Guidelines for the beginner medical translator

practically applied and analysed

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Chapter 1: An introduction to this thesis

1.1 A brief overview

Before going into all the accompanying factors that make the translation process easier or more difficult for the medical translator, a proper background has to be given in order to root the main purpose behind this thesis. The foundation then will start off by describing the current situation of medical translation literature. Then, it will mention and justify the texts that have been used for the purpose of this thesis. The types of text that a medical translator can encounter will have a varying level of suitability. It will show how some texts will benefit the translator greatly, while others should be avoided if possible. The target audience is arguably the main reason behind the difficulty of any text and therefore special respect is paid to this factor in the following part. However, the function of the text should also be kept in mind as is closely related to the target audience. Therefore, the text function will also be mentioned. Fortunately, all medical translators have available resources, whether these are dictionaries, help from experts or other sources, all additional information will benefit their translation. In the part where resources are discussed there is also a short comparison between the situation for the medical translator in a country such as Nigeria and the situation for a medical translator in the Netherlands. This story will show that due to socio-cultural, linguistic and cultural reasons the situation and the forthcoming conditions can differ greatly for medical translators around the world. However, to this point, there are several guidelines to aid the medical translator, but they are usually scattered among a number of different texts. One expection to this is the book *Medical Translation Step by Step* (Montalt Resurreccio and Gonzalez Davies, 2007). The authors cover a lot of guidelines throughout the chapters. However, they give general guidelines, not specified according to a specific target audience and different audiences require different approaches. This thesis will go into just that, ultimately resulting in one source text that is translated for the main three different target audiences. The guidelines mentioned throughout this dissertation will be categorized accordingly. Therefore, the final part of this chapter will discuss the need for a set of guidelines specified to the target audience the translation is intended for. Having these guidelines categorized according to a specific target audience the novice translator who wants to focus on the medical field will be enabled to kick-start his carrier in this respect.

1.2 The current situation

Medical translation has been around for thousands of years, going back as far as the times of Ancient Greece. To this day medical translation is an area of utmost importance as good translations will be able so save patients´ lives while those of poor quality may endanger human, and animal,

life. The importance of medical translation can simply not be underestimated. The Translation Studies Bibliography shows that there has been an increase in medical translation writings in the last several years. It is this trend that this thesis goes along with.
In the field of medical translation, there are several recurring names. Most renowned is arguably Henry Fischbach, who passed away some years ago. Not just as a writer and member of the American Translators Association, but as an editor of medical translation texts as well. This is one of the only medical translators who wrote about medical translation. In a number of his articles he focussed on the sources behind the problems that surface in the medical translation process. This is also one of the aspects this thesis focusses on. Not only are the problems analysed, the sources from which they stem are also clarified in order to raise awareness in all parties involved in the medical translation process. Especially the medical author, translator and client play a role in causing problems, while this thesis also mentions a number of ways in which these can be avoided or resolved.

A short discussion of the texts that have been found will outline the current situation of the medical translation field. In this case, current means texts that have been published in the past fifty years. The most noticeable aspect of almost all these texts is, as has been mentioned earlier, that they focus on specific language pairs. While it is interesting and of more help to move to a more universal problem solving situation.

Peter Newmark, in his “A layman's view of medical translation”, written back in 1979, rightly argues that “this form of translation may be no less difficult and challenging than that of poetry.” (Newmark, 1407) Newmark's article mentions a number of linguistic fields where the translation could go wrong and flings about some solutions. Nowadays, the article is not very useful because it only conveys common knowledge which any translator in any field already knows. Besides that, the solutions Newmark provides can be outdated since the article has been written some thirty years ago.
Other, more recent articles focus more on a language pair specific situation. For instance, Omoregbe Mercy in his article “English-Edo Medical Translation” (2005) describes the situation in Nigeria. Gabi Berghammer in her 2006 article “Translation and the language(s) of medicine: Keys to producing a successful German-English translation” describes the situation English texts undergo when they are translated into German. Fortunately, these texts can also be used in a more universal setting because not all their content strictly limits itself to a language pair. However, only Mercy's text has been used as it is far more extensive in pages and in content. More importantly, it is also

practically applicable around the world whereas Berghammer's text focuses almost solely on German solutions to English words. Linda Haffner also describes such a specific language pair situation in “Translation Is Not Enough, Interpreting in a Medical Setting”, published in 1992. Being a professional interpreter in an American hospital she encounters many Spanish speaking patients. Although this article does give some insight into problems and solutions it is first and foremost a narrative of a day in her life. Therefore it is purposefully left out of this thesis as it comes across as more personal than professional.

There are also texts that discuss the consequences of medical translation, such as Glenn Flores et al. in their 2003 article “Errors in Medical Interpretation and Their Potential Clinical Consequences in Pediatric Encounters”. In this article Flores and his colleagues present their findings of a study conducted among Americans with a limited proficiency of English in order to “determine the frequency, categories, and potential clinical consequences of errors in medical interpretation” (Flores, 6) The results speak for themselves: “Most errors have potential clinical consequences, and those committed by ad hoc interpreters are significantly more likely to have potential clinical consequences than those committed by hospital interpreters.” (Ibidem) In short, a well-trained professional is less likely to make mistakes.
This article led the way for another study. Published in 2005, the article “The Impact of Medical Interpreter Services on the Quality of Health Care: A Systematic Review”, has been written also by Glenn Flores. However, this study was conducted among people living in the United States who master only a limited English proficiency. The main conclusion of the article is that the interpreter is needed in such conversations and preferably one who is a trained professional. The need for a set of guidelines that are of aid to a medical translator become apparent throughout these studies. Over time, these guidelines, in combination with in field experience, can transform a beginning medical translator in to a competent professional.

Judy Wakabayashi covers the teaching of medical translation in her 1998 article “Teaching Medical Translation”. The text has little relevance for the purpose of this thesis as it focuses solely on Japanese-English medical translation. Furthermore, the main point of view of this text is that most of the problems in medical translations are caused by the translator's lack of knowledge. Especially their vocabulary and phraseology affect the quality of the translation. Although there is truth in her findings, this thesis focuses on all the problems that a medical translator experiences and it will show that linguistic incompetence is but on of many factors that contribute to the difficulty of medical translations.

By now, only articles published in magazines have been discussed. This does not mean that there are no books on the topic. As has been mentioned earlier, there are some books that deal with medical translation and they will be discussed in the following part.

The most specific book on medical translation is *Medical Translation Step by Step,* written by Vincent Montalt Ressurreccio and Maria Davies González. It is a relatively new book, its publishing date was in 2007, and covers many aspects of medical translation. It is also the first text that provides a lot of guidelines when it comes to medical translation. Although this book could have been an excellent starting point for this thesis, there are several shortcomings. First off, the book is not that helpful when it comes to translating specifically for different audiences. There are some tasks which lend themselves for this purpose, but this is mainly by becoming aware that there are differences between audiences instead of providing clear cut information as to how the translator should go about these cases. In other words, the book touches the surface of what this thesis is about, and fails to go in depth. This does not mean that the guidelines in it are of no use, on the contrary, they can be very helpful. The problem is that they are general guidelines and are not specifically designed for the different types of audiences mentioned in this thesis. Also, the authors signal problems but do not investigate where they stem from. That is another difference with this thesis, where the root of the problem is also often part of the solution. For further research it is definitely interesting to combine the guidelines of this book with the approach mentioned in this thesis to come to a set of guidelines targeted at specific audiences. This will prove helpful to any medical translator, from the novice to the advanced.

Secondly, it has to be noted that there are way more books on specialized translation in general than on any specific specialized field. There are several books which briefly mention medical translation but the most space is reserved for juridical translations or specialized texts in general. Kim Grego's book *Specialized Translation* is one of those books that deals with specialized texts and mentions medical translation in a nutshell.

A different book that has been used for this thesis has been written by Sauer. In this book Sauer deals extensively with specialized texts and it is by far the most well-known text on the topic. It has also been translated in 1990 into Dutch by Theo Hermans and is used during some specialized courses at Utrecht University. Because it covers a great range of topics and deals with them in depth it is a proper source for this thesis, even though it deals with specialized texts in general and focuses

not so much on medical translation. The text has been used in this thesis to set a framework as will be explained in the section to come.

One person has been left out of the equation until now. He goes by the name of Henry Fischbach and is arguably the most influential person when it comes to medical translation. He has written a number of articles on the topic, some of which deal with problems that are encountered in medical translation while others cover the history of medical translation in the United States. Although he passed away some years ago, his texts still live on. One of those texts, "Problems of Medical Translation" covers a great deal of problems that a medical translator can encounter and even though the text has been written in the 1960's it still holds true today. Fischbach's observations are timeless and critical, therefore making it a work of reference for this thesis. Fischbach was also asked to edit a book called *Translation and Medicine,* which has been published in 1998. It is a collection of articles from other writers and the book deals with a number of aspects the medical translator faces. However, even though about half of the articles are again based on specific language pairs it is still of interest for the medical translator. It has however, because of this, been left out of this thesis. Fischbach's own article has been used because it briefly sums up an extensive overview of problems and possible solutions.

1.3 Texts used

In this thesis, a number of texts have been used as a work of reference concerning translation theory. Some of these texts cover more general translation theories, for instance the articles by J. Sauer. In these articles Sauer explains where Language for Specific Purpose (LSP) originates from and how it is observed by different groups of readers and how this influences the text's status. Such a text creates the framework for this thesis. Other texts that have been used concerning translation theory are those of Andrew Chesterman, "Causes, Translations, Effects" and several articles from *Denken over Vertalen,* by Ton Naaijkens, et al.. It has to be noted that Chesterman's text will also be used in a more practical way as his Equivalence Variables model will be applied further on in this thesis. Finally, Omoregbe Mercy's text "English-Edo Translation" will be used to cover general translation theory as well as specific medical translation theory and in addition its content will sometimes be used as an example as well.

A number of texts have been used that focus on the more general problems that medical translators face. The primary text for this section has been H. Fischbach's "Problems of Medical Translation". Although the text is rather old, it is far from outdated. Written in 1961, its content still holds true

today. The problems Fischbach describes are timeless and translators still face them in present day and age. Omoregbe Mercy's text, already mentioned in a previous paragraph, will also be used to describe common translation problems. Although Mercy describes many problems in respect to a certain situation in Nigeria, the text, as he explains himself, holds true for other situations as well. A number of articles from *Denken over Vertalen,* by Naaijkens, et al., have been referred to in order to find solutions to these problems.

On the other hand, there are texts that focus more on the role of medical writers and their part in causing problems, whether or not they are aware of this. Were medical authors aware of their role in causing problems they could offer solutions or simply avoid them. Simon Andriessen covers most of these problems in his article “Medical Translation: What Is It, and What Can the Medical Writer Do to Improve Its Quality?” In addition to this, the texts that have been mentioned earlier, such as Mercy's and Fischbach's texts, apart from dealing with general translation problems, also focus on the author's role. Creating awareness on their part, a lot of problems can be avoided and this would pave the way for great quality translations in a noticeable shorter amount of time.

All these texts describe a different number of problems and possible solutions and by combining them into one piece, the beginning medical translator can benefit greatly from reading and applying this thesis' content.

Other works of reference have been used specifically for the translations. Among these, Mostert's dictionary takes up an important amount of space. This is the only bilingual dictionary that has been used and it deserves credit for being one of the few bilingual LSP dictionaries in the Netherlands. It is also, arguably, the most well-known in its category.
The monolingual texts that have been used are texts concerning the topic of lymphomatics which target a specific group of readers. These fall apart in three groups: laymen, students and experts. For the first group, a leaflet from the institution KWF Kankerbestrijding has been used as a primary source of reference because it targets people with little to no knowledge on lymphomatics. Therefore it is a perfect example how to reach those readers (laymen), not only in respect to the words that are used but also in respect to other strategies, for example the syntax and length of the sentences. Because this leaflet offers only a limited amount of terms, secondary sources have been adopted as well in order to create a complete translation. These texts are mentioned in the second and third target audience groups and, obviously, in the translation itself.

For the second group, the schoolbook *Anatomie en fysiologie van de mens*, written by L. Grégoire, et al., and Coëlho's *Zakwoordenboek der Geneeskunde* have been used as primary sources. Where the first text gives insight in the phraseology and other features of the text and therefore include guidelines that can be used for the translation at hand, the second text provides terms and extensive explanations for them. The definition of the term, instead of the term itself, has sometimes been used in order to fit in better with the preknowledge of the target audience. Although both these texts covered about ninety per cent of the entire text to be translated, the final ten per cent has been *covered* by using terms and phraseology of the primary source mentioned for the third group. For on or two terms, magazines concerning lymphomatics have also been used to fill in certain gaps.

The translation for the third and final group uses the book *Oedeem en oedeemtherapie* as its main source. This book enjoys a high status among physiotherapists who have specialized themselves in the field of lymphatics. This makes it the perfect source for a text which is targeted at experts. However, the framework of the text has found additional structure in texts that have been mentioned earlier, for instance the *Zakwoordenboek der Geneeskunde.* It is clear that no single text stands out as an overall best text but that a combination of them has been synergetic; each text fuels another which creates the best end result for each specific translation.

1.4 Text-type

A medical translator is bound to encounter different text types in his field of work. The following part will briefly discuss a number of text types which the medical translator can encounter. The texts will be divided into persuasive texts, argumentative texts and informative texts. Of these texts, some are better suited for the medical translator than others; this is an aspect which will be mentioned. Each text type has its own features and areas of interest and therefore there are specific variables the translator should keep in mind during the translation process.

To start off with the persuasive texts, there are texts such as leaflets and advertisements. Although the medical translator will be able to find work in the sector which covers these types of text, he only plays a limited part. For these kind of texts it makes more sense for the employer to use a marketing expert in combination with a translator, except if the translator naturally excels at either copying the style of the author or has been educated in the marketing field as well. The medical part plays only a minor role in texts like these as the emphasis will be on the marketing part. Therefore, these texts are mainly suited to medical translators with a background in marketing.

Argumentative texts require a different translator, although being able to copy the author's style again comes in handy. These texts can for instance be reviews of a medical book, letters to a newspaper or opinion pieces. For the latter, think of two medical experts who disagree on a certain subject and go head-to-head in an interview. The translator will gain rapid knowledge from interviews between opposing medical parties while at the same time the text structure will be rather uncomplicated. Because these texts can include whatever medical subject there is, the usefulness to the beginner medical translator will vary accordingly. Some texts will fit in perfectly with the translator's preknowledge, others not so much. Newspaper articles, whether or not they are sent in letters, will have their level of difficulty based on the intended reader, more on this later. Therefore, the reader will indirectly control the form and content of the articles and the translator is subject to this. This can work to the translator's advantage, for instance, if the translator is a beginner he could join the local newspaper based in a rural town where medical knowledge is not as common as in a big city with a number of hospitals. Newspapers could be the ideal starting point for a medical translator. That is to say if the newspaper covers medical topics regularly and if the translator is willing to cover not only medical topics but others as well.

The most basic of informative medical texts is arguably a package leaflet. Such a purely informational text is stylistically poor, uses short sentences and is often written in the imperative. For a translator, these texts require basic knowledge and a competence in either terminology or in the ability to find corresponding terms easily. Although it is adamant to convey the correct lexis, these texts can rather easily be translated by beginner translators. Then there are newspaper articles which describe the latest of medical discoveries or deals with symptoms of a cattle disease. These texts will often be translated by a (freelance) translator working for the newspaper. It is unlikely that such a translator has extensive medical knowledge. However, it is a good starting point, for building medical expertise as well as gaining experience in the line of work. Fortunately, for most newspapers, the content in the article will target an audience without much medical preknowledge and therefore these translators can suffice without much difficulty. For a beginner medical translator, these texts may be a next logical step. However, working for a newspaper will lead to encounters with many different text types, medical texts could rarely be translated and therefore this medium is not one that fits in well. A better example of an informative text which is suited for a beginner medical translator is a report of a medical convention or the translation of an encyclopaedic article dealing with human anatomy for instance. These texts convey much more medical lingo and the phraseology will pose more of a challenge. This way the learning process is accelerated while the topic is constantly directly related to the medical translator's interest. Such a

text is also the focus of this thesis.

However, and this applies to whatever text type, the audience that the author targets will be responsible more directly for the difficulty of a translation. This important aspect will be discussed next.

1.5 Target audience

The language used in the medical field, or any other specific field for that matter, differs from the general language that is spoken in a certain area. However, any Language for Specific Purposes (LSP) is based on the general language (GL). Sauer, in a book called *Vak, Taal, Kennis* goes deep into the difference between GL and LSP and explains the need for both of them. For instance, it differs because it mixes the general language with a specific set of words, different phraseologies and grammar systems which divert from general grammar. To some people such field specific languages may seem coded as if they are only to be understood by the initiated. This is false as a LSP is always based on a GL so the very basics should be clear for the reader. On the other hand, it is true to some extent as the LSP used can use only very basic GL elements and mainly LSP elements. Even more so LSP usage and alienation from the GL is sometimes done on purpose. In his book, Sauer explains why.

The author has a certain target audience in mind and shapes his writing in to a form which suits that particular audience best. For instance, books for toddlers are short, use the easiest of sentence structures and are often written in rhyme. On the other hand, articles concerning quantum physics targeted at the leading experts in the field, will be long, in content as well as in sentences, use complex sentence structures, sometimes even ungrammatical ones, and are very poor stylistically. In the first case, the form is superior to the content and the author uses an approach that complements this strategy. In the latter case, the message has to come across and the form does not matter as much as the content. The author therefore pays little respect to stylistic conventions. For medical texts, this distinction is a bit different. Without any preknowledge of a certain text the target audience can still be pinpointed just by analysing the author's style. The language that is used in a text will hold much information about the audience it was targeted at. The audience is arguably the main factor that influences the language that is used in a text. The following part will describe the three main audience groups a medical text targets, although a combination of groups one and two, and groups two and three can exist as well.

The target audience can be divided into three main groups: (1) laymen, (2) students or (3) experts. Each of these groups requires a different approach based on the preknowledge on the subject at hand and their overall intelligence. An author should always keep this in mind and should have an idea of the level of language proficiency a certain reader has mastered and should write accordingly. Too easy a text and the reader could think the text is not meant for him, too difficult a text and the reader could also think a text is not meant for him. It is hard to decisively say where one group ends and another begins. However, assuming it is an expert who writes a text, the author has been in those positions himself and therefore has a clue on how to address the individual groups best. If not, it is always possible to ask a colleague for help. For the medical translator this applies on a smaller scale. Correctly copying the author's style is the most important aspect while asking for help is also a proper option.

The aforementioned groups are not fixed and a combination between the groups can be possible. However, a combination of groups one and three is unlikely because of the difference in language mastery and subject proficiency. Group one requires a vastly different approach that the audience of group three. Whereas group one comes across short sentences which are built up logically, the third audience will encounter long sentences filled with commas. Group one will find only text essential terms often in combination with an explanation for them while group three's text is filled mostly with terms without any form of explanation. Although even in this case there are sometimes one or two additional comments to explain a new word in the LSP. These are only two possible examples of the difference in approaching the audience and there are many others. Mixing these two will not work as the text that is then created will not read pleasantly for any audience. Every group is alienated by an author's attempt to target both groups at once. These texts, if published, will sell poorly but it is even likelier that they will not be published at all.

However, there are instances when the other possible group combinations overlap. Books that cover the fundamentals of a certain topic will target both interested laymen and students. Study books originally targeted at students can be found in both a student’s and expert’s study and quite possibly even in one or two rooms of laymen. It is hard to pinpoint exactly when someone is no longer a layman but has entered the realm of the student. The same goes for the line between a student and an expert. Only when stereotype extremes are used can this distinction hold fast. Therefore, this distinction is only a guideline instead and stays rather abstract than being concrete and easily defined evidence.

For the medical translator it is important to have in his mind a concept of the type of audience that the text targets. He should always to approach the intended group and not deviate by trying to please more than one group at a time, just like the source text's author did. However, if the translation assignment is to reach out to more than one group, it is best to discuss the consequences of such a translation with the employer because the author targets a certain audience with a certain goal in mind. This text purpose will be discussed next.

1.6 Text function

Now that the three main groups of audience have been discussed, a closer look can be taken at what approach strategy would suit each group best. It is clear that this three-way distinction asks for different functional approaches in combination with tailor-fit linguistical factors such as vocabulary, syntax and phraseology. First off, the function of the text should be defined. According to Fischbach, the function of a medical document can be divided into two categories: either with the purpose of “information” or “promotion” although these can sometimes be mutually exclusive. (Fischbach, 462) However, this distinction is too broad. To make things more complicated, different sources argue different numbers of text types. For the purpose of this thesis, there are five functions a text can embody, although it has to be noted that a random combination of one or more functions is possible. The different functions are: (1) to inform, (2) to instruct, (3) to convince, (4) to activate and (5) to amuse. (Bovenhoff, 2) The text function is closely related to the text type, and can transcend the distinction of target audiences. Therefore, any one or combination of text types can be targeted at any one or multiple audiences. The approach will only differ in linguistical difficulty. The coming part will discuss the different functions and the most common forms in which the medical translator can encounter these.

The first text function, the informative text is most likely the number one function in any medical document. These texts can occur anywhere, from a new type of drug reported in the newspaper to magazines concerning one type of condition, from a package leaflet to a dissertation in book form. Schoolbooks can be a combination of informative and instructive texts as they both teach and instruct the reader on a particular topic if the author chooses to do so. Otherwise, textbooks can be purely informative, where the workbook is instructive as well as informative. This thesis's source text, an excerpt from Robert Damstra's *Diagnostic and Therapeutical Aspects of Lymphedema* is purely informative as it discusses the anatomy and physiology of the human lymphatic system. Other informative texts are medical encyclopaedias, medical dictionaries, magazines concerning whatever medical topic, in short anything medical is potentially informative, although it can be a

combination of giving information and being instructive, or convincing as will be explained later. It is important for the medical translator to adopt the correct style in order to let the text achieve its goal.

