & Human Services NIH, Centers for Disease Control & Prevention, Merck Manual (HIV), AIDS Info Net (IAPAC), Florida Health, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health – HIV, NYC Health - HIV-again, GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, San Francisco AIDS Foundation, Greater Than AIDS / Más Que SIDA, POZ	Divulgativa	5	Aparece (4 acepciones)	TAM2-3

Extracción de sangre	TeensHealth from Nemours Foundation, San Francisco AIDS Foundation, Whitman-Walker Clinic, POZ	No aparece	Extracción = 2 divulgativa, sangre = 4	Aparece	TAM2-3
Extrapulmonar	Kaiser Permanente TB	No aparece	No aparece, extra- = aparece sin número - divulgativa, pulmonar = 2 divulgativa	Aparece	TAM2-3
Factores de riesgo	Centers for Disease Control & Prevention, Merck Manual (HIV), Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, HealthReach HIVtesting3, POZ	No aparece	Factor = 5, riesgo = 5	Aparece	TAM2-3
Falso negativo	Centers for Disease Control & Prevention, Mayo Clinic (TB), Merck Manual, Antisida Lleida CAT, HealthReach HIVtesting4, POZ	No aparece	Falso = 5, negativo = 4	Aparece	TAM2-3
Falso positivo	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Centers for Disease Control & Prevention, Mayo Clinic (TB), Merck Manual, POZ	No aparece	Falso = 5, positivo = 5 divulgativa y especializada	Aparece	TAM2-3
Farmacia (s)	Generalitat de Catalunya / CanalSalut – CAT, US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA, GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, POZ	Divulgativa	3 divulgativa	Aparece (3 acepciones)	TAM2-3
Fármacos	Merck Manual, Merck Manual (HIV), NAM AIDSmap, American Association for Clinical Chemistry, World Health Organization (WHO) TB, Explain TB	Divulgativa	2 divulgativa	Aparece	TAM2-3
Farmacoresistencia	World Health Organization (WHO) TB	No aparece	No aparece [Farmaco- = no aparece, resistencia = 4]	Aparece	TAM4-5
Fatiga	Merck Manual (HIV), Kaiser Permanente TB	Divulgativa	2 divulgativa	Aparece (5 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

Fibrobroncoscopia	European Lung Foundation	No aparece	No aparece [fibro- = no aparece, broncoscopia = aparece sin número, especializada]	Aparece	TAM4-5
Fibróticos (“cambios fibróticos”)	Centers for Disease Control & Prevention	No aparece	No aparece	Aparece (2 acepciones)	TAM4-5
Fiebre	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Merck Manual, NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB, Explain TB	Divulgativa	3 especializada	Aparece (3 acepciones)	TAM2-3
Filtro (s) (para drogas)	CESIDA	Divulgativa	2 divulgativa	Aparece (2 sentidos, 1er tiene 7 acepciones, 2º tiene una; en este caso, pertenece al 1er)	TAM2-3
Físico (examen físico)	Mayo Clinic (TB), Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB	Divulgativa	5	Aparece (7 acepciones)	TAM2-3
Flema	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Explain TB	Divulgativa	1 divulgativa	Aparece (4 acepciones)	TAM2-3
Fluido (s) (oral; vaginal)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Merck Manual, AIDS Info Net (IAPAC), Boston Public Health Commission, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health – HIV, Centers for Disease Control and Prevention 2, HealthReach HIVtesting4, Explain TB	Divulgativa	2 divulgativa	Aparece (5 acepciones – nota que “se desaconseja el uso de ‘fluido’ con el sentido de liquido, muy frecuente por influencia del inglés fluid (liquido)” p724)	TAM2-3

Frasquito (EN: vial)	National Library of Medicine	No aparece ("frasco" = divulgativa)	No aparece, pero "frasco" = 2 divulgativa	No aparece (pero sí "frasco" EN: bottle)	TAM1
Frotar	NYC Health – HIV, Centers for Disease Control and Prevention 2	Divulgativa	3 divulgativa	No aparece, pero sí "frotador/a" y "frotamiento" con definiciones relacionadas	TAM1
Ganglio (s)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Mayo Clinic (TB), Merck Manual, Merck Manual (HIV)	Especializada	1 divulgativa	Aparece (3 acepciones)	TAM4-5
Ganglio linfático	Mayo Clinic (TB), Merck Manual, Merck Manual (HIV)	Especializada	Ganglio = 1 divulgativa, linfático = 1 especializada	Aparece (3 acepciones)	TAM4-5
Garganta	NYC Health – HIV, NYC Health - HIV-again, Explain TB	Divulgativa	3 divulgativa	Aparece (6 acepciones)	TAM2-3
Gastos compartidos	Office on Women's Health - US Department of Health & Human Services	No aparece	Gasto = 5, compartido (compartir) = 5	No aparece	TAM1
Gen (es)	Merck Manual	Especializada	3 especializada	Aparece	TAM2-3
Genético / a	HealthlinkBC, Merck Manual, Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa	4	Aparece (5 acepciones)	TAM2-3
Genital	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health - HIV-again	Divulgativa	2 divulgativa	Aparece (4 acepciones)	TAM2-3
Genoma	Govern Illes Balears Direcció General de Salut Pública y Participación	Especializada	2 especializada	Aparece	TAM2-3
Gérmen (sic) (gérmenes)	National Library of Medicine, Florida Health	No aparece	No aparece, mira abajo	Mira abajo (El DTM explica que es un error común. Correcte: germen / gérmenes)	TAM2-3
Germen (gérmenes)	AIDS Info Net (IAPAC), Boston Public Health Commission, NYC Health	Divulgativa	2 divulgativa y especializada	Aparece (5 acepciones)	TAM2-3
Ginecológico	Planned Parenthood	Divulgativa	1 divulgativa	Aparece	TAM2-3
Glándula (s)	NYC Health - HIV-again	Especializada	2 especializada	Aparece (2 acepciones)	TAM2-3
Glóbulo (s) blanco (s)	Mayo Clinic (HIV), Merck Manual	Divulgativa	Aparece sin número, divulgativa	Aparece (leucocito)	TAM2-3

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Gonorrea	Govern Illes Balears Direcció General de Salut Pública y Participació, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, HealthReach HIVtesting2, Whitman-Walker Clinic	Especializada	1 divulgativa	Aparece (2 acepciones)	TAM4-5
Gripe	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), HealthReach HIV/AIDS101-7, American Association for Clinical Chemistry	Divulgativa	2 divulgativa	Aparece	TAM2-3
Hemorragia	Explain TB	Divulgativa	2 divulgativa	Aparece	TAM2-3
Hepática	Kaiser Permanente TB	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Hepatitis	Mayo Clinic (HIV), CESIDA, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participació, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, Kaiser Permanente TB, POZ	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM4-5
Hepatitis B	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No aparece	No aparece, consulta "hepatitis"	Aparece	TAM4-5
Hepatitis C	Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius	No aparece	No aparece, consulta "hepatitis"	Aparece	TAM4-5
Hepatitis viral	CESIDA	No aparece	Hepatitis = no aparece, consulta "hepatitis", viral = 1 divulgativa	Aparece	TAM4-5
Heroína	National Library of Medicine	Divulgativa	2 divulgativa	Aparece	TAM2-3
Herpes	POZ	Divulgativa y especializada	1 divulgativa	Aparece (4 acepciones)	TAM2-3
Hígado	Mayo Clinic (HIV)	Divulgativa	3 divulgativa	Aparece	TAM2-3
Hinchar (hincha)	SaludMadrid	Divulgativa	2 divulgativa	No aparece	TAM1
Hinchazón	Centers for Disease Control & Prevention, Florida Health	Divulgativa	1 divulgativa	Aparece	TAM2-3
Hipersensibilidad	American Association for Clinical Chemistry	Divulgativa	1 divulgativa	Aparece (3 acepciones)	TAM4-5
Hisopado (bucal; de la boca) / hisopar	Whitman-Walker Clinic, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA	Divulgativa	No aparece, pero "hisopazo" y "hisopada" con significados	No aparece	TAM1



			parecidos, sin número y divulgativas		
Hisopo (EN: hyssop)	Centers for Disease Control & Prevention, HealthReach HIVtesting4, Planned Parenthood, POZ (wrote "isopo")	Divulgativa	Aparece sin número, divulgativa	Aparece (3 acepciones)	TAM2-3
Historia Clínica	Health Service Executive, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Planned Parenthood, American Association for Clinical Chemistry	Divulgativa	Aparece sin número bajo "historia (5)" - divulgativa	Aparece (2 acepciones)	TAM2-3
Historial médico	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Kaiser Permanente TB	No aparece	Aparece sin número bajo "historial (2 divulgativa)" - divulgativa	No aparece	TAM2-3
Historial médico electrónico	HealthlinkBC	No aparece	Historial médico = aparece sin número bajo "historial (2 divulgativa)" - divulgativa, electrónico 4	No aparece, pero sí "historia clínica electrónica" y "historia clínica informatizada" (p876)	TAM2-3
HIV	Office on Women's Health - US Department of Health & Human Services, Planned Parenthood	No aparece	No aparece	Aparece	TAM4-5
HIV positivo	Office on Women's Health - US Department of Health & Human Services	No aparece	No aparece	No aparece	TAM4-5
Hormonas	POZ	Divulgativa	3 especializada	Aparece	TAM2-3
Hospital	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, US Department of Health & Human Services NIH, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Fundació Lluita Contra la SIDA, BCN Checkpoint, NYC Health – HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7, Planned Parenthood, Xunta de Galicia Consellería de Sanidade, POZ	Divulgativa	5	Aparece	TAM2-3

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Hospital de referencia de VIH	BCN Checkpoint, Xunta de Galicia Consellería de Sanidade	No aparece	Hospital = 5, referencia = 4	Aparece	TAM4-5
Hueso	American Association for Clinical Chemistry	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
IFA	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	No aparece	No aparece	TAM4-5
IGRA	Merck Manual, American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health +IGRA, Explain TB	No aparece	No aparece	No aparece	TAM4-5
Imágenes por resonancia magnética (MRI)	Kaiser Permanente TB	No aparece	Imágen = 5, resonancia magnética = aparece debajo "resonancia" (2 - especializada)	Aparece (2 acepciones)	TAM2-3
Immunoenzimática (sic – inmunoenzimática?)	Govern Illes Balears Direcció General de Salut Pública y Participación	No aparece	No aparece (inmuno- = no aparece, enzimático = 1 divulgativa)	No aparece (either spelling)	TAM4-5
Inactivo / inactiva	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry	Divulgativa	1 divulgativa	Aparece	TAM2-3
Induración	Centers for Disease Control & Prevention	Especializada	No aparece	Aparece (3 acepciones)	TAM4-5
Infección (infecciones)	Healthfinder, WHO, Health Service Executive, HealthlinkBC, Centers for Disease Control & Prevention, Grupo de Trabajo Sobre el Tratamiento, del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Massachusetts Department of Public Health, CESIDA, Antisida	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3

	Lleida CAT, Govern Ílles Balears Direcció General de Salut Pública y Participación, Govern Ílles Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius, NYC Health – HIV, NYC Health - HIV-again, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, AIDS Info, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIV/AIDS101-7, HealthReach HIVtesting4, HealthReach HIVtesting1, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, Xunta de Galicia Consellería de Sanidade, POZ, Norwegian Institute of Public Health +IGRA, COCQ-SIDA, Explain TB				
Infección activa	American Association for Clinical Chemistry	No aparece	Infección = 3 divulgativa, activa = 4	No aparece	TAM2-3
Infección aguda	HealthlinkBC, POZ	No aparece	Infección = 3 divulgativa, aguda = 4	Aparece	TAM4-5
Infección inactiva	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	No aparece	Infección = 3 divulgativa, inactiva = 1 divulgativa	No aparece	TAM2-3
Infección latente	American Association for Clinical Chemistry	No aparece	Infección = 3 divulgativa, latente = 2 divulgativa	Aparece	TAM2-3

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Infecciones oportunistas	Merck Manual (HIV)	No aparece	Infección = 3 divulgativa, oportunista = 2 divulgativa	Aparece	TAM2-3
Infección de transmisión sexual / infecciones de transmisión sexual	Generalitat de Catalunya / CanalSalut – CAT, Mayo Clinic (HIV), CESIDA, Antisida Lleida CAT, Govern Ílles Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, Gais Positius, NYC Health - HIV-again, POZ	No aparece	Infección = 3 divulgativa, transmisión = 4, sexual = 5	Aparece	TAM2-3
Infección de tuberculosis latente	Centers for Disease Control & Prevention	No aparece	Infección = 3 divulgativa, tuberculosis = 2 especializada, latente = 2 divulgativa	No aparece	TAM2-3
Infección tuberculosa	Massachusetts Department of Public Health, American Association for Clinical Chemistry, Norwegian Institute of Public Health +IGRA, Explain TB	No aparece	Infección = 3 divulgativa, tuberculosa = 1 divulgativa	No aparece	TAM2-3
Infección tuberculosa latente	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), American Association for Clinical Chemistry, Norwegian Institute of Public Health +IGRA	No aparece	Infección = 3 divulgativa, tuberculosa = 1 divulgativa, latente = 2 divulgativa	No aparece	TAM2-3
Infección urinaria	Mayo Clinic (HIV)	No aparece	Infección = 3 divulgativa, urinaria = 2 divulgativa	Aparece	TAM2-3
Infección del VIH	AIDS Info Net (IAPAC)	No aparece	Infección = 3 divulgativa, VIH = (consulta VIH abajo)	No aparece	TAM4-5
Infeccioso (infecciosa) (s)	SaludMadrid, American Association for Clinical Chemistry, Explain TB	Divulgativa	2 divulgativa	Aparece (4 acepciones)	TAM2-3
Infectado / a (infectados; infectar; infectarse)	WHO, Centers for Disease Control & Prevention, SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, TeensHealth from Nemours Foundation, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Mayo Clinic (TB), Merck Manual (HIV), AIDS Info Net (IAPAC), Boston Public Health Commission, Florida Health, Antisida Lleida CAT, Govern Ílles	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3

	Balears Direcció General de Salut Pública y Participación, NYC Health – HIV, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente HIV, Xunta de Galicia Consellería de Sanidade, POZ, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, Explain TB				
Infectividad	WHO	No aparece	No aparece	Aparece	TAM4-5
Infertilidad	Greater Than AIDS / Más Que SIDA	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Infiltrados (infiltrar)	Explain TB	Especializada	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Inflamación	Mayo Clinic (TB), Merck Manual, Norwegian Institute of Public Health - TB test migrants	Divulgativa	2 divulgativa	Aparece	TAM2-3
Inflamar (inflamado / s)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Mayo Clinic (TB), Merck Manual, Merck Manual (HIV), NYC Health - HIV-again	Divulgativa	2 divulgativa	Aparece	TAM2-3
Informe estadística (informes estadísticas, informes estadísticos)	AIDS Info Net (IAPAC), AIDSinfo.nih.gov	No aparece	Informe = 4, estadística = 3 divulgativa	No aparece	TAM2-3

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Ingle	Norwegian Institute of Public Health - TB test migrants	Divulgativa	2 especializada	Aparece (2 acepciones)	TAM2-3
Inhalar	Explain TB	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Inmune	AIDS Info Net (IAPAC), Centers for Disease Control and Prevention 2	Divulgativa y especializada	2 especializada y divulgativa	Aparece (2 acepciones)	TAM2-3
Inmunidad	Florida Health	Divulgativa y especializada	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Inmunitario (inmunitaria)	Healthfinder, WHO, HealthlinkBC, Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (TB), Health Information Translations, Merck Manual, Merck Manual (HIV), Govern Illes Balears Direcció General de Salut Pública y Participación, NAM AIDSmap, HealthReach - Sexual risks 4, HealthReach HIVtesting3, Planned Parenthood, American Association for Clinical Chemistry, Kaiser Permanente TB	Especializada	1 divulgativa	Aparece	TAM4-5
Inmunocomprometido	American Association for Clinical Chemistry	No aparece	Inmuno- = no aparece, comprometido = 3 divulgativa	Aparece	TAM4-5
Inmunocromatografía	Govern Illes Balears Direcció General de Salut Pública y Participación	No aparece	Inmuno- = no aparece, cromatografía = aparece sin número - divulgativa	No aparece	TAM4-5
Inmunodeficiencia	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), National Library of Medicine, Merck Manual (HIV), AIDS Info Net (IAPAC), AIDSinfo.nih.gov, COCQ-SIDA	Especializada	1 divulgativa	Aparece	TAM4-5
Inmunodeficiencia adquirida	National Library of Medicine, AIDSinfo.nih.gov	No aparece	Inmunodeficiencia = 1 divulgativa, adquirida = 3 divulgativa	Aparece (2 acepciones)	TAM4-5
Inmunodeficiencia humana	National Library of Medicine, Merck Manual (HIV), AIDS Info Net (IAPAC)	No aparece	Inmunodeficiencia = 1 divulgativa, humana = 5	No aparece	TAM4-5
Inmunodeprimido / a / os / as	Centers for Disease Control & Prevention	Especializada	Aparece sin número, divulgativa	Aparece (2 acepciones)	TAM2-3
Inmunológico / inmunológica	Office on Women's Health - US Department of Health & Human Services, NYC Health, San	Especializada	Inmunológica = 2 especializada	Aparece	TAM2-3

	Francisco AIDS Foundation, Norwegian Institute of Public Health +IGRA, Explain TB, POZ				
Inmunosupresores (fármacos...)	American Association for Clinical Chemistry	Especializada	Inmuno- = no aparece, supresor = 1 divulgativa	Aparece (2 acepciones)	TAM4-5
Inmunotransferencia	Merck Manual (HIV)	No aparece	Inmuno- = no aparece, transferencia = 4	Aparece	TAM4-5
Inoculación	Merck Manual	Divulgativa	1 divulgativa	Aparece	TAM2-3
Inspirar	Norwegian Institute of Public Health - TB test migrants	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
Instalación de atención sanitaria	AIDS Info Net (IAPAC)	No aparece	Instalación = 4, atención = 5, sanitaria = 4	No aparece	TAM2-3
Instalaciones sanitarias	Merck Manual (HIV)	No aparece	Instalación = 4, sanitaria = 4	No aparece	TAM2-3
Instrumentos (drogas)	Govern Íles Balears Direcció General de Salut Pública y Participación	Divulgativa	4	Aparece (2 acepciones)	TAM2-3
Interferón (interferones)	Merck Manual, American Association for Clinical Chemistry, Kaiser Permanente TB	Especializada	interferón = aparece sin número, divulgativa	Aparece (2 acepciones)	TAM2-3
Interferon-gamma (sic)	Explain TB	No aparece	interferón = aparece sin número, divulgativa, gamma = 1 divulgativa	No aparece, mira "interferón gamma"	TAM4-5
Interferón gamma	Merck Manual, American Association for Clinical Chemistry, Kaiser Permanente TB	No aparece	interferón = aparece sin número, divulgativa, gamma = 1 divulgativa	Aparece (refiere al listing con el símbolo griego, que tiene 2 acepciones)	TAM4-5
Interferón-gamma reléase assay (IGRA)	Merck Manual	No aparece	interferón = aparece sin número, divulgativa, gamma = 1 divulgativa, [release assay (inglés)]	No aparece	TAM4-5
Intervención	Fundació Lluita Contra la SIDA	Divulgativa	5 divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Intradérmica (intradérmico)	Centers for Disease Control & Prevention	Especializada	Intra- = aparece sin número - divulgativa, dérmico = 1 especializada	Aparece (2 acepciones)	TAM4-5
Intradérmicamente	American Association for Clinical Chemistry	No aparece, se refiere a intradérmico	Intra- = aparece sin número - divulgativa, dérmico = 1	No aparece, pero intradérmico sí	TAM4-5

