PROCEDURES AND DIFFICULTIES IN THE TRANSLATION OF MEDICAL TEXTS. AN ENGLISH-ROMANIAN CASE STUDY

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Abstract: Irrespective of the field or of the languages involved, translation represents a means of communication. Nevertheless, translation in the medical field involves the translation of documents related to new drug applications, of clinical, technical, regulatory, or marketing documents that are related to the medical, pharmaceutical, or health care field. As with any specific field, medical translation requires training and extensive knowledge of the subject matter besides linguistic skills. This paper tackles several translation procedures and issues encountered in the translation of medical texts. It is noteworthy that medical translation is an area of extremely high importance as good translations could be able to save patients' lives, while those of poor quality may endanger them (Engels 2011).

Keywords: medical terminology, translation, translator, medical term, English language

Introduction

All fields of translation are equally important and involve specific features, difficulties, and methods. However, translation in the medical field often involves the translation of documents related to new drug applications, of clinical, technical, regulatory, or marketing documents that are related to the medical, pharmaceutical, or health care field. Medical translation facilitates communication and proper treatment and care for patients who speak various languages. A medical translator should be a professional, since any sort of wrong translation or mistake could trigger serious consequences. As with any specific field, medical translation requires training and extensive knowledge of the subject matter besides linguistic skills. Medical translation is an area of extremely high importance as good translations could be able to save patients' lives, while those of poor quality may endanger

them[1]. This paper deals with several translation procedures and issues encountered in the translation of medical texts, while providing theoretical basis, as well as examples to support the ideas presented, proving thus that any translator or linguist must know the basics of the work he or she becomes bound to.

Jaaskelainen considers that the translation strategy is "a series of competencies, a set of steps or processes that favor the acquisition, storage, and/or utilization of information"[2]. In his turn, W. Loescher understands by translation strategy "a potentially conscious procedure for solving a problem faced in translating a text, or any segment of it"[3]. Direct translation techniques and oblique translation techniques, which are going to be dealt with in this paper, are among the most commonly used. It is noteworthy that each field has its own linguistic features, therefore needing an appropriate approach when it comes to translation.

Direct Translation Techniques

Direct translation occurs when there is an "exact structural, lexical, even morphological equivalence between two languages", only possible when the two languages are very close to each other[4]. These translation procedures are borrowing, calque and literal translation.

In what concerns borrowing, it is the simplest method of translation and it is void of style, since it involves leaving a word from the source language stay the same in the target language. It is usually used when the equivalent word in the target language would change the rhythm or style of the text, or even when there is no appropriate equivalent word in the target language. There are many words in the Romanian registers borrowed from English; therefore, Romanian readers would not have any issues in identifying their meaning and understanding them. For example, these are only a few of the English words that Romanian language has "adopted" over the years: software, design, screening etc. Nevertheless, the words above are indeed commonly used in Romanian.

[1]Vertalen Engels (2011), Guidelines for the beginner medical translator practically applied and analysed (MA Thesis), Nederlands, Utrecht University, p. 13, Web. 20 September 2015, <file:///C:/Users/SWAT/Downloads/Guidelines+for+the+beginner+medical+translator.pdf>
[2] R. Jaaskelainen, (1999). Tapping the process: an explorative study of cognitive and effective factors involved in translating. Joensuu: University of Joensuu Publications in Humanities. p. 71
[3] W. Loescher, (1991). Translation performance, translation process and translation strategies. Tuebingen: Guten Narr., p. 8
[4] Lucia Molina and Amparo Hurtado Albir (2002). "Translation Techniques Revisited: A Dynamic and Functionalist Approach." Translators' Journal. 47.4., p. 499, Web. 03 Jun. 2013. <http://www.erudit.org/revue/meta/2002/v47/n4/008033ar.pdf>.

Borrowing in translation does not refer to the words borrowed "officially", but mostly to the ones that are unknown to the reader. Take for example the following sentence, found on a website designed to inform people about medicine: "Tomografia computerizată (CT) foloseşte razele X pentru a crea imagini detaliate ale structurilor din interiorul corpului"[5]. The sentence uses two different terms for the concept described. At the beginning, we have "tomografie computerizată," which in English would be "computed tomography". Nevertheless, the abbreviation given in parenthesis is "CT", which is actually the English abbreviation for "computed tomography." Irrespective of the purpose, this is clearly an instance of borrowing. The problem in this case is with borrowing abbreviations, since a reader without any medical or linguistic background regarding English language would not know what the abbreviation stands for and where it comes from.