The instructive function of medical texts is apparent. The guidelines on how to take in a particular drug, for example, are the most common form in which this aspect is encountered by the medical translator and consumer alike. Schoolbooks are, has been mentioned earlier, another example of instructive text but only when they target a practical approach. Theory for the sake of it does not suffice, for instance, a description of the physiology of the intestines can be interesting but will remain informative as long as there is no further information on how to correctly cut them open during surgery. The instructive and informative functions go together perfectly and this combination is often found in medical texts.

Convincing the reader is another possible function of a medical text. For instance in this thesis's source text, Robert Damstra's *Diagnostic and Therapeutical Aspects of Lymphedema* is a fitting example of a text that needs to convince the reader. This is done in combination with the informative and instructive approach. Damstra seeks to earn his PhD via his book by showing his vast knowledge on the topic in combination with new discoveries in his line of field. The most important readers, in this case Damstra’s fellow specialists and jury, are to be convinced of his expertise which will allow them to grant him his title. The same goes for commercials, where the goal is to convince the reader to buy a certain type of medicine although there are many similar drugs out on the market already. For these instances, either the author of the source text should be schooled in marketing or should corporate with a team of people who are marketing experts. For the medical translator it is most important to be able to adopt the style of the source text in great detail or to ask for help from an outsider who is aware of marketing principles, especially in convincing a reader through text.

The function of activating the reader of a medical text is closely related to convincing the reader. It is the next logical step. As soon as a reader is convinced of a certain advantage of, for example, a new type of drug it makes sense for him to buy it next time he is at the pharmacy. Also, if a package leaflet warns of an overdose it makes sense that, under normal conditions, the patient will stick to the guidelines and avoid taking in too many pills at one time. Commercials are the main source of activating the target audience and commercials for medicinal products are no different. Although in the latter case references to scientific findings concerning the product are usually embedded to

convince the reader and activate him on a scientific and rational level. However, this is again a combination of factors. It is rare to find a medical text, in whatever medium, which only seeks to active the reader, apart from several sections of the package leaflet.

There are only a few instances where medical texts will be targeted at the reader's amusement. In these cases amusement will be the main factor and other factors such as activating the reader to buy a certain product will be secondary. The main type of medium where amusement can be found is in commercials where by a combination between informative, activating and amusing factors the consumer is targeted. The amusing factor will cause the commercial stay longer on and be more influential on the buyer's mind. Purely amusing medical texts can sometimes be found in works of poetry albeit this topic is in most cases approach rather precautiously and therefore is rather unsuited to be targeted in a comedic way.

This part has shown that the different text functions can lead to different problems. However, whenever the medical translator comes across a situation where he needs help, there are several resources available to help him get past such sticking points.

1.7 Resources

Even though translation studies in the Netherlands are quite recent, with the real rise including translation theory being in the twentieth century, there is a lot of documentation on the subject. Fortunately for the translator this is not only theoretical but also practical, the latter in the form of dictionaries and computer software. It is especially interesting to look at the dictionaries that are available as they will be the number one reference. Online sources take up a second spot and will also briefly be evaluated. The high number of high-quality Dutch resources available in the Netherlands will provide the medical translator with the tools necessary to create a high-quality end product.

There are a number of dictionaries available to the English <-> Dutch medical translator that can be of help. There is one publisher that stands out from the rest when it comes to publishing books in the medical field: Bohn Stafleu van Loghum. All the books mentioned in the following section are available through them although others also sell them. The most renowned resource is E. van Everdingen’s *Pinkhof Geneeskundig woordenboek*, which has been around for almost a hundred years and has already been printed eleven times. Besides the full volume there is also a compact edition of the book, providing ninety percent of the full edition and shorter explanations. F. Mostert

has written and composed the well-known *Medisch woordenboek Engels <-> Nederlands*, which is currently at its fifth pressing. Therefore, it takes a solid number two position when it comes to medical dictionaries. Even though it is very extensive there are several points of criticism. For instance, the author does not provide the reader with the gender of a word, nor its plural. It seems that even the best book on the market could do with some further fine-tuning. Then, however it must be noted that the following book is only in Dutch, is *Coëlho's zakwoordenboek der geneeskunde*, which is printed anew every year and is currently at its 29th edition. Just recently, P. Reuter's wrote the *Groot medisch vertaalwoordenboek*, and adds another multi-language medical dictionary to the Dutch collection. Its reception is not yet known. Furthermore, there are several others medical dictionaries available, such as the *Verpleegkundig woordenboek En <-> NL* and the *Woordenboek geneeskunde en biomedische wetenschappen*. These books are not popular among translators as they offer little to no advantages over the books that have been mentioned earlier. They are not nearly as extensive as their competitors.

Leaving the global medical dictionaries aside there are also field-specific dictionaries: the vade mecums. These also provide solutions but on a more specific level. Often they are available in one language only. Some publishers compile them by demand.
Apart from the solid reference works, there are also online resources. Although they can be of great help to a translator, the source of the site will provide clues as to the credibility of the site's content. In most cases the translations should not be taken at face-value but they can be a great indication to the word a translator is looking for. If such a source were to be used it would be best to look it up in a real medical dictionary.

It seems that there are enough sources available to the translator in order to achieve a high-quality end product and with this conclusion the types of text a medical translator will encounter will be dealt with next. The part to come will deal with the types of text that are available in the medical field, as there are several and each one deals with a different audience and therefore contains or lacks certain content. Also, the way in which the content is handed to the reader will differ greatly.

Finally, Dutch people will have different demands for a medical text than, for instance, South-African do. In "English-Edo Medical Translation", author Omoregbe Mercy explains the many difficulties a medical translator in Nigeria is to face. Not only are there vast linguistic and socio-cultural differences that pose great obstacles for the translator, cultural instances such as the taboos of the Edo culture pose much difficulty as well. Because an extensive overview of the differences

between Edo and English when they are in contact it is out of place in this thesis only the main conclusions of Mercy's article will be cited. Even with only several of the conclusions of the article, the reader will have a clear image of the many difficulties that pose the English <-> Edo medical translator in Nigeria. For this thesis's relevance, after having mentioned a discrepancy between Edo and English, the Dutch situation will be discussed to clarify the background in which the translations in Appendix B have been made.

Linguistical

To start off with the linguistic problems, "many medical terms in English do not have lexical equivalents in Edo." (Mercy, 270) For instance, Edo vocabulary does not incorporate the major diseases AIDS nor does it entail any STD's. Not only does Edo vocabulary fall short regarding major sexually transferable diseases Edo lacks linguistic equivalence all over. Unfortunately for the medical translator in Nigeria, "[s]uch instances abound in medical texts." (271) The cultural development of Edo is vastly different from that of Great-Britain and America and this is the reason behind the many linguistic problems a translator of Edo <-> English will encounter. For Dutch and English linguistic problems occur much less often and wherever they occur they will be easier to overcome. This is due to the many resemblances English and Dutch share. They lie close-by on language tree and the cultural development has gradually been the same. Especially in the last few centuries the countries have bonded more closely due to globalization. Of course, there are still linguistic problems but as has been mentioned earlier, these will be rather easy to trounce.
Finally, there are the cultural-specific items (csi's) that the medical translator will always face. It is apparent that csi's between English and Edo will be more difficult to overcome than those that exist between English and Dutch as the latter cultures share more commonalities than the pair mentioned first.
In conclusion, due to the level of similarity between the Dutch and English language, the instances where linguistic problems occur are much smaller between English and Dutch than between English and Edo. Plus the English <-> Dutch translator has many resources available to tackle the obstacle where for other language pairs this may very well not be the case. This is one of the main reasons that a lot of medical texts are translated from English to Dutch; it can be achieved quite easily, especially when compared to other language pairs.

Socio-cultural

Where in Europe biology classes are taught for approximately age twelve and onwards, most African and other third world countries do not follow suit. Education in these countries is often

limited to the rich while children from poorer families often put their focus on having to work in order to maintain their family than on education. Public schooling, therefore, takes on a less important part of society than is the case in most Western countries. Obviously, third world countries cannot be hold accountable for this, however, it does cause to be problematic for English <-> Edo medical translators.

Due to the lack of education and the limitations on other available resources such as the internet and library books, most Edo people do not encompass much knowledge on their own and others anatomy and physiology. Edo patients often describe the symptoms leaving the doctor to guess the exact cause of the problem. This also explains the lack of linguistic equivalence between Edo and English, Edo simply is not as developed in the medical field as English is. Mercy puts it like this: "[o]ften patient's knowledge of biology is so poor that they do not fully understand the nature of their health problems." (271) Obviously, whenever this discrepancy occurs "doctors and patients are communicating at different levels". (Ibidem) Another factor that contributes to the guess-work doctors have to do is caused by a different socio-cultural problem dealing with human anatomy: "Edos do not distinguish between parts of the body in the same fashion as Westerners do." (273) This provides further linguistic untranslatability. In the first case, the translator mediating between these forces must come up with proper "word-for-word equivalents" or by "providing explanations relevant in the situation". (272) In the second case, the solution could lie in providing a "multi-faceted description allowing for all these aspects of the disease and the parts of the body affected". Both solutions are extensive processes but are necessary to help overcome the many socio-cultural gaps that lie between Edo and English.

In the Netherlands and Great-Britain and America alike, most if not all school-going children will be taught the basics of biology. This is not restricted to school hours but also via medical programs on the television that are available to them during daytime. Also, the internet provides many sources of information on the topic. Therefore, medical access is easy to accomplish in these countries and most people, from the age of twelve and onwards, will at least have some basic medical knowledge on their bodily functions and state of health. Also, as has been mentioned in a previous section, the English <-> Dutch medical translator is aided by several resource options for instance in the form of specific dictionaries enabling the translation process to reach completion much faster than is the case in languages which lack such targeted dictionaries. The social-cultural differences between English and Dutch are not at all too great and therefore many medical texts in Dutch have been translated from English.

Cultural

It works to the advantage of the English <-> Dutch translator that the two cultures are much alike. Especially when a different culture such as the Nigerian Edo is brought under the scope, the position of the English <-> Dutch translator seems near hallowed. There are little to no taboos in the Netherlands and the same goes for England. The taboos that still remain to the present are often those caused by a religious root. Christianity being the major religion in English speaking countries and the Netherlands alike the taboos on a large scale will be the same. Even while there is tension between scientists and theologists in these cultures there are many shared truths between them. This is favourable in the medical context as Edo culture shows that taboos in this particular field will cause major dilemmas. In Edo there are several names of diseases that, though they do have an English counterpart, may not be used by a translator or any other person for that matter because mentioning them "either orally or in writing is forbidden and taboo in Edo culture." (273) Religion or rather superstition steps in when the reason behind this statement is investigated: "[t]he use of these terms is to be avoided because it is commonly believed that if they are mentioned, this will cause epidemics in the land." (Ibidem) Fortunately, there is a solution to this problem albeit it is an extensive one. Metaphors that do not have "any clear relationship with the disease" can be used but in this case explanatory notes must be added to explain what the ailment precisely is. It may be clear that Dutch has no such instances and the translation process is therefore much easier to complete.

Because of the similarities between the Netherlands and Western English speaking countries, the English <-> Dutch medical translator has quite a favourable position even though he or she is not aware of it. The incorporation and demand of translated English medical texts into Dutch is also evidence of the status of these texts. Now that the stage has been set for the need and status of the translated medical text in the Dutch medical field the conditions of translation can be investigated.

1.8 The need for a set of guidelines

Until now, the main principles of any text and translation have been discussed. The current situation of the medical translator in the Netherlands in the first decennium of the twenty-first century has been mentioned. This is done in order to sketch an outline of the field in which this thesis places itself. The texts that have been used in this thesis have been discussed and will be dealt with more in depth in the chapters to come. The types of text a medical translator will encounter during his job have then been mentioned. However, the type of text that is encountered is often influenced by the

target audience the author has in mind. Logically, a short overview of the three common types of target audiences followed. During this discussion it became clear that the purpose of the text goes hand-in-hand with the target audience so a brief mentioning of the text function has taken place. These are the most important factors any translator has to keep in mind. During any good schooling to become a translator these elements are discussed extensively. Fortunately, there are also several types of resource available to the translator to aid his quest in creating a high-quality target text. All in all, the beginner medical translator will usually have an idea of how to cope with these general factors.

However, apart from these general factors, there is a lack of more practical in depth guidelines for any medical translator who has need for them. Especially the beginner medical translator can find it difficult just how to approach a text correctly in order to deliver a high-quality translation. As has been mentioned earlier, the amount of information on medical translation is limited, especially when compared to other specialized fields such as juridical translation. The information that can be found is scattered and sometimes outdated. Therefore, the purpose of this thesis is to offer a basic set of guidelines, collected from different sources and most of them deal directly with medical translation, so the beginner medical translator has to his aid a practical manual which allows him to tackle the many difficulties a medical text can provide and therefore can kick-start his career as a medical translator.

The following chapter will deal with one of the major problem causing sources in any medical text: the author. It will also give solutions and guidelines to deal when these occur.

Chapter 2: Theory, problems and solutions

2.1 A brief overview

Any text within any genre can conjure up text or genre specific problems for translators and it is up to the translator to find fitting solutions for the problems he faces. In general there are many areas which can cause difficulties regardless of the text subject or text type. There are linguistic, cultural and semantic problems, for instance. This chapter will focus on the most prominent problems a Dutch medical translator can encounter when translating a document. As this thesis focuses on an English source text and three Dutch target texts, the focus of the problems and solutions will be discussed in this context. If the problems discussed throughout this chapter are kept in mind during the translation process, they can be overcome and will result in a high-quality target text.

2.2 Conditions of translation

All texts that have to be translated have certain specific problematic areas and errors lie just beneath the surface. The translator has the responsibility to prevent this from happening and deliver a high-quality target text. Although these are common features to all translators, there are two kinds of translators who have to keep this in mind more than their colleagues. The first of these is the legal translator; the second is the medical translator. They both have more responsibility as mistakes on their parts are greater than translators who translate novels. If, in a normal setting, a mistake is made during the translation process, it will likely be pointed out to the translator and a warning ensues that this better not happens again. However, for the medical and legal translator, the consequences of an error can be graver. As this scope of this thesis is about medical translations, the situations and examples will only deal with the medical translator.

For example, if the mistake is made in the prescription for medicinal intake, say the translator accidentally places a decimal in the wrong place and thereby changing the intake from one pill a day to ten a day, the dangers and consequences can only be imagined.

The same goes for manufacturing instructions, if the translator were to accidentally change a dose of a certain ingredient from 0,002 milligrams tot 0,020 milligrams, the chemical composition will not bear much resemblance to the medicine in mind and will not have to the desired effect, it may even turn out to be dangerous. Were such a product to be released to the public, then, and, say, one or several people would die because of this error, apart from obvious healthcare issues, serious economical problems would also ensue. Think of lawsuits, an increasing negative company image and a loss of credibility that may make a company go bankrupt.

As Simon Andriesen, manager director of MediLingua BV, in his 2006 article “Medical Translation: What Is It, and What Can the Medical Writer Do to Improve Its Quality?” states: “the US Food and Drug Administration (FDA); its European counterpart; or similar organizations in Asia may delay authorization for the marketing of a product.” (157) This delayed authorization is problematic for two reasons: (1) such a delay shortens “the patent production period during which the investment in the development of drugs or medical devices is earned back” which also automatically means that (2) “a delay in the authorization to market a drug or other means that the patients who can benefit from its use must wait longer.” (ibid) In an industry where millions, if not billions, of dollars, Euros and other currencies are involved, this is to be avoided at all costs. If grave mistakes do occur then

the consequences should be kept to an absolute minimum and be solved as soon as possible.

Several causes of problems that endanger a high-quality translation can be ascribed to the author and the following section will deal with this issue. If the instigator is made aware of his part in causing problems but also how this can be avoided the translation process will be executed smoother and faster as less energy, time and money will be spent on correcting errors caused by the author.

2.3 Problems the author of medical texts faces

In the process of creating the source text, the author does not keep in mind the possibility of his text being translated. Because of this, the final version of the text can be filled with problems for the translator. If the author is aware of this, he can try to avoid several of these problems and thus enabling the translator to come up with a high-quality target text in a shortened amount of time. The problems caused by the source text itself are many and Andriesen, in his article "Medical Translation: What Is It, and What Can the Medical Writer Do to Improve Its Quality?" names the three most prominent ones: (1) content, (2) extent of "internationalization, and (3) format and layout. (158) The first two of these will be discussed in the section to come, the third problem will be addressed in section 2.5 where secondary problems that do not relate to the text directly are discussed.

The first problem then, content, is by far the largest area where problems can occur and it encompasses errors "such as typographical errors, incorrect uses of terms, errors in writing, and ambiguities." (Andriesen, 158) This section will deal will the most problematic problems for medical translators: noun stacking, ambiguities, decimals, abbreviations and vagueness. As mentioned earlier, there is also the notion of "internationalization" of a text and that will be dealt with after the first set of problems that deal with the content of a text. Lastly, didacticism will also briefly be looked at as that can also prove to be an unwanted symptom of a text. Not only will each of these factors be analyzed, solutions to avoiding or overcoming these will also be given. For if these are put into the right perspective the author can aid the translator in achieving a high-quality product.

Noun stacking

The first major problematic area is the stacking of nouns. "The piling up of modifiers in front of nouns, which is so common in English, is a difficult hurdle for the translator to overcome."

(Fischbach, 467) 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. In the source text, Robert J. Damstra's *Diagnostic and Therapeutical Aspects of Lymphedema,* for example, the construction "circular and longitudinal smooth muscular layers" is used. (11) The problem with this construction is that the nouns can be used interchangeable and therefore several meanings can be ascribed to this construction. In Dutch, the solution for this is often that the nouns will be combined into one word, whether this is by connecting the words or by using a hyphen. So, using the example given earlier, the Dutch construction will look like "kring- en in lengteverlopende gladspierweefsels". Whichever is the case, either by using a hyphen or writing the word as one, the meaning of the construction is much clearer as the words are now connected narrowing down the number of possible meanings, whereas in the English original the nouns can often refer interchangeably and thus have several meanings. The author should be made aware of this and if possible prevent constructions with too many nouns so that the interpretation of his intention is clear. If this is not the case, the result will be an ambiguous construction and how these will be mentioned next.

Ambiguity

The problem with ambiguities lays in the context, or rather the omission of context. 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. This is often the easiest solution. However, is not favorable as readers of the target text face the same difficulty when it comes to understanding the text. Especially in cases of prescription medicines ambiguities should be non-existent and both the author and translator should make sure there are none to be found. If all else fails and maintaining the ambiguity is not an option, nor does the context permit enough clues as to clarify the author's intention, the translator should then contact the client or author in order to gain clarification of the word, words or fragments he or she is having difficulty with. Not only should the author keep this in mind while he writes, but the translator should also keep this in mind as he is also creating a text where an ambiguity could unintentionally surface. Close-reading of the final text is therefore an absolute must and this is a quality the author and translator should both exhibit in order to create a high-quality target text.

Vagueness

Vagueness should be avoided at all cost, except if this is truly the intention of the author. In medical texts, however, vagueness sometimes exists but should be avoided in the translation wherever

possible. For instance, in the article “Medical Translation: What Is It, and What Can the Medical Writer Do to Improve Its Quality?” mentions the situation where an English writer uses the word “should”, “does the word mean ‘must’ or ‘it is recommended’?” (Andriesen, 158) If the source text gives no further insight or context for the translator to know the correct meaning it may result in a wrong meaning. For prescription medication this could pose to be problematic. It is up to the author to create clarity in the source text and aid his or her audience, including the translator, by avoiding vague terms or constructions. Using multiple different terms for the same concept can unnecessarily confuse the translator, but the translator should also be aware of this. He or she should use one word for one concept, even if the source text uses multiple different terms, so the reader does not misunderstand the text.

Decimals

In section 2.2 of this thesis it has been mentioned that in a worse-case scenario an incorrectly placed decimal point could turn out to be fatal. In less dire circumstances an incorrectly placed decimal point can seem awkward or even ridiculous. The instances where a similar mistake could occur in the target text is when Damstra mentions “100-600 µm” and “that can contract about 10-12 times per minute.” (11) Say the 600 is changed into 6000 then the outcome would be absurd. The same goes for accidentally changing the contractions to 10-120 times per minute. A better example of a wrongly placed decimal would be in weight issues. If the weight of a certain patient were to be described as 7,45 kilograms where it is clear the patient is an adult male, this number is clearly a mistake and will point out sloppiness on the author’s and editor’s part and therefore damage the company image.
In the case of Damstra’s source text, no decimals are used so this problem does not occur in the translations. However, if this were the case, the best solution is critically reviewing the text and correcting it where necessary.

Abbreviations

Another common problem the medical translator comes across is the use of abbreviations. Especially when a medical document has been written by one expert for another expert it is possible the abbreviation appears from out of the blue. As there is little background information it is up to the translator to guess what the abbreviation means. This is a time-consuming process and there is little guarantee the translator has used the correct translation for the abbreviation. The best solution in this case, according to Andriesen, is that “the word or words should be written in full at lease once”. (158) Abbreviations which are “not commonly used by the medical profession as a whole

should be avoided, however obvious they may be to the specialist.” (Fischbach, 471) However, abbreviations can be excellent solutions when it comes to cases in which there is little space. In order to avoid the abbreviations “should be fully identified the first time they occur.” (471) These quotes prove to be guidelines for the translations in this thesis.