APPENDIX 2.2 Spanish word list

			especializada, -mente = aparece sin número - divulgativa		
Intravenosa (vía intravenosa)	Govern Illes Balears Direcció General de Salut Pública y Participación, American Association for Clinical Chemistry, Explain TB	Especializada	1 divulgativa	Aparece (2 acepciones)	TAM4-5
Investigación	NAM AIDSmap	Divulgativa	5	Aparece (2 acepciones)	TAM2-3
Inyectables	WHO, HealthlinkBC, Centers for Disease Control & Prevention, HealthReach HIVtesting3	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Inyección	Health Service Executive, SaludMadrid, Centers for Disease Control & Prevention, Mayo Clinic (TB), Boston Public Health Commission, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NY State Department of Health, American Association for Clinical Chemistry, Explain TB	Divulgativa	2 divulgativa y especializada	Aparece (4 acepciones)	TAM2-3
Inyectar (se) (inyectado)	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Mayo Clinic (TB), Merck Manual, Merck Manual (HIV), Boston Public Health Commission, Florida Health, CESIDA, Generalitat de Catalunya / CanalSalut – CAT, NYC Health – HIV, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting2, HealthReach SubstanceAbuse6, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), POZ, Explain TB	Divulgativa	2 divulgativa y especializada	Aparece (3 acepciones)	TAM2-3
Isopo (sic – refiere a hisopo)	POZ	No aparece, se refiere a hisopo	No aparece	No aparece	TAM2-3



ITS	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), CESIDA, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health - HIV-again, POZ	No aparece	No aparece. Consulta "infecciones por transmisión sexual"	Aparece	TAM4-5
ITSS (infecciones transmitidas sexualmente y por la sangre)	COCQ-SIDA	No aparece	No aparece	No aparece	TAM4-5
Jeringa (de tuberculina o drogas)	Centers for Disease Control & Prevention, Govern Illes Balears Direcció General de Salut Pública y Participación, AIDSinfo.nih.gov, HealthReach HIVtesting2, POZ	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Jeringuillas	CESIDA	Divulgativa	1 divulgativa	Aparece en su propia entrada y también debajo "jeringa" (2a acepción de jeringa)	TAM2-3
Jerinja (de 1 mL)	American Association for Clinical Chemistry	No aparece, se refiere a jeringa	No aparece	No aparece	TAM2-3
Kaposi	National Library of Medicine, Merck Manual (HIV)	No aparece	No aparece	Aparece	TAM4-5
Kit	HealthReach HIV/AIDS101-7, Whitman-Walker Clinic, Planned Parenthood, Centers for Disease Control & Prevention, NYC Health - HIV	Divulgativa	1 divulgativa	No aparece	TAM1
Laboratorio (s)	HealthlinkBC, SaludMadrid, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Mayo Clinic (HIV), Merck Manual (HIV), AIDS Info Net (IAPAC), CESIDA, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA, NYC Health, NYC Health – HIV, GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach HIVtesting7, Planned Parenthood,	Divulgativa	4	Aparece (2 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

	American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, World Health Organization (WHO) TB, Explain TB				
Lactancia	HealthReach Pregnancy3	Divulgativa	1 divulgativa	Aparece (4 acepciones)	TAM2-3
Lactante / s	WHO	Divulgativa	1 divulgativa	Aparece (3 acepciones)	TAM2-3
Latente	Healthfinder, Health Service Executive, Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual, AIDS Info, American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, Explain TB	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Látex (condones de)	NYC Health - HIV-again	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Lesión	Explain TB	Divulgativa	4	Aparece	TAM2-3
Leucemia	San Francisco AIDS Foundation	Divulgativa	1 divulgativa	Aparece	TAM2-3
Leucocitos	Merck Manual, American Association for Clinical Chemistry	Especializada	1 especializada	Aparece	TAM4-5
Linfático (s)	Mayo Clinic (TB), Merck Manual, Merck Manual (HIV)	Divulgativa	1 especializada	Aparece (3 acepciones)	TAM2-3
Linfocito (s)	Mayo Clinic (HIV), Merck Manual (HIV)	Especializada	1 especializada	Aparece	TAM4-5
Linfocito (s) CD4	Mayo Clinic (HIV), Merck Manual (HIV)	No aparece	Linfocito = 1 especializada, CD4 = no aparece	Aparece	TAM4-5
Líquido	Merck Manual, Boston Public Health Commission, Centers for Disease Control and Prevention 2, Kaiser Permanente TB, Explain TB	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
Líquido cefalorraquídeo (EN: cerebrospinal fluid)	Merck Manual	No aparece	Líquido = 4, cefalorraquídeo = 1 especializada	Aparece	TAM4-5

Líquido corporal (líquidos corporales)	Centers for Disease Control and Prevention 2	No aparece	Líquido = 4, corporal = 3 divulgativa	Aparece (2 acepciones)	TAM2-3
Llaga (s)	NYC Health - HIV-again	Divulgativa	2 divulgativa	Aparece (coloq. úlcera)	TAM2-3
LTBI (siglas en inglés)	Centers for Disease Control & Prevention	No aparece	No aparece	No aparece	TAM4-5
Lubricante	NYC Health - HIV-again	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Lumbar	Merck Manual, Kaiser Permanente TB	Especializada	1 especializada	Aparece	TAM4-5
Mantoux (prueba de Mantoux)	Health Service Executive, SaludMadrid, Centers for Disease Control & Prevention, Merck Manual, American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health - TB test migrants	No aparece	No aparece	Aparece (Mantoux: 2 acepciones)	TAM4-5
Maternoinfantil	AIDSinfo.nih.gov	No aparece	Aparece debajo "materno" como "materno-infantil" - 3 especializada	No aparece	TAM2-3
Material	HealthlinkBC, Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC)	Divulgativa	5	Aparece (4 acepciones)	TAM2-3
Material genético	HealthlinkBC, Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC)	No aparece	Material = 5, genético = 4	No aparece	TAM2-3
Medicación	Health Service Executive, TeensHealth from Nemours Foundation	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Medicaid	Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, Greater Than AIDS / Más Que SIDA	No aparece	No aparece	No aparece	TAM4-5
Medicare	Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, Greater Than AIDS / Más Que SIDA	No aparece	No aparece	No aparece	TAM4-5
Medicamentos	HealthlinkBC, TeensHealth from Nemours Foundation, National Library of Medicine, Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual, AIDS Info Net (IAPAC), Massachusetts Department of Public Health, Boston Public Health Commission,	Divulgativa	4	Aparece (2 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

	Florida Health, NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting1, HealthReach Pregnancy3, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, POZ				
Medicina (s)	SaludMadrid, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, COCQ-SIDA	Divulgativa	4	Aparece (2 acepciones, un de ellas se refiere a medicamento – “medicina” es coloq.) (p1046)	TAM2-3
Médico (noun)	Health Service Executive, HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, National Library of Medicine, Mayo Clinic (HIV), Health Information Translations, Merck Manual, Massachusetts Department of Public Health, Boston Public Health Commission, Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA, NYC Health, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Office on Women’s Health - US Department of Health & Human Services, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente HIV, Xunta de Galicia Consellería de Sanidade,	Divulgativa	5	Aparece	TAM2-3

	Norwegian Institute of Public Health, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants				
Médico / médica / médicos / médicas (adj)	WHO, HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, Mayo Clinic (TB), Merck Manual (HIV), AIDS Info Net (IAPAC), Florida Health, CESIDA, Govern Ílles Balears Direcció General de Salut Pública y Participación, NY State Department of Health, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, HealthReach HIV/AIDS101-7, HealthReach Pregnancy3, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, European Lung Foundation, POZ, Norwegian Institute of Public Health, COCQ-SIDA, Explain TB	Divulgativa	5	Aparece (2 acepciones)	TAM2-3
Médico de atención primaria	HealthlinkBC, Xunta de Galicia Consellería de Sanidade	No aparece	Médico = 5, atención = 5, primaria = 4	Aparece	TAM2-3
Médico de cabecera	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Generalitat de Catalunya / CanalSalut – CAT, Fundació Lluita Contra la SIDA, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Divulgativa	Aparece sin número, divulgativa	Aparece	TAM2-3
Médico de (la) familia	Fundació Lluita Contra la SIDA	Divulgativa	Aparece sin número, divulgativa	Aparece	TAM2-3

APPENDIX 2.2 Spanish word list

Medio de contraste	Explain TB	No aparece	Medio = 5, contraste = 3 divulgativa	Aparece	TAM2-3
Mejilla (EN: cheek)	AIDS Info Net (IAPAC), San Francisco AIDS Foundation, Planned Parenthood	Divulgativa	3 especializada	Aparece	TAM2-3
Membrana	Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa y especializada	2 especializada	Aparece (4 acepciones)	TAM2-3
Membranas de flujo	Govern Illes Balears Direcció General de Salut Pública y Participación	No aparece	Membrana = 2 especializada, flujo = 4 especializada	Aparece (4 acepciones)	TAM2-3
Meningitis	Merck Manual, Kaiser Permanente TB	Especializada	1 especializada	Aparece	TAM4-5
Meningitis tuberculosa	Merck Manual, Kaiser Permanente TB	No aparece	Meningitis = 1 especializada, tuberculosa = 1 divulgativa	Aparece	TAM4-5
Método anticonceptivo	NYC Health - HIV-again	No aparece	Aparece debajo "método" - 5 especializada	Aparece	TAM2-3
Método de Mantoux	Centers for Disease Control & Prevention	No aparece	Método = 5, Mantoux = no aparece	No aparece	TAM4-5
Micobacteria (s)	Centers for Disease Control & Prevention, American Association for Clinical Chemistry	No aparece	Mico- = no aparece, bacteria = 3 especializada	Aparece (2 acepciones)	TAM4-5
Micobacteriología	Centers for Disease Control & Prevention	No aparece	Mico- = no aparece, bacteriológico = 1 divulgativa	No aparece	TAM4-5
Microbio	Centers for Disease Control & Prevention, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	Divulgativa	1 especializada	Aparece	TAM2-3
Microscopía	World Health Organization (WHO) TB, Explain TB (la escribió sin acento)	Refiere a microscopia (divulgativa).	Aparece sin acento - sin número, divulgativa	Aparece (microscopia)	TAM2-3
Microscópico	World Health Organization (WHO) TB	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Microscopio	Merck Manual, Explain TB	Divulgativa	2 especializada	Aparece	TAM2-3

Miliar (TB miliar)	Kaiser Permanente TB	Especializada	Aparece sin número, especializada	Aparece (2 acepciones)	TAM4-5
Moco	NYC Health, Explain TB	Divulgativa	1 especializada	Aparece (2 acepciones)	TAM2-3
Molecular	Govern Illes Balears Direcció General de Salut Pública y Participació, World Health Organization (WHO) TB	Especializada	2 especializada	Aparece	TAM2-3
Moretón	National Library of Medicine	Divulgativa (coloq. = cardenal / cardeno)	1 divulgativo	Aparece (coloq. ~ hematoma)	TAM2-3
Mortal (es)	National Library of Medicine	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
MRI	Kaiser Permanente TB	No aparece	No aparece	No aparece	TAM4-5
Mucosas	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), CESIDA, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, San Francisco AIDS Foundation	Divulgativa u especializada	2 divulgativa y especializada	Aparece	TAM2-3
Mucosidad	Mayo Clinic (TB), Kaiser Permanente TB	Divulgativa	1 especializada	Aparece (4 acepciones)	TAM2-3
Muestras (muestra)	HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Associació Ciutadana Anti-SIDA de Catalunya (ACASC), National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual, Merck Manual (HIV), Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participació, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius, NYC Health, NYC Health – HIV, GMHC, Centers for Disease Control and Prevention 2, HealthReach HIVtesting4, HealthReach HIVtesting7, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, COCQ-	Divulgativa	4	Aparece (2 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

	SIDA, World Health Organization (WHO) TB, Explain TB				
Muestra de esputo	Merck Manual, World Health Organization (WHO) TB, Explain TB	No aparece	Muestra = 4, esputo = 1 divulgativa	No aparece	TAM2-3
Muestra de fluido oral	NYC Health – HIV, Centers for Disease Control and Prevention 2	No aparece	Muestra = 4, fluido = 2 divulgativa, oral = 3 divulgativa	No aparece	TAM2-3
Muestra de orina	US Department of Health & Human Services NIH, Whitman-Walker Clinic	No aparece	Muestra = 4, orina = 2 especializada	No aparece	TAM2-3
Muestra de saliva	National Library of Medicine, Antisida Lleida CAT	No aparece	Muestra = 4, saliva = 2 divulgativa	No aparece	TAM2-3
Muestra de sangre	HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Associació Ciutadana Anti-SIDA de Catalunya (ACASC), US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual (HIV), AIDS Info Net (IAPAC), Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius, NYC Health, NYC Health – HIV, GMHC, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting4, HealthReach HIVtesting7, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, POZ, COCQ-SIDA, Explain TB	No aparece	Muestra = 4, sangre = 4	Aparece como “muestra de sangre periférica”	TAM2-3
Muestras de tejido	Explain TB	No aparece	Muestra = 4, tejido = 3 divulgativa	No aparece	TAM2-3
Multirresistente	World Health Organization (WHO) TB	No aparece	Multi- = aparece sin número - divulgativa, resistente = 3 divulgativa	Aparece	TAM2-3



Mutaciones	Merck Manual	Especializada	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Mycobacterium	Centers for Disease Control & Prevention, Merck Manual, American Association for Clinical Chemistry	No aparece	No aparece	Aparece	TAM4-5
Mycobacterium kansasii	American Association for Clinical Chemistry	No aparece	No aparece (ni mycobacterium ni kansasii)	No aparece	TAM4-5
Mycobacterium tuberculosis	Centers for Disease Control & Prevention, Merck Manual, American Association for Clinical Chemistry	No aparece	Mycobacterium = no aparece, tuberculosis = 2 especializada	Aparece	TAM4-5
M. tuberculosis	Centers for Disease Control & Prevention, American Association for Clinical Chemistry	No aparece	No aparece	No aparece	TAM4-5
Nasal (es)	Merck Manual	Divulgativa u especializada	2 divulgativa	Aparece (3 acepciones)	TAM2-3
NAT	Centers for Disease Control & Prevention, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	No aparece	No aparece	No aparece	TAM4-5
Nebulizada (solución salina nebulizada) / nebulizar	Explain TB	Divulgativa	(nebulizar = sin número, divulgativa)	Aparece	TAM2-3
Necrosis	Centers for Disease Control & Prevention	Especializada	1 especializada	Aparece (2 acepciones)	TAM4-5
Negativo / negativa	Health Service Executive, HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Associació Ciutadana Anti-SIDA de Catalunya (ACASC), TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Mayo Clinic (HIV), Mayo Clinic (TB), Health Information Translations, Merck Manual (HIV), AIDS Info Net (IAPAC), Boston Public Health Commission, Florida Health, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, BCN	Divulgativa	4	Aparece (9 acepciones)	TAM2-3

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	Checkpoint, Gais Positius, NY State Department of Health, NYC Health, NYC Health – HIV, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach SubstanceAbuse6, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ, TB_IGRA, Explain TB				
Negativo falso	Florida Health	No aparece	Negativo = 4, falso = 5	Aparece	TAM2-3
Neumonía	National Library of Medicine	Especializada	2 especializada	Aparece	TAM2-3
Nitrilo	NYC Health - HIV-again	No aparece	No aparece	Aparece (3 acepciones)	TAM4-5
Nitrilo sintético (condones de)	NYC Health - HIV-again	No aparece	Nitrilo = no aparece, sintético = 2 divulgativa	No aparece	TAM4-5
Nódulo	Explain TB	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Oral (es)	TeensHealth from Nemours Foundation, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Centers for Disease Control and Prevention 2, San Francisco AIDS Foundation, Kaiser Permanente HIV, POZ	Divulgativa	3 divulgativa	Aparece (3 acepciones)	TAM2-3
Oportunistas (de “enfermedades oportunistas”)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Organismo	Healthfinder, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Generalitat de Catalunya / CanalSalut – CAT, Merck Manual (HIV), Florida Health, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública,	Divulgativa	5 divulgativa y especializada	Aparece (4 acepciones)	TAM2-3

	HealthReach HIVtesting4, HealthReach HIVtesting3, American Association for Clinical Chemistry				
Órgano (s)	Centers for Disease Control & Prevention, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry, Explain TB	Divulgativa	5 especializada	Aparece (2 acepciones)	TAM2-3
Orientador	TeensHealth from Nemours Foundation	Divulgativa	1	No aparece	TAM2-3
Orificio (s)	Merck Manual	Divulgativa u especializada	2 divulgativa y especializada	Aparece (3 acepciones)	TAM2-3
Orificios nasales	Merck Manual	No aparece	Orificio = 2 divulgativa y especializada, nasal = 2 divulgativa	Aparece	TAM2-3
Orina	Centers for Disease Control & Prevention, AIDS Info Net (IAPAC), NYC Health - HIV-again, Centers for Disease Control and Prevention 2, Whitman-Walker Clinic, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, COCQ-SIDA	Divulgativa	2 especializada	Aparece	TAM2-3
Oxígeno	Explain TB	Divulgativa	4 divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Padecer	Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants	Divulgativa	4	No aparece	TAM1
Padecimiento	Norwegian Institute of Public Health	Divulgativa	2 divulgativa	Aparece	TAM2-3
PAN (prueba de ácido nucleico)	HealthReach HIVtesting6, HealthReach HIVtesting4	No aparece	No aparece	Aparece, pero la definición no coincide con este contexto	TAM4-5
Paperas	American Association for Clinical Chemistry	Divulgativa y especializada	Aparece sin número, especializada	Aparece	TAM2-3
Parafernalia	HealthReach HIVtesting6, HealthReach SubstanceAbuse6	divulgativa	1 divulgativa	No aparece	TAM1
Pareja sexual	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), National Library of Medicine	Pareja D Sexual D	pareja 4, sexual 5	Pareja aparece (4 acepciones, 2 relevantes); sexual aparece (3	TAM2-3

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				acepciones, 2 relevantes)	
Parotiditis	American Association for Clinical Chemistry	Especializada	Aparece sin número, especializada	Aparece (2 acepciones)	TAM4-5
Partículas víricas [vivas (vacuna con...)]	American Association for Clinical Chemistry	No aparece	Partícula = 4, vírico = 1 divulgativa	Aparece (en "partícula viral")	TAM2-3
Parto	National Library of Medicine, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach Pregnancy3	Divulgativa	3 divulgativa	Aparece (3 acepciones)	TAM2-3
Pastilla	SaludMadrid, NY State Department of Health, NYC Health - HIV-again	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Patógenos	WHO, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Especializada	1 divulgativa	Aparece (2 acepciones)	TAM2-3
PCR (sigla en EN: Polymerase chain rxn ~ reacción en cadena de la polimerase)	Merck Manual, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Explain TB	Especializada	No aparece	Aparece (3 acepciones)	TAM4-5
Pecho	Mayo Clinic (TB), Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Kaiser Permanente TB	Divulgativa	4 divulgativa y especializada	Aparece (3 acepciones – incl. coloq. mama y coloq. tórax)	TAM2-3
Pediátrica	World Health Organization (WHO) TB	Divulgativa	1 divulgativa	Aparece	TAM2-3
Penetración (de "relación sexual con penetración")	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Generalitat de Catalunya / CanalSalut - CAT	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
PEP	Centers for Disease Control & Prevention, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, Whitman-Walker Clinic, Planned Parenthood, Greater Than AIDS / Más Que SIDA	No aparece	No aparece	No aparece	TAM4-5
Pérdida de peso	SaludMadrid, Merck Manual (HIV)	No aparece	Pérdida = 5, peso = 5	Aparece	TAM2-3