Regarding calque, it is another type of borrowing where the target text borrows an expression form from the source language and then translates literally each of its elements. This technique of translation is mostly used for names of organizations, but not only. Some calques can be widely accepted, but if the calque is unsuccessful, then it could cause confusion because of unfamiliarity. Examples of calques include "hemolytic serum" translated in Romanian as "ser hemolytic". Romanian medical language also uses "ser hemolizant," and this term is used even more often than the first. Nevertheless, the presence of "ser hemolitic" in the Romanian medical language is a clear indication of calque in translation.

Another such instance is represented by the translation of the word "anthrax"(disease) by "antrax". This term also has other versions in Romanian, such as "cărbune" or "dalac". Instead of using these other terms, many translators prefer to use the "false cognate" term, which is "antrax"[6].

The word-for-word or the literal translation represents the direct transfer (and translation) of the explicit features of the source language into the target language. It is noteworthy that the literal translation could be used in several languages and only under certain circumstances, but not all of them, since the technique is dependent on the sentence structure. Such an instance is represented by the following fragment, from Neurological

[5] "Tomografia computerizată." Imagistica şi endoscopia. <http://www.sfatulmedicului.ro/Imagistica-si-endoscopia/tomografia-computerizata_1311>.
[6] Lucia Luis Rosendo (2008), "English and Spanish Medical Languages: A Comparative Study from a Translation Point of View." Trans. Revista de Traductologia. 12: 231-46, p. 237. Web. 06 Jun. 2013. <http://www.trans.uma.es/pdf/Trans_12/t12_231-246_LRuiz.pdf>.

Diagnostic Tests and Procedures[7], first translated word-for-word (see Translation I – Ro) and afterwards translated by having in view various techniques (see Translation II – Ro):

Source text: Eng	Translation I (literal) – Ro	Translation II – Ro
Genetic testing and counseling can help parents who have a family history of a neurological disease determine if they are carrying one of the known genes that cause the disorder or find out if their child is affected. Genetic testing can identify many neurological disorders, including spina bifida, in utero (while the child is inside the mother's womb).	Genetică testarea şi consilierea pot ajuta părinţii care au o familie istorie de neurologice afecţiuni determine dacă poartă una din cunoscutele gene care cauzează afecţiunea sau să afle dacă lor copil este afectat. Genetica testare poate identifica multe neurologice afecţiuni, incluzând spina bifidă, in utero (în timp ce copilul este în al mamei uter.)	Testarea genetică şi consilierea pot ajuta părinții cu istoric familial de afecţiuni neurologice să stabilească dacă sunt purtători ai uneia dintre genele cunoscute ca fiind responsabile pentru anumite afecţiuni sau să afle dacă copilul lor este afectat. Testarea genetică poate identifica mai multe tulburări neurologice, inclusiv spina bifidă, in utero (în timp ce copilul este în interiorul uterului mamei).

It is noteworthy that the word-for-word translation does make sense in certain contexts. Nevertheless, a major problem was represented by the grammatical structure. In Romanian, the adjective usually follows the noun, whereas in English, exactly the opposite. This is why the expression "afecţiuni neurologice", the correct expression in Romanian – by use of transposition, becomes "neurologice afecţiuni", while translating word-for-word.

Oblique Translation Techniques

According to Molina and Hurtado Albir, "oblique translation occurs when word for word translation is impossible"[8]. The oblique translation procedures are transposition, modulation, equivalence and adaptation.

[7] "Neurological Diagnostic Tests and Procedures." National Institute of Neurological Disorders and Stroke - National Institutes of Health. National Institute of Neurological Disorders and Stroke, March, 2005. Web. 4 Jun 2013. <http://www.ninds.nih.gov/disorders/misc/diagnostic_tests.htm>.
[8] Lucia Molina, op. Cit., p. 502

By means of transposition, the sequence of different parts of speech is changed during translation; for example, in the table above, the expression "neurological disorders" is translated in Romanian by "afecţiuni neurologice". The process of transposition implies the fact that grammatical structures often differ from one language to another and, therefore, different translation approaches are requested. Nevertheless, not only sequence is shifted in transposition. The technique also consists in replacing a grammatical category in the source language by another in the target language, without changing the meaning of the message. For example, "hand stitched" in English - noun and participle becomes Romanian "cusut la/de mână" – participle and adverbial phrase, and the meaning stays the same.