In the source text, several pages of the first chapter of *Diagnostic Therapeutical Aspects of Lymphedema* written by Robert J. Damstra in 2009 there are three abbreviations: MALT, IgA and MLD.

The first abbreviation is introduced via a theme-rhema construction as proposed by Sauer in his book *Vak, taal, Kennis*, translated by Theo Hermans and published in 1990. This construction is a common one when it comes to introducing new concepts in a text and consists of a set of concepts known to the reader followed by a new concept. The information previous to the new concept give away the new concept’s meaning. Its counterpart is the rhema-theme construction, where the new concept is mentioned first and the explanation follows suit. In the source text, the full sentence including the theme-rhema construction looks like this: “The secondary lymphoid organs include the lymph glands, tonsils, Peyer’s patches, spleen and the mucosa-associated lymphatic tissue (MALT), which is primarily located in the bronchial and digestive tracts.” (Damstra, 12) The abbreviation is introduced and explained and informs the reader and translator with the full meaning. The only difficulty that the translator is faced with in this situation is finding a Dutch equivalent that suits the bill. One of several sites that provide the Dutch equivalent is www.pathofysiologie.nl, a site that studies the function of diseased organs. The section that deals with lymphoma’s explains that MALT stand for “mucosa-geassocieerde lymfeweefsel”: “De prognose en de behandeling hangen af van of de kanker een agressieve lymphoma of een traaggroeiende (indolent) lymphoma van het mucosa-geassocieerde lymfeweefsel is (MALT).” (Pathofysiologie) It is interesting to note that the term is introduced in the exact same way as is the case in the source text.

The second abbreviation, IgA is not accompanied by any sort of explanation and the sentence in which it is used offers little context to dissect its meaning: “[t]he MALT, present as diffuse lymphoid tissue along all mucosal surfaces, is the site of IgA transport across the mucosal epithelium6.” (Damstra, 12) The reader can only know that IgA has to do with transportation of some sort. To find out what IgA stand for there are two options. The first is to turn to the list of abbreviations that is included in the book by Damstra himself. Though multiple abbreviations are

listed here, IgA is not to be found so this option is unsuccessful. The other option is researching the term which proves to be successful. A short search on the internet leads to several medical sites providing the answer. The conclusion is that IgA stands for immunoglobulin or, in simpler language an “antibody”. Translated into Dutch, then, IgA stands for “immunoglobulines”, although the word “antilichaam” is the more commonly used word.

The third and last abbreviation is MLD and, unlike IgA, can be found in the overview of abbreviations listed in Damstra’s book *Diagnostic Therapeutical Aspects of Lymphedema*, prior to the first chapter. MLD stands for “manuel lymph drainage”, in Dutch “manuele lymfe drainage.” The fact that the solution is officially a loanword is obvious and aids the translator to the extent that this is often the key when it comes to medical terms although it has to be noted that the spelling can differ, as indeed is the case in this example.

Internationalization

The second problem mentioned by Andriesen, extent of internationalization, needs some clarification in order to be understood. A text has to be “translation ready” or “world ready”, meaning that the source text should be free of cultural specific-items (csi’s) and of “local or national circumstances or references”. (Andriesen, 158) In other words, any reader anywhere on the globe should be able to fully understand the text without looking up cultural items which the reader is unfamiliar with. In the case of this thesis, the source text features no csi’s that have to be changed in the target text and therefore the source text is translation ready.

Didacticism

Whilst translating, it is important that the author of the source text does not unintentionally come across as didactic. Of course, in cases where new concepts are introduced a level of didacticism is needed, but is should never come to the point “of discussing in detail rudimentary concepts in basic anatomy, pathology, or physiology.” (Fischbach, 470) When introducing a new concept, certain background information must be given in order to clarify the origin from which it stems “but it should never sound as if the foreign doctor were being taught something he did not know – or worse, had forgotten.” (471) This does, however, provide guidelines for the translation further on in the thesis, where an expert to expert translation is given. In this instance, it is important to avoid sounding didactic, whereas in the other two translations it is allowed to a certain extent. Especially in the case of the translation for the public, certain exaggerations and clarification will be extensive so as to give enough background information and for explaining rudimentary concepts.

Now that the main problems the author can cause have been discussed, the problems that the translator faces can be put into perspective and this will be the focus of the next section.

2.4 Problems the translator of medical text faces

As with any text, one of the problems the translator faces is the amount of skill with which the author writes. Whereas the previous section dealt with several of the most common issues the author faces this section will focus on the position and role of the translator in creating a high-quality translation. Not only does the translator face many of the same problems as the author when he creates his target text but he also faces additional difficulties and this section will deal with the most common of those and solutions to overcome these difficulties will also be given. First off, a representative image of the medical translator will be given before going into the problems.

The following description of the average medical translator is based on several texts, but relies most on the description Simon Andriesen provides in “Medical Translation: What Is It, and What Can the Medical Writer Do to Improve Its Quality?”. In addition, to complete the picture external features from other authors have been added. According to Andriesen, then:

> Most translators look like women. Actually, 6 of every 7 translators are women. Their characteristic is that their background is most often in the study of languages or translation, but quite a few (approximately 20%) have a medical background. No matter where they come from, good medical translators have many years of experience and are usually involved in medical translation most or all of their time. Medical translators typically are independent contractors – practically no in-house translation department with staff translators has survived the outsourcing trends of the 1980s and 1990s. (Andriesen, 157)

Andriesen describes that the translator does not have to be working in the medical field in order to be a translator. Omoregbe Mercy, in his 2005 article “English-Edo Medical Translation”, supports this view: “[t]ranslators handling medical texts do not have to be trained as doctors or nurses, but it is imperative that they understand all the associated implications – the linguistic, medical, social, and cultural contexts in which they work.” (268) So not only should the translator understand the source text and the assignment of the client, the translator should also understand “the physical world and culture in which they are produced originally.” (Ibid) This last feature is important because this kind of knowledge ensures that the translator knows what he is doing.

In addition to this, Henry Fischbach, in his article “Problems of Medical Translation” (1961) opts that the intention of a medical text should also be accounted for when choosing a translator. He argues that in cases in which the text is written for only a small crowd, though he forgets to mention it is likely that they consist of experts and therefore constitute an interlingual translation, “the translator requires no
specialized knowledge other than the scientific subject matter of the translation, except in the case of patents where experience with some legal terminology is available.” (462-463) Fischbach, like his colleagues, also shares the view that the translator should have an active command of the source language as well as the target language. Fischbach puts the focus on the latter by stating: “that he is thoroughly familiar with the source language and has an active command of the target language, to which he should preferably be native.” (Ibid) This latter is to root out those people who have little knowledge of the source language but still try to translate. This will often lead to low-quality texts and by excluding them from the professional translation circuit only professionals will remain and therefore the possibility of a high-quality product will greatly increase.

Taking a closer look at Andriesen’s quote, several features stand out. Although the last mentioned feature would have been ground-breaking in the ‘80s and ‘90s, nowadays, with freelancers everywhere, especially in the translation and localization area, it seems an outdated fact. The other features still hold fast. Why most medical translators are women remains a question and no hard claims concerning that feature can be made. As for the other features, it makes sense that the translators are heavily involved, perhaps on a daily basis even, with medical documents, as the medical field changes rapidly over time and further training is of the utmost importance to keep track of all these changes. This of course also applies to the twenty percent of translators who have a medical background; they also need to keep their knowledge up to date in order to achieve a high-quality target text. Usually, the path of becoming a medical translator is set out early in the translator’s career. As they keep taking refresher courses and thus expanding their active knowledge, it would be a waste not to continue translating medical documents and because of this it makes sense they have years of experience.

Quality of a translation

Now that the features of the average medical translator have been discussed, it is possible to take a closer look at the factors that can influence the quality of a translation. According to Andriesen, there are three major reasons to be kept in mind if the quality of translation is to be safeguarded.

The first reason he mentions is the “incompetence of the translator”. (158) In the following section the competency of a translator will be outlined and discussed. This factor often goes hand-in-hand with the second cause, the “lack of sufficient time for translation”. (Ibid) The factor time will be discussed in section 2.5 as it has less to do with the content of a text and more with the context. Finally, there are “shortcomings in the source text” which can cause serious problems for the translator and therefore for the target text as a whole. (Ibid) Many of these shortcomings are brought to life by the author and have been addressed in the previous section and will not be repeated in this section. However, several related problems that the translator faces will be mentioned as they can be shortcomings in the target text. The most important ones are loanwords and spelling and they will be discussed below.

Competence

The first reason why the competency of a translator is at stake is because of money. Other reasons that influence the competency of a translator have to do with personal interest in the topic, overestimation and lack of in-field involvement. Each of these can affect the quality of a translation and by weeding out the negative ones a high-quality translation can be produced.

With competing prices, which are often ridiculously low, medical companies have lots of choices for finding a suited translator. The problem, then, lays with the competence, or rather incompetence, of the translator. Prices of medical translations are about $0, 25 per word. (Andriesen, 157) This being the average amount means it is highly unlikely that anyone who ask for anywhere in between ten and eighteen cents per word offers the same quality, although there are always exceptions to the rule. Especially in this day and age, where many companies compete with their prices it is hard to draw a line concerning prices only. It may very well be that a cheap company delivers high-quality translations, but is overlooked simply by being cheap. However, there are always "customers looking for a cheap deal” and they may strike gold when they contact a cheap but competent company.

Another problem concerning the competence of the translator is overestimation. There is always the possibility that translators “overestimate their ability” to deliver a high-quality target text. (Andriesen, 158) This is a common problem for any translator who just started translating medical documents. In this case it would be better if the translator would be humble and start with easier texts and whenever a document is too difficult to swallow his pride and address the client for help.

For others, it may just not be their field of interest or suit them at all. If this were to be the case, the quality of the source text can hardly, if at all, be maintained in the target text. As with all translations, personal interest in the field often delivers a better target text.

Also, when the features of the medical translator were discussed in this thesis, it mentioned medical translators to be working either in the field of being in touch with it on a regular basis, and anyone who does not fit into this description will most likely be rendered incompetent in comparison. The medical translator, then, should, according to Henry Fischbach, be "as good a writer as the one who wrote the original." (462)

Conquering Incompetency

There are a few solutions to conquer incompetence. In his article "Problems of Medical Translation" (1961), Fischbach provides a small checklist consisting of three points a translator should combine and embody. They are the following: "1. He must have a fairly extensive knowledge of, and be able to reason in, the subject matter of the translation. 2. He must be able to read the language he is translating well enough so that he can grasp the author's intended meaning. 3. He must himself be able to embody that meaning in lucid and straightforward English, French, Spanish, etc." (464) Although these points seem obvious, Fischbach mentions them for a reason, too often translators make errors that can be brought down to a basic level, errors that could easily have been avoided had the translator used a dictionary.

For instance, the denotation and connotation of a word can vastly differ and it is important the translator does "not lose sight of the fact that copy which *denotes* one thing in English can easily *connote* something else in the foreign language, particularly if translated literally." (Fishbach, 464)

Another problem that can be caused by incompetence is "that even certain scientific words may look like perfectly safe cognate, yet result in a mistranslation if used as such." (Fishbach, 464) These are the so-called 'false friends' most translators are familiar with. These, obviously, do not only occur in documents which contain everyday language but also in technical and medical texts. For example, "*anthrax* in French is not *anthrax* in English, but *carbuncle*." (Ibid) If the translator fails to do proper research and uses the first option available which would be a false friend, though it may seem the right one, the quality of the target text would be influenced.

Fortunately, in some cases the medical translator can use a dictionary in order to look up the right

word or correct meaning and solve these difficulties. However, the part below will deal with the instances where this is not the case. Before going into that, it has to be said that the only other requirement to deliver a high-quality target text would be that the medical translator is humble enough to accept his shortcomings and does not let his pride get in the way of a great translation.

Dictionaries and spellcheckers

One problem the translator of medical documents faces concerns dictionaries as they are often incomplete. Though this may seem a bold claim at first, any translator knows dictionaries fall short because they cannot cope with the fast changes words and languages undergo. New words are added to spoken languages daily and it takes months for a new word to end up in a dictionary, if it ends up in a dictionary at all. As there are a team of specialist, such as linguists, involved in creating dictionaries, a word has to be used enough times and be know well enough to be a potential candidate for a dictionary.

Most often, these dictionaries only deal with everyday language, thus knowingly failing to include more specialized words in the process. This is not only the case with hard-cover dictionaries, but also with digital dictionaries. They also cannot handle the mass-production of words and will not be able to include them all. Also, in cases of slang and other more specific languages, such as jargon, dictionaries fall short.

Finally, there is the problem of reliability. Most languages have a variety of dictionaries and one, or a few of those, stand out above the other ones. That one is considered to be the best there is and has a high factor of reliability. It has often been put together by a team of specialist. The greatest advantage while at the same time the biggest threat that comes with online dictionaries is that they are often open source, meaning that anyone can contribute to its database. Therefore, countless words will exist with a definition not supported by experts. This does not always pose to be a problem for it can indeed be the right definition for the word, especially in cases of slang. However, it does not simplify the task of the translator as he or she should first define the credibility of the dictionary and even then could still encounter shortcomings in it.

A closely related problem comes forth from the spellcheckers that come with most word processors, as they are incomplete and too indiscriminate to be able to guarantee a high-quality target text. Especially in the medical field spellcheckers accept different spellings for the same word. For example, then words “nephritic” and “nephritic”, “arthritis” and “arteritis”, or “uterer” and

“urethra”, while in all cases the words have a different meaning. (Andriesen, 158) In the case of the target text the word “lymph” can be either translated as “lymf” or as “lymfe” in Dutch and either is used in the field. To avoid unnecessary confusion by using both spelling indiscriminately I will use the latter type of spelling.

It is a time-consuming process for the translator to look up each word and definition in order to determine the right one. However, this is mandatory in order to achieve a high-quality target text, but as time is a critical factor and deadlines are often short this cannot be done and the quality of the text will decrease when a wrongly selected word is used.

Loanwords

Although using loanwords seems to be an easy solution it can also be a dangerous one if it turns out to be a false friend, which has been mentioned in a different part of this section. The English language provides many loanwords for the Dutch language and this notion has to be discussed. The English language is not closed off as many other languages are when it comes to inventing words and constructions. This is closely related to the fact that “English is a much less rigidly formalized – and hence, perhaps less *finalized* […] language than Spanish or French, for example.” (469) This also goes for Dutch, where there is a long period of time before words with an English origin are taken up in Dutch dictionaries because official language institutes first want the word to be around long enough. So there are many instances where loanwords from the English language are used on the streets in the Netherlands, but translators, for example, are not yet allowed to use them because they are not yet naturalized via official institutes. There are cases, however, where the translator should overlook this official factor, mainly in cases where the word is common in the specific field from which the word stems. Even though the word has not officially been recognized by a language institute it clearly has been naturalized in field and that is what matters most.

Spelling

Closely related to the problems of loanwords is spelling. It has been mentioned before that spellcheckers and dictionaries cannot fulfill their duties in most of the cases where the applied language is technical, medical, or otherwise more specific than everyday language. Fortunately, there are several options for the translator to find out what the correct spelling for a specific word should be. The most obvious one is checking literature of the specific field to find out what spelling should be used. Another, according to Henry Fischbach, is that amount of attention a translator should pay to spelling only has to do with the amount of readers. Finally, if the previously

mentioned solutions do lead to a sufficient enough result, the translator can ask an expert in the specific field for help.

The first solution to solving problems that deal with spelling is for the translator to look the word up in literature meant and/or coming from the specific field. Most often, the translator has an idea as to what the word should look like so he has a starting point. Not only is this option successful because the translator has an idea as to the spelling of the word. He or she can also check it because in-field domestic literature is widely available in stores, with the exception of expert to expert magazines which are harder to obtain, but the translator can find most of these latter publications online by subscribing to newsletter or the magazines themselves.

Another solution could be related to the amount of readers the text will have, as Fischbach argues that "[i]n translations intended for only a few readers it does not matter which correct form is used. For publication, however, nothing but the most widespread usage should dictate the translator's decision." (470) The first part of the quote sounds amateurish at best, while the second part sounds obvious. In most cases, the translator does not know exactly how many readers his text will have and it does not help that Fischbach gives no guidelines for this. As for the second part of the quote, the most widespread usage of the word can be found in domestic corresponding field literature and therefore the translator would end up with the solution described earlier. All in all, this option should only be used in cases where the translator has absolutely no idea of the conventions of spelling for that particular word, has no in-field literature to provide answers and has no access to any expert in the field whatsoever. It is a final means and should only be regarded as such as it is unlikely to provide a high-quality translation.

However, if the above given options fail, there is still the option of addressing an in-field expert for help. These experts are embedded in a specific field all day long and therefore have a better understanding of words and spelling than most translators. For the translations given further on in this thesis, an expert has also been contacted to give feedback on certain ways of spelling. In these cases, it will be mentioned.

So, although spelling can pose a serious threat in order to accomplish a high-quality translation, there are several options the translator can opt for to solve these. First off, he or she can find relevant domestic in-field literature to find the right spelling, there is also the possibility of discarding spelling as a problem if the target audience is small enough, and, finally, a translator can

also turn to an expert in the field to ask for their opinion. The first and last options seem to be, by far, the best solutions but involve time and energy from multiple people. However, this is a small price to pay in order to achieve a high-quality translation.

Addressing the client

To address the client, or author, may pose a problem in itself. Besides issues that deal with the translator's own pride, there are more factors that cause approach anxiety. Fischbach describes these as follows: "Many translators are reluctant to approach the client with questions of this nature because they fear that he may interpret such queries as a reflection on his copy." (466-467) To this, it is easy yet factual to add that the translator fears that by asking questions he or she could be considered dumb, incompetent or inadequate for the task at hand. If this indeed is the image the client develops then the translator finds himself in a difficult position for future situations as it is unlikely an under qualified person is given an assignment. However, all these possible problems should be rendered secondary to gaining a great source text as they do not weigh up to the benefits of a high-quality target text. Ultimately, that is what translation is about and no matter what pre-conceived ideas a translator may have when he directs his questions to the client, they will oftentimes turn out to be untrue and find the client willing to help him solve these, thus gaining a high-quality source text.

2.5 Miscellaneous problems

Now that the primary factors that influence the translation process have been discussed, namely the role of the author and the translator in the process, the focus can shift to secondary factors that can influence the quality of a translation. The main secondary factor is time, a second one, which has been briefly mentioned in the previous section, involves money, while the third factor has to do with the layout of a text. This section will go into each one of them and hand solutions where possible in order to achieve a high-quality end text.

Time

A major secondary cause of problems is the time factor. As with most translation assignments, deadlines of medical documents are often short. Because the medical field is a demanding one which wants only those target texts that convey high-quality, the amount of stress put on the translator is extraordinary high. Even if the translator is highly competent and is a true master in the field, there is still the factor time to be considered, because "if there is not enough time to do the work, the quality is jeopardized." (Andriesen, 158) This is a problem to which there is actually no

real solution. Of course, asking for a delayed deadline is possible but that only gives some extra time but still probably not enough to ensure the best translation possible. Any translator knows that the target text has to be given a certain amount of time and care in order to be able to reach a sufficient level of quality. This can happen relatively fast, but in order to create a high-quality target text, much more time has to spend, time that is often non-existing in the medical field.

Time is of the utmost essence and directly relates to money when it comes to medical documents, especially when it comes to releasing a new product on the market. It is mandatory for a product to be accompanied by a medical document stating the use of it. Without this document, often the prescription, it cannot be distributed and the company loses money. Also, the period in which the money invested in the development and marketing of the product can be earned back is reduced. In this context, time truly is money and it is no wonder that deadlines are short and none but the best translators should be translating these documents. However, at the end of the day it all comes down to this: if there is not enough time, the quality of the translation will inevitably be reduced.

Finances

Besides from being a highly demanding field, the medical field also involves great sums of money. This money is reserved not only for the development of new medicines, marketing campaigns and information campaigns, but also for the writing and translating of medical documents.

According to Andriesen, “the cost of medical writing is around 8 times higher than the cost of translation.” (158) Logically, it makes more sense to have one text translated numerous times into different languages as opposed to writing a new text from scratch for every target language. However, during the translation process, as with any translation, a high-quality target text must be kept in mind. Although prices per word tend to differ, the average lies around “$0.25”. (158) It makes sense to translate medical texts as the costs can be kept relatively low, that is, “as long as the process is smooth.” (ibid)

It is of great importance the quality of the source is high, and errors are non-existent. It is to be imagined that one error in the source text after it has already been published causes much more time, effort and money to fix than before publishing, because now all the translations also have to be corrected.

Unfortunately, no hard claims can be made concerning prices and quality; there may be cheap companies out there that deliver high-quality translations, but also cheap companies who do not

deliver any quality whatsoever. Moreover, many translators are looking for an assignment and may give their resume a touch of non-existing flair, either because they overestimate themselves or need an assignment really hard, and, when chosen for the job, do not have the right amount of competence to deliver a high-quality translation. It is important for the medical company to be aware of this so safeguard the quality of their documents.

Format

The final secondary problem that will be discussed is the format of the translated document. According to Andriesen, problems that deal with format and layout are the third most common problem area when it comes to the quality of a translation. Andriesen argues that the translator "should be enabled to access (and change) the text in illustrations and to use fonts that are generally available. (158) When taking Eastern countries into consideration, the whole "page formatting has to start from scratch, because of the differences in the direction in which these languages are read". (Ibid) In most of those countries, people read from right to left and sometimes also from the bottom to the top of the page.