Perforaciones	CESIDA	Divulgativa	2 divulgativa y especializada	Aparece (4 acepciones)	TAM2-3
Período silente (refiere a período ventana)	AIDSinfo.nih.gov	No aparece	Período = aparece sin número - divulgativa y especializada, silente = 1 divulgativa	No aparece	TAM2-3
Periodo de ventana	Centers for Disease Control & Prevention, NYC Health – HIV, Centers for Disease Control and Prevention 2, HealthReach HIVtesting4, HealthReach HIVtesting3	No aparece	Periodo ser refiere a período = aparece sin número - divulgativa y especializada, ventana = 5	No aparece	TAM2-3
Periodo ventana	Govern Illes Balears Direcció General de Salut Pública y Participación, San Francisco AIDS Foundation, Planned Parenthood, POZ	No aparece	Periodo ser refiere a período = aparece sin número - divulgativa y especializada, ventana = 5	No aparece	TAM2-3
Período ventana	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), AIDS Info Net (IAPAC), Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, GMHC, Office on Women's Health - US Department of Health & Human Services	No aparece	Período = aparece sin número - divulgativa y especializada, ventana = 5	No aparece	TAM2-3
Período de ventana	HealthReach HIVtesting6, Greater Than AIDS / Más Que SIDA	No aparece	Período = aparece sin número - divulgativa y especializada, ventana = 5	No aparece	TAM2-3
Picazón	Explain TB	Divulgativa	1 divulgativa	Aparece (coloq. = prurito)	TAM2-3
Picor	American Association for Clinical Chemistry	Divulgativa	1 divulgativa	Aparece (2 acepciones, incl. coloq. = prurito)	TAM2-3
Píldora	Whitman-Walker Clinic	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Pinchar (pinchando un dedo)	NYC Health – HIV, Planned Parenthood	Divulgativa	2 divulgativa	No aparece	TAM1

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Pinchazo	BCN Checkpoint. Gais Positius, Centers for Disease Control and Prevention 2, HealthReach HIVtesting4, San Francisco AIDS Foundation, POZ	Divulgativa	2 divulgativa	Aparece (5 acepciones)	TAM2-3
Pipeta (de estudio)	POZ	No aparece	1 divulgativa	Aparece (2 acepciones)	TAM4-5
Plasma (de sangre)	Govern Ílles Balears Direcció General de Salut Pública y Participación	Especializada	Plasma = 1 divulgativa y especializada, sangre = 4	Aparece (3 acepciones)	TAM2-3
Polimerasa	Merck Manual	Especializada	No aparece	Aparece (2 acepciones)	TAM4-5
Portador / portadora	POZ, Norwegian Institute of Public Health	Divulgativa	3 especializada	Aparece (5 acepciones)	TAM2-3
Posexposición	Centers for Disease Control & Prevention	No aparece	No aparece	No aparece	TAM2-3 (cognate of exposición)
Positivo / positiva / os	Health Service Executive, HealthlinkBC, Centers for Disease Control & Prevention, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Associació Ciutadana Anti-SIDA de Catalunya (ACASC), TeensHealth from Nemours Foundation, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Mayo Clinic (HIV), Mayo Clinic (TB), Health Information Translations, Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Boston Public Health Commission, Florida Health, CESIDA, Antisida Lleida CAT, Govern Ílles Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius, NY State Department of Health, NYC Health, NYC Health – HIV, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and	Divulgativa	5 divulgativa y especializada	Aparece (9 acepciones)	TAM2-3

	Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach HIVtesting7, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, Xunta de Galicia Consellería de Sanidade, POZ, Norwegian Institute of Public Health +IGRA, COCQ-SIDA, Explain TB				
Positivo falso	AIDS Info Net (IAPAC)	No aparece	Positivo = 5 divulgativa y especializada, falso = 5	aparece	TAM2-3
PPD	Centers for Disease Control & Prevention, Mayo Clinic (TB), Merck Manual, American Association for Clinical Chemistry, Kaiser Permanente TB	No aparece	No aparece	No aparece	TAM4-5
PPrE (PrEP en inglés)	HealthReach HIVtesting6, HealthReach HIVtesting1	No aparece	No aparece	No aparece	TAM4-5
Preciso (en cuanto a pruebas)	Explain TB	Divulgativa	4	Aparece (2 acepciones)	TAM2-3
Prednisona	Centers for Disease Control & Prevention	No aparece	No aparece	Aparece	TAM4-5
Prenatal	HealthReach Pregnancy3, Planned Parenthood	Divulgativa	1 divulgativa	Aparece	TAM2-3
PrEP	NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Whitman-Walker Clinic, Planned Parenthood	No aparece	No aparece	No aparece	TAM4-5
PrEP15	Centers for Disease Control & Prevention	No aparece	No aparece	No aparece	TAM4-5
Preservativo (s)	SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, TeensHealth from Nemours Foundation, CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, HealthReach	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

	HIVtesting6, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach HIVtesting3, Kaiser Permanente HIV				
Prevalencia	WHO	Divulgativa u especializada	No aparece	Aparece (2 acepciones)	TAM2-3
Prevención	Generalitat de Catalunya / CanalSalut – CAT, Fundació Lluita Contra la SIDA	Divulgativa	4	Aparece (2 acepciones, ambas relevantes)	TAM2-3
Probabilidad	WHO	Divulgativa u especializada	3 divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Procedimiento (s)	Centers for Disease Control & Prevention, National Library of Medicine, Fundació Lluita Contra la SIDA	Divulgativa	5	Aparece	TAM2-3
Productivo / productiva (tos)	World Health Organization (WHO) TB	Divulgativa	4	No aparece	TAM1
Profesional médico	HealthReach HIVtesting7	No aparece	Profesional = 5, médico = 5	Aparece	TAM2-3
Profesional de la salud	GMHC	No aparece	Profesional = 5, salud = 5	No aparece	TAM2-3
Profesional sanitario	HealthReach HIV/AIDS101-7, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, American Association for Clinical Chemistry	No aparece	Profesional = 5, sanitario = 4	Aparece	TAM2-3
Profiláctico	Antisida Lleida CAT, Norwegian Institute of Public Health	Divulgativa u especializada	1 divulgativa y especializada	Aparece (3 acepciones)	TAM2-3
Profilaxis	Centers for Disease Control & Prevention, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting1, Whitman-Walker Clinic, Greater Than AIDS / Más Que SIDA	Especializada	1 especializada	Aparece (2 acepciones)	TAM4-5
Profilaxis posterior a la exposición	Greater Than AIDS / Más Que SIDA	No aparece	Profilaxis = 1 especializada, posterior = 4, exposición = 5	No aparece	TAM4-5



Profilaxis posexposición	Centers for Disease Control and Prevention 2	No aparece	Profilaxis = 1 especializada, pos- = aparece sin número - divulgativa, exposición = 5	No aparece	TAM4-5
Profilaxis postexposición	NYC Health – HIV, NYC Health - HIV-again	No aparece	Profilaxis = 1 especializada, post- = aparece sin número - divulgativa, exposición = 5	No aparece	TAM4-5
Profilaxis post-exposición	Whitman-Walker Clinic	No aparece	Profilaxis = 1 especializada, post- = aparece sin número - divulgativa, exposición = 5	No aparece	TAM4-5
Profilaxis preexposición	AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting1	No aparece	Profilaxis = 1 especializada, pre- = aparece sin número - divulgativa, exposición = 5	No aparece	TAM4-5
Profilaxis pre-exposición	NY State Department of Health, Whitman-Walker Clinic	No aparece	Profilaxis = 1 especializada, pre- = aparece sin número - divulgativa, exposición = 5	No aparece	TAM4-5
Profilaxis preexposición	Centers for Disease Control and Prevention 2	No aparece	Profilaxis = 1 especializada, pre- = aparece sin número - divulgativa, exposición = 5	No aparece	TAM4-5
Profilaxis previa a la exposición	NYC Health – HIV, NYC Health - HIV-again	No aparece	Profilaxis = 1 especializada, previa = 4, exposición = 5	No aparece	TAM4-5
Propagación	NYC Health - HIV-again, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV	Divulgativa	2 divulgativa	No aparece	TAM1
Propagar	NYC Health, HealthReach HIV/AIDS101-7, Kaiser Permanente HIV	Divulgativa	2 divulgativa	No aparece	TAM1

APPENDIX 2.2 Spanish word list

Proteico	Centers for Disease Control & Prevention, Merck Manual, American Association for Clinical Chemistry	Divulgativa	2 divulgativa	Aparece	TAM2-3
Proteína(s)	HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Mayo Clinic (HIV), Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Florida Health, AIDSinfo.nih.gov, HealthReach HIVtesting4	Divulgativa	4	Aparece	TAM2-3
Protuberancia	Boston Public Health Commission, American Association for Clinical Chemistry	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Proveedor de atención médica	NY State Department of Health, NYC Health, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, POZ	No aparece	Proveedor = 3 divulgativa, atención = 5, médica = 5	No aparece	TAM2-3
Proveedor de atención de salud	NYC Health - HIV	No aparece	Proveedor = 3 divulgativa, atención = 5, salud = 5	No aparece	TAM2-3
Proveedor de cuidado de salud	Centers for Disease Control and Prevention 2	No aparece	Proveedor = 3 divulgativa, cuidado = 4, salud = 5	No aparece	TAM2-3
Proveedor médico	NYC Health – HIV, NYC Health - HIV-again	No aparece	Proveedor = 3 divulgativa, médico = 5	No aparece	TAM2-3
Proveedor de salud	Greater Than AIDS / Más Que SIDA	No aparece	Proveedor = 3 divulgativa, salud = 5	No aparece	TAM2-3
Prueba (pruebas)	Healthfinder, WHO, Health Service Executive, HealthlinkBC, Centers for Disease Control & Prevention, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Mayo Clinic (TB), Health Information Translations, Merck Manual, Merck Manual (HIV), AIDS Info Net	Divulgativa	4 divulgativa y especializada	Aparece (9 acepciones)	TAM2-3

	(IAPAC), Massachusetts Department of Public Health, Boston Public Health Commission, Florida Health, CESIDA, Antisida Lleida CAT, Govern Ílles Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positiu, NY State Department of Health, NYC Health, NYC Health – HIV, NYC Health - HIV-again, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, AIDS Info, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting4, HealthReach SubstanceAbuse6, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, POZ, Norwegian Institute of Public Health, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA, World Health Organization (WHO) TB, Explain TB				
Prueba de ácido nucleico	Centers for Disease Control & Prevention, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting6, HealthReach HIVtesting4, POZ	No aparece	Prueba = 4 divulgativa y especializada, ácido = 4 (divulgativa y especializada), nucleico = 1 especializada	No aparece	TAM4-5
Prueba de alta especificidad	Antisida Lleida CAT	No aparece	Prueba = 4 divulgativa y especializada, alta = 5, especificidad = 2 divulgativa	No aparece	TAM2-3

APPENDIX 2.2 Spanish word list

Pruebas de amplificación de ácidos nucleicos	Merck Manual	No aparece	Prueba = 4 divulgativa y especializada, amplificación = 2 divulgativa, ácido = 4 (divulgativa y especializada), nucleico = 1 especializada	No aparece	TAM4-5
Prueba de anticuerpo	HealthlinkBC, Centers for Disease Control & Prevention, National Library of Medicine, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, San Francisco AIDS Foundation	No aparece	Prueba = 4 divulgativa y especializada, anticuerpos = 2 especializada	No aparece	TAM2-3
Prueba de anticuerpos y antígenos contra el VIH	National Library of Medicine	No aparece	Prueba = 4 divulgativa y especializada, anticuerpos = 2 especializada, antígeno = 1 especializada, VIH = (consulta VIH abajo)	No aparece	TAM4-5
Prueba antígeno-anticuerpo	HealthReach HIVtesting4	No aparece	Prueba = 4 divulgativa y especializada, antígeno = 1 especializada, anticuerpos = 2 especializada	No aparece	TAM4-5
Prueba de antígeno/anticuerpo	Centers for Disease Control and Prevention 2	No aparece	Prueba = 4 divulgativa y especializada, antígeno = 1 especializada, anticuerpos = 2 especializada	No aparece	TAM4-5
Prueba de antígenos y anticuerpos	AIDSinfo.nih.gov	No aparece	Prueba = 4 divulgativa y especializada, antígeno = 1 especializada, anticuerpos = 2 especializada	No aparece	TAM4-5
Prueba de ARN	HealthReach HIVtesting6, HealthReach HIVtesting4	No aparece	Prueba = 4 divulgativa y especializada, ARN = Las siglas no aparece, [ácido = 4 divulgativa y especializada,	No aparece	TAM4-5

			ribonucleico = 1 especializada]		
Prueba de carga viral	Centers for Disease Control & Prevention, Centers for Disease Control and Prevention 2	No aparece	Prueba = 4 divulgativa y especializada, carga = 4, viral = 1 divulgativa	No aparece	TAM2-3
Prueba de carga viral del VIH	Centers for Disease Control and Prevention 2	No aparece	Prueba = 4 divulgativa y especializada, carga = 4, viral = 1 divulgativa, VIH = (consulta VIH abajo)	No aparece	TAM4-5
Prueba de carga vírica	HealthReach HIVtesting6, HealthReach HIVtesting4	No aparece	Prueba = 4 divulgativa y especializada, carga = 4, vírica = 1 divulgativa	No aparece	TAM4-5
Prueba casera	GMHC, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting4, POZ	No aparece	Prueba = 4 divulgativa y especializada, casera = 2 divulgativa	No aparece	TAM2-3
Prueba combinada / pruebas combinadas	Centers for Disease Control & Prevention	No aparece	Prueba = 4 divulgativa y especializada, combinada = 2 divulgativa	No aparece	TAM2-3
Pruebas de confirmación	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No aparece	Prueba = 4 divulgativa y especializada, confirmación = 2 divulgativa	No aparece	TAM2-3
Prueba confirmatoria	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), San Francisco AIDS Foundation	No aparece	Prueba = 4 divulgativa y especializada, confirmatoria = aparece sin número - divulgativa	No aparece	TAM2-3
Prueba convencional (pruebas convencionales)	Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA	No aparece	Prueba = 4 divulgativa y especializada, convencional = 3 divulgativa	No aparece	TAM2-3
Pruebas de cribado	Merck Manual (HIV), American Association for Clinical Chemistry	No aparece	Prueba = 4 divulgativa y especializada, cribado = aparece sin número - divulgativa	No aparece	TAM2-3

APPENDIX 2.2 Spanish word list

Prueba de cuarta generación	Centers for Disease Control & Prevention, AIDS Info Net (IAPAC), POZ	No aparece	Prueba = 4 divulgativa y especializada, Cuarta = 5, generación = 5	No aparece	TAM4-5
Prueba cutánea	Health Service Executive, Centers for Disease Control & Prevention, Mayo Clinic (TB), Merck Manual, Boston Public Health Commission, Florida Health, NYC Health, American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health - TB test migrants, Explain TB	No aparece	Prueba = 4 divulgativa y especializada, cutánea = 2 divulgativa	No aparece, pero sí que aparece "prueba cutánea por punción"	TAM2-3
Prueba cutánea de la tuberculina	Centers for Disease Control & Prevention, Merck Manual, Florida Health, American Association for Clinical Chemistry, Explain TB	No aparece	Prueba = 4 divulgativa y especializada, cutánea = 2 divulgativa, tuberculina = aparece sin número - especializada	No aparece (pero sí "prueba de la tuberculina")	TAM2-3
Prueba cutánea de TB	Boston Public Health Commission, Kaiser Permanente TB	No aparece	Prueba = 4 divulgativa y especializada, cutánea = 2 divulgativa, TB = las siglas no aparecen pero tuberculosis es 2 especializada	No aparece	TAM4-5
Prueba de detección	WHO, HealthlinkBC, Centers for Disease Control & Prevention, Merck Manual, Antisida Lleida CAT, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDS Info, Kaiser Permanente TB, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA, Explain TB	No aparece	Prueba = 4 divulgativa y especializada, detección = 2 divulgativa	No aparece	TAM2-3
Prueba de detección de tuberculosis	AIDS Info, Norwegian Institute of Public Health - TB test migrants	No aparece	Prueba = 4 divulgativa y especializada, detección = 2 divulgativa, tuberculosis = 2 especializada	No aparece	TAM2-3
Prueba de detección de VIH	COCQ-SIDA	No aparece	Prueba = 4 divulgativa y especializada, detección = 2	No aparece	TAM4-5

			divulgativa, VIH = consulta VIH abajo		
Pruebas de detección del VIH	NYC Health – HIV, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Explain TB	No aparece	Prueba = 4 divulgativa y especializada, detección = 2 divulgativa, VIH = consulta VIH abajo	No aparece	TAM4-5
Prueba de detección sistemática	Merck Manual	No aparece	Prueba = 4 divulgativa y especializada, detección = 2 divulgativa, sistemática = 3 divulgativa	No aparece	TAM2-3
Prueba diagnóstica	WHO, Merck Manual (HIV)	No aparece	Prueba = 4 divulgativa y especializada, diagnóstica = 4 divulgativa	No aparece	TAM2-3
Prueba de diagnóstico	POZ, World Health Organization (WHO) TB	No aparece	Prueba = 4 divulgativa y especializada, diagnóstico = 4 divulgativa y especializada	No aparece	TAM2-3
Prueba domiciliaria	AIDSinfo.nih.gov	No aparece	Prueba = 4 divulgativa y especializada, domiciliaria = 1 divulgativa	No aparece	TAM2-3
Prueba en dos fases	Centers for Disease Control & Prevention	No aparece	Prueba = 4 divulgativa y especializada, dos = 5, fase = 4	No aparece	TAM2-3
Prueba de esputo	Health Information Translations	No aparece	Prueba = 4 divulgativa y especializada, esputo = 1 divulgativa	No aparece	TAM2-3
Prueba estándar (vs prueba rápida)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	Prueba = 4 divulgativa y especializada, estándar = 3 divulgativa	No aparece	TAM2-3
Prueba de EV	Whitman-Walker Clinic	No aparece	Prueba = 4 divulgativa y especializada, EV = no aparece	No aparece	TAM4-5

APPENDIX 2.2 Spanish word list

Prueba de función hepática	Kaiser Permanente TB	No aparece	Prueba = 4 divulgativa y especializada, función = 5 divulgativa y en este contexto especializada, hepática = 2 divulgativa	Aparece en “pruebas funcionales hepáticas”	TAM2-3
Prueba de garganta	NYC Health - HIV-again	No aparece	Prueba = 4 divulgativa y especializada, garganta = 3 divulgativa	No aparece	TAM2-3
Prueba de Hepatitis C	Antisida Lleida CAT	No aparece	Prueba = 4 divulgativa y especializada, hepatitis C = no aparece pero “hepatitis” 1 divulgativa	No aparece	TAM4-5
Prueba IGRA	Norwegian Institute of Public Health +IGRA	No aparece	Prueba = 4 divulgativa y especializada, IGRA = no aparece	No aparece	TAM4-5
Prueba de infección (“aguda”) por el VIH	NYC Health - HIV	No aparece	Prueba = 4 divulgativa y especializada, infección = 3 divulgativa, VIH = consulta VIH abajo	No aparece	TAM4-5
Prueba INSTI	AIDS Info Net (IAPAC)	No aparece	Prueba = 4 divulgativa y especializada, INSTI = no aparece	No aparece	TAM4-5
Prueba de ITS	NYC Health - HIV-again	No aparece	Prueba = 4 divulgativa y especializada, ITS = No aparece. Consulta “infecciones por transmisión sexual”	No aparece	TAM4-5
Prueba de Mantoux (see Mantoux)	Health Service Executive, Merck Manual, American Association for Clinical Chemistry, Kaiser Permanente TB	No aparece	Prueba = 4 divulgativa y especializada, Mantoux = no aparece	Aparece	TAM4-5
Prueba molecular rápida	World Health Organization (WHO) TB	No aparece	Prueba = 4 divulgativa y especializada, molecular = 2 especializada, rápida = 5	No aparece	TAM2-3
Prueba de orina	NYC Health - HIV-again	No aparece	Prueba = 4 divulgativa y especializada, orina = 2 especializada	No aparece	TAM2-3