This technique implies a more complex change of semantic perspective and involves a shift in perspective, in point of view, or the replacement of the abstract by the concrete, or the means by the result – such as in "screening tests", which in Romanian are "teste de prevenţie". The phrase "involves a shift in […] point of view" indicates that this procedure automatically involves subjectivity, a concept that lacks reliability in communication, quite unacceptable for the source language readers as for the target language reader if it is used obsessively[9]. Nevertheless, for short phrases, such as "the top floor" (in Romanian "ultimul etaj") it is acceptable, since not even translation through transposition ("etajul de top / etajul din top / etajul din vârf" etc.) could make sense for native Romanian readers. The most important aspect in modulation is nuance, since the target text has to sound natural to its readers. For example, "It is easy to understand" would be translated better through "Este uşor de înţeles" rather than "Nu este dificil de înţeles" ("It is not difficult to understand"), since the latter version suggests a previous supposition of difficulty, but the first one only conveys the message clearly and without interference.

Equivalence is used when a restricted meaning and situation in the source language implies maintenance in the target language by finding completely different stylistic and lexical means. Equivalence involves the message in its entirety and is the case of set phrases, proverbs, clichés, idiomatic phrases etc, as is "A friend in need is a friend indeed" ("Prietenul la nevoie se cunoaşte"), or "ouch!" ("au!").

Adaptation is required when there is no correspondence in the target language for a certain source language term or expression, situation which rarely happens in medicine. Adaptation is mostly necessary when the target language has no referential event, situation, or

[9] Idem, p. 505

custom similar to one in the source language, for example the Romanian dance Fedelesul. Therefore, adaptation is mostly required in texts dealing with a specific culture or with cultural events. Sometimes, as in the case of these two examples, an explicatory footnote or in-text specification is required. Because an explanatory phrase, could be long and "upsetting," it is recommended that a translator should use an interpolation, which is always short and does not interfere too much with the text[10].

C. Seguinot implies the fact that a translator needs to adopt at least three major strategies when dealing with specialized translation. The first strategy implies that a translation should be written without interruptions for as long as possible. The second strategy implies that surface errors should be corrected immediately. A third strategy presented by Seguinot is that the stylistic or qualitative errors should be left for the revision step[11].

Henry Fischbach divides medical texts into two categories, according to their purpose, i.e. information or promotion, "although this is not to imply that the two are mutually exclusive". The two are "chiefly distinguished by the inclusion subtle or otherwise-of a sales message"[12]. Since text function is closely related to the text type any text type or any combination of text types can lead to different problems if it is not treated carefully and professionally[13]. Accordingly, each type of text requires different translation strategies, procedure, or techniques. Irrespective of the name or context, one or more translation methods are to be applied when dealing with any specialized text.

Difficulties encountered in the translation of medical texts

An important process which should be taken into account when dealing with a translation is represented by the analysis of the source text, also known as TOSTA (Translation Oriented Source Text Analysis). This analysis helps the translator discover important key elements, such as the function of the text, its target readers, (who may have different backgrounds, ages, and knowledge about the subject), as well as "source text elements that need to be preserved or adapted in translation"[14].

[10] Clifford E Landers (2000). "The Fundamentals." Literary Translation. A Practical Guide. Clevedon: Multilingual Matters, p. 113.
[11] C. Seguinot, (1989). The translation process. Toronto: H.G. Publications. pp. 87-88
[12] Henry Fischbach (1962), Problems of Medical Translation, Bulletin of Medical Library Associations, 50/3: 462-72, p. 462
[13] Engels, op. cit. p. 15
[14] C. Nord (1997), Text Analysis in Translation: Theory, Methodology and Didactic Application of a Model for Translation-Oriented Text Analysis. Amsterdam: Rodopi. p. 21

In order to preserve the fidelity toward the source text and the equivalence in terms of wordiness, medical translators face numerous problems. This analysis would help the translator identify several possible translation issues and elaborate a translation strategy in order to solve these issues. According to Christiane Nord, there are four main translation problems (i.e. pragmatic, linguistic, cultural and text-specific) which require specific transfer strategies and which should represent the starting point of the translation process. Therefore, the translator should identify these four issues before he/she starts working.[15]

As far as pragmatic problems are concerned, in Nord's view, they deal with the fact that the situations in the source culture and the ones in the target culture may differ in many aspects. These differences are always present within the translation process, irrespective of the direction of the translation or the languages involved in the process. Nord argues that, for the identification of the potential pragmatic problems, the translator should check the extra-textual factors, such as the profile and intention of the author, the target audience, the means of communication, as well as the place and time involved in the production and reception of the respective text.