"Length of copy is a serious problem, particularly in journal advertisements." (Fischbach, 467) Compared to English many languages such as Dutch "require many more words to convey the same meaning and thought." (467-468) This is a widely acknowledge problem for translator in any field. Not only does this have to do with English being a much more compact language than most other European languages, it also has to do with the fact that English is much less "rigidly formalized" and "finalized" than other languages. (469) Oftentimes, English authors are able to invent terms and words while translators are denied this creativity. This is because of official language guidelines and restrictions. Newly invented words are common to the translator and though he may know exactly what the author means by it, he still has to put it in words and this is often where the translator has to go into using several words to convey the same meaning where the English language only needed one word.

One of the solutions to coping with the format of a text has to do with the amount of space that is available. "The translator must know to what extent the space factor has to be taken into consideration in his choice of wording."(Fischbach, 468) This is, of course, a possibility. However, it would be better if the layout and format of the document itself can be changed so as not to create shortcomings in the target text by leaving out elements of the source text. It is much better to do damage to the format of a text than to damage the text stylistically, grammatically or linguistically

and end up with incomplete or strange sounding sentences as they interfere with the quality of the target text.

2.6 Guidelines for translation

Now that both the primary and secondary features that influence the quality of a medical translation have been discussed, there is room to sum up the guidelines meant especially for the beginner medical translator that have been mentioned throughout this chapter. First off, there will be a comparison between Andriesen's view of the medical translator and how I compare to that. Then, the guidelines which are meant for beginner medical translators will be given and also how they were applied to the translations further on in this thesis.

Comparing my features concerning medical translation to Andriesen's description, which has been discussed in part 2.4, of the medical translator many differences are apparent:

I am not a woman, so I would be an exception. My background information is indeed a language study and an additional translation study. I lack a medical background. As I am a beginner I have little experience in the field and am not constantly involved in medical translations. I am an independent contractor.

To achieve a high-quality end product, then, there is need for translation strategies and medical knowledge. Throughout this chapter many guidelines have been mentioned and in this section I will briefly sum them up. A distinction will be made between the primary and secondary factors mentioned in this chapter. Not only did they aid me, they can be of aid to any medical translator in the field, though they are primarily meant for the beginning medical translator. The guidelines have been italicized as to create a distinction between the guideline and my interpretation of them during the translation process.

To start off with some more general guidelines, based on the work by Mercy and Fishbach:

The medical translator should fully understand the linguistic, medical, social, and cultural contexts of their field. So not only should the translator understand the source text and the assignment of the client, the translator should also understand the source culture and habitat.

-As a former student of the English Language and Culture program at Utrecht University I have a sufficient enough picture of the source culture. For the medical field however I have consulted an

expert so that my lack of knowledge in-field had been compensated.

The translator should have an active command of the source language as well as the target language and preferably be native. No specialized knowledge is needed other than the scientific subject matter of the translation.
-I have an active command over the source language and am a native target language speaker. Besides the matter at hand, I have little to no specialized knowledge.

Section 2.3 dealt with problems the author of medical texts faces but most of these problems also apply to the translator. Below are the guidelines retrieved from that section and also how they were used in the translations in the following chapters.

Avoid noun stacking wherever possible.
-Though this could not always be achieved it has been kept in mind and unnecessary noun stacking has been avoided.

Add explanatory comments if necessary.
-This has only been the case in the first and second translation, for the public and student translation. In case of the expert to expert translation no additional comments have been placed.

Avoid ambiguity.
-This often goes hand in hand with nouns stacking. There were only three instances where noun stacking could have led to an ambiguous meaning, these will be mentioned in the translation's themselves, and these were solved by using explanatory comments in the first two translations.

Avoid vagueness.
-As the source text was an analysis of the anatomy of the lymphatic system there was no vagueness to be detected. The word 'should', which is often open to interpretation, has hardly been used and did not prove to be problematic.

No wrongly placed decimals.
-Although decimals did not appear in the source text, a critical look was taken at the numbers and symbols so that there were no mistakes there.

Critically reviewing the text.
-Any obvious errors are to be eliminated in this process and I have reviewed my own texts multiple times as to avoid obvious errors.

The part on didacticism also revealed a guideline that can be used when translating:

Unintentional didacticism should be avoided.
-However, didacticism can be used where this is wanted so this guideline only applies to the third translation, the expert to expert one. In the other instances, especially in the translation meant for students, didacticism was wanted, needed and used.

In section 2.4, where the problems the translator faces have been discussed, there were also several guidelines that have been used during the translation process:

When using abbreviations, the word or words should be written in full at lease once. and *Abbreviations which are not commonly used by the medical profession as a whole should be avoided, however obvious they may be to the specialist.*
-Abbreviations used in the source text have been avoided in the text for the broadest audience, they will be used and explained via brackets in the text intended for students and upcoming specialist, and will be maintained in the text meant for the expert. In the final case, abbreviations will be maintained. However, the first time the abbreviation is used it will be maintained but following it will be the word written in full between brackets.

The competency of a translator has also been analyzed in section 2.4 and the following guidelines have been conducted out of that section:

The translator should not overestimate himself.
-I have selected the source text myself, knowing that I could translate it well enough. There was no pressure from any additional factors that have been mentioned in the section dealing with overestimation.

Personal interest in the text almost automatically increases the text's quality.
-As I chose the source text myself it may be evident that my personal interest goes out to these kinds of text and therefore I was enthusiastic about the whole process.

There is no set price for a translation, but too cheap is almost certainly killing.
- There was no money to be earned with my translations so this factor has also been eliminated.

The dictionary can not always provide the correct spelling:
-In these cases I researched the word in domestic in-field literature. If I also could not find it there I asked an expert for help.

The translator should use the correct spelling of a word:
-I have used a dictionary to ensure I used the right spelling in my translations but in cases where the word was not present in a dictionary I looked it up in domestic in-field literature. If I also could not find it there I asked an expert for help.

The secondary factors that influence the quality of a translation have been mentioned in section 2.5 and will briefly be mentioned below as three guidelines from that section have been adopted for the sake of this thesis:

There should be enough time to create a high-quality translation
- In my case there has been plenty of time to create the translations so this factor has been eliminated.

Enough money should be spent on a high-quality translation.
-As has been mentioned earlier, there was no money to be earned with my translations so this factor has also been eliminated.

The translator should keep the format of the end product in mind.
-The format was also not a problem as my translations were not intended to be published and therefore there was no format I should keep to.

To bridge the gap between theory and practice and discover the usefulness of these guidelines, it is necessary to apply them. Therefore, the guidelines mentioned earlier will be tested in-field on the translations to come. They will be applied where relevant. In chapter five these guidelines will be revised and discussed considering their level of practicality.

2.7 Conclusion

This chapter has been separated into multiple sections and each discussed a different factor of the translation process. The first section explained why there is need for Dutch translations of English medical texts even though many Dutch people also speak English. Next, the possible conditions of translating a medical text have been mentioned and thus established the need for high-quality medical translations even more. There are several factors that can ensure or endanger a high-quality translation and section 2.4 dealt with the role of the author in medical texts in this perspective. The following part also dealt with one of the main factors in this process, the translator and in it were several feats the translator has to keep in mind to achieve a high-quality end product. Now that the two primary factors had been mentioned, there was room to go into secondary factors and section 2.5 dealt with these. Throughout the latter three sections solutions to the forthcoming problems had also been given and from these, guidelines for beginner medical translators had been distilled. In section 2.6 these guidelines have been summed up and also how they applied to the translations further on in this thesis. Now that the possible problems and solutions have been discussed the next logical step is to make a source text analysis. The next chapter will include a source text analysis and the theory behind it.

Chapter 3: Translation relevant text analysis

3.1 Translation relevant text analysis theory

This chapter contains a translation relevant text analysis which is the result of several theories put together in practice. When it comes to translating, the most important step is to first make an translation relevant text analysis. However, the need for a translation relevant analysis is a source of discussion so first off, this chapter will go into the benefits of making one. It depends on the translator and translation theory what kind of analysis is made. Even though some professionals swear to never make one they will still give some thought as to whom the intended reader is and what the purpose of the translation will be. An additional problem arises when different translators and/or readers read the same text and interpret it in different ways. There is no one objective interpretation of a text although some argue that there is. This idea will be shortly discussed before going into the translation relevant text analysis as that too leads to different opinions. Throughout the years some have argued that a source text analysis is best while others have claimed that only a source text analysis is insufficient. The latter opt for both a source text and target text analysis. Others have argued that the translation assignment should be included in the analysis. The text

function should define the interpretation, according to the translation experts used in this thesis. Only when the text function is defined, the analysis can be initiated. There are numerous models that lend themselves for this purpose but in this thesis the models of Hans Hönig and Christiane Nord will be discussed. These models have been chosen as they both lead to a pragmatically translation relevant analysis of the text at hand. These models can also apply to the target text, as the target text will function as a source text in the target culture, making a comparison between the two possible. However, that comparison will take its own space in chapter four by using Chesterman's variables proposal. For now, however, Hönig's model as an introduction to Nord's model will first be discussed. Then, logically, Nord's model will follow and finally a source text analysis of Robert J. Damstra's *Diagnostic and Therapeutical Aspects of Lymphedema* will be given and discussed in more detail. However, as this thesis translates the same source text three times with a different target audience and text function in mind, the final section of this chapter will go briefly into the consequences of such changes. This final element, in combination with the rest of the chapter, paves the way for chapter four.

According to Hans Hönig in "Ubersetzen zwischen Reflex und Reflexion" (1986) it is up to the translator 'om te beoordelen *of* zijn taalkundige (communicatieve en culturele) competentie toereikend is en *waar* en *hoe* hij deze eventueel moet aanvullen. (in Naaijkens, 220) To gain this insight, the translator should make a translation relevant text analysis (vertaalrelevante tekstanalyse). (Ibid) After completion, the translator should have an overview of his competency for this source text and either he (1) his makes up for his lack of knowledge with the aids at hand or (2) he rejects the assignment because he cannot translate the text sufficiently enough. (Ibid) The translation relevant text analysis is thus used to create an overview of problematic areas in a text so that the translator gets an idea of the difficulty of the text and where he should educate himself further.

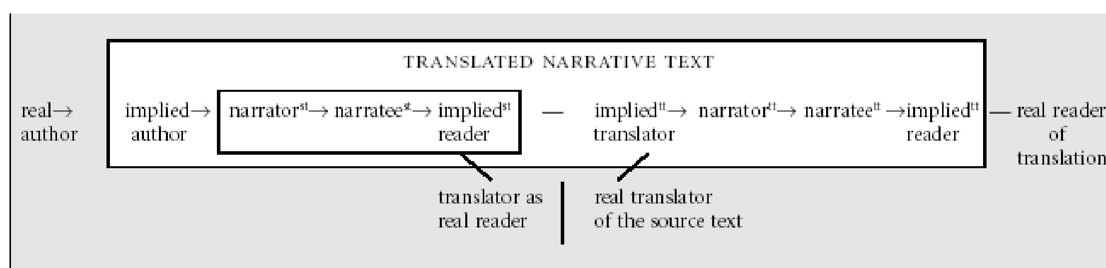
Where previous models only used the starting-point that the text should be understood prior to translation Hönig notices a problem: "[n]iet elke observatie is namelijk relevant voor zijn vertaling; sommige inzichten zijn in meer of mindere mate relevant, sommige zelfs irrelevant." (In Naaijkens, 220) This statement is true for the translations to come further on in this thesis. For some of them, additional information is needed, in other cases omission of certain elements will be part of the translation strategy. The different strategies that can be applied per text are usually the result of the translation assignment and the target audience and function of the target text. With this in mind, it is clear that the models previous to Hönig's fall short in a very important aspect; they omit the

function of the target text in their models. These models are all based on the principle that a text should be understood before it can be translated. The problem here is that multiple readers can understand the same text in many different ways and hard claims between a wrong or right understanding cannot be made.

This is backed up by several theorists and Emer O'Sullivan is one of them. In "The Voice of the translator in Children's Literature", published in *Meta* in 2003, O'Sullivan presents a communicative model of a translated text:

Fig. 3

Communicative model of the translated narrative text



(st = source text, tt = target text)

(O'Sullivan, 204)

This communicative model is based on Theo Hermans' model and is widely recognized and renowned. Because of this, the model will not be discussed in detail. However, for additional background information and questions concerning the model I would like to refer to the original article itself. With the thought in mind that different readers find different meanings in the text and therefore the understanding of a text is subjective, a solution to this problem of multiple interpretations is needed.

Hönig argues that the function of the target text is more important that just understanding the source text. Obviously, understanding the source text cannot be disregarded but O'Sullivan's model shows that understanding a text is merely an interpretation of a certain reader and therefore subjective. With this in mind and according to Hönig, first of all the function of the target text should be defined prior to the text analysis because relevance can only be proven in accordance to a defined function. (In Naaijkens, 221) For this thesis, the main function of the source text is to inform as it explains extensively the anatomy of the lymphatic system and also how its separate elements function. Besides being informative, the source text also has an educational tone as the information given in the text is new to many readers. As the source text will be translated on three different levels it is interesting to notice a shift in the function of the target text. For the text intended for

people who are completely new to the topic the text will be more informative as its audience only needs to know the very basics of the lymphatic system in an easy to understand manner. The text meant for students will be more educational, using many theme-rhema constructions as have been discussed in chapter two. The target text intended for experts will try to copy the balance of the informative and educational approach of the source text as its addressed audience is the same for the source and target text alike, with the exception of speaking a different language. Now that the two main functions have been set for each text respectively there is room to continue discussing a source text analysis.

With the function of the target text in mind, the translator now has an idea as to what he wants to understand and what he needs to understand. In this case it means how extensively the process of understanding must be simulated and when this process can be viewed as completed, or in Hönig's words: "tot op welke hoogte het proces van het begrijpen gesimuleerd moet worden en wanneer dit proces als afgesloten beschouwd kan worden." (Ibid) The translation relevant text analysis should be guided by the situation of the translator in two ways: the analysis should be an aid to the translator and this can only be achieved when making the analysis takes less time than the translation. Secondly, the function of the translation in accordance to the source text should be defined in the target language by using its correct communicative principles. (221-222)

The main principles of Hönig's analysis model are based on the Laswell formula: "Who says what in which channel to whom with what effect?" (In Naaijkens, 235) Hönig's model can be brought down to three other questions. The first is: 'who speaks where, and why him?', the second: 'what is the text about and why is it written his way?' and the final question is: 'what needs to be translated here?'. Because there are only three questions and though they can be answered, the model is insufficient for the purpose of this thesis because it leaves many important text aspects out of the picture. Hönig's model needs to be broadened to cover all of a text's aspects. This can and will be achieved in this thesis by using this model as a starting-point and then adding other theorists' models to gain a complete overview of relevant text aspects. Also, this model works best when there are two kinds of speakers in the text: the descriptive expert and the moralist. Because the part of the source text that is to be translated in this thesis only has one voice, namely the expert's voice, this model lacks applicability. However, the model can still be used as a solid foundation for further models; it is especially useful as an introduction to Christiane Nord's model.

Whereas Hönig's translation relevant text analysis model focuses on proving the need to orientate

on the translator's wants it fails to be applicable to texts that deal with only one voice, in this case Damstra's source text. Because the source text is to be translated in three different ways it is necessary to take a closer look at the demands of the translation assignment. Hönig argues that the status of a source text is highly relative because of the assignment as opposed to using only the linguistical features of the source text in an analysis. (In Naaijkens, 235) However, the translation assignment in combination with the target text profile are the most important factors when it comes to setting the difficulty of a text and her model incorporates these elements. Just like Hönig's translation relevant text analysis model Nord uses the Laswell formula as a starting point. The most extensive version of Nord's formula adds the findings of several other researchers to the picture, for instance the incorporation of non-verbal elements, syntax and text reception, looks the following:

> 'Wie heeft de opdracht om met welk doel aan wie wanneer waar en waarom een tekst met welke functie over te brengen? Waarover moet hij wat (en wat niet) in welke volgorde, met gebruikmaking van welke non-verbale middelen, met welke woorden, in wat voor zinnen, op welke toon, met welk effect zeggen?' (236)

Using this version, the outer and inner textual factors can be analyzed in respect to those points that are relevant for a pragmatic functional source text analysis. (Ibid)

3.2 Practical application of Nord's model

Who writes: Robert J. Damstra, who works at Nij Smellinghe Hospital in Drachten. Damstra is a dermatologist, researcher in the field of lympho-vascular medicine, working in an active group developing telemedicine in the Netherlands which specializes in teledermatology. In addition to this, he is also active as chairman of the Dutch Lymphedema Network patient organization and a renowned practitioner among his colleagues. (LinkedIn) This way it is important to note that although Damstra will to a large extent approach the reader as an expert there may also be instances where he functions as a moralist. His own influences and interests in the field could cause him to act subjective. It is important no notice whenever this is the case. However, in the part of his book *Diagnostic and Therapeutical Aspects of Lymphedema* that will be translated there are no subjective instances to be found as Damstra writes about the anatomy of the lymphatic system and therefore only resorts to using scientific findings. This eases the task of the translator as he needs not distinguish between the two voices that can occur in a text as Hönig indicated.

With what goal: Damstra's dissertation is the first one that writes of a new diagnostic for lymphedema and provides an overview of the effectiveness of some (not)-operable methods of treatment. Despite the fact that lymphedema is a common condition there is not enough attention

paid to it and the knowledge medical practitioners have of it is limited. Via *Diagnostic and Therapeutical Aspects of Lymphedema* Damstra seeks to inform his colleagues and fill in the gaps of knowledge which are present at the time of writing. Besides this, the thesis is also written to gain him a PhD and it precedes a public defense of it some weeks after its publishing date.

To whom: Damstra's most important target audience is fellow experts, lymph specialists and other medical staff such as General Practitioners. In a wider sense, to anyone who is in contact with people who suffer from the conditions he mentions in his thesis. Besides the experts in the medical field it is also meant for those with a smaller amount of medical knowledge but who are interested in lymphedema, often patients themselves or their friends and relatives. Finally, he writes for those who can grant or deny him his PhD but this is more of a side effect. By proving his expertise in the field via a dissertation he automatically puts himself in a position of receiving a PhD. However, nowhere in the text is this made explicit. His personal gains are preceded by informing his audience and therefore helping others which all befits his image as an expert. In the following chapter, prior to each translation, the target audience will be analyzed in more detail, mentioning their pre-knowledge, age, etcetera, while at the same time using a more defined translation assignment.

When: In 2009 when there is a growing interest in lymphedema in the Netherlands as well as outside the Netherlands. This is mainly because of the dramatic increase of cancer patients every year. Several forms of cancer and several treatments can cause lymphedema. During surgery, especially in cases of breast cancer, lymph glands may be damaged or removed. Because of this, the balance in the lymphatic system is disturbed and approximately 350,000 people, including cancer patients, suffer from lymphedema.

Where: In Drachten where the SLCN and the Nij Smellinghe hospital are located. Damstra is an active practitioner at the Nij Smellinghe hospital, which has a special ward for Lymphedema. This hospital, besides treating patients, also provides courses to physiotherapists, bandagers and other medical staff on different levels. The courses range from basic training to trainings especially designed for specialist. Not only do those courses take place in Drachten but also in Arnhem and Amersfoort for instance. It is likely that Damstra's dissertation will find its place in the recommended literature of such studies. Finally, Drachten is also where the defense of Damstra's dissertation will take place.

Why: As has been noted above, there are 350,000 people in the Netherlands who suffer from

lymphedema. With lymphedema on the rise Damstra sets out to inform the public through this dissertation and raise the awareness of his fellow experts. This way, patients can be treated faster and more efficient. In addition to this, the text is also meant to inform other experts about a new method of surgery. Finally, in his dissertation Damstra provides a guideline to set up a multidisciplinary healthcare protocol. More specific to the part that is to be translated Damstra uses the section on anatomy as an introduction to the rest of his dissertation. This way he limits himself to just his field of expertise and introduces the reader to the very basics of lymphedema.

With what function: Damstra uses his dissertation mainly to inform his audience is several ways. By first discussing the anatomy of the lymphatic system, Damstra paints a picture of what is to come further on in his thesis. This way, he invites those who are interested to read on while those who lack interest will stop reading. He also activates the knowledge of the reader which enables him or her to understand the text better. In a broader scope, Damstra uses his dissertation to ensure the quality of a patient’s life and to prevent or limit irreparable abnormalities and complications. It is also a defense of Damstra's dissertation and by successfully defending it earning his PhD.

What does he speak of: Throughout the dissertation Damstra discusses many different topics, all having to do with lymphedema, in a scientific way. He limits himself to this topic to show his expertise in the field. For the purpose of the source text analysis it is also useful to mention that part which is to be translated. In this perspective, then, Damstra writes about the anatomy of the lymphatic system as to introduce the reader to the rest of the text and capture the interest of those readers and inform them.

What does he not speak of: By using and referring to scientific findings, Damstra does not come across as a moralist. He evades this image by not mentioning anything unrelated to the lymphatic system nor does he give his own opinion. In the analyzed part of the dissertation he presents facts only, conforming to the image of Damstra as an expert in the field.

In what order: As this part of the dissertation is mentioned in the introduction, Damstra uses it to create a logical order. It is introductionary to the rest of his thesis and this knowledge needs to be present for anyone who has little knowledge on the topic. His sentences are also constructed in an easy to read manner, beginning with the basics and then moving on to more advanced information. This way he eases the reader into the process. He starts out fairly simple and moves on to more detailed and more difficult matter throughout his dissertation. In addition to this, Damstra slowly

moves the reader into his argument and through this approach he, by the end of the dissertation, convinces the reader of his findings.

Using which non-verbal elements: As mentioned earlier, Damstra only uses facts to shape this part of his thesis. Via this approach he succeeds in creating the impression that he is indeed one of the top experts in the field in the Netherlands when it comes to lymphedema. His use of terms, grammatical structure and phraseology all lead to the impression that the reader is in contact with an author who knows what he is talking about.