Prueba de piel	NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	No aparece	Prueba = 4 divulgativa y especializada, piel = 5 divulgativa y especializada	No aparece	TAM2-3
Prueba PPD	Kaiser Permanente TB	No aparece	Prueba = 4 divulgativa y especializada, PPD = no aparece	No aparece	TAM4-5
Prueba rápida (pruebas rápidas)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Centers for Disease Control & Prevention, CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participación, BCN Checkpoint, Gais Positius, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente TB, POZ, World Health Organization (WHO) TB	No aparece	Prueba = 4 divulgativa y especializada, rápida = 5	No aparece	TAM2-3
Prueba rápida de detección del VIH	CESIDA	No aparece	Prueba = 4 divulgativa y especializada, rápida = 5, detección = 2 divulgativa, VIH = consulta VIH abajo	No aparece	TAM4-5
Prueba (s) rápida (s) del VIH	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	Prueba = 4 divulgativa y especializada, rápida = 5, detección = 2 divulgativa, VIH = consulta VIH abajo	No aparece	TAM4-5
Prueba de sangre	HealthlinkBC, Centers for Disease Control & Prevention, National Library of Medicine, AIDS Info Net (IAPAC), NYC Health, NYC Health – HIV, NYC Health - HIV-again	No aparece	Prueba = 4 divulgativa y especializada, sangre = 4	No aparece	TAM2-3
Prueba de seguimiento	Centers for Disease Control & Prevention, National Library of Medicine, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach Pregnancy3, Greater Than AIDS / Más Que SIDA	No aparece	Prueba = 4 divulgativa y especializada, seguimiento = 3 divulgativa	No aparece	TAM2-3

APPENDIX 2.2 Spanish word list

Pruebas serológicas	WHO	No aparece	Prueba = 4 divulgativa y especializada, serológica = sin número, divulgativa	Aparece	TAM2-3
Prueba de SIDA	SaludMadrid	No aparece	Prueba = 4 divulgativa y especializada, SIDA = aparece sin número en minúsculas, divulgativa	No aparece	TAM2-3
Prueba del SIDA	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	Prueba = 4 divulgativa y especializada, SIDA = aparece sin número en minúsculas, divulgativa	No aparece	TAM2-3
Prueba de TB	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2	No aparece	Prueba = 4 divulgativa y especializada, TB = las siglas no aparecen pero tuberculosis es 2 especializada	No aparece	TAM4-5
Prueba de la TB	AIDS Info	No aparece	Prueba = 4 divulgativa y especializada, TB = las siglas no aparecen pero tuberculosis es 2 especializada	No aparece	TAM4-5
Prueba TB de la piel	Boston Public Health Commission	No aparece	Prueba = 4 divulgativa y especializada, TB = las siglas no aparecen pero tuberculosis es 2 especializada, piel = 5 divulgativa y especializada	No aparece	TAM4-5
Prueba de tuberculina	Health Information Translations	No aparece	Prueba = 4 divulgativa y especializada, tuberculina = aparece sin número - especializada	Aparece	TAM2-3
Prueba de la tuberculina	Kaiser Permanente TB	No aparece	Prueba = 4 divulgativa y especializada, tuberculina = aparece	Aparece	TAM2-3

			sin número - especializada		
Prueba de VIH	TeensHealth from Nemours Foundation, National Library of Medicine, Office on Women's Health - US Department of Health & Human Services, Office on Women's Health - US Department of Health & Human Services, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, Greater Than AIDS / Más Que SIDA	No aparece	Prueba = 4 divulgativa y especializada, VIH = consulta VIH abajo	No aparece	TAM4-5
Prueba del VIH	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, CESIDA, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA, BCN Checkpoint, NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente HIV, Xunta de Galicia Consellería de Sanidade, POZ	No aparece	Prueba = 4 divulgativa y especializada, VIH = consulta VIH abajo	No aparece	TAM4-5
Prueba del VIH/sida (sic)	Generalitat de Catalunya / CanalSalut - CAT	No aparece	Prueba = 4 divulgativa y especializada, VIH = consulta VIH abajo, sida = aparece sin número en minúsculas, divulgativa	No aparece	TAM4-5
Pruebas virológicas	WHO	No aparece	Prueba = 4 divulgativa y especializada, virológico = no aparece	No aparece	TAM4-5
Psicológica	Associació Ciutadana Anti-SIDA de Catalunya (ACASC)	Divulgativa	4	Aparece	TAM2-3
Púa	American Association for Clinical Chemistry	Divulgativa	2 divulgativa	No aparece	TAM1
Puesto móvil	Planned Parenthood	No aparece	Puesto = 5, móvil = 4	No aparece	TAM1

APPENDIX 2.2 Spanish word list

Pulmonar (TB pulmonar)	Kaiser Permanente TB, Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB, Explain TB	Divulgativa	2 divulgativa	Aparece (5 acepciones)	TAM2-3
Pulmones (pulmón)	Healthfinder, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health - TB test migrants, Explain TB	Divulgativa	3 especializada	Aparece	TAM2-3
Pulmonar	Merck Manual, Norwegian Institute of Public Health	Divulgativa	2 divulgativa	Aparece (5 acepciones)	TAM2-3
Punción	American Association for Clinical Chemistry, Kaiser Permanente TB	Especializada	1 divulgativa	Aparece (2 acepciones)	TAM4-5
Punción capilar	Antisida Lleida CAT	No aparece	Punción = 1 divulgativa, capilar = 2 divulgativa	No aparece	TAM4-5
Punción lumbar	Merck Manual, Kaiser Permanente TB	No aparece	Punción = 1 divulgativa, lumbar = 1 especializada	Aparece	TAM4-5
P24	WHO, HealthlinkBC, Centers for Disease Control & Prevention, National Library of Medicine, Govern Illes Balears Direcció General de Salut Pública y Participación, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, POZ	No aparece	No aparece	No aparece	TAM4-5
Radiografía	Health Service Executive, Centers for Disease Control & Prevention, SaludMadrid, Mayo Clinic (TB), Health Information Translations, Merck Manual, Florida Health, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3

	Chemistry, Kaiser Permanente TB, European Lung Foundation, Norwegian Institute of Public Health, Norwegian Institute of Public Health - TB test migrants, Explain TB				
Raspado (bucal) (EN: curettage)	US Department of Health & Human Services NIH, Planned Parenthood	Divulgativa u especializada	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Rastreo de contacto	Health Service Executive	No aparece	Rastreo = 1 divulgativa, contacto = 4	No aparece	TAM2-3
Rayos X (quiere decir radiografía)	Explain TB	No aparece	Aparece debajo "rayo", 4 divulgativa	Aparece	TAM4-5
Reacción	Merck Manual	Divulgativa u especializada	4 divulgativa y especializada	Aparece (9 acepciones)	TAM2-3
Reacción en cadena de la polimerasa (PCR)	Merck Manual	Especializada	Reacción en cadena = aparece debajo "reacción", 4 divulgativa y especializada, polimerasa = no aparece	Aparece	TAM4-5
Reactivo / a (se refiere al resultado)	HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, HealthReach HIVtesting4	Divulgativa u especializada	1 divulgativa y (en este contexto) especializada	Aparece (4 acepciones)	TAM2-3
Receta	Fundació Lluita Contra la SIDA, TeensHealth from Nemours Foundation	Divulgativa	3 divulgativa	Aparece (3 acepciones)	TAM2-3
Rectal / es	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Whitman-Walker Clinic	Especializada	1 divulgativa	Aparece (2 acepciones)	TAM4-5
Red sanitaria privada	Xunta de Galicia Consellería de Sanidade	No aparece	Red = 5, sanitaria = 4, privada = 5	No aparece	TAM2-3
Registro médico	Centers for Disease Control and Prevention 2	No aparece	Registro = 4, medico = 5	No aparece	TAM2-3
Rehabilitación	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	Divulgativa y especializada	3 divulgativa	Aparece (3 acepciones)	TAM2-3
Reinfección	Generalitat de Catalunya / CanalSalut – CAT, CESIDA	No aparece	No aparece, pero "reinfectar" 1 divulgativa	No aparece	TAM2-3 (cognate of infección)

APPENDIX 2.2 Spanish word list

Relación sexual (relaciones sexuales / relaciones sexuales-eróticas) (con penetración / sin protección)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, TeensHealth from Nemours Foundation, CESIDA, Govern Ílles Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach - Sexual risks 4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach SubstanceAbuse6, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, COCQ-SIDA	No aparece	relación = 5, sexual = 5	Aparece, pero “relacion sexual con penetración” no aparece	TAM2-3
Remisión	Centers for Disease Control & Prevention, Whitman-Walker Clinic	Divulgativa	2 divulgativa	Aparece (5 acepciones)	TAM2-3
Renal	Kaiser Permanente TB	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Resistencia	Mayo Clinic (HIV), World Health Organization (WHO) TB	Divulgativa	4	Aparece (7 acepciones)	TAM2-3
Resonancia magnética (MRI)	Kaiser Permanente TB	Especializada	Aparece debajo “resonancia” (2 - especializada)	Aparece	TAM2-3
Respiración	Norwegian Institute of Public Health - TB test migrants, Explain TB	Divulgativa	3 divulgativa	Aparece (4 acepciones)	TAM2-3
Respirar (respiras, respirando, respirado)	Mayo Clinic (TB), Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Explain TB	Divulgativa	4	Aparece (5 acepciones)	TAM2-3
Respiratorios (respiratorio / respiratoria)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry, Explain TB	Divulgativa	3 divulgativa	Aparece (4 acepciones)	TAM2-3
Respuesta inmunitaria	WHO, National Library of Medicine, HealthReach HIVtesting3	No aparece	Respuesta = 5, inmunitaria = 1 divulgativa	Aparece	TAM4-5

Respuesta inmunológica	Office on Women's Health - US Department of Health & Human Services	No aparece	Respuesta = 5, inmunológica = 2 especializada	Aparece	TAM2-3
Resultado (resultados)	Healthfinder, Health Service Executive, HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Mayo Clinic (TB), Health Information Translations, Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Massachusetts Department of Public Health, Boston Public Health Commission, Florida Health, CESIDA, Antisida Lleida CAT, Govern Ílles Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius, NY State Department of Health, NYC Health, NYC Health – HIV, Centers for Disease Control and Prevention 2, AIDS Info, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS	Divulgativa	5	No aparece	TAM1

APPENDIX 2.2 Spanish word list

	Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, Xunta de Galicia Consellería de Sanidade, POZ, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA, Explain TB				
Revisiones	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
Revisiones médicas	SaludMadrid	No aparece	Revisión = 4, médico = 5	Aparece	TAM2-3
Riesgo	Healthfinder, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Florida Health, CESIDA, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, BCN Checkpoint, Gais Positius, NY State Department of Health, NYC Health, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, Whitman-Walker Clinic, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser	Divulgativa	5	Aparece	TAM2-3



	Permanente HIV, Kaiser Permanente TB, Xunta de Galicia Consellería de Sanidade, POZ, Norwegian Institute of Public Health +IGRA, COCQ-SIDA, Explain TB				
Rifampicina	World Health Organization (WHO) TB	No aparece	No aparece	Aparece	TAM4-5
Riñón (riñones)	Mayo Clinic (HIV), Kaiser Permanente TB	Divulgativa	2 divulgativa y especializada	Aparece	TAM2-3
Rojez	Florida Health	Divulgativa	Aparece sin número, divulgativa	No aparece	TAM1
Rojiza	American Association for Clinical Chemistry	Divulgativa	2 divulgativa	Aparece	TAM2-3
Roncha (EN: bump)	Centers for Disease Control & Prevention	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Ronquera	Explain TB	Divulgativa	1 divulgativa	Aparece	TAM2-3
Sala de emergencia / sala de emergencias	NYC Health – HIV, NYC Health - HIV-again	No aparecen	Sala = 4, emergencia = 3 divulgativa	No aparece	TAM2-3
Sala de partos	HealthReach Pregnancy3	No aparece	Sala = 4, parto = 3 divulgativa	Aparece	TAM2-3
Sala de urgencias (de hospitales)	POZ	No aparece	Sala = 4, urgencias = 4	No aparece	TAM2-3
Salina	Explain TB	Divulgativa	3 divulgativa	Aparece (3 acepciones)	TAM2-3
Saliva	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), TeensHealth from Nemours Foundation, National Library of Medicine, Mayo Clinic (HIV), Merck Manual (HIV), AIDS Info Net (IAPAC), Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	2 divulgativa	Aparece	TAM2-3
Salud	HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, US Department of Health & Human Services NIH, Centers for Disease Control & Prevention, National Library of Medicine, AIDS Info Net (IAPAC), CESIDA, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NYC Health, NYC Health – HIV, NYC Health - HIV-again, GMHC,	Divulgativa	5	Aparece	TAM2-3

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	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIV/AIDS101-7, HealthReach - Sexual risks 4, HealthReach HIVtesting1, HealthReach HIVtesting5, HealthReach HIVtesting7, Whitman-Walker Clinic, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Xunta de Galicia Consellería de Sanidade, POZ, Norwegian Institute of Public Health, COCQ-SIDA, Explain TB				
Salud Pública	AIDS Info Net (IAPAC), Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NY State Department of Health, Centers for Disease Control and Prevention 2, HealthReach HIV/AIDS101-7, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, Kaiser Permanente TB	Divulgativa	salud = 5, pública = 5	Aparece (2 acepciones)	TAM2-3
Saludable (s)	TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, Massachusetts Department of Public Health, Boston Public Health Commission, Govern Illes Balears Direcció General de Salut Pública y Participación, NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again, NAM AIDSmap, Centers for Disease Control and Prevention 2, HealthReach HIV/AIDS101-7, HealthReach HIVtesting1, Planned Parenthood, Greater Than AIDS / Más Que SIDA, POZ, COCQ-SIDA	Divulgativa	3 divulgativa	Aparece	TAM2-3

Sanar	Norwegian Institute of Public Health	Divulgativa	4	Aparece (2 acepciones)	TAM2-3
Sangrado	Explain TB	Divulgativa	1	Aparece (2 acepciones)	TAM2-3
Sangre	HealthlinkBC, Centers for Disease Control & Prevention, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), US Department of Health & Human Services NIH, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Mayo Clinic (HIV), Mayo Clinic (TB), Health Information Translations, Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, NYC Health, NYC Health - HIV-again, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting4, HealthReach HIVtesting3, HealthReach HIVtesting7, San Francisco AIDS Foundation, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, POZ, Norwegian Institute of Public Health, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA, World Health Organization (WHO) TB, Explain TB	Divulgativa	4	Aparece (2 acepciones)	TAM2-3

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Sanguíneo	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Sanidad	HealthlinkBC	Divulgativa	4	Aparece (2 acepciones)	TAM2-3
Sanidad pública	HealthlinkBC	No aparece	sanidad = 4, pública = 5	No aparece	TAM2-3
Sanitario / a (s)	WHO, HealthlinkBC, SaludMadrid, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, American Association for Clinical Chemistry, Xunta de Galicia Consellería de Sanidade, Explain TB	Divulgativa	4	Aparece (4 acepciones)	TAM2-3
Sano (sana)	TeensHealth from Nemours Foundation, Merck Manual (HIV), AIDS Info Net (IAPAC), HealthlinkBC, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, AIDSinfo.nih.gov, Kaiser Permanente HIV, Explain TB	Divulgativa	3 divulgativa	Aparece (4 acepciones)	TAM2-3
Sarampión (EN: measles)	Centers for Disease Control & Prevention, American Association for Clinical Chemistry	Divulgativa	2 divulgativa	Aparece	TAM2-3
Sarcoma	National Library of Medicine, Merck Manual (HIV)	Especializada	Aparece sin número, divulgativa	Aparece	TAM4-5
Sarcoma de Kaposi	National Library of Medicine, Merck Manual (HIV)	No aparece	sarcoma = aparece sin número (divulgativa), Kaposi = no aparece	Aparece	TAM4-5
Sarpullido	NYC Health – HIV, NYC Health - HIV-again	Divulgativa	Aparece sin número, divulgativa	Aparece	TAM2-3
Screening	Govern Illes Balears Direcció General de Salut Pública y Participación	No aparece	No aparece	No aparece	TAM4-5
Secreciones bucales	Centers for Disease Control & Prevention, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov	No aparece	Secreción = 2 divulgativa, bucal = 2 divulgativa	Aparece (2 acepciones)	TAM2-3
Secreción (es) oral (es)	Centers for Disease Control & Prevention	No aparece	Secreción = 2 divulgativa, oral = 3 divulgativa	No aparece	TAM2-3

Secreciones respiratorias	American Association for Clinical Chemistry	No aparece	Secreción = 2 divulgativa, respiratorio = 3 divulgativa	No aparece	TAM2-3
Seguimiento	Generalitat de Catalunya / CanalSalut – CAT, Merck Manual (HIV), CESIDA, Govern Ílles Balears Direcció General de Salut Pública y Participación, Govern Ílles Balears Direcció General de Salut Pública y Participación, Centers for Disease Control and Prevention 2, HealthReach HIVtesting4, HealthReach HIVtesting7, Greater Than AIDS / Más Que SIDA, COCQ-SIDA, Explain TB	Divulgativa	3 divulgativa	No aparece	TAM1
Seguimiento médico	Generalitat de Catalunya / CanalSalut – CAT, CESIDA, Govern Ílles Balears Direcció General de Salut Pública y Participación	No aparece	Seguimiento = 3 divulgativa, médico = 5	No aparece	TAM2-3
Seguro	NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, GMHC, Office on Women's Health - US Department of Health & Human Services	Divulgativa	5	No aparece	TAM1
Seguro médico	NYC Health - HIV-again, Centers for Disease Control and Prevention 2	No aparece	Seguro = 5, médico = 5	Aparece	TAM2-3
Seguro de salud	GMHC, Office on Women's Health - US Department of Health & Human Services	No aparece	Seguro = 5, salud = 5	Aparece	TAM2-3
Semen	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Divulgativa	2 divulgativa	Aparece	TAM2-3
Sensibilidad (en cuanto a pruebas de laboratorio)	Antisida Lleida CAT	Divulgativa	4	Aparece (2 acepciones, la 1ª es la correcta en este caso)	TAM2-3
Sensibles (en cuanto a pruebas)	Explain TB	Divulgativa	4	Aparece (7 acepciones, 3 de las cuales se aplican a este contexto)	TAM2-3
Seroconversión	WHO	No aparece	No aparece	Aparece	TAM4-5
Serológicas	WHO, San Francisco AIDS Foundation	Divulgativa	Sin número, divulgativa	Aparece	TAM2-3
Seronegativo	AIDSinfo.nih.gov, COCQ-SIDA	Divulgativa	Aparece sin número, divulgativa	Aparece	TAM2-3
Seropositividad	HealthReach HIVtesting4	No aparece	No aparece	Aparece	TAM4-5

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Seropositivo / a / os / as	Govern Illes Balears Direcció General de Salut Pública y Participació, AIDSinfo.nih.gov, HealthReach HIVtesting7, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), COCQ-SIDA	Divulgativa	1 divulgativa	Aparece	TAM2-3
Servicio de atención y apoyo médicos	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	No aparece	Servicio = 5, atención = 5, apoyo = 5, medico = 5	No aparece	TAM2-3
Servicio de detección / servicios de detección	COCQ-SIDA	No aparece	Servicio = 5, detección = 2 divulgativa	No aparece	TAM2-3
Servicio de enfermedades infecciosas	SaludMadrid	No aparece	Servicio = 5, enfermedad = 5, infecciosa = 2 divulgativa	No aparece	TAM4-5
Servicio especializado	Antisida Lleida CAT	No aparece	Servicio = 5, especializado = 4	No aparece	TAM1
Servicio médico	COCQ-SIDA	No aparece	Servicio = 5, médico = 5	No aparece	TAM2-3
Servicio de salud	NAM AIDSmap	No aparece	Servicio = 5, salud = 5	No aparece	TAM2-3
Servicio de urgencias	Generalitat de Catalunya / CanalSalut - CAT	No aparece	Servicio = 5, urgencias = 4	No aparece	TAM2-3
Sexo	Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual (HIV), Gais Positius, NY State Department of Health, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting2, HealthReach HIVtesting3, HealthReach SubstanceAbuse6, Whitman-Walker Clinic, Planned Parenthood, Kaiser Permanente HIV, POZ	Divulgativa	4 divulgativa y especializada	Aparece (4 acepciones)	TAM2-3
Sexo anal	NYC Health - HIV-again	No aparece	Sexo = 4 divulgativa y especializada, anal = 1 especializada	Aparece	TAM2-3