For example, the translation of the question "Can you diagnose a child?" ("Poţi diagnostica un copil?") is tightly connected to the speaker's communicative intention. In this case, the translator does not know whether the question is a request for information or for action. This aspect could cause problems to the target text, since the question could be interpreted in at least two or three ways in Romanian, for example: "Ai cunoştinţele necesare pentru a diagnostica un copil?", "Ai timpul necesar pentru a diagnostica un copil?" or "Dispui de condiţiile necesare pentru a diagnostica un copil?".

Linguistic problems arise from differences in structure concerning syntax and vocabulary, both in the source language and in the target language. The author argues that these problems could be caused by certain terms belonging to the "false friends" group, or by situations of equivalence, either one-to-many, or one-to-zero[16]. Nevertheless, linguistic problems also occur because of lack of grammar and/or style knowledge both of the source and of the target language. This is precisely the aspect that requires a translator to have extended knowledge of all the languages he or she is working with in terms of vocabulary, grammar, syntax, expressions, domains, but also culture.

[15] Idem, p. 47
[16] Idem

Linguistic problems may also appear during the translation of texts from specific domains, especially technical. It is indeed self-understood that when one does not know a certain word, they make use of dictionaries. The problem arises when the translator realizes that one word in the source language may have more than one meaning in the target language, and without extensive knowledge of the field, or without context, research is mandatory. Text-specific problems refer to specific situations of communication that are unique and depend on certain contexts. Take for example the following phrase: "The cord is damaged". The problems is that without context or a determinant, the translator would not know how to translate the word "cord", since in The American Heritage Dictionary of the English Language attributes to it not one or two definitions, but nine definitions as a noun and three as a verb. It would be easy to exclude the three definitions this word has as a verb, since the sentence clearly shows the word is a noun. Nevertheless, without any context, which of the other nine definitions would suit this sentence? Fortunately, a translator does not usually translate one sentence only, but at least a text containing several sentences from which he or she could obtain a clue about to what type of "cord" the sentence is referring.

Therefore, if another sentence is added, it all makes sense: "The cord is damaged. The spine must have suffered some type of trauma" ("Măduva spinării este afectată. Coloana vertebrală a suferit probabil un tip de traumă"). In this case, the translator should realize that the text is referring to the spinal cord, and pick only one definition (i.e. the one stating that a cord is "in anatomy: a long ropelike structure, such as a nerve or tendon as in spinal cord"[17]). Nevertheless, if there is indeed only one sentence to translate and if it contains a word with many meanings unless put within a context, then the translator must recur to other means, such as contacting the client and ask for clarification.

Lucía Ruiz Rosendo writes that medical language is no exception to specialized languages as to the abusive use of acronyms. The author explains that acronyms are most difficult to translate, especially in those cases when the original meaning of the acronym has been forgotten, as in "laser", which comes from the term "light amplification by stimulated emission of radiation"[18]. Based on the similarities and differences between the source and the target language, Van Hoof categorizes four different types of acronyms (231): when the acronym is identical in both languages (ADP, adenosi diphosphate = ADP, adenozin difosfat; ECG,EKG electrocardiogram = ECG,EKG electrocardiogramă); when the acronym is

[17] "Cord", The American Heritage Medical Dictionary. Houghton Mifflin Company (2007).
[18] Lucia Luis Rosendo, op. cit., p. 238

different in both languages (DNA, deoxyribonucleic acid = AND, acid dezoxiribonucleic; RNA, ribonucleic acid = ARN, acid ribonucleic); when the acronym does not exist in the target language (ABX, antibiotics = antibiotic); when the acronym does not exist in English (intravenous urography = UIV, urografia intravenoasă)[19].