With which words: Damstra uses many terms and only explains several of those. This is a strategy which is also mentioned by Sauer, who was mentioned in chapter two. This way, Damstra creates the impression that his readers are knowledgeable when it comes to this topic. By using these words he creates a sort of vacuum in which the initiated knows exactly what he is talking about. For the large majority of people, however, who have little pre-knowledge the text may be difficult to understand. Damstra does reach out to them by easing them into the matter of which he writes. It can be said that Damstra tries to approach multiple audiences at the same time by using seemingly contrasting writing approaches.

In what kind of sentences: The sentences are kept as short as possible. Also, they are mainly terms glued together by fillers. All lead to the impression that the reader is dealing with a text written by an expert but who invites non-experts to read it as well due to the length of the sentences. This latter claim finds its evidence in the fact that the sentences use many repetitions. Where one sentence ends with a term, the other continues in the same trend. For example: “Endothelial lymphatic cells are connected to the surrounding elastic fibres in the extracellular matrix by fibrillar anchoring fibers. These fibers […]” (Damstra, 11) The structure of the sentences follow each other in a logical fashion. Damstra takes the reader by the hand and uses a clear and easy-to-follow approach and structure throughout the text.

With which tone: Damstra has constructed this text in a very factual tone. He uses clear-cut sentences which add to the expert like tone of the text. He does not give his opinion and uses this part only as an outline and introduction to the rest of the text. Although the overall tone of this section is factual it does not come across as didactic even though it is meant to educate the reader on the rest of the dissertation at hand. A reason for this may be found in his mission statement and the mission statement of the publishers, the SLCN. Both he and the SLCN set out to gather all

knowledge that is available concerning lymphedema and to inform not only each other but also the patients and their families. Therefore, although the tone is factual it is also an inviting one.

To what effect: All of the above paragraphs lead to one conclusion: Damstra uses all the previously mentioned approaches to establish and empower his image of an expert in the medical field which specializes in lymphedema.

3.3 Outcomes of Nord's model

Now that all the questions have been answered the source text analysis has been completed. Using the translation assignment in combination with the relation between the source text analysis and the target text's function, the profile of the target text, which is the direct product of the assignment, and the source text are analyzed using the same model and wherever differences appear there are problems to be solved. This model lends itself perfectly for this thesis as a comparison between the target text profile and source text analysis isolate translation relevant source text elements or features with respect to the target text's function. This means that those source text elements which are relevant to the functioning of the target text are highlighted and only in the next step are they considered to be maintained or adapted to the target culture. (238) More specific to the scope of this thesis, the main function of the source text is to inform which goes hand in hand with educating the audience, however this latter takes place on a more secondary level. To achieve the same function and effect in the target texts all functional units that are deployed to achieve those ends should be maintained in the target texts because the function does not change.

3.4 Specialization related to text function

Because the function of the text remains the same, the degree of specialization can be determined. According to Arntz it is now possible to make a distinction in the target text audience that it based purely on the degree of specialization of the source text.

He makes three distinctions in the audience and the target texts to come have been constituted by this theory.

First off, there are introductionary texts which are meant for a large audience that lack prior knowledge. These texts can be found for instance in popular science.

The second group of texts consists of textbooks meant for post-secondary school and higher education; sometimes these are classified according to educational levels.

The final group is made up of scientific articles from professional magazines. (In Naaijkens, 241)

Using Arntz's distinction it is possible to apply a functional pragmatic text analysis such as Nord's to both the source text and the target text and it can be used to systematize the numerous and difficult to define factors. According to Nord, the most common of these are:

> toegankelijkheid van het thema, omvang en complexiteit van de inhoud, omvang van de veronderstelde kennis resp. redundantiegraad, stringentie van de opbouw (bv. met betrekking tot de thema-rhema-progressie), hoeveelheid van kenmerken die het begrip vergemakkelijken [... en] hoeveelheid en soort non-verbale elementen (met inbegrip van de layout). (241)

When all of these factors are clarified and put into practice by translation strategies the translation process will be completed much faster and smoother than if there were a lack of an approach plan. In other words, the more the translator knows about the situation of the source text the smaller the difficulties will be. The same goes for the assignment, the more the client explains his specific wishes the easier it is for the translator to go about the translation process as the latter has a better idea of the outcome than if the assignment was unclear or simply missing. This is not an uncommon feature as translators are often told to 'just translate' a text. All in all, it can be said that the more a translator knows about a specific translation, such as the cultural background, the assignment and all other information regarding it, the easier it will be to translate a text. For the structure of this thesis the assignment for each translation will be mentioned in chapter four respectively. For now, an analysis based on the answering the questions of Nord's analysis model of the source text, mentioned earlier, will suffice. The source text itself can be found in the appendix section as appendix A.

3.5 Conclusion

By now, many variables that shape the text have already been taken into account but it can be taken one step further by applying Chesterman's 1998 variables proposal. This way it is possible to make clear distinctions between the differences in the target texts that sprout from the different audiences of the target texts. These differences can provide guidelines not only for the beginning medical translator but also for translators in general as a more concrete approach to the three kinds of audiences are hardly existent in translation literature. The next chapter will discuss the model and will also contain the application of the model on the translations.

Chapter 4: Target text analyses

4.1 *Introduction*

Before the translation process can take place it is useful, if not mandatory, to make a target text analysis. The reason for this lies in the fact that specification of the outcome of the text is needed for both the client and the translator in order to reach a product both parties are content with. Though it sounds easy to anyone who is not involved in the translation or localization business, to ‘just translate’ a text without any agreements beforehand it is highly problematic beforehand or during the translation process. In the article “Causes, Translations, Effects”, written in 1998 by Andrew Chesterman, Chesterman explains the reason behind this thought. He mentions that if a person goes to a store to buy a chair, the buyer knows exactly which model he or she wants and the very same goes for a translation as there is no general chair or translation but only specific kinds exist. He goes on to say:

> [b]oth clients and translators are naïve if they assume that they can speak of “a translation” without specifying what kind of translation they have in mind. Of course, professional translators often assume that they “know” what kind of translation is wanted, and clients assume that translators know this; but this assumption is not always correct, and seldom made explicit.” (202)

To create a high-quality product that both the translator and the client feel satisfied with several variables concerning the effect and outcome of the translation have to be specified. In the same article, Chesterman proposes a typology that “has both theoretical and practical use”. (228) He gives a “set of default values" that "would this correspond to what we might call the *default prototype* concept of a translation, in the minds of most clients or readers of translations.” (227) He distinguishes the main “four sets of variables A-D: A) Equivalence variables (having to do with the relation between source text and target text) B) Target-language variables (having to do with the style of the target text) C) Translator variables D) Special situational variables”. (210) These variables be subdivided into parameters and every translation can be discussed via these. For the full explanation of the possibilities of each variable I would like to refer to the original text as discussing all the possibilities lies beyond the focus of this thesis. The three translations which are presented further on in this thesis are no different and in this chapter the strategies and thoughts behind each of them will be made concrete and explained, using this theoretic model as well as the potential instructions given by an imaginary client. All translations have been constructed with latter thought in mind as all of them can be considered potential assignments that could be issued by for instance a hospital or other medical institute.

In order to compare and contrast the outcomes of the equivalence variables per translation that will either have changed or remained the same, in whichever case further insight in guidelines for the upcoming medical translator can be distilled, first off, the variables of the source text have to be determined in order to make any claims regarding the equivalence variables whatsoever.
It is relevant to know that the variables for each translation are also relevant for the main source behind each translation.
The main source behind the translations, a text from comparative Dutch corpora, will also be mentioned as it is interesting to see how it reaches out to the intended audience. The clues provided from these analyses will also be of influence for the translations.
Each translation will be introduced by an analysis of the target audience, the most important literature that was used, the imaginary function and goal of the source text and a short overview of the main strategies as deducted from chapter two that were used during the translation process. All this information will prove a fertile soil for an examination of the equivalence variables. When these variables are compared intertextually, guidelines for the upcoming medical translator will emerge for each of the main three types of target audience a medical text and its translation can target.

4.2 Source text: An overview of strategies used and purpose of the translation.

Although the previous chapter has dealt in detail with the target audience, its function and goal and several of the strategies the author, Robert J. Damstra, used to achieve the function and goal, a short recap of those points will be given hereunder. This is done in order to refresh the main points that are relevant for the purpose of this chapter. The part that deals with the main literature will be left out as it is not relevant for the analysis.

Target audience: In his book *Diagnostic and Therapeutical Aspects of Lymphedema*, Robert J. Damstra targets fellow medical experts who have an understanding of the lymphatic system. He targets direct and indirect colleagues, those who work in the same field. However, most prominently, he targets his colleagues abroad because his dissertation in written in English and he himself is a native speaker of Dutch. Yet, his fellow Dutch medical experts will also be able to read the book and understand its content because it is written in a, for experts, straightforward, easy to understand, manner. Also, the occasional personally interested person will read this book, but he or she needs a lot of pre knowledge in order to understand its content.

Function and goal: To inform as it explains extensively the anatomy of the lymphatic system and also how its separate elements function. Besides being informative, the source text also has an educational tone as the information given in the text is new to many readers. The main function of the source text is to inform fellow colleagues around the globe of new findings in the field dealing with lymphedema. The part of the anatomy outlines Damstra's expertise in the field and sets the stage for the rest of his dissertation. In his chapter he also explains some of the new elements and therefore also educates his readers on the topic at hand.

Strategies:
Several strategies have been adopted when this book was written. Apart from indicating the target audience and the tone that conforms best to that ideal, other strategies have also been deployed. A number of abbreviations have been used. The phraseology, idiom and syntax all co-operate to achieve a text that targets fellow experts. A reader which does not comply with the target audience Damstra had in mind will experience a lot of difficulty comprehending the text. A certain level of prior and specialized knowledge is needed to understand the book. Think, for example, of the long sentences Damstra uses that are filled with jargon and are almost nowhere accompanied by explanations. This strategy automatically rules out most people and will successfully target the right target audience that has been established beforehand.

4.3 Translation 1: Laymen: An overview of strategies used and purpose of the translation.
There will always be a need to inform the patient and the family of the patient who have little to no foreknowledge on the topic whatsoever there is a need for a translation fitting their specific situation.

Target audience:
The target audience for this translation is quite a variety of people. They can be filed in two ways:

The first part of the audience is native Dutch children entering, or just having entered, puberty. Their age is specified between ten and twelve. Their fluency of Dutch is set at an average level; they still have a lot to learn. They have not yet attended any classes of biology or other courses that have to do with human anatomy or physiology. They have little prior knowledge of the topic whatsoever, apart from one or two things their parents, siblings or older friends might have told them.

The other target audience consists of immigrants who hardly speak Dutch. They range in the age

group between thirty and forty. When visiting the general physician (GP) they take one of their kids along to vouch as a translator between the GP and the patient. Their knowledge of human physiology and anatomy is still limited due to the language barrier. However, they have attended some classes on biology growing up so it lies dormant somewhere at the back of their mind. However, the language barrier severely limits their active understanding.

One thing they have in common is that in all cases they can be either male or female readers. No attention has been paid to the gender of the readers as the topic is gender neutral.

Function and goal:
The audience does not need to be educated, it only wants and needs to be informed. To achieve this end, several strategies have been applied to make the text more comprehendible to a larger audience. For instance, sentences will be shortened or split up into two or more sentences. Terms will be explained in the text itself. The content is presented matter-of-factly.

Literature:
The main sources for this translation are the KWF Kankerbestrijding's leaflet *Lymfoedeem bij kanker* and Grégoire, L. et al.'s *Anatomie en fysiologie van de mens*. These sources have been chosen due to their strategies, which, as will be mentioned in the paragraph concerning the strategies, is equal to the strategy of this translation. The first text targets an audience with little to no prior knowledge. Because this also applies to the translation several strategies have been subtracted from looking closely at the text and imitating those strategies. They are mentioned below. The second text has been chosen as it is a book that can be purchased easily. It is an introduction to basic biology, set at secondary school level. It provides a lot of information around the topic of lymphatics and therefore is a suitable second option.

Strategies:
Shortening sentences where necessary.
Whenever a term occurs, the definition will be given in full. This will happen either in the sentence itself or the sentence following the term. Many of the terms will be cut from the text as not to impose educative.
Also, the text will be given more stylistic properties, for instance by adding linkers and other such instruments to create a text that reads quite pleasantly.

Equivalence variables based on the translation for laymen

A1) Function

The function of the text has shifted dramatically. The purpose of the translation is not so much to educate its audience as it is to present the content in a matter-of-factly manner. This translation is more of an adaptation as it strives for acceptability rather than adequacy. It was therefore also the most difficult text to translate and to make an even bolder claim: the source text never was meant to be translated or adapted to reach out to laymen. It is also highly unlikely that such a text would be published as the end product seems rather alienated because of the conflicting content for the target audience. The content does not fit it with the target audience at any level whatsoever.

A2) Content

In this translation, there has been a shift in content. Although all content, with the exclusion of one or two abbreviations, has remained in the translation, more text has been added. This has been done in order to clarify or explain certain terms that otherwise would have been unclear to the target audience. The translated text is of an exegetic nature, therefore being closer to an adaptation rather than a translation.

A3) Form

The form of the translated text has remained the same; there is no noticeable shift in the text-type.

A4) Style

Opposite to the form which has not changed, the style of the text has been changed dramatically. Long sentences have been divided into one or two shorter sentences. The word order has often been changed in order to make the sentence more comprehendible. The grammar and syntax have also been altered to achieve this effect. Several terms have been explained in the text itself, whereas this has not been done in the source text. This has either been done by integrating the meaning in the same sentence or starting a new sentence which addresses the definition of the term. Other terms have been replaced with their definition as the target audience does not need to know every term available in the field. The only symbol that occurs in the text has been replaced by its meaning written in full. All in all, it can be said that the whole text has been reduced in difficulty and made more available to a wider audience. It is exemplary to what the purpose of any translation for laymen should be.

A5) Source-text revision

As the source text was of a high standard, no additional revision was needed. There were no factual errors to be spotted or changed.

A6) Status

The status of this translation can be defined as derived. Although this text could be published to as

many people, if not more seeing the broader audience this text targets, it is unlikely that the status will remain the same because it is unlikely for this text to be published due to its awkwardness. As has been mentioned before, it is unlikely that this text will be read by the target audience for even though it is translated in their native language, there are still many indicators that the academic level of the text surpasses its audience. This will undoubtedly lead to a negative effect on the translation's status and will not be made as readily available to the public as the original text, or any of the other translations. It would be best to completely dissect the source text and write it anew with the laymen in mind, instead of translation an expert-to-expert text and then downgrading it to where a layman would be comfortable with reading it. The content of the source text can simply not be deducted as much as the tone, grammar and all other language instruments can be. Therefore, this translation, or adaptation, is unlikely to serve its purpose and goal sufficiently enough to be published.

Target-language variables

B1) Acceptability

As has been discussed in A6, the acceptability of the translation has changed radically from that of the source text. Most readers will find that this text seems odd. Maybe they will not notice so much it is a translation in itself but will jump to that conclusion by finding the text at hand rather peculiar. The text does not read very fluent and several sentences will seem odd considering where they are surface. Again, this has to do with the downgrading of the source text, which will inevitably lead to an end product that does not seem to fit it with other domestic texts in that field due to its poor stylistically quality.

B2) Localized or not?

This translation has not been adapted to local norms and therefore has not been localized. Seeing the content of the book, this feature is unnecessary, as it deals with a universal topic.

B3) Matched or not?

This translation has not been matched in order to fit in with other texts.

Translator variables

C1) Visibility

The translator is visible in this text as there are many explanatory notes indicating and justifying choices in the target text. Most likely, if the book were actually to be translated and published, there would be a commentary or preface by the translator.

C2) Individual or team?

The translation has been an individual one as there are no indications within the text than other

translators have had their share in it. This can usually be spotted by a change of tone or style. This is not apparent in the translation.

C3) Native speaker of the target or source language, or neither

The translator is a native speaker of the target language and close to near-native in the source language.

C4) Professional or amateur?

This text has been constructed in a professional manner. The explanatory notes, and the source of these, indicate that the translator had an end product in mind that would be of a high quality. By using appropriate sources this end has been achieved. Also, by taking a look at the whole text, there are indicators that the translator has had sufficient background and world knowledge to create a proper translation.

Special situational variables

D1) Space

The factor space has not been taken into account as it was not necessary to do so. For example, the layout was unrestricted and the same goes for the number of pages. This text has taken up a bit more space however than the source text for two reasons. The first is that the English language is more compressed than the Dutch language. Much more can be said in English in the same amount of space than in Dutch. The second reason why the translation takes up more space is because several terms needed clarification and explanatory sentences have been added throughout the translation.

D2) Medium

The medium has remained the same. Both the source text and target text are written texts.

D3) Time

To most readers, this translation does not indicate a lack of sufficient time spent on creating the end product. To some it may, but in those cases the awkwardness of the topic in combination with the translating and downgrading of the source text have risen to the surface, cloaked by the factor time.

4.4 Translation 2: Students: An overview of strategies used and purpose of the translation.

As educating the next generation of doctors, physiotherapists and medical staff in general is of utmost importance, it is easy to indicate the need for a translation that is conform their specific knowledge and level of intelligence.

Target audience:

The target audience of this translation can also be divided twofold.

The majority of the audience will consist of native Dutch students who follow a study which has to do with the human bodily functions. Take, for instance, biologists and physiotherapists. They range in the age of seventeen and twenty. They are in the first or second year of their education. If they are more advanced they should read the expert like text as it suits their specific needs better.

The second, smaller, part of the audience will consist of interested native Dutch laymen who are interested in the anatomy of the human body, with a special interest in either the lymphatic system or the immune system as a whole. Maybe they themselves or a friend or relative of theirs suffers from lymph edema. They could be subscribers of the *Lymfologica* magazine, which targets this audience. They can vary greatly in age, but the majority of them will be between the age of twenty-five and sixty-five.

Whichever is the case, the gender of the reader does not play a role in the translation as the text still remains gender neutral.

Function and goal:
As this text is mainly intended for students, the function and goal of the text is to be educational. This has been achieved by a number of strategies. Terms have been explained in brackets. Some sentences have been shortened or split up to make them more comprehensible. Abbreviations have been written in full. Because the nature of the target text is to inform and to educate, the style and tone of the text have been changed accordingly. All elements in this translation will serve the purpose of being educational first and informative second.

Literature:
The main source for this translation is *Anatomie en fysiologie van de mens,* written by Grégoire, L. et al. This book is mandatory for much of the students who follow a study that deals with the human body at the Haagse Hogeschool, for instance the Voeding en Diëtetiek department. It targets the above mentioned target audience. The students, that is, not the interested laymen, although it does not necessarily exclude them. The second book that was used quite extensively for this translation is the *Coëlho zakwoordenboek der geneeskunde,* which is also a mandatory purchase for the students mentioned earlier.

Strategies:
When sentences run very long, say twenty words or more, they will be divided into two sentences, using linkers to create proper sentences.
Terms will be introduced according to the theme-rhema construction as proposed by J. Sauer, mentioned in a previous chapter of this thesis.
Most terms will have their explanation following the term between brackets. On one or two occasions the term has been defined in the next sentence for a smoother reading experience.
These strategies have been taken from the *Anatomie en fysiologie van de mens* book.

Equivalence variables based on the translation for students
A1) Function
The function of this translation has shifted from the function of the source text. This translation focuses more on the educational aspect than the informative aspect, although they go hand-in-hand with each other. This change can be found in a number of strategies applied during the translation process. For instance, several terms have their definition explained in brackets. Several sentences have also been split up to make the content more comprehensible. Some terms have been explained in sentences following the first occurrence of the word. This approach leads to a text than educates more than in informs. Because this translation is intended for students, it is a proper approach.
A2) Content
The content of this translation is a combination of several options given by Chesterman. The most obvious is the one of added content, in the form of explanations of terms in brackets and abbreviations written in full. All of the original text can be traced back too. There are no reductions of passages and no omissions of words or sentences. The content is the same, except for several explanatory elements.
A3) Form
The text-types are the same. Both this translation and the source text can be filed under the same genre, with a slight shift in function.
A4) Style
The style of the target text is different from that of the source text. This is apparent after just a quick overview of the text. Because of the difference between the functions of the texts and the target audience, the style automatically changes as well. The strategies that have been mentioned in A1 account for this as they have lead to a text that is more educational in tone and style than the original text, which focuses more on being informational. According to some, then, this translation would be more of an adaptation because of the change in function, style and tone. However, be it a

translation or an adaptation, fact is that end product is a high-quality text suitable for publishing.
A5) Source-text revision
As the source text was of a high standard, no additional revision was needed. There were no factual errors to be spotted or changed.
A6) Status
The status of this translation has changed slightly. According to Chesterman's article, this translation can be filed under derived. The most important reason behind this change is the target audience the text addresses. As the targeted audience is larger than that of the source text the status changes too.

Target-language variables
B1) Acceptability
The translation forehand fits in the first of possible options Chesterman presents: "Good native style". (223) The text is written in a fluent and readable manner, although some editing may still be applied before publishing. The reason behind this is that the text has been translated by a native speaker of the target language and of the slight change in function. The latter reason provided little difficulty in creating a high-quality translation as only a little bit of downgrading of the source text after translation was needed. The downgrading could be done rather easily by using brackets or new sentences so that the text suffered little damage when it came to readability.
B2) Localized or not?
This translation has not been localized, rather, it is a universal concept that is mentioned and the text was free of any cultural specific items.
B3) Matched or not?
This translation has not specifically been matched to other texts. However, as many terms have been deducted from domestic literature there will undoubtedly be more resemblance in tone, style and words to one text than to another. This has not been done on purpose and has most likely happened unconsciously.