Sexo seguro	Merck Manual (HIV)	No aparece	Sexo = 4 divulgativa y especializada, seguro = 5	No aparece	TAM2-3
Sexual (sexuales)	WHO, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual (HIV), CESIDA, Govern Ílles Balears Direcció General de Salut Pública y Participació, Govern Ílles Balears Direcció General de Salut Pública y Participació, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, Gais Positius, NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach - Sexual risks 4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach SubstanceAbuse6, Whitman-Walker Clinic, Planned Parenthood, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ, COCQ-SIDA	Divulgativa	5	Aparece (3 acepciones)	TAM2-3
Sexualmente	HealthlinkBC, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual (HIV), AIDS Info Net (IAPAC), BCN Checkpoint, Gais Positius, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Kaiser Permanente HIV, POZ, COCQ-SIDA	Divulgativa	No aparece	No aparece	TAM2-3 (cognate of sexual)
Sexualmente activa	BCN Checkpoint, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH)	Sexualmente D, Activa D	No aparece	No aparece	TAM2-3 (basado en “sexualmente” y “activa”)
SIDA	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), US Department of Health & Human Services NIH, National Library of Medicine, AIDS Info Net	No aparece, mira “sida”	Aparece sin número en minúsculas, divulgativa	Aparece como “sida” (La RAE admitió en 1992 la lexicalización de las siglas SIDA)	TAM2-3

APPENDIX 2.2 Spanish word list

	(IAPAC), NY State Department of Health, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Planned Parenthood, American Association for Clinical Chemistry, Kaiser Permanente HIV, POZ, Norwegian Institute of Public Health +IGRA, COCQ-SIDA, Explain TB			para su uso como sustantivo común, con minúsculas; pero todavía se ve mucho en forma siglada y con mayúsculas: SIDA. Puede verse en forma desarrollada: “síndrome de inmunodeficiencia adquirida”, cuando por el contexto se sobretiene. No debe confundirse con □ infección por el VIH. p1484)	
Sida (only S capitalized, “ida” in lower case)	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA	No aparece, mira “sida”	Aparece sin número en minúsculas, divulgativa	Aparece como “sida” – lee la nota arriba	TAM2-3
Sida (all lower case)	Generalitat de Catalunya / CanalSalut – CAT, Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual (HIV), Govern Ílles Balears Direcció General de Salut Pública y Participación	Divulgativa	Aparece sin número en minúsculas, divulgativa	Aparece – lee la nota arriba	TAM2-3
Sífilis	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius, NYC Health - HIV-again, AIDSinfo.nih.gov, HealthReach HIVtesting2, Whitman-Walker Clinic, POZ	Divulgativa	2 divulgativa	Aparece	TAM2-3
Signos (signo)	Healthfinder, US Department of Health & Human Services NIH, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (TB), Health Information Translations, Merck Manual (HIV), AIDS Info Net (IAPAC), NYC Health, NYC	Divulgativa	4 divulgativa y especializada	Aparece (2 acepciones)	TAM2-3



	Health - HIV-again, American Association for Clinical Chemistry, World Health Organization (WHO) TB, Explain TB				
Silicona	NYC Health - HIV-again	Divulgativa	2 divulgativa	Aparece	TAM2-3
Síndrome	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), National Library of Medicine, AIDSinfo.nih.gov	Divulgativa y especializada	3 divulgativa	Aparece	TAM2-3
Síndrome de Inmunodeficiencia Adquirida	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), National Library of Medicine, AIDSinfo.nih.gov	Divulgativa	Aparece sin número, divulgativa	Aparece	TAM4-5
Síntoma (síntomas)	Healthfinder, WHO, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, US Department of Health & Human Services NIH, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), NYC Health, NYC Health – HIV, NYC Health - HIV-again, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIV/AIDS101-7, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, European Lung Foundation, Xunta de Galicia Consellería de Sanidade, Norwegian Institute of Public Health, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA, World Health Organization (WHO) TB, Explain TB	Divulgativa	4 divulgativa	Aparece	TAM2-3
Sistema	Healthfinder, HealthlinkBC,	Divulgativa y especializada	5 divulgativa y especializada	Aparece (6 acepciones)	TAM2-3

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	Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (TB), Health Information Translations, Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Govern Ílles Balears Direcció General de Salut Pública y Participació, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, Centers for Disease Control and Prevention 2, HealthReach - Sexual risks 4, HealthReach HIVtesting4, San Francisco AIDS Foundation, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Kaiser Permanente TB, POZ, Norwegian Institute of Public Health +IGRA, Explain TB				
Sistema de atención médica	POZ	No aparece	Sistema = 5 divulgativa (en este contexto) y especializada, atención = 5, médica = 5	No aparece	TAM2-3
Sistema de defensa	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	No aparece	Sistema = 5 divulgativa y especializada (en este contexto), defensa = 5 divulgativa y (en este contexto) especializada	No aparece	TAM2-3
Sistema inmune	AIDS Info Net (IAPAC), NYC Health, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services	No aparece	Aparece debajo "inmune", 2 divulgativa	Aparece	TAM2-3
Sistema inmunitario	Healthfinder, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (TB), Health Information Translations, Merck Manual, Merck Manual (HIV), Govern Ílles Balears Direcció General de Salut Pública y Participació, NAM AIDSmap, HealthReach - Sexual risks 4, Planned Parenthood, American	No aparece	Sistema = 5 divulgativa y especializada (en este contexto), inmunitario = 1 divulgativa	Aparece	TAM4-5

	Association for Clinical Chemistry, Kaiser Permanente TB				
Sistema inmunológico	NYC Health, San Francisco AIDS Foundation, Norwegian Institute of Public Health +IGRA, Explain TB	No aparece	Sistema = 5 divulgativa y especializada (en este contexto), inmunológico = 2 especializada	Aparece	TAM2-3
Sistema nervioso central	American Association for Clinical Chemistry	No aparece	Sistema = 5 divulgativa y especializada (en este contexto), nervioso = 4 divulgativa y (en este contexto) especializada, central = 5	Aparece	TAM2-3
Solución (de prueba; PPD)	NYC Health, American Association for Clinical Chemistry, Explain TB	Especializada	5	Aparece (3 acepciones)	TAM2-3
Sudoración	American Association for Clinical Chemistry, Kaiser Permanente TB, European Lung Foundation	Divulgativa	1 divulgativa	Aparece	TAM2-3
Sudoración nocturna	American Association for Clinical Chemistry, Kaiser Permanente TB, European Lung Foundation	No aparece	Sudoración = 1 divulgativa, nocturna = 4	No aparece	TAM2-3
Sudores (sudor)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB, Explain TB	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Sudores nocturnos	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB, Explain TB	No aparece	Sudor = 3 divulgativa, nocturno = 4	No aparece	TAM2-3
Suero (EN: serum)	Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa	2 divulgativa	Aparece (4 acepciones)	TAM2-3
Supervivencia	Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Sustancia (también substancia –	Mayo Clinic (TB), Merck Manual, Centers for Disease Control & Prevention, HealthReach HIVtesting3, HealthReach SubstanceAbuse6	Divulgativa	4	Aparece (5 acepciones)	TAM2-3

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ambas son correctas)					
TAC	Explain TB	Especializada	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Tamizaje	COCQ-SIDA	No aparece	Aparece sin número, divulgativa	No aparece (pero "tamizar" sí)	TAM2-3
Tampon (sic – correcto: tampón) (de arrastre)	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM1
TAR (tratamiento antirretroviral)	AIDSinfo.nih.gov, HealthReach HIVtesting1	No aparece	Tratamiento = 5 divulgativa y especializada, antirretroviral = [anti- = aparece sin número - divulgativa, retro = aparece sin número - divulgativa, viral = 1 divulgativa]	No aparece	TAM4-5
Tarjeta sanitaria	SaludMadrid, CESIDA	No aparece	Tarjeta = 4, sanitaria = 4	Aparece	TAM2-3
Tarjeta de seguro de salud	COCQ-SIDA	No aparece	Tarjeta = 4, seguro = 5, salud = 5	No aparece	TAM2-3
TB	Health Service Executive, SaludMadrid, Mayo Clinic (TB), Merck Manual, Boston Public Health Commission, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, AIDS Info, AIDSinfo.nih.gov, HealthReach HIVtesting2, American Association for Clinical Chemistry, Kaiser Permanente TB, AIDS Info, Norwegian Institute of Public Health - TB test migrants	No aparece	No aparece	Aparece	TAM4-5
TB activa	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, American Association for Clinical Chemistry, Kaiser Permanente TB	No aparece	TB = no aparece, activa 4	No aparece	TAM4-5

TB extrapulmonar	Kaiser Permanente TB	No aparece	TB = no aparece, extrapulmonar = No aparece, extra- = aparece sin número - divulgativa, pulmonar = 2 divulgativa	No aparece	TAM4-5
TB latente	Kaiser Permanente TB	No aparece	TB = no aparece, latente = 2 divulgativa	No aparece	TAM4-5
TB miliar	Kaiser Permanente TB	No aparece	TB = no aparece, miliar = aparece sin número, especializada	No aparece	TAM4-5
TB pulmonar	Kaiser Permanente TB	No aparece	TB = no aparece, pulmonar = 2 divulgativa	No aparece	TAM4-5
TB renal	Kaiser Permanente TB	No aparece	TB = no aparece, renal = 2 divulgativa	No aparece	TAM4-5
TBC (~ TB)	Health Information Translations	No aparece	No aparece	Aparece	TAM4-5
TC (tomografía computarizada)	European Lung Foundation	No aparece	No aparece	Aparece	TAM4-5
Tejido	Merck Manual, Explain TB	Especializada	3 divulgativa	Aparece	TAM2-3
Terapeuta	The American Foundation for AIDS Research (AmFAR)	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Terapia	HealthlinkBC	Divulgativa	3 divulgativa	Aparece (4 acepciones)	TAM2-3
Terapia antirretroviral	HealthlinkBC	No aparece	Terapia = 3 divulgativa, antirretroviral = [anti- = aparece sin número - divulgativa, retro = aparece sin número - divulgativa, viral = 1 divulgativa]	No aparece	TAM4-5
Test / tests	SaludMadrid, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, Planned Parenthood, Norwegian Institute of Public Health	Divulgativa	3 divulgativa	Aparece	TAM2-3

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Test cutáneo	Norwegian Institute of Public Health	No aparece	Test = 3 divulgativa, cutáneo = 2 divulgativa	No aparece	TAM2-3
Test rápido	Antisida Lleida CAT, Fundació Lluita Contra la SIDA	No aparece	Test = 3 divulgativa, rápido = 5	No aparece	TAM2-3
Test de tuberculina	SaludMadrid	No aparece	Test = 3 divulgativa, tuberculina = aparece sin número, especializada	Aparece como “test de la tuberculina”	TAM2-3
Tinción de Ziehl-Neelson	Explain TB	No aparece	Tinción = 1 divulgativa, Ziehl-Neelson = no aparece	No aparece	TAM4-5
Tira	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Divulgativa	3 divulgativa	Aparece (EN: paper strip)	TAM1
Tira reactiva	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	No aparece	Tira = 3 divulgativa, reactiva = 1 divulgativa y (en este contexto) especializada	Aparece (sin: papel reactivo; EN: dipstick)	TAM2-3
TNF-a (antagonista de)	Centers for Disease Control & Prevention	No aparece	No aparece	No aparece	TAM4-5
Tomografía	Mayo Clinic (TB), Kaiser Permanente TB, Explain TB	Divulgativa	1 especializada	Aparece (4 acepciones)	TAM2-3
Tomografía axial computerizada (sic)	Explain TB	No aparece	Tomografía = 1 especializada, axial = 1 divulgativa, computerizada = 1 divulgativa	Aparece como “tomografía axial computerizada” y explica que “computerizada” es incorrecta	TAM4-5
Tomografía computarizada	Mayo Clinic (TB), Kaiser Permanente TB	No aparece	Tomografía = 1 especializada, computarizada = 1 divulgativa	Aparece como “tomografía computarizada” (dice que abreviado a “tomografía” o “TC”, puede verse también “tomografía computada” y “tomografía computadorizada”, pero los siguientes	TAM2-3

				dos son incorrectas: "tomografía computerizada" y "tomografía computerizada"	
Torácico	NYC Health, Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB	Divulgativa	1 especializada	Aprece (2 acepciones)	TAM2-3
Tórax	Centers for Disease Control & Prevention, Mayo Clinic (TB), Health Information Translations, Merck Manual, Florida Health, NYC Health, American Association for Clinical Chemistry, Kaiser Permanente TB, European Lung Foundation, Norwegian Institute of Public Health - TB test migrants, Explain TB	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Tos	SaludMadrid, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Kaiser Permanente TB, European Lung Foundation, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB, Explain TB	Divulgativa	2 divulgativa	Aparece	TAM2-3
Tos crónica	Norwegian Institute of Public Health - TB test migrants	No aparece	Tos = 2 divulgativa, crónica = 3 divulgativa	No aparece	TAM2-3
Tos productiva	World Health Organization (WHO) TB	No aparece	Tos = 2 divulgativa, productiva = 4	Aparece	TAM2-3
Toser (tose, tosa)	Healthfinder, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, American Association for Clinical Chemistry, Explain TB	Divulgativa	2 divulgativa	Aparece	TAM2-3
Toxoplasmosis	Mayo Clinic (HIV)	Especializada	No aparece	Aparece	TAM4-5
Trabajador de la salud	GMHC, POZ	No aparece	Trabajador = 5, salud = 5	No aparece	TAM1
Trabajador social	TeensHealth from Nemours Foundation	No aparece	Trabajador 5, social 5	No aparece	TAM1

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Trabajo de parto	Centers for Disease Control and Prevention 2, HealthReach Pregnancy3	No aparece	Trabajo = 5, parto = 3 divulgativa	Aparece	TAM2-3
Tracto urinario	American Association for Clinical Chemistry	No aparece	Tracto = divulgativa y (en este contexto) especializada, urinario = 2 divulgativa	Aparece	TAM2-3
Transmisible	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH)	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Transmisión	WHO, Generalitat de Catalunya / CanalSalut – CAT, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Merck Manual (HIV), Govern Illes Balears Direcció General de Salut Pública y Participación, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, Gais Positius, NY State Department of Health, NYC Health – HIV, NYC Health - HIV-again, Centers for Disease Control and Prevention 2, HealthReach - Sexual risks 4, HealthReach HIVtesting2, HealthReach HIVtesting1, Planned Parenthood, Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, POZ, COCQ-SIDA, Explain TB	Divulgativa	4	Aparece (3 acepciones)	TAM2-3
Transmitir(se) (transmite, transmitirlo)	SaludMadrid, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual (HIV), AIDS Info Net (IAPAC), Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, NY State Department of Health, NYC Health - HIV-again, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach Pregnancy3, HealthReach SubstanceAbuse6, Planned Parenthood, American	Divulgativa	4	Aparece (2 acepciones)	TAM2-3



	Association for Clinical Chemistry, Kaiser Permanente HIV, POZ, COCQ-SIDA				
Transplante (de órganos)	Population Health Division - San Francisco Department of Public Health Disease Prevention & Control	No aparece, refiere a trasplante	2 divulgativa y especializada	Aparece	TAM2-3
Trasmitirse	Greater Than AIDS / Más Que SIDA	Divulgativa	4	No aparece (pero "transmisión" sí)	TAM1
Trasplante (s) (de órganos)	Centers for Disease Control & Prevention	Divulgativa y especializada	2 divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Trastorno (s)	Centers for Disease Control & Prevention	Divulgativa	3 divulgativa	Aparece	TAM2-3
Tratable	Greater Than AIDS / Más Que SIDA	Divulgativa	1 divulgativa	No aparece	TAM1
Tratamiento (tratamientos)	Healthfinder, WHO, HealthlinkBC, SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (VIH), Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Merck Manual, Merck Manual (HIV), CESIDA, Govern Illes Balears Direcció General de Salut Pública y Participación, BCN Checkpoint, NY State Department of Health, NYC Health, NYC Health – HIV, NYC Health - HIV-again, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting1, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, Xunta de Galicia Consellería de Sanidade, POZ, Norwegian Institute of Public Health, Norwegian Institute of Public Health	Divulgativa	5 divulgativa y especializada	Aparece	TAM2-3

APPENDIX 2.2 Spanish word list

	+IGRA, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA, Explain TB				
Tratamiento antibiótico	Merck Manual	No aparece	Tratamiento = 5 divulgativa y especializada, antibiótico = 2 especializada	Aparece	TAM2-3
Tratamiento antirretroviral	Govern Ílles Balears Direcció General de Salut Pública y Participación, BCN Checkpoint, AIDSinfo.nih.gov	No aparece	Tratamiento = 5 divulgativa y especializada, antirretroviral = [anti- = aparece sin número - divulgativa, retro = aparece sin número - divulgativa, viral = 1 divulgativa]	Aparece como "tratamiento antirretroviral de gran actividad", la traducción del EN: highly active antiretroviral therapy (HART)	TAM4-5
Tratamiento antirretrovírico	HealthReach HIVtesting1	No aparece	Tratamiento = 5 divulgativa y especializada, antirretrovírico = [anti- = aparece sin número - divulgativa, retro = aparece sin número - divulgativa, vírico = 1 divulgativa]	Aparece en "tratamiento antirretroviral de gran actividad" como "tratamiento antirretrovírico de gran actividad"	TAM4-5
Tratamiento clínico	BCN Checkpoint	No aparece	Tratamiento = 5 divulgativa y especializada, clínico = 4	No aparece	TAM2-3
Tratamiento preventivo	Generalitat de Catalunya / CanalSalut - CAT	No aparece	Tratamiento = 5 divulgativa y especializada, preventivo = 3 divulgativa	Aparece	TAM2-3
Tratamientos sanitarios	HealthlinkBC	No aparece	Tratamiento = 5 divulgativa y especializada, sanitario = 4	No aparece	TAM2-3