One of the main difficulties faced by a medical translator is that many abbreviations and acronyms are used in the medical field. Acronyms and abbreviations are two of the most common elements in written and oral medical communication. Extremely long terms presenting names of diseases, names of chemical compounds or names of therapies hardly ever appear in the full form, because this would hinder efficient communication. The popularity of abbreviations is strongly related to the "time economy" they provide, so needed in most of medical emergencies. Moreover, abbreviations enable medical professionals to "encrypt" the true meaning of what is they denote, thus making the content somewhat inaccessible to the patient who might not have extensive or enough medical knowledge in order to understand the respective text. Although, at times, this is advisable due to certain ethical reasons, the extensive use of abbreviations tend to obscure the meaning in many situations, as they might be the source of ambiguity, since even in highly technical fields, one acronym or abbreviation may stand for several different terms.

There are also extreme cases, such as in handwritten prescriptions, where the abbreviated terms may be illegible. In other cases, some terms might be specifically related to the author's choice of words, or subject to the author's "invention," being produced only for one particular text. The matter is even worse when, as every specialized field develops, new abbreviated forms are coined and the multitude of terms standing for one acronym might leave the translator without any form of reference or source to solve the translation difficulty. In this respect, translators should contact their clients and tackle the terminological issues together, so as not to misinterpret any of the terms. To ask clients for clarification is compulsory if he/ she is the manufacturer of new medical instruments. The problem with acronyms or abbreviations goes so far that, for example, when looking the abbreviation CF in Medilexicon, an acronym dictionary, it displayed 104 results, and MA, 164 results.

Having in view the fact that medical terminology abounds in words of Greek and Latin origin, not surprisingly, the latter are also subject to abridgement. Therefore, acronyms formed from Latin are to be found in medical language. For example, SFI, which means sulcus frontalis

[19] H. Van Hoof (1999). Manual práctico de traducción médica. Diccionario básico de términos médicos (inglés-francés-español). Granada: Comares.

inferior (inferior frontal suculus), or CA, which is commissura anterior (anterior commissure). However, Latin acronyms are rarely used, as in English medical discourse English terminology is preferred. Latin has been preserved largely in pharmacology, and especially in English prescription-writing. Latin prescription abbreviations are generally spelled in italicized letters, having dots in-between. Often, these abbreviations relate to the administration of medicines ("Translation Directory"). Regardless of the translation direction, these Latin abbreviations are left the way they are in the source text. Latin abbreviations are indeed a common source of translation difficulties, since finding their full form often proves to be problematic. The knowledge of the Latin roots helps professionals in the field of medicine understand medical texts in various languages[20]. Irrespective of the use rate of Latin abbreviations in English, Romanian doctors mostly use Romanian abbreviations for prescriptions indications.

Another major translating problem is represented by content errors, "such as typographical errors, incorrect uses of terms, errors in writing, and ambiguities"[21]. The most problematic problems for medical translators are, in Engels's opinion, noun stacking, ambiguities, decimals, abbreviations and vagueness[22] (2011: 22). Regarding the first problem, Engels argues that noun stacking includes the range of nouns used to from a word with one meaning starting from as little as two nouns to having virtually no maximum amount of nouns. The problem with ambiguities lays in the context, or rather the omission of context, Engels writes; "for if the context allows no further indications as to what is meant the translator has little option but to maintain the ambiguity in his target text". However, especially in the case of medicine, ambiguities must not exist. The translator has the responsibility to prevent errors from happening and to deliver a high quality translation. If a mistake is made in the translation of a prescription for medicinal intake, for example, if the translator accidentally places a decimal wrongly, therefore changing the intake, the consequences can be catastrophic.

Fischbach characterizes a good translating as being "the rewriting in the foreign language of the ideas contained in the original"[23]. He argues that a translation should be "invisible", i.e. the foreign-language reader of the translated text should be unaware of the

[20] Katrin Herget (1999). "The Spanish Language in Medicine."Medical Translation 3.3. Borkorlang. Web. 04 Jun 2013. <http://www.bokorlang.com/journal/09medic1.htm>
[21] Simon Andriesen (2006). 'Medical Translation: What Is It, and What Can the Medical Writer Do to Improve Its Quality?'. AMWA Journal. Vol. 21:4, p. 157-158.
[22] Engels, op. cit., p. 23
[23] Fischbach, op. cit., p. 462

fact that the respective is a translation[24]. An obvious translation would confuse the reader, since unusual topics, odd meanings, or unfamiliar metaphors are common with inexperienced translators. The reader should have the impression that the translated text was in fact written originally in his/ her own language. In Fischbach's opinion, a good technical translator should have three main qualities: "have a fairly extensive knowledge of, and be able to reason in, the subject matter of the translation; be able to read the language he is translating well enough so that he can grasp the author's intended meaning; be able to embody that meaning in lucid and straightforward language"[25].