Translator variables
C1) Visibility
In this text, the translator is very visible. The text is accompanied by many notes and explanations as to why certain changes have been made and where a specific term and its explanation have been found. If this book were to be published, these explanatory notes will likely be left out. However, in that case there will likely be a preface by the translator giving some insight in his approach to the

translation.

C2) Individual or team?

The translation has been done by one translator. The evidence for this lies in the tone and style that remain the same throughout the text.

C3) Native speaker of the target or source language, or neither

The text has been translated by a native speaker of the target language.

C4) Professional or amateur?

This translation has most likely been done by a beginning professional. The explanatory notes are evidence for this. It is clear that the translator is familiar with the content at hand. However, stylistically the text could be a bit richer, more fluent.

Special situational variables

D1) Space

This translation takes up a bit more space than the source text, due to several explanatory words and sentences.

D2) Medium

The medium has remained the same.

D3) Time

The time taken for the translation seems to be sufficient. There are no indications that the translation has been made in a hurry.

4.5 Translation 3: Experts: An overview of strategies used and purpose of the translation.

Finally, expert to expert communication is an everyday happening in hospitals, practices and other medical institutions.

Target audience:

The audience for this translation can be defined as native Dutch speakers who have specialized themselves in the medical field. Their prior knowledge is extensive; most of them are active in professions with a direct link to lymphatics, for instance dermatologists and physiotherapists. They are between twenty-one and sixty-five years old. Basically, there are the same people Robert J. Damstra targets with his source text, with the only exception being that the target audience for this translation speaks Dutch instead of English.

Function and goal:

As this text will be a direct translation, the target audience and the function of the translation are the same as those of the source text. Therefore, the function and goal of this translation is to inform, as the text explains extensively the anatomy of the lymphatic system and also how its separate elements function. Besides being informative, the source text also has an educational tone as some of the information given in the text is new to many readers.

Literature:
The main source for this translation was *Oedeem en Oedeemtherapie.* The choice for this text has been the back cover of the book which explains that the book is meant especially for "fysiotherapeuten, huidtherapeuten, sportmasseurs, dermatologen, flebologen en studenten fysiotherapie en huidtherapie." (Verdonk, H.P.M.)

Strategies:
The main strategy behind this translation is to imitate and copy the source text as much as possible when it comes to stylistic features, phraseology, grammar and syntax. The only changes that have been made were made according to chapter two, which discussed several guidelines for the medical writer and translator respectively. An example of this is the way in which abbreviations are explained; the first time they occur they should be spelled out in full, with the abbreviation between brackets. From then on the abbreviation can be used.

Equivalence variables based on translation for experts
A1) Function
The function of this translation is the same as that of the source text. Both try to inform first and educate second.
A2) Content
All content of the source text has been kept, only one or two exegetics have been applied in the cases of abbreviations.
A3) Form
The form and text-type have remained the same.
A4) Style
The style has also been copied to the fullest extent.
A5) Source-text revision
As has been mentioned in all A5's so far, the source text was of a high standard, so no additional revision was needed. There were no factual errors to be spotted or changed.

A6) Status
As this is a direct translation, the status is derived. No noticeable differences in status occur in the translation.

Target-language variables
B1) Acceptability
For this translation, the second point Chesterman describes fits the bill. This translation is one hundred percent native style. It conforms to the target text-type norms.
B2) Localized or not?
The translation has not been localized as the source text itself was free of any cultural specific items.
B3) Matched or not?
The translation has not actively been matched to other corpora. However, on a subconscious level it is likely that this text bears much resemblance to a source that has been used for research.

Translator variables
C1) Visibility
The translator is visible in this text. This is apparent throughout the text by the explanatory notes that state sources for the terms. If this text were to be published, these notes would be removed but would be replaced by a preface dealing with the thought of the translator concerning the translation process and choices accompanying it.
C2) Individual or team?
This translation has been made by one translator. The steadiness of the style and tone give no room for other translators.
C3) Native speaker of the target or source language, or neither
The text has been translated by a native speaker of the target language who seems to master the source language adequately.
C4) Professional or amateur?
The evidence of world knowledge and knowledge more specific to the topic at hand, in combination with proper documentation for terms and explanations for certain changes in the text all lead to the image of a professional translator, or at least one that is proficient at it. However, there will undoubtedly be some instances where the text could have been richer in a stylistic aspect.

Special situational variables

D1) Space

The translation takes up slightly more space than the source text because Dutch is a less compressed language than English is. Also, due to one or two abbreviations written in full several more words will be present in the target text.

D2) Medium

The medium has remained the same.

D3) Time

Seeing the quality of the translation, it can be said that enough time has been spent on the translation.

The question that may arise is: what does this all mean for the beginning medical translator? Chesterman's model is not only useful in hindsight but also lets itself be applicable for other, more practical use. Having set the values for each translation, general hypotheses concerning the types of translation can be proposed. More interesting for the medical translator is the advice that can be formulated from these hypotheses.

For the first translation, the hypothesis sounds like this: I hypothesize that this translation is unsuitable for publishing due to the shift in variable B1 that dealt with acceptability. A second hypothesis: I also hypothesize that this effect came forth from the downgrading of the source text because of the target audience kept in mind during the translation process. The advice concerning these hypotheses would be to decline the translation assignment because the end product will not be satisfactory.

For translation two I hypothesize that the change in A1 will also automatically lead to a shift in A4, as the function of a translation has direct consequences for the style of the text. The translator should be well aware of this and if he or she does not know how to implement this change in tone, a book covering this topic should be read and its content mastered. For instance, *Style in Fiction,* written by Short & Leech, lends itself perfectly for this matter.

For the third translation the hypothesis may sound the following: I hypothesize that in case of a direct translation, A6, the status of the text, will remain the same. The advice stemming forth could be that the effect of the source text on the reader should be the same as that of the target text on the reader.

A more general hypothesis for all the translations together can sound like this: I hypothesize that a shortcoming in feature D3, time will directly influence the quality of the end product in a negative way, due to the many complications a medical translation can provide. Therefore, if the translator has insufficient time for a translation, the offer should be declined.

4.6 Conclusion

The outcome of these hypotheses may lead to a typology targeted directly at certain medical translations. However, basing a complete typology on only three translations of one source text is inadequate. It does pave the way for further research and if several medical translators were to analyze their end products this way, a proper typology concerning medical translations could be formulated. This would greatly benefit medical translators around the globe and would be of great guidance and value to the beginning medical translator.

Chapter 5: Practicality of the guidelines

5.1 Introduction

The previous chapter dealt with analysis of the target texts and also incorporated the strategies that would be applied during the translation of an excerpt of Robert Damstra's *Diagnostic and Therapeutical Aspects of Lymphedema.* During the three translation processes of that excerpt the strategies from chapter four have been combined with the guidelines that chapter two presented in order to judge the latter's usefulness. (The source text can be found in appendix A while the three translations can be found in appendix B.) However, the scale of this research is very limited and therefore the results described later on may not hold true for all medical texts. For instance, some guidelines which lacked practicality for these translations could prove to be of great importance in other cases. Because of the limited range these guidelines have been applied to the results below are first and foremost indications. The results are sometimes personal and therefore vary between translators, for instance the active command of the source language and target language. Differences between translators can cause differences in the end product's quality. However, the guidelines and strategies are meant to be aid the translator and the outcomes of their usefulness for the translations in this thesis are by no means final. Regardless the small extent to which this research has been done, the outcomes are still a first step to creating the first practical set of guidelines for the beginner medical translator and, as has been shown in chapter one, there is a need for such an instrument.

The usefulness of the guidelines for Damstra's text, and hopefully medical texts in general, have been tested in practice. During the translation process the guidelines and strategies were constantly reviewed and applied wherever possible. The process of reviewing took place even before the translations were made as several guidelines apply to the translator's active command of the source language and target language. Other guidelines and moreover the strategies mentioned in the previous chapter, such as the avoidance of abbreviations and shortening of sentences were applied when an abbreviation or a long sentence was found. Finally, after finishing the translations, the more general applicable guideline of 'critically reviewing the text' was applied. Because of this distinction of applicability during different stages of the translation process, the guidelines will be filed accordingly. Especially when Christiane Nord's notion, described in chapter three, of competency is taken into account. If the translator's understanding of the text at hand is far insufficient or lacks an active command of either of both the source language and target language the translation assignment should be turned down. This in order to prevent low quality translations.

In order to achieve a high-quality translation, the following guidelines will, in addition to what has been mentioned earlier, also be filed according to the target audience because different conditions apply for laymen than for students or experts. For experts, long sentences do not pose to be problematic while in the case of laymen long sentences make the text incomprehensible. In several cases, some guidelines and strategies apply to more than one audience, maybe even all if appropriate. The following overview has been based firstly on what has been found in medical translation theory but secondly, and more importantly, on the usefulness of the guidelines and strategies when they were practically applied in the translation process of Robert Damstra's source text. Now that the main aspects of the division of the guidelines have been discussed, the guidelines and strategies themselves will be analyzed according to their usefulness in order to create a sort of checklist for the beginner medical translator. One final distinction has been made in the guidelines and strategies: the distinction between general guidelines and more target audience related guidelines. The general guidelines will be dealt with first as they apply to all three translations, even more so any translation whatsoever. The more specific guidelines will be analyzed and explained when they were used in the audience of interest. This will point out the different approaches and strategies can best be used for a certain audience.

5.2 General Guidelines

Before

The medical translator should fully understand the linguistic, medical, social, and cultural contexts of their field. So not only should the translator understand the source text and the assignment of the client, the translator should also understand the source culture and habitat
This guideline is relevant for all translations in general. Even if the translator understands the source text and the assignment, the translation's quality can still be severely affected by a lack of understanding concerning the source culture. If a translator is not aware of the conditions, customs and habits of that culture, in this case assuming it is the medical field, it will surface in the end product. A lack of understanding will result in a lack of quality as the text will seem alien compared to text that function properly in the source culture. It is therefore important as a beginner medical translator to educate himself on the customs and habits of the source culture's medical field as this will automatically translate into the end product's quality.

The translator should have an active command of the source language as well as the target language and preferably be native. No specialized knowledge is needed other than the scientific subject matter of the translation
Again, this is a general guideline which also applies to medical translation. An active command of both languages is essential for a smooth translation process. The better or more actively a translator controls his languages the faster the process will go with few errors on the way. The second part of the guideline may seem in contrast with this as it sounds as if anyone with a dictionary can translate. Although this may be true, the translation of a person with only a passive language command will be poorer at least stylistically when compared to a translation made by a translator who has an active command of both the source language and the target language. This is caused by multiple factors, such as the limited amount of words a dictionary covers in a specialized setting, as has been explained in previous chapters. Any translator with an active command can translate any text even if he is not submerged in the topic as long as he writes stylistically rich, does extensive research and is willing to go the extra mile to accomplish a high-quality end product. This brings hope to the beginner medical translator, who can now relax with this idea in mind.

The translator should not overestimate himself
This guideline involves humility on part of the translator as well an understanding of his limitations. For the translator who attended multiple classes on translation that involve practical assignments, such as translating itself, one's own limitations concerning linguistic and stylistic mastery as well as being able to cope with deadlines will become clear. As a beginner but also as an established translator this means that too specialized a text in a field that the translator has no affiliation with

whatsoever should be turned down. It is important for the translator to realize there is no shame in acknowledging a lack of mastery compared to delivering translations of poor quality. The latter will hurt the status of the translator for a long time to come while turning down an assignment too difficult will not cause long term damage on the translator's career. It is possible that this may take a while to admit as well as to realize what level a translator is currently on but as time goes by and experience grows it will become easier to know what can and cannot be achieved.

There should be enough time to create a high-quality translation
This guideline has two targets. The first target is the employer who gives the translation assignment and, with the scope of this thesis in mind, it suffices to say that short deadlines will lead to end product of poorer quality. For the translator, this means that the deadline should be set at a date which is achievable. Too short will lead to poor quality as stress on the translator's side automatically affects the translation in a negative way. If the deadline is too short, the translator should show competency and turn down the assignment. Too long a deadline could cause the translator to slack off, also affecting the translation in a negative way. If the deadline given is too long, the translator should either make note of this, or turn the assignment in earlier. For the translator then, the deadline should be long enough to feel at ease and short enough to motivate him to give it his all. Clear communication between both parties is key when it comes to establishing a deadline which works for both the employer and translator. A good deadline will lead to a high-quality end product.

Personal interest in the text almost automatically increases the text’s quality
As a translator of general texts, many topics will be encountered and some are closer to personal interest than others. For medical translators this lies a bit differently. Choosing to specialize oneself will automatically lead to a limitation of the variety of topics that will be encountered. The medical field is one of wide differentiation all topics will at least have to do with the issue that links them all together: health. So if a translator's general interest lies in that field, becoming a specialized medical translator could be the perfect career. Being interested in a certain topic will have a positive result in two ways, or a combination of them. The first is that interest in a field leads to more preknowledge as the translator will immerse himself in the surrounding literature. Also, the learning process goes faster on a topic where one is already interested in. This will cut back on the time that is needed for the translation. The second benefit is closely related to that, namely interest in a topic will also speed up the process of looking up things as the translator knows where to look. Maybe he is part of a forum which deals with the topic at hand. Simply said, a topic of relevant interest will motivate

the translator to do a better and faster job.

There is no set price for a translation, but too cheap is almost certainly killing
and
Enough money should be spent on a high-quality translation
Although theses guidelines are of more use for the company which delivers the assignment that it is to the translator himself, they do contain a message for the latter. For the purpose of this thesis, only the consequences for the translator will be discussed. For medical translations, as has been covered by Simon Andriesen in chapter two, the price per word is set at "$0.25 or so per word". (Andriesen, 158) It is important to ask for this amount, although a slight deviation is also possible, in a quotation. A price way below that amount could lead to suspicion on the employer's side. A price too high will lead to no assignments as cheaper options can easily be found. The average price mentioned earlier is a good starting point, but, as a beginner, a price somewhat below that amount, say $0.21 can lead to more assignments, more satisfied customers and thus more business. Taking the local and biggest competition into account the best price can be set for any beginner's specific situation.

During
Avoid noun stacking wherever possible
This guideline targets the author of medical texts more than it does the medical translator. However, it is an important aspect to take into account. If a combination of nouns confuses the translator it will also confuse the reader. Therefore, the stacking of nouns should be avoided if possible in the target text. Not only does this cover the original noun stacking from the text but also any stacking of nouns the translator may accidentally have added. During the translation process this aspect should be kept in mind as noun stacking will affect the comprehension of the reader and thus affect the end product's quality in a negative way.

Avoid ambiguity
This guideline has the previous guideline at its foundation. Noun stacking will irrevocably cause ambiguity and thus confusion on the reader's or translator's part. For the latter it means that he has to make his own interpretation of a combination of nouns and convey them correctly to the target audience without noun stacking. Dutch spelling takes away most noun stacking and thus ambiguity but there are some cases when the source text's author intentionally chose to be ambiguous and in these cases it is used as an instrument to convey a message. In these instances the translator should

pick up on this and maintain the ambiguity. This guideline should be changed into 'avoid unnecessary ambiguity' in order to be truly effective.

Avoid vagueness

Avoiding vagueness is also closely related to the two previously mentioned guidelines. Noun stacking can lead to ambiguity as well as vagueness. Unwanted vagueness will lead to a more difficult apprehension of a text. This will have a negative effect on the quality. For the translator it is important to clarify what is meant, either in the text itself, footnotes or via explanatory comments. In other cases vagueness can be used purposefully and the translator should maintain it in the end product. Therefore, it is better to change this guideline into: avoid unnecessary vagueness.

The translator should use the correct spelling of a word

This guideline is as obvious as it is important. Correct spelling is the icing on the cake and chapter two explained this in detail. For now it suffices to say that per translation different sources have been used in order to have uniform and correct spelling throughout the translations. Instead of just using a dictionary other references have also been used. These sources have been chosen according to other texts in the medical field targeted at that same audience. This proves to be an efficient and helpful strategy in any situation where a normal dictionary fails to help out. This strategy works in general as well as for more specialized texts.

The dictionary can not always provide the correct spelling

This guideline is closely related to the previous one. Although chapter two described the pros and cons of dictionaries the basic principle is this: dictionaries are limited in covering all words of a certain topic and are vastly outdated. Therefore it is important to use the dictionary in combination with other sources of reference which can clarify the correct spelling of a word. Per translation the different sources that were used will be described.

No wrongly placed decimals

This guideline is straightforward and could be placed under 'critically reviewing the text'. However, in medical texts the placing of decimals should be done with utmost care due to the consequences discussed in an earlier chapter. This is not only important in medical texts but also in, say, texts that deal with construction. Small mistakes can lead up to grave errors in the manufacturing process and be costly to repair in hindsight. It is therefore necessary that the translator is aware of the necessity of correctly placed decimals during the translation process and should check them at least once

more in a final review of the translation.

When using abbreviations, the word or words should be written in full at lease once
Not every book is accompanied by an overview of the main abbreviations used in the text. Furthermore, many magazine articles lack such explanations whatsoever because the author assumes that the reader knows what the abbreviation stands for. However, this is not necessarily true and using abbreviations without their full spelling should therefore be avoided. Other abbreviations mean different things in different situations which can also be problematic, especially if a reader is new to the field. For more in depth information of how abbreviations were dealt with the explanations per translation will go into that matter. Nonetheless, this is an important guideline which enhances the quality of a translation for any audience in any text.

After
The translator should keep the format of the end product in mind
As has been mentioned in an earlier part of the thesis, English is a compact language. Most other European languages take up more space to convey the same message. It is then important for the translator to account for this if the employer fails to do so. More importantly, the editor and those who are involved with the final lay out of the text in a book or magazine should be notified of this condition. If the translator knows that there is not enough room to incorporate all the source text information, the employer should be contacted and through discussion should come to a solution. Chances are that this guideline is more important to editors than it is to translators but in any case it is an important issue to keep in mind. As the lay out has not been a problem for this thesis's translation it will not be discussed in more detail.

Critically reviewing the text
This final step in the translation process should not be underestimated. Although it is easy to think that what is done is done, it is not in this case. The final review, or even better final reviews, will always point out one of two spelling errors, sentences that should be rephrased and so on. It is by taking distance from the final version of a translation and then coming back that the i's can really be dotted. If a translator cannot review his own work critically enough this should be done by an editor or a colleague. As a beginner who works freelance the latter will often be the case. Though this final step may take a lot of extra time and/or money it truly is worth it as otherwise some errors, maybe even obvious ones, will stay hidden in the text because of the blind spot most people have for their own creations. Having the right connections can help a lot and for the translations of this thesis, this

final step has been performed at least eight times, from which two times either a colleague or a professional from the field of lymphatics have reviewed the text as well. All in all this has lead to an end product of high-quality and therefore should always be done with whatever translation on whatever topic.

5.3 Guidelines specifically designed for laymen

During

Add explanatory comments if necessary

For the translation for laymen additional commentary has been added to the text. This has been done in order to clarify certain terms that they otherwise would not understand. The reason why these explanations have been added to the text itself has been done for the reading experience. Other viable options were the use of footnotes or references to clarification pages, quite possibly an overview of the terms and their definition at the end of the book. However, using any of these options would mean that the reader would constantly have to interrupt his reading to look up certain words. This interferes with a pleasant reading experience and would thus affect the translation negatively. Therefore, the explanations have been added to sentences.

The dictionary can not always provide the correct spelling

and

The translator should use the correct spelling of a word

As has been mentioned earlier, dictionaries can not always provide the right spelling and with this translation this has also been the case a number of times due to the specialized topic of this text. Therefore, other Dutch texts concerning lymphatics targeted at laymen have been used in order to find the correct spelling of a word and create uniformity throughout the translation. The reader has no need for learning all the fancy terms which the experts do understand so it is best to chose sources that do not do so either. In this case, the main sources were the KWF leaflet *Lymfoedeem by kanker* and L. Grégoire's *Anatomie en fysiologie van de mens.* It is important to find the right source of reference in cases where the dictionary falls short; an efficient starting point would be other texts from the target culture which are directed at the same audience the translation is to target.

Simplify

Also, when the option is there it is important to use words that are most familiar to the target audience in order to play into their reality. This will cause them to feel better at home with the text and enjoy it more fully. The translation shows many instances where terms have been simplified

and the phraseology has been adapted to fit in with the reader's level of understanding.

No wrongly placed decimals → avoid unfamiliar symbols

Although the text to be translated did not feature any decimals it did feature a different element to take into account. In this case the use of the symbol 'µm'. Considering the background knowledge of the target audience, it is unlikely they know what this symbol stands for. This, in combination with the function of the text, was reason to omit the symbol altogether and just write it out in full. This way the reader would instantly know what is meant. Therefore, a new guideline can be added to the list: avoid unfamiliar symbols.

When using abbreviations, the word or words should be written in full at lease once → avoid abbreviations if possible

and

Abbreviations which are not commonly used by the medical profession as a whole should be avoided, however obvious they may be to the specialist

These are guidelines that have slightly been changed with the target audience in mind. Instead of using abbreviations it is better to avoid them if possible. Due to the function of the translation there is no need to actively teach the audience and explaining abbreviations would be an example of that. It is best to keep the text straightforward and informative as much as possible. In the case of this source text, where only a few abbreviations have been used without much emphasis being placed on them, the have been eliminated from the translation. However, in those cases where a whole text is based on one term that keeps coming back in its abbreviated form it is best to use the abbreviation followed by an explanation the first time it is used and then use that abbreviation consequently. For instance, if the text is about Manual Lymphatic Drainage only, the abbreviation MLD, which is consistently used in the medical field, can be used accordingly.