Tratar	NYC Health - HIV-again, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, HealthReach HIVtesting1, Greater Than AIDS / Más Que SIDA, Norwegian Institute of Public Health - TB test migrants, COCQ-SIDA	Divulgativa	5 divulgativa y (en este contexto) especializada	No aparece	TAM1
T-Spot	Mayo Clinic (TB)	No aparece	No aparece	No aparece	TAM4-5
TST	Centers for Disease Control & Prevention, Explain TB	No aparece	No aparece	No aparece	TAM4-5
Tuberculina [prueba (cutánea) de la tuberculina; test de tuberculina]	Centers for Disease Control & Prevention, SaludMadrid, Centers for Disease Control & Prevention, Mayo Clinic (TB), Health Information Translations, Merck Manual, Florida Health, NYC Health, American Association for Clinical Chemistry, Kaiser Permanente TB, Explain TB	Divulgativa	(sin número) especializada	Aparece (2 acepciones)	TAM2-3
Tuberculina PPD	Mayo Clinic (TB)	No aparece	Tuberculina = (sin número) especializada, PPD = no aparece	No aparece	TAM4-5
Tuberculosis	Healthfinder, Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Mayo Clinic (HIV), Mayo Clinic (TB), Merck Manual, Massachusetts Department of Public Health, Florida Health, CESIDA, Govern Ílles Balears Direcció General de Salut Pública y Participación, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Centers for Disease Control and Prevention 2, AIDS Info, AIDSinfo.nih.gov, HealthReach HIVtesting2, American Association for Clinical Chemistry, Kaiser Permanente TB, European Lung Foundation, POZ, Norwegian Institute of Public Health, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB	Divulgativa	2 especializada	Aparece (2 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

	test migrants, World Health Organization (WHO) TB, Explain TB				
Tuberculosis activa	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual, Florida Health, NYC Health, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control 2, Explain TB	No aparece	Tuberculosis 2 especializada, active 4	No aparece	TAM2-3
Tuberculosis asociada al VIH	World Health Organization (WHO) TB	No aparece	Tuberculosis = 2 especializada, asociada = 3 divulgativa, VIH = no aparece	No aparece	TAM4-5
Tuberculosis generalizada	Centers for Disease Control & Prevention	No aparece	Tuberculosis = 2 especializada, generalizada = 4	Aparece (~ tuberculosis miliar)	TAM2-3
Tuberculosis latente	Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual, Norwegian Institute of Public Health +IGRA, Norwegian Institute of Public Health - TB test migrants, Explain TB	No aparece	Tuberculosis = 2 especializada, latente = 2 divulgativa	No aparece (un calc del EN?)	TAM2-3
Tuberculosis multirresistente	World Health Organization (WHO) TB	No aparece	Tuberculosis = 2 especializada, multirresistente = no aparece	No aparece	TAM2-3
Tuberculosis pediátrica	World Health Organization (WHO) TB	No aparece	Tuberculosis = 2 especializada, pediátrica = 1 divulgativa	No aparece	TAM2-3
Tuberculosis pulmonar	Norwegian Institute of Public Health - TB test migrants, World Health Organization (WHO) TB	No aparece	Tuberculosis = 2 especializada, pulmonar = 2 divulgativa	Aparece	TAM2-3
Tuberculosis pulmonar activa	World Health Organization (WHO) TB	No aparece	Tuberculosis = 2 especializada, pulmonar = 2 divulgativa, activa = 4	No aparece	TAM2-3
Tuberculosis ultrarresistente	World Health Organization (WHO) TB	No aparece	Tuberculosis = 2 especializada,	No aparece	TAM4-5

			ultrarresistente = no aparece		
Tuberculoso / tuberculosa	Office of Disease Prevention and Health Promotion ODPHP Healthfinder (TB), Merck Manual, Massachusetts Department of Public Health, AIDS Info, American Association for Clinical Chemistry, Kaiser Permanente TB, Norwegian Institute of Public Health +IGRA, Explain TB	Divulgativa	1 divulgativa	Aparece (4 acepciones)	TAM2-3
Tubo de análisis	HealthReach HIVtesting4	No aparece	Tubo = 3 divulgativa, análisis = 5	No aparece	TAM2-3
Tubo de ensayo	National Library of Medicine	Divulgativa	Tubo = 3 divulgativa, ensayo = 4	Aparece	TAM2-3
Ulceración / es	Centers for Disease Control & Prevention, Explain TB	Divulgativa	1 divulgativa	Aparece	TAM2-3
Ultrarresistente	World Health Organization (WHO) TB	No aparece	No aparece	No aparece	TAM4-5
Urgencias	Generalitat de Catalunya / CanalSalut – CAT, NY State Department of Health, POZ	Divulgativa	4	Aparece (5 acepciones)	TAM2-3
Urinario (urinaria)	Mayo Clinic (HIV), American Association for Clinical Chemistry	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Utensilios (drogas)	Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	2 divulgativa	No aparece	TAM1
Vacuna	Centers for Disease Control & Prevention, Mayo Clinic (TB), American Association for Clinical Chemistry, Kaiser Permanente TB, Explain TB	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3
Vacuna BCG	Centers for Disease Control & Prevention, American Association for Clinical Chemistry, Kaiser Permanente TB, Explain TB	No aparece	Vacuna = 2 divulgativa, BCG = no aparece	Aparece	TAM4-5
Vacuna con partículas víricas vivas	American Association for Clinical Chemistry	No aparece	Vacuna = 2 divulgativa, partícula = 4, vírico = 1 divulgativa, vivo = 4	No aparece	TAM2-3
Vacunación	Centers for Disease Control & Prevention, Merck Manual, Norwegian Institute of Public Health	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Vacunar (vacunada)	American Association for Clinical Chemistry, Norwegian Institute of Public Health, Explain TB	Divulgativa	2 divulgativa	Aparece (2 acepciones)	TAM2-3
Vaginal (es) (de “fluidos vaginales”)	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), TeensHealth from Nemours Foundation, Generalitat Valenciana Conselleria de Sanitat	Divulgativa	2 divulgativa	Aparece (3 acepciones)	TAM2-3

APPENDIX 2.2 Spanish word list

	Universal i Salut Pública, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov				
Varicela	Centers for Disease Control & Prevention, American Association for Clinical Chemistry	Divulgativa	1 divulgativa	Aparece	TAM2-3
Vena	National Library of Medicine, NYC Health – HIV, Centers for Disease Control and Prevention 2, American Association for Clinical Chemistry, POZ	Divulgativa	3 divulgativa	Aparece	TAM2-3
Venosa	American Association for Clinical Chemistry	Divulgativa	1 divulgativa y especializada	Aparece (2 acepciones)	TAM2-3
Vertebral	Kaiser Permanente TB	Divulgativa	2 divulgativa	Aparece (4 acepciones)	TAM2-3
Vías aéreas	Merck Manual	No aparece	Vía = divulgativa y especializada, aérea = 4	Aparece (2 acepciones)	TAM2-3
Vías respiratorias	Explain TB	No aparece	Vía = divulgativa y especializada, respiratorio = 3 divulgativa	Aparece (2 acepciones)	TAM2-3
VIH	Healthfinder, WHO, HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), SaludMadrid, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Mayo Clinic (HIV), Merck Manual, Merck Manual (HIV), AIDS Info Net (IAPAC), Florida Health, CESIDA, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius, NY State Department of Health, NYC Health, NYC Health – HIV, NYC Health - HIV-again, GMHC, Population Health Division - San	Especializada	No aparece	Aparece	TAM4-5

	Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDS Info, AIDSinfo.nih.gov, Office on Women's Health - US Department of Health & Human Services, HealthReach HIV/AIDS101-7, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, Whitman-Walker Clinic, Planned Parenthood, American Association for Clinical Chemistry, The American Foundation for AIDS Research (AmFAR), Greater Than AIDS / Más Que SIDA, Kaiser Permanente HIV, Kaiser Permanente TB, Xunta de Galicia Consellería de Sanidade, POZ, COCQ-SIDA, World Health Organization (WHO) TB, Explain TB				
VIH negativo	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, NYC Health - HIV-again, GMHC, Centers for Disease Control and Prevention 2, Office on Women's Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting1	No aparece	VIH = no aparece, negativo = 4	No aparece	TAM4-5
VIH positivo / a	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Centers for Disease Control & Prevention, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, AIDS Info Net (IAPAC), NYC Health - HIV-again, Centers for Disease Control and Prevention 2, Centers for Disease Control and Prevention 2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting7, San Francisco AIDS Foundation, POZ	No aparece	VIH = no aparece, positivo = 5 divulgativa y (en este contexto) especializada	No aparece	TAM4-5

APPENDIX 2.2 Spanish word list

VIH/SIDA	Centers for Disease Control and Prevention 2, HealthReach HIV/AIDS101-7, HealthReach HIVtesting6, HealthReach - Sexual risks 4, HealthReach HIVtesting2, HealthReach HIVtesting1, HealthReach Pregnancy3, HealthReach HIVtesting3, HealthReach HIVtesting5, HealthReach SubstanceAbuse6, HealthReach HIVtesting7, POZ	No aparece	VIH = no aparece, SIDA = 4	Aparece	TAM4-5
VIH/sida (sic)	Mayo Clinic (HIV)	No aparece	VIH = no aparece, sida = 4	No aparece	TAM4-5
VIH-1	WHO, National Library of Medicine, Whitman-Walker Clinic, The American Foundation for AIDS Research (AmFAR), POZ	No aparece	No aparece	No aparece	TAM4-5
VIH-2	WHO, National Library of Medicine, Whitman-Walker Clinic, POZ	No aparece	No aparece	No aparece (surprisingly – the two types were discovered BEFORE this dictionary’s 2011 publication)	TAM4-5
Violación	HealthReach HIVtesting2	Divulgativa y especializada	3 divulgativa	Aparece (2 acepciones)	TAM2-3
Viral	AIDS Info Net (IAPAC), Centers for Disease Control and Prevention 2, Centers for Disease Control & Prevention, National Library of Medicine, Mayo Clinic (HIV), Merck Manual (HIV), Antisida Lleida CAT, CESIDA, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, San Francisco AIDS Foundation, POZ	Divulgativa	1 divulgativa	Aparece (2 acepciones)	TAM2-3
Vírico / vírica	Govern Illes Balears Direcció General de Salut Pública y Participación, American Association for Clinical Chemistry	Divulgativa	1 divulgativa	Aparece	TAM2-3
Viológica (s)	WHO	No aparece	No aparece	Aparece	TAM4-5
Viruela (EN: smallpox)	Centers for Disease Control & Prevention	Divulgativa	1 divulgativa	Aparece	TAM2-3
Virus	WHO, HealthlinkBC, Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Generalitat de Catalunya / CanalSalut – CAT,	Divulgativa	3 especializada	Aparece (2 acepciones)	TAM2-3



	US Department of Health & Human Services NIH, TeensHealth from Nemours Foundation, Centers for Disease Control & Prevention, National Library of Medicine, Office of Disease Prevention and Health Promotion ODPHP Healthfinder, Mayo Clinic (HIV), Merck Manual (HIV), AIDS Info Net (IAPAC), Florida Health, Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, BCN Checkpoint, NY State Department of Health, NYC Health – HIV, GMHC, Population Health Division - San Francisco Department of Public Health Disease Prevention & Control, NAM AIDSmap, Centers for Disease Control and Prevention 2, AIDSinfo.nih.gov, Office on Women’s Health - US Department of Health & Human Services, HealthReach HIVtesting6, HealthReach HIVtesting4, HealthReach HIVtesting1, HealthReach HIVtesting3, San Francisco AIDS Foundation, Planned Parenthood, Greater Than AIDS / Más Que SIDA, COCQ-SIDA				
Virus de inmunodeficiencia humana	AIDS Info Net (IAPAC), AIDSinfo.nih.gov, COCQ-SIDA	Especializada	Virus = 3 especializada, inmunodeficiencia = 1 divulgativa, humana = 5	No aparece	TAM2-3
Virus de la inmunodeficiencia humana	Merck Manual (HIV)	No aparece (mira arriba)	Virus = 3 especializada, inmunodeficiencia = 1 divulgativa, humana = 5	Aparece	TAM4-5
Virus vivo	Centers for Disease Control & Prevention	No aparece	Virus = 3 especializada, vivo = 4	No aparece	TAM2-3
Western Blot	Grupo de Trabajo Sobre el Tratamiento del VIH (gTt-VIH), Merck Manual (HIV), AIDS Info Net (IAPAC), Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Gais Positius, San Francisco AIDS Foundation, POZ	No aparece	No aparece	Aparece Variación: “análisis Western”	TAM4-5
(Tinció de) Ziehl-Neelson	Explain TB	No aparece	No aparece	Aparece en “Ziehl” y menciona “tinció de Ziehl-Neelson”	TAM4-5

Sánchez, A. (2001). Gran diccionario de uso del español actual. Alcobendas (Madrid): Sociedad General Española de Librería, S.A.

## APPENDIX 2.3 CATALAN WORD LIST

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Actiu / activa	NYC Health, BCN Checkpoint, Gais Positius, Explain TB	Divulgativa	3	No apareix	TAM1
Acupuntura	Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa i especialitzada	0	Apareix	TAM4-5
Agulla / agulles	NYC Health, Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa i especialitzada	3	Apareix (2 sentits, un dels quals és rellevant)	TAM2-3
Anal	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa i especialitzada	1	Apareix (2 sentits, un dels quals és rellevant)	TAM2-3
Anàlisi	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA, Explain TB	Divulgativa i especialitzada	3	Apareix	TAM2-3
Anàlisi clínica / anàlisis clíniques	Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA	No apareix	Anàlisi 3, clínica 2	Apareix	TAM2-3
Anàlisi de l'esput	Explain TB	No apareix	Anàlisi 3, esput 1	No apareix	TAM2-3
Anàlisi de sang	NYC Health, Generalitat de Catalunya / CanalSalut - CAT	No apareix	Anàlisi 3, sang 4	No apareix	TAM2-3
Analític / analítica / analítiques	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Explain TB	Divulgativa i especialitzada	2	No apareix	TAM2-3
Analítica de sang	Explain TB	No apareix	Analítica 2, sang 4	No apareix	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Antibacterià / antibacteriana	Explain TB	Especialitzada	0	Apareix	TAM4-5
Antibiòtic	Explain TB	Especialitzada	0	Apareix	TAM4-5
Anticòs / anticossos	Generalitat de Catalunya / CanalSalut – CAT, Antisida Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint	Especialitzada	1	Apareix	TAM4-5
Antigen	Govern Illes Balears Dirección General de Salud Pública y Participación	Especialitzada	1	Apareix	TAM4-5
Antigen p24	Govern Illes Balears Dirección General de Salud Pública y Participación	No apareix	Antigen 3, p24 no apareix	No apareix	TAM4-5
Antiretroviral	Govern Illes Balears Dirección General de Salud Pública y Participación, BCN Checkpoint, Explain TB	No apareix	No apareix	Apareix	TAM4-5
Anti VIH-1	Fundació Lluita Contra la SIDA	No apareix	Anti 0, VIH-1 no apareix	No apareix	TAM4-5
Anti VIH-2	Fundació Lluita Contra la SIDA	No apareix	Anti 0, VIH-2 no apareix	No apareix	TAM4-5
Asimptomàtic	Antisida Lleida CAT	Especialitzada	0	No apareix	TAM4-5
Assessorament	BCN Checkpoint	Divulgativa	1	No apareix	TAM1
Atenció mèdica	NYC Health	No apareix	Atenció 4, mèdic 2	No apareix	TAM2-3
Atenció psicològica	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	No apareix	Atenció 4, psicològic 2	No apareix	TAM2-3
Autoritat de salut	Explain TB	No apareix (salut D i E)	Autoritat 3, salut 3	No apareix	TAM2-3

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Auto-test	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	No apareix	No apareix ( <i>test</i> apareix sota <i>prova</i> )	TAM2-3
Autotest	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA	No apareix	No apareix	No apareix ( <i>test</i> apareix sota <i>prova</i> )	TAM2-3
Bacteri / bacteris (sic)	Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
BCG	Explain TB	No s'ha trobat	0	Apareix	TAM4-5
Biologia	Govern Ílles Balears Direcció General de Salut Pública y Participación	Divulgativa i especialitzada	2	Apareix	TAM2-3
Biologia molecular	Govern Ílles Balears Direcció General de Salut Pública y Participación	No apareix	Biologia 2, molecular 1	No apareix	TAM2-3
Biològic	BCN Checkpoint	Divulgativa i especialitzada	2	No apareix	TAM2-3
Broncoscòpia	Explain TB	Especialitzada	No apareix	Apareix	TAM4-5
Butllofa	Explain TB	Divulgativa i especialitzada	1	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Capilar (sic – capil·lar)	Antisida Lleida CAT	Divulgativa i especialitzada	1	Apareix (2 sentits, un dels quals és rellevant)	TAM2-3
Carga viral (sic – càrrega viral)	Antisida Lleida CAT	No apareix	No apareix	Apareix	TAM4-5
Cavitat	Explain TB	Divulgativa i especialitzada	2	No apareix	TAM2-3
Cèl.lula / cèl.lules	Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
Centre d'atenció especialitzada	Fundació Lluita Contra la SIDA	No apareix	Centre 1, atenció 4, especialitzada 0	No apareix	TAM2-3
Centre d'atenció primària	Fundació Lluita Contra la SIDA	No apareix però sí "centre d'assistència	Centre 1, atenció 4, primària 0	No apareix	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
		primària" sota "centre" com a especialitzada			
Centre de diagnòstic i prevenció d'infeccions de transmissió sexual	Fundació Lluita Contra la SIDA	No apareix	Centre 1, diagnòstic 1, prevenció 2, infecció 2, transmissió 2, sexual 2	No apareix	TAM2-3
Centre d'especialitats (sic)	Fundació Lluita Contra la SIDA	No apareix	Centre 1, especialitat 2	No apareix	TAM2-3
Centre de planificació familiar	Fundació Lluita Contra la SIDA	Especialitzada (apareix sota "centre")	Centre 1, planificació 2, familiar 3	No apareix	TAM2-3
Centre de prevenció i control de les infeccions de transmissió sexual	Generalitat de Catalunya / CanalSalut – CAT, Fundació Lluita Contra la SIDA	No apareix (prevenció D; infecció D i E; transmissió E; sexual E)	Centre 1, prevenció 2, control 3, infecció 2, transmissió 2, sexual 2	No apareix (prevenció A; infecció A; transmissió A; sexual A)	TAM2-3
Centre de salut	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Explain TB	Especialitzada (apareix sota "centre"; salut D i E)	Centre 1, salut 3	Apareix	TAM2-3
Centre de salut de la xarxa pública	Govern Illes Balears Direcció General de Salut Pública y Participación	No apareix (salut D i E)	Centre 1, salut 3, xarxa 3, pública 0	No apareix	TAM2-3
Centre sanitari de la xarxa pública / centres sanitaris de la xarxa pública	Fundació Lluita Contra la SIDA	No apareix (sanitari D i E)	Centre 1, sanitari 2, xarxa 3, pública 0	No apareix	TAM2-3
Centre de VIH / ITS	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix (ni VIH ni ITS apareixen)	Centre 1, VIH no apareix, ITS no apareix	Resulta en "The website encountered an unexpected error. Please try again later." (VIH i ITS apareixen)	TAM4-5

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Cita (prèvia)	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, BCN Checkpoint, Gais Positius	Divulgativa	2	No apareix	TAM1
Clínica (suj)	NYC Health	Divulgativa i especialitzada	2	Apareix (2 sentits, un dels quals és rellevant)	TAM2-3
Clínic / Clínica /clínicas (adj)	Govern Ílles Balears Dirección General de Salud Pública y Participación, Fundació Lluita Contra la SIDA, BCN Checkpoint	Divulgativa i especialitzada	2	No apareix	TAM2-3
Coll	Explain TB	Divulgativa i especialitzada	4	Apareix (3 sentits, 2 dels quals són rellevants)	TAM2-3
Col.lapse (sic) del pulmó	Explain TB	No apareix ( <i>pulmó</i> D i E)	col·lapse 1, pulmó 2	No apareix ( <i>pulmó</i> A)	TAM2-3
Condó	BCN Checkpoint	Divulgativa i especialitzada	0	No apareix	TAM2-3
Consum de drogues	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix ( <i>droga</i> D i E)	Consum 3, droga 2	No apareix ( <i>droga</i> A)	TAM2-3
Contagiar (contagi)	Antisida Lleida CAT, Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
Contagiós / contagiosa	NYC Health, Explain TB	Divulgativa i especialitzada	1	No apareix	TAM2-3
Contraure (sic – vol dir “contreure”)	BCN Checkpoint	Divulgativa (contreure)	2 (contreure)	No apareix	TAM1
Control	Generalitat de Catalunya / CanalSalut – CAT, Fundació Lluita Contra la SIDA, Gais Positius	Divulgativa i especialitzada	3	Apareix (4 sentits, 1 dels quals és rellevant)	TAM2-3
Corresponents reactius	Antisida Lleida CAT	No apareix	Corresponent 3, reactiu 3	No apareix	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Cribratge	Explain TB	No apareix	0	Apareix	TAM4-5
Cultiu (víric)	Govern Illes Balears Direcció General de Salut Pública y Participación, Explain TB	Divulgativa	0	Apareix (2 sentits, ambdós rellevants)	TAM2-3
Cultiu d'esput	Explain TB	No apareix	Cultiu 0, esput 1	No apareix	TAM2-3
Cultivar	Explain TB	Divulgativa i especialitzada	2	No apareix	TAM2-3
Cultura (refereix a prova – paraula incorrecta, vol dir cultiu)	NYC Health	Divulgativa	3	No apareix	TAM1
Curar	NYC Health	Divulgativa i especialitzada	3	Apareix (3 sentits, 2 dels quals són rellevants)	TAM2-3
Cutània	NYC Health	Divulgativa i especialitzada	No apareix	No apareix	TAM2-3
Defensa / defenses (refereix a immunitat)	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	3	Apareix	TAM2-3
Departament (de Salut)	NYC Health	Divulgativa	2	No apareix	TAM1
Departament de Salut	NYC Health	No apareix	Departament 2, salut 3	No apareix	TAM2-3
Derivació	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Divulgativa	2	Apareix	TAM2-3
Derivació mèdica	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	No apareix	Derivació 2, mèdic 2	No apareix	TAM2-3
Diagnòstic	Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Fundació Lluita Contra la SIDA, BCN Checkpoint	Divulgativa i especialitzada	1	Apareix (2 sentits, ambdós dels quals són rellevants)	TAM2-3
Diagnosticar / diagnosticat	Generalitat de Catalunya / CanalSalut – CAT, Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3



Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Donant	Govern Illes Balears Dirección General de Salud Pública y Participación	Divulgativa	0	Apareix	TAM2-3
Droga / drogues	Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa i especialitzada	2	Apareix (3 sentits, tots rellevants)	TAM2-3
Efectes secundaris	Explain TB	Divulgativa i especialitzada (sota “efecte”)	Efecte 4, secundari 3	Apareix	TAM2-3
Eficàcia (pel que fa a prova)	Gais Positius	Divulgativa	3	Apareix (2 sentits, ambdós rellevants)	TAM2-3
EIA	Govern Illes Balears Dirección General de Salud Pública y Participación	El sentit és irrellevant	El sentit és irrellevant	Apareix amb sentit rellevant	TAM4-5
ELISA	Govern Illes Balears Dirección General de Salud Pública y Participación	No apareix	No apareix	Apareix	TAM4-5
Embarassada	Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Dirección General de Salud Pública y Participación	Divulgativa i especialitzada	1	Apareix	TAM2-3
Erupció	Explain TB	Divulgativa i especialitzada	1	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Esnifar (Spanish word)	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	0	No apareix	TAM4-5
Especificitat (pel que fa a proves)	Antisida Lleida CAT	Especialitzada	1	Apareix (5 sentits, un dels quals és rellevant)	TAM4-5
Esperança de vida	BCN Checkpoint	Especialitzada (apareix sota “esperança”)	Apareix sota “esperança” - 1	Apareix (2 sentits, ambdós rellevants)	TAM4-5

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Esput	NYC Health, Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
Esterilitzar / esterilitzat	Govern Illes Balears Direcció General de Salut Pública y Participación	Divulgativa i especialitzada	1	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Estudis de variabilitat genètica	Govern Illes Balears Direcció General de Salut Pública y Participación	No apareix	Estudi 4, variabilitat 1, genètica 1	No apareix	TAM2-3
Examinar	Explain TB	Divulgativa	3	Apareix	TAM2-3
Exposar / exposat	Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, BCN Checkpoint	Divulgativa	3	Apareix	TAM2-3
Exposició	Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	3	No apareix	TAM2-3 (cognate of exposar / exposat)
Exposició sanguínia	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	Exposició 3, sanguínia 1	No apareix	TAM2-3
Exposició sexual	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	Exposició 3, sexual 2	No apareix	TAM2-3
Fals negatiu	Antisida Lleida CAT	No apareix	No apareix; fals 3, negatiu 3	Apareix	TAM2-3

<b>Paraula (word)</b>	<b>Llocs web en que apareix (websites in which it appears)</b>	<b>DIEC2</b>	<b>IEC Diccionari descriptiu de la llengua catalana</b>	<b>TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)</b>	<b>TAM-HC ranking (TAM-HC ranking)</b>
Fàrmac	Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
Farmàcia / farmàcies	Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Fundació Lluita Contra la SIDA	Divulgativa i especialitzada	2	Apareix (2 sentits, un dels quals és rellevant)	TAM2-3
Farmàcia acreditada / Farmàcies acreditades	Fundació Lluita Contra la SIDA	No apareix	Farmàcia 2, acreditat 2	No apareix	TAM2-3
Febre	Explain TB	Divulgativa i especialitzada	3	Apareix	TAM2-3
Flegma	Explain TB	Divulgativa i especialitzada	1	Apareix (3 sentits, 1 dels quals és rellevant)	TAM2-3
Fluid / fluids	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Explain TB	Divulgativa i especialitzada	2	No apareix	TAM2-3
Fluorescència (microscòpia de)	Explain TB	Divulgativa i especialitzada	0	Apareix	TAM2-3
Fulla d'afaitar / fulles d'afaitar	Govern Illes Balears Dirección General de Salud Pública y Participación	Divulgativa (apareix sota "fulla")	Fulla 4, afaitar 2	No apareix	TAM1
Genètic / genètica	Govern Illes Balears Dirección General de Salud Pública y Participación	Divulgativa i especialitzada	2	No apareix	TAM2-3
Genital	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Especialitzada	1	Apareix	TAM4-5
Genoma (víric)	Govern Illes Balears Dirección General de Salud Pública y Participación	Especialitzada	0	Apareix	TAM4-5
Gèrmen	NYC Health	Divulgativa i especialitzada	2	No apareix	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Gonorrea	Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Especialitzada	0	Apareix	TAM4-5
Hepatitis	Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius	Divulgativa i especialitzada	1	Apareix	TAM2-3
Hepatitis B	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	No apareix	No apareix, però sí "virus de l'hepatitis B"	TAM4-5
Hepatitis C	Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius	No apareix	No apareix	Apareix	TAM4-5
Hospital	Generalitat de Catalunya / CanalSalut – CAT, Fundació Lluita Contra la SIDA, BCN Checkpoint	Divulgativa i especialitzada	0	Apareix	TAM2-3
Hospital de referència de VIH	BCN Checkpoint	No apareix	Hospital 0, referència 3, VIH no apareix	No apareix	TAM4-5
IGRA	Explain TB	No apareix	No apareix	No apareix	TAM4-5
Immune	NYC Health	Especialitzada	1	Apareix	TAM4-5
Immunitari	Govern Illes Balears Direcció General de Salut Pública y Participación, Explain TB	Especialitzada	0	Apareix	TAM4-5
Immunoenzimàtic / immunoenzimàtiques	Govern Illes Balears Direcció General de Salut Pública y Participación	No apareix	No apareix	No apareix (NOTA: <a href="https://www.termcat.cat/en/diccionaris-en-">https://www.termcat.cat/en/diccionaris-en-</a>	TAM4-5

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
				<a href="#">linia/183/search/immunoenxim%C3%A0tiques?type=basic&amp;condition=fuzzy</a>	
Immunològic	NYC Health	Especialitzada	0	Apareix	TAM4-5
Infecció	Generalitat de Catalunya / CanalSalut – CAT, Antisida Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius	Divulgativa i especialitzada	2	Apareix	TAM2-3
Infecció de transmissió sexual / infeccions de transmissió sexual	Generalitat de Catalunya / CanalSalut – CAT, Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, Gais Positius	No apareix	Infecció 2, transmissió 2, sexual 2	Apareix sota “malaltia de transmissió sexual”	TAM2-3
Infeccions / infeccioses	Explain TB	Especialitzada	1	Apareix (3 sentits, tots rellevants)	TAM4-5
Infectar / infectat / infectada / infectades	Generalitat de Catalunya / CanalSalut – CAT, Antisida Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Explain TB	Divulgativa i especialitzada	1	Apareix (3 sentits, tots rellevants)	TAM2-3
Infermera	Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
Infiltrar / infiltrat	Explain TB	Divulgativa	2	Apareix	TAM2-3
Injecció	Generalitat Valenciana Conselleria de Sanitat	Divulgativa i especialitzada	2	Apareix (3 sentits)	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
	Universal i Salut Pública, Explain TB				
Injectar	Generalitat de Catalunya / CanalSalut – CAT, Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
Inspirar	Explain TB	Divulgativa i especialitzada	3	Apareix	TAM2-3
Instruments (drogues)	Govern Ílles Balears Dirección General de Salud Pública y Participación	Divulgativa i especialitzada	3	Apareix	TAM2-3
Interferó-gamma	Explain TB	No apareix	Interferó 0, gamma 0	Apareix	TAM4-5
Interferon gamma	Explain TB	No apareix	Interferó 0, gamma 0	Apareix (tot i és anglès i no català)	TAM4-5
Intervenció	Fundació Lluita Contra la SIDA	Divulgativa i especialitzada	3	Apareix	TAM2-3
ITS	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA	No apareix	No apareix	Refereix a “malaltia de transmissió sexual”	TAM4-5
Intravenós / intravenosa	Govern Ílles Balears Dirección General de Salud Pública y Participación	Especialitzada	1	Apareix	TAM4-5
Kit	Fundació Lluita Contra la SIDA	No apareix	No apareix	No apareix	TAM4-5
Laboratori	NYC Health, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Fundació Lluita Contra la SIDA, Explain TB	Divulgativa	2	Apareix	TAM2-3
Laboratori d'anàlisis clíniques	Fundació Lluita Contra la SIDA	No apareix	Laboratori 2, anàlisi 3, clínica 2	No apareix	TAM2-3

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Laboratori privat d'anàlisis clíniques	Govern Illes Balears Dirección General de Salud Pública y Participación	No apareix	Laboratori 2, privat 3, anàlisi 3, clínica 2	No apareix	TAM2-3
Latent	Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
Líquid	Explain TB	Divulgativa i especialitzada	2	No apareix	TAM2-3
Malalt	NYC Health	Divulgativa i especialitzada	3	No apareix	TAM2-3
Malaltia / malalties	NYC Health, Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Explain TB	Divulgativa i especialitzada	3	Apareix	TAM2-3
Malalties infeccioses	Explain TB	No apareix	Malaltia 3, infecció 1	Apareix	TAM4-5
Malaltia de transmissió sexual	Govern Illes Balears Dirección General de Salud Pública y Participación	No apareix	Malaltia 3, transmissió 2, sexual 2	Apareix	TAM2-3
Manca d'aire	Explain TB	No apareix	Manca 3, aire 4	No apareix	TAM1
Mèdic / mèdica	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Govern Illes Balears Dirección General de Salud Pública y Participación, Explain TB	Divulgativa	2	Apareix	TAM2-3
Medicament / medicaments	Explain TB	Divulgativa i especialitzada	0	Apareix	TAM2-3
Metge / metgessa	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Dirección General de Salud Pública y	Divulgativa i especialitzada	3	Apareix	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
	Participación, Fundació Lluita Contra la SIDA, Explain TB				
Metge de capçalera	Generalitat de Catalunya / CanalSalut - CAT	Especialitzada (apareix sota "metge")	1, apareix sota "metge"	Apareix	TAM4-5
Metge de família	Fundació Lluita Contra la SIDA	No apareix	Metge 3, família 4	Refereix a "metge de capçalera"	TAM4-5
Microscopi	Explain TB	Divulgativa i especialitzada	0	Apareix	TAM2-3
Microscòpia	Explain TB	Especialitzada	0	Apareix (2 sentits, ambòs rellevants)	TAM4-5
Microscòpia de fluorescència	Explain TB	No apareix	Microscòpia 0, fluorescència 0	No apareix	TAM4-5
Mitjà de contrast (TAC)	Explain TB	No apareix	Mitjà 4, contrast 2	No apareix	TAM4-5
Moc	NYC Health	Divulgativa i especialitzada	1	Apareix	TAM2-3
Molecular	Govern Ílles Balears Direcció General de Salut Pública y Participación	Divulgativa i especialitzada	1	Apareix	TAM2-3
Mostra	NYC Health, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius, Explain TB	Especialitzada	3	Apareix (2 sentits, ambdós rellevants)	TAM2-3
Mostra de saliva	Antisida Lleida CAT	No apareix	Mostra 3, saliva 2	No apareix	TAM2-3
Mostra de sang	NYC Health, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles	No apareix	Mostra 3, sang 4	No apareix	TAM2-3



Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
	Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius, Explain TB				
Mucòs / mucoses	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa i especialitzada	1	No apareix, però sí "mocòs"	TAM2-3
Mucositat	Explain TB	Divulgativa i especialitzada	1	Apareix (2 sentits, ambdós rellevants)	TAM2-3 (cognate)
Nebulitzar / nebulitzat (líquid nebulitzat salat)	Explain TB	Divulgativa	0	No apareix	TAM2-3
Negatiu / negativa	NYC Health, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, BCN Checkpoint, Gais Positius, Explain TB	Divulgativa	3	No apareix	TAM1
Nòdul	Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
Nounat	Govern Ílles Balears Dirección General de Salud Pública y Participación	Especialitzada	1	Apareix	TAM4-5
Oral	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa i especialitzada	2	Apareix	TAM2-3
Òrgan / òrgans	Explain TB	Especialitzada	3	Apareix	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Organisme	Generalitat de Catalunya / CanalSalut – CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa i especialitzada	3	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Oxigen	Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
p24	Govern Ílles Balears Dirección General de Salud Pública y Participación	No apareix	No apareix	No apareix	TAM4-5
Pacient	Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación	Divulgativa i especialitzada	2	Apareix	TAM2-3
PCR	Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Explain TB	No apareix	No apareix	Apareix sota “reacció en cadena per la polimerasa” (sigla en EN, ES, FR i CAT segons aquest diccionari)	TAM4-5
Període finestra	Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	Període 4, finestra 3	No apareix	TAM4-5
Personal especialitzat (sic) en VIH	Govern Ílles Balears Dirección General de Salud Pública y Participación	No apareix	Personal 3, especialitzat 0, VIH no apareix	No apareix	TAM4-5
Personal mèdic	Explain TB	No apareix	Personal 3, mèdic 2	No apareix	TAM2-3
“pírcings” (pírcing)	Govern Ílles Balears Dirección General de Salud Pública y Participación	Divulgativa	No apareix	No apareix	TAM1
Pit	Explain TB	Divulgativa i especialitzada	0	Apareix (5 sentits, 2 dels quals són rellevants)	TAM2-3

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Plasma	Govern Illes Balears Direcció General de Salut Pública y Participación	Especialitzada	1	Apareix (3 sentits, 1 dels quals és rellevant)	TAM4-5
Positiu / positiva	NYC Health, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius, Explain TB	Divulgativa	3	No apareix	TAM1
Precís (pel que fa a prova)	Explain TB	Divulgativa	3	No apareix	TAM1
Preservatiu	Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Direcció General de Salut Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa i especialitzada	1	Apareix	TAM2-3
Prevenió	Generalitat de Catalunya / CanalSalut – CAT, Fundació Lluita Contra la SIDA	Divulgativa	2	Apareix	TAM2-3
Procediment	Fundació Lluita Contra la SIDA, BCN Checkpoint	Divulgativa i especialitzada	3	Apareix	TAM2-3
Professional sanitari	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	Professional 3, sanitari 2	No apareix	TAM2-3
Profilàctic	Antisida Lleida CAT	Especialitzada	1	Apareix	TAM4-5
Propagar	NYC Health	Divulgativa	2	No apareix	TAM1

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Prova	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius, Explain TB	Especialitzada	4	Apareix	TAM2-3
Prova d'alta especificitat	Antisida Lleida CAT	No apareix	Prova 4, alta 4, especificitat 1	No apareix	TAM4-5
Prova de confirmació	Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix ( <i>confirmació D</i> )	Prova 4, confirmació 2	No apareix	TAM2-3
Prova convencional	Fundació Lluita Contra la SIDA	No apareix	Prova 4, convencional 2	No apareix	TAM2-3
Prova cutània	NYC Health	No apareix	Prova 4, cutània no apareix	Apareix	TAM2-3
Prova de detecció dels anticossos del VIH	Antisida Lleida CAT	No apareix	Prova 4, detecció 1, anticòs 1, VIH no apareix	No apareix	TAM4-5
Prova IGRA	Explain TB	No apareix	Prova 4, IGRA no apareix	No apareix	TAM4-5
Proves d'interferon gamma (a la sang)	Explain TB	No apareix	Prova 4, interferó 0, gamma 0	No apareix	TAM4-5
Prova de laboratori	Antisida Lleida CAT	No apareix	Prova 4, laboratori 2	No apareix	TAM2-3
Prova de pell	NYC Health	No apareix	Prova 4, pell 3	No apareix	TAM2-3
Prova ràpida / proves ràpides	Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Govern Illes Balears Dirección	No apareix	Prova 4, ràpid 3	No apareix	TAM2-3

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
	General de Salud Pública y Participación, BCN Checkpoint, Gais Positius				
Prova de sang	NYC Health	No apareix	1, apareix sota "prova" <sup>2</sup>	No apareix	TAM2-3
Prova de la tuberculina	Explain TB	No apareix	Prova 4, tuberculina 0	Apareix	TAM2-3
Prova del VIH	Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Fundació Lluita Contra la SIDA, BCN Checkpoint, Explain TB	No apareix	Prova 4, VIH no apareix	No apareix	TAM4-5
Prova del VIH/SIDA / proves del VIH/SIDA	Generalitat de Catalunya / CanalSalut – CAT, Explain TB	No apareix	Prova 4, VIH/SIDA no apareix	Resulta en "The website encountered an unexpected error. Please try again later."	TAM4-5
Proveïdor d'atenció mèdica	NYC Health	No apareix	Proveïdor 1, atenció 4, mèdic 2	No apareix	TAM2-3
Psicològic / psicològica	Associació Ciutadana Anti-SIDA de Catalunya (ACASC)	Divulgativa i especialitzada	2	Apareix	TAM2-3
Pulmó / pulmons	NYC Health, Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
Punció capilar (sic – capil·lar)	Antisida Lleida CAT	Punció (Divulgativa i especialitzada), capil·lar (divulgativa i especialitzada)	Punció 1, capil·lar 1	Punció (Apareix, 2 sentits, 1 dels quals és rellevant), capil·lar (2 sentits, 1 dels quals és rellevant)	TAM2-3
Punxada	BCN Checkpoint	Divulgativa i especialitzada	1	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Qualitat de vida	BCN Checkpoint	Especialitzada (apareix sota "qualitat")	Qualitat 4, vida 4	Apareix	TAM2-3
4a generació	Gais Positius	No apareix	Quarto 0, generació 3	No apareix	TAM4-5
Radiografia	NYC Health, Explain TB	General i especialitzada	1	Trobada (2 sentits)	TAM2-3
Raigs X	Explain TB	Apareix sota "raig", especialitzada	Apareix sota "raig (3)"	"raigs X" no apareix però térmios amb aquesta paraula sí	TAM2-3
Reactiu / reactiva (tira / prova)	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT	Divulgativa i especialitzada	3	Apareix	TAM2-3
Recepta	Fundació Lluita Contra la SIDA	Divulgativa i especialitzada	2	Apareix sota "fórmula"	TAM2-3
Rectal	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa i especialitzada	0	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Reinfecció	Generalitat de Catalunya / CanalSalut - CAT	No apareix	0	Apareix	TAM2-3 (cognate of infecció)
Relació sexual / Relacions sexuals (amb penetració)	Generalitat de Catalunya / CanalSalut – CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	Relació 4, sexual 2	Apareix	TAM2-3
Relacions sexuals-eròtiques	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	No apareix	Relació 4, sexual 2, eròtic 2	No apareix	TAM2-3
Respiració	Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
Resultat	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA	Divulgativa	3	No apareix	TAM1

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
	de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius, Explain TB				
Risc	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, BCN Checkpoint, Gais Positius, Explain TB	Divulgativa	3	Apareix	TAM2-3
Ronquera	Explain TB	Divulgativa i especialitzada	1	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Sagnat (sic – sagnant)	Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
Saliva	Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Especialitzada	2	Apareix	TAM2-3
Saludable	Govern Ílles Balears Dirección General de Salud Pública y Participación	Divulgativa	2	Apareix	TAM2-3
Salut	NYC Health, Govern Ílles Balears Dirección General de	Divulgativa i especialitzada	3	Apareix	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
	Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Explain TB				
Salut Pública	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Especialitzada (apareix sota "salut")	Salut 3, pública 4	Apareix	TAM2-3
Sang	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, Gais Positius, Explain TB	Divulgativa i especialitzada	4	Apareix	TAM2-3
Sanguini / sanguínia / sanguínies	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Explain TB	Divulgativa i especialitzada	1	No apareix, però sí téminos amb la paraula apareixen	TAM2-3
Sanitari	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Explain TB	Divulgativa i especialitzada	2	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Sedant / sedants	Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
Seguiment	Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Dirección General de	Divulgativa	1	Apareix	TAM2-3



Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
	Salud Pública y Participación, Explain TB				
Seguiment mèdic	Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Dirección General de Salud Pública y Participación	No apareix	Seguiment 1, mèdic 2	No apareix	TAM2-3
Sensible (pel que fa a proves)	Explain TB	Especialitzada	3	No apareix, però sí términos que conté aquesta paraula	TAM2-3
Sensibilitat (pel que fa a proves)	Antisida Lleida CAT	Especialitzada	3	Apareix (5, 2 dels quals són rellevants)	TAM2-3
Seropositiu / seropositiva	Govern Illes Balears Dirección General de Salud Pública y Participación	Especialitzada	No apareix	Apareix	TAM4-5
Sèrum	Govern Illes Balears Dirección General de Salud Pública y Participación	Especialitzada	1	Apareix (4 sentits, 1 dels quals és rellevant)	TAM4-5
Servei de la prova ràpida	Gais Positius	No apareix	Servei 4, prova 4, ràpid 3	No apareix	TAM2-3
Servei d'urgències	Generalitat de Catalunya / CanalSalut - CAT	No apareix	Servei 4, urgència 2	No apareix	TAM2-3
Sexe (tenir sexe)	Gais Positius	Divulgativa i especialitzada	3	Apareix (3 sentits, 1 dels quals és rellevant)	TAM2-3
Sexual	Generalitat de Catalunya / CanalSalut – CAT, Antisida Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, Gais Positius	Especialitzada	2	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Sexualment (activa)	BCN Checkpoint, Gais Positius	Divulgativa	1	No apareix	TAM1

APPENDIX 2.3 Catalan word list

<b>Paraula (word)</b>	<b>Llocs web en que apareix (websites in which it appears)</b>	<b>DIEC2</b>	<b>IEC Diccionari descriptiu de la llengua catalana</b>	<b>TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)</b>	<b>TAM-HC ranking (TAM-HC ranking)</b>
Sexualment actiu / activa	BCN Checkpoint	No apareix	No apareix	No apareix	TAM1
SIDA	Generalitat de Catalunya / CanalSalut – CAT, Explain TB	("sida") Divulgativa i especialitzada	("sida") 0	("sida") Apareix	TAM2-3
Sida	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Fundació Lluita Contra la SIDA	("sida") Divulgativa i especialitzada	("sida") 0	("sida") Apareix	TAM2-3
sida	Generalitat de Catalunya / CanalSalut – CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación	Divulgativa i especialitzada	0	Apareix	TAM2-3
Sífilis	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Gais Positius	Divulgativa i especialitzada	1	Apareix	TAM2-3
Signe / signes	NYC Health, Explain TB	Especialitzada	3	Apareix	TAM2-3
Síntoma / símptomes	NYC Health, Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
Sistema	NYC Health, Govern Ílles Balears Dirección General de Salud Pública y Participación, Explain TB	Divulgativa	4	Apareix	TAM2-3
Sistema immune	NYC Health	No apareix	Sistema 4, immune 1	No apareix	TAM4-5
Sistema immunitari	Govern Ílles Balears Dirección General de Salud Pública y Participación, Explain TB	No apareix	Sistema 4, immunitari 0	Apareix	TAM4-5
Sistema immunològic	NYC Health	No apareix	Sistema 4, immunològic 0	No apareix	TAM4-5

<b>Paraula (word)</b>	<b>Llocs web en que apareix (websites in which it appears)</b>	<b>DIEC2</b>	<b>IEC Diccionari descriptiu de la llengua catalana</b>	<b>TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)</b>	<b>TAM-HC ranking (TAM-HC ranking)</b>
Solució (de prova)	NYC Health	Divulgativa i especialitzada	4	Apareix (3 sentits, cap dels quals rellevant)	TAM2-3
Solució de prova	NYC Health	No apareix	Solució 4, prova 4	No apareix	TAM2-3
Suor nocturna / suors nocturnes	Explain TB	Suor – divulgativa i especialitzada, nocturn – divulgativa	Suor 2, nocturn 2	Apareix	TAM2-3
Supervivència	Govern Ílles Balears Direcció General de Salut Pública y Participación	Divulgativa	2	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
TAC	Explain TB	No apareix com a sigla	No apareix com a sigla	No apareix	TAM4-5
Tampó (d'arrossegament)	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Especialitzada	0	Apareix	TAM4-5
Tatuar	Govern Ílles Balears Direcció General de Salut Pública y Participación	Divulgativa i especialitzada	1	No apareix	TAM2-3
TB	NYC Health	No apareix	No apareix	No apareix	TAM4-5
Tècnic immunoenzimàtic / tècniques immunoenzimàtiques	Govern Ílles Balears Direcció General de Salut Pública y Participación	No apareix	Tècnica 3 (refereix al mètode), immunoenzimàtic no apareix	No apareix	TAM4-5
Test	Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA	Divulgativa i especialitzada	No apareix en el sentit rellevant	Apareix sota “prova”	TAM2-3
Test ràpid	Antisida Lleida CAT, Fundació Lluita Contra la SIDA	No apareix	Test no apareix en el sentit rellevant, ràpid 3	No apareix	TAM2-3

APPENDIX 2.3 Catalan word list

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
Tinció (que es diu Ziehl-Neelsen)	Explain TB	No apareix	0	Apareix	TAM4-5
Tira	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	Divulgativa	2	Apareix	TAM2-3
Tira reactiva (EN: dipstick)	Asociació Ciutadana Anti-SIDA de Catalunya (ACASC)	No apareix	Tira 2, reactiva 1	Apareix	TAM2-3
Tomografia	Explain TB	Especialitzada	0	Apareix	TAM4-5
Tomografia computeritzada (sic – espanyolisme?)	Explain TB	“Tomografia” = especialitzada, però “tomografia computeritzada” no apareix	Tomografia 0, també “tomografia axial computadoritzada” sota “tomografia”, computeritzat no apareix	No apareix (però <b>tomografia computada</b> sí)	TAM4-5
Toràctic	NYC Health	Divulgativa i especialitzada	1	Apareix	TAM2-3
Tòrax	NYC Health	Divulgativa i especialitzada	1	Apareix	TAM2-3
Tos	Explain TB	Divulgativa i especialitzada	No apareix en el sentit rellevant	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3
Tractament	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, BCN Checkpoint, Explain TB	Especialitzada	2	Apareix	TAM2-3
Tractament antiretroviral	Govern Illes Balears Dirección General de Salud Pública y Participación, BCN Checkpoint	No apareix	Tractament 2, antiretroviral no apareix	No apareix	TAM4-5
Tractament clínic	BCN Checkpoint	No apareix	Tractament 2, clínic 2	No apareix	TAM2-3
Transmetre	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	2	No apareix	TAM2-3 (cognate c transmissió)
Transmissió	Generalitat de Catalunya / CanalSalut – CAT, Antisida	Especialitzada	2	Apareix (2 sentits, 1 dels quals és rellevant)	TAM2-3

Paraula (word)	Llocs web en que apareix (websites in which it appears)	DIEC2	IEC Diccionari descriptiu de la llengua catalana	TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)	TAM-HC ranking (TAM-HC ranking)
	Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, Gais Positius, Explain TB				
Treballador sanitari	Explain TB	No apareix	Treballador 3, sanitari 2	No apareix	TAM2-3
Tub	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	2	Apareix (3 sentits, 1 dels quals és rellevant)	TAM2-3
Tuberculina	Explain TB	Divulgativa i especialitzada	0	Apareix	TAM2-3
Tuberculosi	NYC Health, Govern Illes Balears Dirección General de Salud Pública y Participación, Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
Tuberculosi activa	NYC Health, Explain TB	No apareix	Tuberculosi 1, actiu 3	No apareix	TAM2-3
Tuberculosi latent	Explain TB	No apareix	Tuberculosi 1, latent 2	No apareix	TAM2-3
Tus (sic - tos)	Explain TB	No apareix	0 (i "vegeu tos")	No apareix	TAM2-3
Ulcerar / ulcerat	Explain TB	Divulgativa i especialitzada	0	Apareix	TAM2-3
Urgència / urgències	Generalitat de Catalunya / CanalSalut - CAT	Divulgativa i especialitzada	2	Apareix (2 sentits, ambdós rellevant)	TAM2-3
Utensilis (drogues)	Govern Illes Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa	1	No apareix	TAM1
Vacuna	Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3

APPENDIX 2.3 Catalan word list

<b>Paraula (word)</b>	<b>Llocs web en que apareix (websites in which it appears)</b>	<b>DIEC2</b>	<b>IEC Diccionari descriptiu de la llengua catalana</b>	<b>TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)</b>	<b>TAM-HC ranking (TAM-HC ranking)</b>
Vacuna BCG	Explain TB	No apareix	Vacuna 1, BCG 0	Apareix sota “vacuna antituberculosa”	TAM4-5
Vacunació	Explain TB	Divulgativa i especialitzada	1	Apareix	TAM2-3
Vaginal	Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública	Divulgativa i especialitzada	1	Apareix (3 sentits, 1 dels quals és rellevant)	TAM2-3
Vena	Explain TB	Divulgativa i especialitzada	2	Apareix	TAM2-3
Via intravenosa	Govern Ílles Balears Dirección General de Salud Pública y Participación	No apareix	Via 4, intravenós 1	Apareix sota “via d’administració intravenosa”	TAM4-5
VIH	NYC Health, Generalitat de Catalunya / CanalSalut – CAT, Associació Ciutadana Anti-SIDA de Catalunya (ACASC), Antisida Lleida CAT, Govern Ílles Balears Dirección General de Salud Pública y Participación, Generalitat Valenciana Conselleria de Sanitat Universal i Salut Pública, Fundació Lluita Contra la SIDA, BCN Checkpoint, Gais Positius, Explain TB	No apareix	No apareix	Apareix sota “virus de la immunodeficiència humana”	TAM4-5
VIH-1	Fundació Lluita Contra la SIDA	No apareix	No apareix	No apareix	TAM4-5
VIH-2	Fundació Lluita Contra la SIDA	No apareix	No apareix	No apareix	TAM4-5
VIH/SIDA	Generalitat de Catalunya / CanalSalut - CAT	No apareix	No apareix	Resulta en “The website encountered an unexpected error. Please try again later.”	TAM4-5
Viral	Antisida Lleida CAT	No apareix	0	Apareix sota “víric”	TAM4-5
Víric	Govern Ílles Balears Dirección General de Salud Pública y Participación	Divulgativa i especialitzada	0	Apareix	TAM2-3

<b>Paraula (word)</b>	<b>Llocs web en que apareix (websites in which it appears)</b>	<b>DIEC2</b>	<b>IEC Diccionari descriptiu de la llengua catalana</b>	<b>TERMCAT Diccionari enciclopèdic de Medicina (DEMCAT)</b>	<b>TAM-HC ranking (TAM-HC ranking)</b>
Virus	Generalitat de Catalunya / CanalSalut – CAT, Antisida Lleida CAT, BCN Checkpoint	Divulgativa i especialitzada	1	Apareix	TAM2-3
Western Blot	Antisida Lleida CAT, Govern Illes Balears Dirección General de Salud Pública y Participación, Gais Positius	No apareix	No apareix	Apareix sota “transferència de proteïnes”	TAM4-5
Xeringa / xeringues	Govern Illes Balears Dirección General de Salud Pública y Participación	Divulgativa i especialitzada	1	Apareix	TAM2-3
(tinció que es diu) Ziehl-Neelsen	Explain TB	No apareix	No apareix	Apareix sota “tinció de Ziehl-Neelsen”	TAM4-5





## APPENDIX 3: Fitted Model Results

The results for technicality of text and all the other markers are listed in the following two tables: Table 1 shows the results for comparison between the three languages' non-translated texts, and Table 2 displays the results for comparison between the non-translated and translated sub-corpora within each of the three languages. The comparisons between the non-translated texts of each language are the product of linear regression models with omnibus tests (chi-square test to check for any significant differences between variables) and pairwise comparisons (Cohen's  $d$  for effect size of any differences between groups). For comparison between the translated and non-translated sub-corpora within each language, the results provided are those which are typically given in a linear regression model, an option that in this case is facilitated by the fact that the only fixed factor of those models, non-translated (L1) and translated (L2), form two levels. In Table 2, the positive coefficients  $\beta$  and  $z^{105}$  indicate that the non-translated sub-corpus contains more of the marker than the translated sub-corpus ( $L2 > L1$ ). The inverse is the case ( $L1 > L2$ ) when these two coefficients are negative. In these tables, English is "en," Spanish is "es," and Catalan is "ca."

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<sup>105</sup> The  $\beta$  coefficient, which is the standardized slope in a linear regression model, generally reflects the relationship between two variables. The regression coefficient  $z$ , frequently referred to as the  $z$ -score, is the estimate divided by the standard error and reflects the high or low tendency to move towards the mean.

Table 36 - Fitted model results for comparison between languages' L1 texts.

analysis	Chisq	p.Chisq	en_es_cohensd	en_es_p.value	en_ca_cohensd	en_ca_p.value	es_ca_cohensd	es_ca_p.value
1 Number of technical words	5.818	0.055	-1.446	0.107	0.518	1.000	1.965	0.080
2a Words accompanied by a definition or explanation	0.259	0.879	0.222	1.000	0.020	1.000	-0.202	1.000
2a Greek or Latin affixes	1.636	0.441	0.136	1.000	-0.487	0.715	-0.623	0.803
2a Multiple capital letters	1.512	0.470	-0.382	1.000	0.304	1.000	0.687	0.672
2a Numerical symbols	2.040	0.361	0.390	1.000	-0.349	1.000	-0.739	0.475
2a Cognates	1.756	0.416	-0.465	0.838	0.244	1.000	0.709	0.600
2b Multimodality	14.303	0.001	-1.467	0.002	0.207	1.000	1.674	0.006
3 Explanation to avoid use of a technical term	1.718	0.424	0.231	1.000	-0.461	0.799	-0.693	0.663
3 Implemented layman's terms	0.644	0.725	0.223	1.000	0.264	1.000	0.041	1.000
4 ID of writer explicit	0.100	0.951	0.359	1.000	-1.965	1.000	-2.324	1.000
5 ID of reader explicit	4.391	0.111	2.102	0.213	-0.788	1.000	-2.890	0.129
6 Person marker or selfmention	0.181	0.913	0.182	1.000	-0.013	1.000	-0.194	1.000
6 Relational or engagement marker	4.377	0.112	0.086	1.000	1.348	0.123	1.261	0.470
6 Hedge	7.122	0.028	0.554	0.588	0.989	0.049	0.435	1.000
6 Diminutive	0.157	0.924	-0.123	1.000	0.096	1.000	0.219	1.000
6 Persuasion marker	0.311	0.856	-0.213	1.000	-0.114	1.000	0.099	1.000
7 Inclusion word	3.441	0.179	-0.660	0.319	0.249	1.000	0.909	0.252
7 Stigma word	0.949	0.622	0.187	1.000	0.378	1.000	0.191	1.000
8 Imperative	1.215	0.545	0.066	1.000	0.451	0.824	0.386	1.000
8 Do not	3.372	0.185	-0.755	0.238	0.082	1.000	0.837	0.387
8 Modal verb or clause or expression	1.699	0.428	-0.375	1.000	0.349	1.000	0.724	0.592

Table 37 - Fitted model results for comparison between L1 & L2 sub-corpora.

analysis	en_β	en_SE	en_z	en_p	es_β	es_SE	es_z	es_p	ca_β	ca_SE	ca_z	ca_p
1 Number of technical words	0.01347902	0.001185456	1.13703263	0.25552465	-0.03616139	0.01696587	<b>-2.13142049</b>	<b>0.033050452</b>	0.0180352	0.01654872	1.08982457	0.27579043
2a Words accompanied by a definition or explanation	-0.00191124	0.00200668	-0.9523779	0.34090536	0.00054921	0.0025325	0.21686637	0.82831249	0.00984275	0.00439324	<b>2.24043212</b>	<b>0.02506288</b>
2a Greek or Latin affixes	0.00195123	0.00122838	1.5884624	0.11218182	0.00134213	0.0016809	0.79846661	0.42460557	-0.00135577	0.0014412	-0.94072392	0.34684636
2a Multiple capital letters	0.00112478	0.00188058	0.59810249	0.54977155	-0.0040481	0.00217528	-1.86095828	0.06275007	3.7092E-05	0.00232516	0.0159524	0.98727237
2a Numerical symbols	5.1549E-05	0.00040826	0.12626681	0.89952073	0.00048356	0.00046076	1.0494909	0.29395224	-0.00099395	0.00113681	-0.87433958	0.38193335
2a Cognates	0.00233472	0.00161672	1.44411162	0.14870758	0.00098207	0.00334489	0.29360451	0.76906013	0.00866488	0.00299808	<b>2.28976284</b>	<b>0.02203507</b>
2b Multimodality	0.00405693	0.00285092	1.42302133	0.15472997	-0.01577877	0.00340666	<b>-4.63173783</b>	<b>3.6261E-06</b>	0.00010005	0.00346877	0.0288445	0.97698861
3 Explanation to avoid use of a technical term	0.0014089	0.00105132	1.34012883	0.18020346	0.00035412	0.00107481	0.32946838	0.74180169	-0.00103125	0.00160148	-0.64393587	0.51961702
3 Implemented layman's terms	-0.00090653	0.00109735	-0.82610344	0.40874542	0.00015554	0.0005894	0.26388986	0.79186479	-9.1038E-20	#NUM!	#NUM!	#NUM!
4 ID of writer explicit	0.64665608	0.67668694	0.95562075	0.33926388	0.50752769	1.25668535	0.40386218	0.68631407	-22.7150864	46889.8409	-0.00048444	0.99961348
5 ID of reader explicit	-1.09863033	0.62437064	-1.75958037	0.07847898	1.94593002	1.12637933	1.72759741	0.08406043	-1.09863474	1.71482997	-0.64066686	0.52173915
6 Person marker or selfmention	-0.00349083	0.00578478	-0.60345137	0.54620845	0.00241859	0.00612773	0.394696	0.69306726	-0.00759618	0.00510073	-1.4892328	0.13642608
6 Relational or engagement marker	-0.02645284	0.01169072	<b>-2.26272073</b>	<b>0.02365291</b>	-0.01241177	0.01557606	-0.79684933	0.42553854	0.01578527	0.01745491	0.90434557	0.36581219
6 Hedge	-0.00410973	0.00239477	-1.71612597	0.08613899	-0.00034252	0.00260668	-0.13140052	0.89545847	0.00499895	0.00176955	<b>2.82497791</b>	<b>0.00472839</b>
6 Diminutive	0.0001199	0.00104522	0.11471337	0.90867231	-0.00083742	0.00141414	-0.59217704	0.55373204	0.00281245	0.00191829	1.46612174	0.14261512
6 Persuasion marker	0.00165796	0.000834	<b>1.98795861</b>	<b>0.04681627</b>	-0.00020547	0.00105369	-0.19500274	0.8453908	-0.00067626	0.00135639	-0.49857018	0.61808222
7 Inclusion word	0.00123168	0.00196347	0.62729398	0.53046655	-0.00570708	0.00227381	<b>-2.50991912</b>	<b>0.01207588</b>	0.00110153	0.00111781	0.98543891	0.32440853
7 Stigma word	0.00030948	0.00297941	0.10387122	0.91727155	0.00019757	0.00406967	0.04854685	0.96128043	-0.00123561	0.00121577	-1.01632058	0.30947675
8 Imperative	-0.0043393	0.00385761	-1.12486567	0.26064596	-0.00244719	0.00454601	-0.53831595	0.59035894	-0.00097892	0.00147166	-0.66517787	0.50593673
8 Do not	0.00019495	0.00037256	0.52328547	0.60077561	-0.00052151	0.00074794	-0.69725495	0.48564326	0.00014503	0.00045144	0.32125847	0.74801452
8 Modal verb or clause or expression	0.00049502	0.00271252	0.18249401	0.85519505	-0.00371632	0.00301686	-1.2318522	0.2180043	0.00228972	0.00361102	0.63409265	0.52602036