Conclusion

This paper has dealt with various translation techniques and difficulties, by providing theoretical basis and also examples to support the ideas presented, emphasizing that medical translation requires from any translator or linguist training and extensive knowledge of the subject matter besides linguistic skills.

In order to fulfill its purpose and to "present" itself as a translation, it should first preserve the semantic and structural similarity of the target text. The translator should refrain from intrusion, or from making any type of remarks regarding the text, as well as to avoid any type of interference in the communication process between the source readers and the target readers. The aim of a proper translation is to preserve a parallel structure in relation to the source text; any breach in the expected parallelism would exist only if the need for precision in meaning would request so. Any interpretation or extreme change in wordiness would only result from the impossibility in translation proper, as similarity regarding structure should be present not only as a whole, but also for the smaller segments of the text.

BIBLIOGRAPHY:

Andriesen, Simon (2006). 'Medical Translation: What Is It, and What Can the Medical Writer Do to Improve Its Quality?'. AMWA Journal. Vol. 21:4.

Engels, Vertalen (2011). Guidelines for the beginner medical translator practically applied and analysed (MA Thesis), Nederlands, Utrecht University, p. 13, Web. 20 September 2015, <file:///C:/Users/SWAT/Downloads/Guidelines+for+the+beginner+medical+translator.pdf>

[24] Idem, p. 463
[25] Idem, p. 464

Fischbach, Henry (1962). “Problems of Medical Translation”, Bulletin of Medical Library Associations, 50/3: 462-72.

Herget, Katrin (1999). "The Spanish Language in Medicine."Medical Translation 3.3. Borkorlang. Web. 04 Jun 2013. <http://www.bokorlang.com/journal/09medic1.htm>

Jaaskelainen, R. (1999). Tapping the process: an explorative study of cognitive and effective factors involved in translating. Joensuu: University of Joensuu Publications in Humanities.

Landers, Clifford E. (2000). “The Fundamentals.” Literary Translation. A Practical Guide. Clevedon: Multilingual Matters.

Loescher, W. (1991). Translation performance, translation process and translation strategies. Tuebingen: Guten Narr.

Luis Rosendo, Lucia (2008). “English and Spanish Medical Languages: A Comparative Study from a Translation Point of View.” Trans. Revista de Traductologia. 12: 231-46, p. 237. Web. 06 Jun. 2013. <http://www.trans.uma.es/pdf/Trans_12/t12_231-246_LRuiz.pdf>.

Molina, Lucia and Amparo Hurtado Albir. (2002). “Translation Techniques Revisited: A Dynamic and Functionalist Approach.” Translators’ Journal. 47.4: 498-512, p. 499, Web. 03 Jun. 2013. <http://www.erudit.org/revue/meta/2002/v47/n4/008033ar.pdf>.

“Neurological Diagnostic Tests and Procedures.” National Institute of Neurological Disorders and Stroke - National Institutes of Health. National Institute of Neurological Disorders and Stroke,March,2005.Web.4Jun2013.
<http://www.ninds.nih.gov/disorders/misc/diagnostic_tests.htm>.

Nord, C. (1997). “Text Analysis in Translation: Theory, Methodology and Didactic Application of a Model for Translation-Oriented Text Analysis.” Amsterdam: Rodopi, p. 21

Seguinot, C. (1989). The translation process. Toronto: H.G. Publications. Pp. 87-88

The American Heritage Medical Dictionary. Houghton Mifflin Company (2007).

„Tomografiacomputerizată.” Imagistica şi endoscopia.
<http://www.sfatulmedicului.ro/Imagistica-si-endoscopia/tomografia-computerizata_1311>.

Van Hoof, H. (1999). Manual práctico de traducción médica. Diccionario básico de términos médicos (inglés-francés-español). Granada: Comares.