Shortening sentences

This is by far the most commonly used strategy throughout this translation. In order to keep the text comprehensible for the target audience, many sentences have been cut into multiple shorter ones as shorter sentences are easier to understand. In the translation itself there are many instances where this strategy has been applied and by analyzing those the effectiveness can be understood.

Simplify

This is partly in addition to the previous guideline. The vocabulary of the average layman is not too

extensive and it is therefore a good tactic to simplify certain terms. For example, in the translation ‘intrinsic’ can be translated into ‘intrinsiek’ as well as ‘intern’. The difference between the terms is mainly in level of comprehension. Most people know what ‘intern’ means though possibly not that many people know what ‘intrinsiek’ mean and therefore simplification is justified. In addition, the function of the text is important as well. As laymen need to be informed rather than educated it is best to communicate to them in a way that suits them best. Therefore, simpler terms that they encounter in everyday life do a better job than specialized medical terms that need further explanation. Throughout the texts there are many examples of terms that have been simplified in order to point out how this guideline could work in other medical texts targeted at laymen.

After

The elements that should be taken into account after the translation has been made have been described in the general guidelines section. For laymen no additional guidelines for this stage of the process apply other than those already described earlier.

5.4 Guidelines specifically designed for students

During

Shortening sentences

Shortening sentences is a very effective way to target students when coming from an expert’s text of which the conditions and variables have been discussed in chapter four. Shortening the sentences makes them more comprehendible, which allows easier understanding. Because texts for students are usually filled with terms and their definition, it is best to keep these two connected. However, this is not confined to one sentence. For instance, mentioning the term in the first sentence does allow a definition of the term in the following sentence. This has been done a great number of times in the translation for students. Other longer sentences, with or without terms, have been cut up into multiple sentences in order to keep the information in chunks that can easily be understood. The text should welcome the students instead of scaring them away and by shortening sentences this can rather easily be accomplished.

Add explanatory comments if necessary → brackets

As this text targets students but was originally targeted at experts there are several terms that need further explanation in order to be understood by the reader. The best way to do this is by adding explanatory comments. However, using footnotes or a list of terms somewhere in the book, will cause the reading process to be disrupted a great number of times. This is an unwanted complication

and should be avoided if possible. Fortunately it is rather easy to avoid this by using brackets to explain the terms or concepts, either in the same sentence or the following sentence. It is important to keep the connection between the term or concept and the explanation of it clear. By using brackets, or a new sentence, for explaining certain ideas in the running text the reading experience will not be interrupted. This will lead to a better understanding of the text as a whole and has therefore been applied a number of times throughout the translation for students.

The dictionary can not always provide the correct spelling
and
The translator should use the correct spelling of a word
Chapter two mentioned the shortcomings of dictionaries and it is important to be aware of this. It is even more important to know how to deal with these shortcomings. The easiest way to overcome such language gaps is by looking at texts in the target culture which concern the same topic and are targeted at the same audience. Therefore, other Dutch texts concerning lymphatics targeted at students have been used in order to find the correct spelling of a word and create uniformity throughout the translation. In this case, the main source has been L. Grégoire's *Anatomie en fysiologie van de mens.* It is important to find the right source of reference in cases where the dictionary falls short; an efficient starting point would be other texts from the target culture which are directed at the same audience the translation is to target.

When using abbreviations, the word or words should be written in full at lease once
and
Abbreviations which are not commonly used by the medical profession as a whole should be avoided, however obvious they may be to the specialist
As this text is to educate the reader abbreviations are in place. There are several ways to deal with abbreviations and their explanation and for this thesis the guideline from chapter two will be used. This guideline leaves no question to the definition of the abbreviation which is a mandatory feature considering the text function. The implementation of this guideline has used the one described below in order to create uniformity in the text. First off, the term is mentioned and then the explanation of it follows between brackets. As this text only features abbreviations common to the lymphatic field there was no reason to leave out any others.

Explaining terms between brackets
This strategy has been adopted from L. Grégoire's *Anatomie en fysiologie van de mens*. His text,

targeted at students uses this feature extensively. First off the term is mentioned in bold type, followed by a definition between brackets. This way their immediate connection is apparent. There is no room for uncertainty of the reader's part. A text intended for students needs to be as clear as possible when it tries to teach, as is the case in this thesis's text. Therefore, other ways of explaining terms, such as additional commentary or footnotes, have been left out as they can more easily disrupt the reading experience. Therefore, this strategy has been adopted and has been applied numerously throughout the second translation.

Simplify

Simplification is another very important aspect to keep in mind while translating a text for students when the original readers were experts. This shift in audience automatically means a shift in vocabulary and phraseology. As has been mentioned earlier, these strategies can be adopted from other texts in the target culture which reach out to students and have the same topic. Simplification will lead to a better understanding of the text and because this text sets out to teach, understanding is key. Throughout the translation there are many instances where the text has been simplified either by shortening sentences or using vocabulary that is more aligned with the target audience. Whenever this is the case, the comment will indicate so.

After

The elements that should be taken into account after the translation has been made have been described in the general guidelines section. For students no additional guidelines for this stage of the process apply other than those already described earlier.

5.5 Guidelines specifically designed for experts

During

The dictionary can not always provide the correct spelling

and

The translator should use the correct spelling of a word

Chapter two described how some terms cannot be found in dictionaries. Not even in Mostert's dictionary as it has a limited range of terms dealing with lymphatics. The solution is quite simple: find texts on the same subject targeted at the same audience written in the target language. This will give insight in the words the audience frequently comes into contact with. The expert can connect to these words easily and the text will come across naturally. For this text, *Coëlho's Zakwoordenboek der Geneeskunde* and *Oedeem en oedeemtherapie* have been used.

When using abbreviations, the word or words should be written in full at lease once

and

Abbreviations which are not commonly used by the medical profession as a whole should be avoided, however obvious they may be to the specialist

These guidelines have been applied in order to create uniformity throughout the text. Every abbreviation has its explanation either before or after it between brackets. It is important to do so for reasons explained in chapter two. Because the translation is only a small excerpt from Damstra's book, it was unnecessary to explain the same abbreviation more than once. This can be done in longer texts and will lead to a better understanding of the text as it refreshes the reader's mind. This text did not feature abbreviations which are not common to the medical profession but in those cases it is best to leave them out. Were this is the case then they would have been left out as the second guidelines prescribes in order to create a text which is highly recognizable to experts.

After

Unintentional didacticism should be avoided.

In a text which targets fellow experts it is important not to come across as being didactic to a level that is intolerable. Didacticism in this context will damage the status of the text badly. For instance, explaining basic terms will render the effect of the text useless as it could come across as condescending. In such a case the text will be poorly received and it will not take long before it is never heard of again. Therefore, it is important to review the text at least once will focusing only on this aspect. It is best to copy the style of the source text to the fullest extent in order to achieve the same tone, which hopefully is not condescending as it is. Otherwise, it is a good idea to contact the employer about this issue in order to solve it.

All other aspects which are to be taken into account after the translation has been made have been covered in the general guidelines section and hold true for the experts' edition as well.

5.6 Conclusion

This chapter has shown the practicality of the guidelines that have been mentioned in chapter two in combination with the translations of this thesis. Most have proven to be useful and others have been added during the translation process itself in order to give an all encompassing set of guidelines. With these, the beginner medical translator as well as more advanced translator can set out and make high-quality translations.

Chapter 6: Conclusion

The purpose of this thesis has been to offer a basic set of guidelines specified for different target audiences, collected from different sources, most of which dealt directly with medical translation, so the beginner medical translator has to his aid a practical manual which allows him to tackle the many difficulties a medical text can provide and therefore can kick-start his career as a medical translator.

To this point, only one book (*Medical Translation Step by Step)* contained a full list of guidelines. Besides this book, the same and other guidelines were mentioned in several texts but none of them were extensive, often focussing on only abbreviations for example. There were several authors who mentioned a number of guidelines that could be used in order to create uniformity in a text which would hopefully be of high quality. All texts had in common that they did not pay specific attention to the target audience and therefore the guidelines they provided were general. But as medical texts are almost always targeted at one of three major types of audiences, the necessity of a set of guidelines targeted specifically at different types of audiences has been discussed in the first chapter. But before this, the current situation of the medical translator in the Netherlands in the first decennium of the twenty-first century has been mentioned. This has been done to create an outline of the field in which this thesis places itself. The literature which mentioned these guidelines have been discussed and in later chapters the guidelines have been examined more closely and, in chapter five, have been put to the test in order to analyze their usefulness. However, medical translators can encounter a variety of texts and therefore also a diversity of text types. As this latter element is closely related to the audience the author has in mind while writing his text, and the translator during the translation process respectively, a short overview of the three main types of target audiences has also been given. However, the target audience and text function are interrelated and so the first chapter also paid attention to this factor. Then, the aids a translator has available to him were discussed and also where these aids lacked applicability and usefulness, as is often the case with dictionaries. Possible solutions have been given so that the beginner medical translator will usually have an idea of how to cope with these general factors.

After this overview of the current situation the beginner medical translator in the Netherlands faces, it was possible to discuss the different factors that influence the difficulty of the translation process. The rough distinction between problems caused by the author, conditions the translator has to keep in mind and finally other, more external factors, made it possible to deal with each of these elements

in detail. If enough attention is paid to these possible difficulties the translation process can be sped up while the outcome will still be a high-quality end product. The awareness of the roots of these problems can be enough to avoid them in the future.

The third chapter contained an extensive translation relevant text analysis based on Christiane Nord's model and shows how an application of her model can give a lot of necessary insight into conditions that have to be kept in mind during the translation process. The next chapter also contained text analyses, but this time the outcome was determined prior to anything else. This has been done to set the goals that should be accomplished. Chesterman's variables proposal was of great use during this process. With her model it is possible to make clear distinctions between the differences in the target texts that sprout from the different audiences of the target texts. These differences can provide guidelines not only for the beginning medical translator but also for translators in general as a more concrete approach to the three kinds of audiences are hardly existent in translation literature. Furthermore, the outcomes of possible hypotheses may lead to a typology targeted directly at certain medical translations. However, basing a complete typology on only three translations of one source text is inadequate. It does pave the way for further research and if several medical translators were to analyze their end products this way, a proper typology concerning medical translations could be formulated. This would greatly benefit medical translators around the globe and would be of great guidance and value to the beginning medical translator.

The final chapter discussed the practicality of the guidelines when they were applied during the translation process. It became clear that some guidelines are applicable to all types of audience while others are only suitable for one type in particular. During the translation process several guidelines have been altered or even introduced as their best form could not be found in the literature mentioned in 1.3 but were too important to leave out. The fifth chapter thus contains an overview of some important guidelines a beginner medical translator can use as a starting point for his translations. Additionally, this set of guidelines leaves room for additional guidelines and is by no means final. Also, more conclusions can be drawn from Chesterman's variable proposal model in order to create even more guidelines conforming the different audiences which are targeted. For further research it is definitely interesting to combine that idea with this thesis´ guidelines and with those from *Medical Translation Step by Step.* Following the approach mentioned in this thesis the result will be several set of guidelines targeted at specific audiences. This will prove helpful to any medical translator, from the novice to the advanced.

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Appendix A: Source text

Source text

Robert J. Damstra – Diagnostic and Therapeutical Aspects of Lymphedema

Page 10-14 (1062 words)

Anatomy

The lymphatic system consists of vessels and lymphatic organs1. Lymph vessels are a one-way system: there is no central pump, and the lymphatics start as minute, blind-ended, endothelial sacs in the intercellular space of all tissues, with the exception of avascular structures such as hair, nails, cartilage and the retina. The brain and spinal cord likewise do not have lymphomatics.
The lymphatic system is divided into pre-lymphatic and lymphatic portions. The pre-lymphatic portion is defined as interstitial channels in the intercellular space without endothelial linings. The lymphatic portion is lined with endothelium and composed as follows, from small to large:

1. *Initial lymphatics / lymph capillaries / lymph sacs.* Endothelial lymphatic cells are connected to the surrounding elastic fibers in the extracellular matrix by fibrillar anchoring fibres2. These fibers can pull the endothelial cells of the lymphatics apart because the initial lymphatics are very thin and lack an endothelial membrane and pericytes3. The blind initial lymphatics are called lymph sacs. The endothelial cells of these lymph sacs, therefore, act as minute valves, called primary valves, and favor fluid drainage from the interstitium in a suction-pump action4, preventing inappropriate fluid transport from the initial lymphatics back into the interstitium. The primary valves are pulled opened, and their function is enhanced by movement of the surrounding tissues (this is the rationale behind manual lymphatic drainage therapy, see below). These capillaries do not have interluminal valves, and their main function is uptake of macromolecules and fluid from the interstitium.
2. *Precollectors:* The initial lymphatics converge into larger vessels with more overlapping endothelial cells. In these precollectors, intraluminal valves with two leaflets appear, the so-called secondary valves.
3. *Collectors:* Precollectors converge into collectors, larger vessels with diameters of 100-600 µm containing three layers: endothelial cells, circular and longitudinal smooth muscular layers, and an outer collagen sheath. Collectors also contain valves. The segment between two valves is called a “lymphangion” and is a functional unit that can contract about 10-12 times per minute, regulated by autonomic nerves. Acting in concert, the lymphangia create a

peristaltic movement that pumps lymph fluid towards the lymphatic vessels.

4. *Lymphatic vessels:* More proximal collectors form lymphatic vessels transporting lymph to the lymph glands. The major lymphatic vessel is the thoracic duct, draining into the venous circulation at the junction of the left subclavian and internal jugular veins. A double thoracic duct is sometimes present.

The lymphatic (lymphoid) organs are divided into primary and secondary lymphatic organs. The red hematopoietic bone marrow and the thymus are the primary lymphatic organs in which the lymphocytes develop and differentiate from proliferating stem cells. The T-lymphocytes leave the bone marrow early and mature in the thymus, while the B-cells remain in the bone marrow for differentation5.

The secondary lymphoid organs include the lymph glands, tonsils, Peyer's patches, spleen and the mucosa-associated lymphatic tissue (MALT), which is primarily located in the bronchial and digestive tracts. The MALT, present as diffuse lymphoid tissue along all mucosal surfaces, is the site of IgA transport across the mucosal epithelium6.

In the body, there are several chains of lymph glands. Superficial lymph glands are located in the popliteal and inguinal regions of the leg; the brachial, pectoral and axillary regions of the arm; and the head and neck region. The deep lymphatic system is located in para-iliac, para-aortic and pre-aortic regions. The pre-aortic region drains all of the derivates of the alimentary canal. From the lymph glands, the lymph is transported upstream to the thoracic duct, which in turn empties into the left subclavian vein. The lymph glands in the gastrointestinal tract are situated close to the wall of the bowel, located both in the mesentery close to the branches of the arteries and also around the superior and inferior mesenteric artery.

The lymphatic vessels in the extremities are mainly located in the epifascial region. Deeper lymphatics are rare. The superficial, subcutaneous collectors roughly follow the course of the major cutaneous veins of the skin, forming wide bundles situated underneath the venous layer. Anastomotic branches between adjacent collectors enable the lymph to follow in several alternative routes so that blockage of a single collector does not affect drainage. Different body parts, however, have more or less separate drainage systems that are connected with just a few anastomoses. The borders between these areas are called "lymphatic watersheds" and are particularly susceptible to edema following damage to the lymphatics.

According to Clodius7, it is the collateral lymph circulation between these watersheds in the presence of a blockage that initiates lymphatic backflow toward the dermis. Stimulation of this flow is one of the main principles of MLD.

The deep lymphatics usually run alongside the arteries within the arterial fascia. The arterial pulsations, therefore, will influence the peristaltic function of the accompanying lymphatics. Perforators connect the epifascial and subfascial lymphatics to each other and direct the flow from deep to superficial, in contrast to venous perforators that guide flow in the opposite direction.
The lymphatic system lacks a central pump; therefore, lymphatic transport must be achieved by other means:

1. Intrinsic propulsion of the lymph collectors and lymph vessels8,
2. External propulsion by means of tissue movements,
3. Negative intra-thoracic / abdominal pressure, providing a suction pump action on the lymph fluid in thoracic duct.

The effects of these mechanics are extremely variable: exercise can increase the lymph transport capacity more than 10-fold9. Rhythmic contractions of the lymph vessels lead to an upstream deviated lymph flow as a result of intraluminal valves, i.e., the segment of the lymph vessel between two valves.
The distance between two valves is irregular and ranges from between three to ten times the diameter of the vessel. The intervals between valves are longer in the deep lymphatics than in the superficial ones. Specialized pacemaker cells initiate the contractions via an action potential that must be propagated efficiently along the vessels10. Dilation of vessels and increased volume of lymph (preload) enhance the frequency and the distension of the lymphangions. Symphatic activity and circulating vaso-active substances can enhance the force, frequency and distention of the functioning lymphangions11.
Lymphatic transport is externally enhanced by mechanical compression initiated by arterial pressure pulsations, arteriolar vasomotion, intestinal smooth muscle contractions and motility, skeletal muscle contraction, and skin tension.
Any inborn or acquired disruption of the lymphatic system will lead to impairment of the lymph transport capacity, which is essential for homeostasis of the interstitium.

Appendix B: Translations

Source text for this translation:

Robert J. Damstra – Diagnostic and Therapeutical Aspects of Lymphedema

Page 10-14 (1062 words)

Note: The comments have been filed according to (1) terms, (2) shortened sentences, (3) clarity, (4) target audience and (5) miscellaneous.

Translation for laymen:

Anatomie

Het lymfestelsel bestaat uit lymfevaten en lymfeorganen. Lymfevaten zijn eenrichtingsverkeer, want er ontbreekt een centrale pomp. De lymfevaten beginnen als kleine, 'blinde', met endotheel, een bepaald soort cellen, beklede zakjes in de ruimte tussen de weefsels. Uitzonderingen hierop zijn structuren zonder bloedvaten, zoals haren, nagels, kraakbeen en het glasachtig lichaam. De hersenen en het ruggenmerg hebben ook geen lymfevaten.

Het lymfestelsel is verdeeld in het prelymfatisch en het lymfatisch deel. Het prelymfatisch deel bestaat uit de kanalen tussen de weefsels zonder endothele voering. Deze kanalen liggen in de ruimte tussen de weefsels. Het lymfatisch deel is wel bekleed met endotheel en bestaat uit de volgende onderdelen, genoemd van klein naar groot:

1. *De oorspronkelijke lymfevaten/lymfcapillairen/lymfezakjes*. Lymfendotheelcellen staan door collageenvezels met de omliggende elastische vezels in verbinding in de ruimte buiten de cellen. Deze vezels kunnen de endotheelcellen van de lymfevaten apart optrekken. Dit komt doordat de oorspronkelijke lymfevaatjes erg dun zijn en zowel een endotheel membraan als pericyten missen. Pericyten zijn de langgerekte samentrekkende cellen die tegen de buitenwand van de bloedcappilairen liggen. De 'blinde', oorspronkelijke lymfevaten heten lymfezakjes. De endotheelcellen van deze lymfezakjes werken als kleine ventielen, die primaire ventielen heten. Deze ventielen bevorderen vloeistofafvoer uit de ruimte tussen de weefsels door middel van een zuigpompbeweging. Ook voorkomen ze ongewild vloeistoftransport van de oorspronkelijke lymfevaatjes terug naar de ruimte tussen de weefsels. De primaire ventieltjes worden opengetrokken en hun functie wordt bevorderd door beweging van de omringende weefsels. Dit is de achterliggende gedachte van de lymfedrainage

therapie, zie hieronder. Deze cappilairen hebben geen klepjes in de opening van het vat en hun belangrijkste functie is de opname van macromoleculen en vloeistof uit het de ruimte tussen de weefsels.

2. *Precollectoren:* De oorspronkelijke lymfevaatjes komen samen in grotere vaten met meer overlappende endotheelcellen. In deze precollectoren verschijnen klepjes die uit twee delen bestaan, dit zijn de secundaire kleppen.
3. *Collectoren:* Precollectoren komen samen in collectoren, grotere vaten met een diameter van 100-600 micrometer. Precollectoren zijn opgemaakt uit drie lagen: endotheelcellen, dwarsgestreept en glad spierweefsel en een omhulsel van collageen, een bepaald soort eiwit. Collectoren bevatten ook kleppen. Het segment tussen twee kleppen heet “lymfangion”. Het lymfangion is een functionele eenheid die tien tot twaalf keer per minuut kan samentrekken en die wordt aangestuurd door autonome zenuwen. In harmonie veroorzaken de lymfangionen een peristaltische beweging die lymfevocht naar de lymfevaten pompt.
4. *Lymfevaten:* Dichter bij het hart gelegen collectoren vormen lymfevaten die de lymfe transporteren naar de lymfeklieren. Het grootste lymfevat is de borstbuis. Deze leegt zicht in de ader op de plaats waar de linker sleutelbeenader en de interne jugulaire ader samenkomen. Soms is er een dubbele borstbuis.

De lymfeorganen (lymfoïde organen) worden verdeeld in primaire en secundaire lymfeorganen. Het beenmerg en de zwezerik (thymus) zijn de primaire lymfeorganen waarin lymfocyten zich ontwikkelen en specialiseren vanuit de stamcellen. Lymfocyten zorgen voor de immuniteit van het lichaam. De T-lymfocyten verlaten het beenmerg vroeg en rijpen in de zwezerik terwijl de B-lymfocyten in het beenmerg blijven tot ze zich hebben gespecialiseerd.
De secundaire lymfeorganen bevatten de lymfeklieren, amandelen, plaques van Peyer, milt en het mucosa geassocieerd lymfoïd weefsel, die vooral voorkomen in het longslijmvlies en het spijsverteringskanaal. Het mucosa geassocieerd lymfoïd weefsel is aanwezig als wijdverspreid lymfeweefsel tussen alle slijmvliezenoppervlakten. Dit is waar IgA-antistoffen-transport plaatsvindt. Dit gebeurt over het slijmvliesepitheel.
In het lichaam bevinden zich meerdere ketens van lymfeklieren. Oppervlakkige lymfeklieren bevinden zich in de knieholten en liesregio van het been, in de bovenarm, de borst en in de okselregio van de arm, in het hoofd en in de nekregio. Het diepe lymfestelsel ligt naast het bekken, rondom de aorta en vooraorta regio’s. De vooraorta regio voert alle overblijfselen van het spijsverteringskanaal af. Vanuit de lymfeklieren wordt de lymfe omhoog getransporteerd naar de borstbuis, die zich op zijn beurt leegt in de linker sleutelbeenader. De lymfeklieren in het spijsverteringskanaal bevinden zich vlakbij de wand van de darmen. Ze liggen zowel in het buik-

darmvlies als vlakbij de takken van de slagaders. Ook komen ze voor rond de bovenste en onderste slagaders in het buik-darmvlies.

De lymfevaten in de ledematen liggen vooral aan het oppervlak. Diepe lymfevaten zijn zeldzaam. De oppervlakkige, net onder de huid gelegen, collectoren volgen ruwweg de route van de grote oppervlakkige aders van de huid. Ze vormen grote bundels die net onder de laag van de aders liggen. Verbindende vaten tussen aanliggende collectoren maken het de lymfe mogelijk alternatieve routes te kiezen. Hierdoor heeft een blokkade van een enkele collector geen invloed op de drainage. Verschillende lichaamsdelen hebben echter min of meer aparte drainagesystemen die verbonden zijn met maar een paar dwarsverbindingen tussen vaten. De grenzen tussen deze gebieden noemen we “lymfatische waterscheidingen”. Deze zijn bijzonder gevoelig voor lymfoedeem dat volgt op schade van lymfevaten. Lymfoedeem is een opeenhoping van lymfevocht.
Volgens Clodius is, in het geval van een blokkade, de zijdelingse lymfecirculatie tussen deze waterscheidingen de oorzaak voor lymfatische terugvloed naar de lederhuid. Stimulatie van deze beweging is een van de belangrijkste principes van manuele lymfedrainage.
De diepe lymfevaten lopen over het algemeen naast de slagaders in het arteriële oppervlak. De pulsaties van de slagaders hebben daarom invloed op de peristaltische beweging van de gelijkoplopende lymfevaten. Perforatoren verbinden de oppervlakkige en diepe lymfevaten met elkaar en sturen de golfbeweging van diep naar oppervlakkig. Dit in tegenstelling tot de aderlijke perforatoren, die de golfbeweging de andere kant op sturen.

Het lymfestelsel mist een centrale pomp. Hierdoor moet het lymfetransport op een andere manier worden gerealiseerd. Dit gebeurt door:
1. Interne voortbeweging van de lymfecollectoren en lymfevaten
2. Externe voorbeweging veroorzaakt door beweging van omliggend weefsel
3. De negatieve druk tussen de borstkas en de buik. Deze druk zorgt voor een zuigpompactie op het lymfevocht in de borstbuis.

Het effect van deze mechanismen varieert erg sterk: beweging kan de capaciteit van het lymfetransport meer dan vertienvoudigen. Ritmische samentrekkingen van de lymfevaten leiden tot een afwijkende terugstroom van lymfevocht. Dit wordt veroorzaakt door intraluminale klepjes in de lymfevaten, of, met andere woorden: het segment van het lymfevat tussen twee kleppen in.

De afstand tussen twee kleppen is onregelmatig en varieert van tussen de drie tot tien keer de diameter van het vat. De intervallen tussen de kleppen zijn langer in de diepe lymfevaten dan in de

oppervlakkige lymfevaten. Gespecialiseerde pacemakercellen veroorzaken de samentrekking via een impuls. Deze impuls moet worden getransporteerd langs de vaten. Verwijding van de vaten en een toegenomen volume van lymfe doen de frequentie toenemen. Ook bevorderen ze de verwijding van de lymfangionen. Bewuste activiteiten en circulerende substanties in de lymfevaten kunnen de kracht, frequentie en ontspanning van de werkende lymfeangionen bevorderen.
Lymfetransport wordt van buitenaf bevorderd door mechanische compressie die wordt veroorzaakt door meerdere factoren. Deze zijn: de samentrekkingen van de slagaders, de vaatbeweging van de kleine slagadertjes, de gladde spierweefselsamentrekkingen en beweeglijkheid van de ingewanden, skeletspiersamentrekkingen en tot slot de spanning van de huid.
Elke aangeboren of verkregen verstoring van het lymfestelsel zal leiden tot een afname van de lymfetransportcapaciteit, die essentieel is voor de constanthouding van de ruimte tussen de weefsels.

Translation for students:

Anatomie

Het lymfestelsel bestaat uit vaten en lymfatische organen. Lymfevaten zijn een eenrichtingssysteem: er is geen centrale pomp. De lymfevaten beginnen als kleine, 'blinde', met endotheel beklede zakjes in de intercellulaire ruimte van alle weefsels (de ruimte tussen weefsels in). Uitzonderingen hierop zijn de avasculaire structuren zoals de haren, nagels, het kraakbeen en het glasachtig lichaam. De hersenen en het ruggenmerg hebben evenmin lymfevaten. Het lymfestelsel is onderverdeeld in het prelymfatisch en het lymfatisch deel. Het prelymfatische deel bestaat uit interstitiële kanalen (tussen de weefsels) zonder endotheel voering, die liggen in de intercellulaire ruimte. Het lymfatische deel is wel bekleed met endotheel en bestaat uit de volgende onderdelen, genoemd van klein naar groot:

1. *De initiële lymfevaten/lymfcapillairen/lymfezakjes*. Lymfatische endotheelcellen staan in verbinding met de omliggende elastische vezels in de extracellulaire matrix door fybrillaire collagene vezels. Deze vezels kunnen de endotheelcellen van de lymfevaten apart optrekken omdat de initiële lymfevaatjes erg dun zijn en een endotheel membraan en pericyten missen. Pericyten zijn de langgerekte samentrekkende cellen die tegen de buitenwand van de bloedcappilairen liggen. De 'blinde' initiële lymfevaten noemen we lymfezakjes. De endotheelcellen van deze lymfezakjes werken daardoor als kleine ventielen die primaire ventielen heten. Deze ventielen bevorderen vloeistofafvoer uit het interstitium (de ruimte tussen de weefsels) in een zuigpompbeweging. Ook voorkomen ze ongewild vloeistoftransport van de initiële lymfevaatjes terug naar het interstitium. De primaire ventieltjes worden opengetrokken en hun functie wordt bevorderd door beweging van de omringende weefsels (dit is de achterliggende gedachte van de lymfedrainage therapie, zie hieronder). Deze cappilairen hebben geen klepjes in de opening van het vat en hun belangrijkste functie is de opname van macromoleculen en vloeistof uit het interstitium.
2. *Precollectoren:* De initiële lymfevaatjes komen samen in grotere vaten met meer overlappende endotheelcellen. In deze precollectoren verschijnen klepjes die uit twee delen bestaan, de zogenaamde secundaire kleppen.
3. *Collectoren:* Precollectoren komen samen in collectoren, grotere vaten met een diameter van 100-600 µm, die zijn opgemaakt uit drie lagen: endotheelcellen, dwarsgestreepte en gladde spierweefsels, en een collageen omhulsel. Collectoren bevatten ook kleppen. Het segment tussen twee kleppen heet een "lymfangion" en is een functionele eenheid die tien tot twaalf keer per minuut kan samentrekken en aangestuurd wordt door autonome zenuwen. In

harmonie veroorzaken de lymfangionen een peristaltische beweging die lymfevocht naar de lymfevaten pompt.

4. *Lymfevaten:* Meer proximaal (dichter bij het hart) gelegen collectoren vormen lymfevaten die lymfe transporteren naar de lymfeknopen. Het grootste lymfevat is de ductus thoracicus (borstbuis). Deze leegt zicht in de ader op de plaats waar de linker v.subclavia en de v.jugularis samenkomen. Soms is er een dubbele ductus thoracicus.

De lymfatische (lymfoïde) organen worden verdeeld in primaire en secundaire lymfatische organen. Het beenmerg en de thymus (zwezerik) zijn de primaire lymfatische organen waarin lymfocyten zich ontwikkelen en differentiëren (specialiseren) vanuit de stamcellen. De T-lymfocyten verlaten het beenmerg vroeg en rijpen in de thymus terwijl de B-lymfocyten in het beenmerg blijven tot ze zich hebben gedifferentieerd.
De secundaire lymfeorganen bevatten de lymfeknopen, amandelen, plaques van Peyer, milt en de lymfatische vezels die samenhangen met de slijmvliezen (MALT), die vooral voorkomen in het longslijmvlies en het spijsverteringskanaal. Het MALT (mucosa geassocieerd lymfoïd weefsel) dat aanwezig is als wijdverspreid lymfeweefsel tussen alle slijmvliezenoppervlakten is de plaats waar IgA-transport plaatsvindt. Dit gebeurt over het slijmvliesepitheel.
In het lichaam bevinden zich meerdere ketens van lymfeknopen. Oppervlakkige lymfeknopen vind je in de knieholten en liesregio van het been, in de bovenarm, de borst en in de okselregio van de arm, in het hoofd en in de nekregio. Het diepe lymfatisch systeem ligt naast het bekken, rondom de aorta en preaorta regio's. De preaorta regio voert alle overblijfselen van het spijsverteringskanaal af. Vanuit de lymfeknopen wordt de lymfe omhoog getransporteerd naar de ductus thoracicus, die zich op zijn beurt leegt in de linker v. subclavia. De lymfeknopen in het spijsverteringskanaal bevinden zich vlakbij de wand van de darmen. Ze liggen zowel in het mesenterium als vlakbij de takken van de slagaders. Ook komen ze voor rond de bovenste en onderste mesenterische slagaders.

De lymfevaten in de extremiteiten (armen en benen) liggen met name in het oppervlakkige deel. Diepe lymfevaten zijn zeldzaam. De oppervlakkige, net onder de huid gelegen, collectoren volgen ruwweg de route van de grote oppervlakkige aders van de huid en vormen grote bundels die net onder de laag van de aders liggen. Verbindende vaten tussen aanliggende collectoren maken het de lymfe mogelijk alternatieve routes te kiezen waardoor een blokkade van een enkele collector geen invloed heeft op de drainage. Verschillende lichaamsdelen hebben echter min of meer aparte drainagesystemen die verbonden zijn met maar een paar anastomoses (dwarsverbindingen tussen bepaalde vaten). De grenzen tussen deze gebieden noemen we "lymfatische waterscheidingen". Deze zijn in het bijzonder gevoelig voor oedeem dat volgt op schade van lymfevaten.

Volgens Clodius is, in het geval van een blokkade, de zijdelingse lymfecirculatie tussen deze waterscheidingen de oorzaak voor lymfatische terugvloed naar de lederhuid. Stimulatie van deze beweging is een van de belangrijkste principes van manuele lymfedrainage (MLD).
De diepe lymfevaten lopen over het algemeen naast de slagaders in het arteriële oppervlak. De pulsaties van de slagaders hebben daarom invloed op de peristaltische beweging van de gelijkoplopende lymfevaten. Perforatoren verbinden de oppervlakkige en diepe lymfevaten met elkaar en sturen de golfbeweging van diep naar oppervlakkig. Dit in tegenstelling tot de veneuze (aderlijke) perforatoren, die de golfbeweging de andere kant op sturen.
Het lymfatisch systeem mist een centrale pomp en daarom moet het lymfetransport op een andere manier gerealiseerd worden:
1. Intrinsieke voortbeweging van de lymfecollectoren en lymfevaten
2. Externe voorbeweging veroorzaakt door beweging van omliggend weefsel
3. De negatieve druk tussen de borstkas (thorax) en de buik (abdomen) zorgt voor een zuigpompactie op het lymfevocht in de ductus thoracicus.

Het effect van deze mechanismen varieert erg sterk: beweging kan de capaciteit van het lymfetransport meer dan vertienvoudigen. Ritmische samentrekkingen van de lymfevaten leiden tot een afwijkende terugstroom van lymfevocht als gevolg van intraluminale klepjes, oftewel, het segment van het lymfevat tussen twee kleppen in.
De afstand tussen twee kleppen is onregelmatig en varieert van tussen de drie tot tien keer de diameter van het vat. De intervallen tussen de kleppen zijn langer in de diepe lymfevaten dan in de oppervlakkige. Gespecialiseerde pacemakercellen veroorzaken de samentrekking via een actiepotentiaal die getransporteerd moet worden langs de vaten. Verwijding van vaten en toegenome volume van lymfe (belasting) doen de frequentie toenemen en bevorderen de verwijding van de lymfangionen. Sympatische (bewuste) activiteiten en aanwezige vasoactieve invloeden kunnen de kracht, frequentie en ontspanning van de werkende lymfeangionen bevorderen.
Lymfetransport wordt van buitenaf bevordert door mechanische compressie veroorzaakt door arteriële pulsaties, de vaatbeweging van de arteriolen, de gladde spierweefselsamentrekkingen en beweeglijkheid van de ingewanden, skeletspiersamentrekkingen en spanning van de huid.
Elke aangeboren of verworven verstoring van het lymfatisch systeem zal leiden tot afname van de lymfatische transportcapaciteit, die essentieel is voor de homeostase van het interstitium.

Translation for experts:

Anatomie

Het lymfesysteem bestaat uit vaten en lymfatische organen. Lymfevaten zijn een eenrichtingssysteem: er is geen centrale pomp en de lymfevaten beginnen als kleine, blinde, met endotheel beklede zakjes in de intercellulaire ruimte van alle weefsels, met uitzondering van de avasculaire structuren zoals haar, nagels, kraakbeen en het retina. De hersenen en het ruggenmerg hebben evenmin lymfevaten.

Het lymfestelsel is verdeeld in het prelymfatisch en het lymfatisch deel. Het prelymfatisch deel wordt gedefinieerd als interstitiële kanalen in de intercellulaire ruimte zonder endothele voering. Het lymfatische deel is wel gevoerd met endothelium en bestaat uit de volgende onderdelen, genoemd van klein naar groot:

1. *De initiële lymfevaten/lymfcapillairen/lymfezakjes*. Lymfendotheelcellen zijn verbonden met de omliggende elastische vezels in de extracellulaire matrix door fybrillaire collagene vezels. Deze vezels kunnen de endotheelcellen van de lymfevaten apart optrekken omdat de initiële lymfevaatjes erg dun zijn en zowel een endotheel membraan als pericyten missen. De blinde initiële lymfevaten heten lymfezakjes.
   De endotheleelcellen van deze lymfezakjes werken daardoor als kleine ventielen die primaire ventielen heten, en ze bevorderen vloeistofdrainage uit het interstitium door middel van een zuigpompbeweging, ze voorkomen ongewild vloeistoftransport van de initiële lymfevaatjes terug naar het interstitium. De primaire ventieltjes worden opengetrokken en hun functie wordt bevorderd door beweging van de omliggende weefsels (dit is de achterliggende gedachte van lymfdrainage therapie, zie hieronder). Deze cappilairen hebben geen klepjes in de vatopening en hun belangrijkste functie is de opname van macromoleculen en vloeistof uit het interstitium.
2. *Precollectoren:* De initiële lymfevaten komen samen in grotere vaten met meer overlappende endotheelcellen. In deze precollectoren verschijnen tweekoppige klepjes, de zogeheten secundaire kleppen.
3. *Collectoren:* Precollectoren komen samen in collectoren, grotere vaten met een diameter van 100-600 μm die bestaan uit drie lagen: endotheelcellen, dwarsgestreepte en gladde spier-weefsels en een collageen schede. Collectoren bevatten ook kleppen. Het segment tussen twee kleppen heet een “lymfangion” en is een functionele eenheid die tien tot twaalf keer per minuut kan samentrekken en aangestuurd wordt door autonome zenuwen. In harmonie veroorzaken de lymfangionen een peristaltische beweging die lymfevocht naar de lymfevaten pompt.

4. *Lymfevaten:* Meer proximaal gelegen collectoren vormen lymfevaten die lymfe transporteren naar de lymfeknopen. Het grootste lymfevat is de ductus thoracicus, die zich in de ader ledigt ter hoogte van de samenkomst van de linker vena subclavia en vena jugularis interna. Een dubbele ductus thoracicus is soms aanwezig.

De lymfatische (lymfoïde) organen worden verdeeld in primaire en secundaire lymfatische organen. Het beenmerg en de thymus zijn de primaire lymfatische organen waarin lymfocyten zich ontwikkelen en differentiëren vanuit de stamcellen. De T-lymfocyten verlaten het beenmerg vroeg en rijpen in de thymus terwijl de B-lymfocyten in het beenmerg blijven tot ze zich hebben gedifferentieerd.
De secundaire lymfeorganen bevatten de lymfeknopen, amandelen, Peyer-plaques, milt en het mucosa-geassocieerd slijmvliesweefsel (MALT), die vooral voorkomen in het longslijmvlies en spijsverteringskanaal. Het MALT dat aanwezig is als difuus lymfeweefsel tussen alle slijmvliezenoppervlakten is de plaats waar IgA-transport plaatsvindt over het slijmvliesepiteel.

In het lichaam zijn meerdere ketens van lymfeknopen. Oppervlakkige lymfeknopen bevinden zich in de knieholten en liesregio van het been, in de bovenarm, het pectorale deel en in de okselregio van de arm en in het hoofd en in de nekregio. Het diepe lymfesysteem ligt naast het bekken, rondom de aorta en preaorta-regio's. De preaorta-regio voert alle overblijfselen af van het spijsverteringskanaal. Vanuit de lymfeknopen wordt de lymfe omhoog getransporteerd naar de ductus thoracicus, die op zijn beurt zichzelf leegt in de linker subclaviale ader. De lymfeknopen in het spijsverteringskanaal bevinden zich vlakbij de darmwand, in het mesenterium vlakbij de vertakkingen van de slagaders en ook rond de bovenste en onderste mesenterische slagader.

De lymfevaten in de extremiteiten zijn met name gesitueerd in de epifasciale ruimte. Diepe lymfevaten zijn zeldzaam. De oppervlakkige, net onder de huid gelegen, collectoren volgen ruwweg de route van de grote oppervlakkige aders van de huid en vormen grote bundels die net onder de laag van de aders liggen. Anastomotische vertakkingen tussen naastliggende collectoren maken het de lymfen mogelijk verschillende alternatieve routes te kiezen waardoor een blokkade van een enkele collector geen invloed heeft op de drainage. Verschillende lichaamsdelen hebben echter min of meer aparte drainagesystemen die verbonden zijn met maar een paar anastomoses. De grenzen tussen deze gebieden heten "lymfatische waterscheidingen," die in het bijzonder gevoelig zijn voor oedeem dat volgt op schade van lymfevaten.
Volgens Clodius is het de collaterale lymfecirculatie tussen deze waterscheidingen in het geval van een blokkade dat lymfatische terugvloed veroorzaakt naar de lederhuid.

Stimulatie van deze beweging is een van de belangrijkste principes van manuele lymfedrainage (MLD).
De diepe lymfevaten lopen over het algemeen parallel aan de slagaders in de fascia van die slagaders. De slagaderlijke pulsaties hebben daarom invloed op de peristaltische beweging van de gelijkoplopende lymfevaten. Perforatoren verbinden de epifasciale en de subfasciale lymfevaten met elkaar en sturen de golfbeweging van diep naar oppervlakkig, in tegenstelling tot veneuze perforators die de golfbeweging de andere kant op sturen.

Het lymfatisch systeem mist een centrale pomp en daarom moet het lymfetransport op een andere manier worden gerealiseerd:

1. Intrinsieke voortbeweging van de lymfecollectoren en lymfevaten
2. Externe voorbeweging veroorzaakt door beweging van weefsel
3. De negatieve intrathoracale / abdominale druk zorgt voor een zuigpompactie op het lymfevocht in de ductus thoracicus.

Het effect van deze mechanismen varieert dramatisch: beweging kan de capaciteit van het lymfetransport meer dan vertienvoudigen. Ritmische samentrekkingen van de lymfevaten leiden tot een afwijkende terugstroom van lymfevocht als gevolg van intraluminale klepjes, oftewel, het segment van het lymfevat tussen twee kleppen in.
De afstand tussen twee kleppen is onregelmatig en varieert van tussen de drie tot tien keer de diameter van het vat. De intervallen tussen de kleppen zijn langer in de diepe lymfevaten dan in de oppervlakkige. Gespecialiseerde pacemakercellen veroorzaken de samentrekking via een actiepotentiaal die getransporteerd moet worden langs de vaten. Verwijding van vaten en toegenomen volume van lymfe (belasting) bevorderen de frequentie en de opzwelling van de lymfeangionen. Sympatische activiteiten en aanwezige vaso-actieve substanties kunnen de kracht, frequentie en ontspanning van de werkende lymfeangionen bevorderen.
Lymfatisch transport wordt van buitenaf bevorderd door compressie veroorzaakt door de druk van arteriële pulsaties, de vaatbeweging van de arteriolen, de gladde spierweefselcontracties van de ingewanden en beweeglijkheid, skeletspiersamentrekkingen en spanning van de huid.
Elke aangeboren of verworven verstoring van het lymfatisch systeem zal leiden tot insufficiëntie van de lymfatische transportcapaciteit, die onontbeerlijk is voor de homeostase van het interstitium.