

# **Anatomy of a medical article: Strategies and resources for doing medical translation from German or Japanese into English**

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## **1. Summary**

A brief overview of medical translation from German or Japanese into English is provided, specifically the translation of scholarly medical articles. The focus is on translators with some technical background, an excellent working knowledge of their source and target languages, and an interest to explore whether they could begin working in the medical translation area. Strategies and resources for doing medical translation are presented, including the assessment of the individual translator's capability to translate the content. The structure and format of medical articles will be outlined, standard equivalents of the section headings will be provided, and guidelines for researching specialized content are covered. Examples given include actual medical scholarly articles in German and Japanese.

## **2. Introduction**

Medical translation is a specialized area within technical translation that has its own unique vocabulary, phrasing, style, and register. With prior direct medical field experience to draw upon, a translator can produce high-quality translations that are agreeable to current medical practitioners. However, even translators with some technical background who take the time to acquaint themselves with the subject matter and how it is presented in the source and target languages can succeed with medical translation. At the earlier stages, it is appropriate to work with a reviser who has extensive experience in the field, but gradually one can gain confidence in producing accurate and readable medical prose.

### **2.1 German and Japanese source languages**

The focus on medical translation from German or Japanese into English might seem curious at first. Many translators working from one or the other source language could wonder about comparisons between these very different tongues.

At first glance, how could an Indo-European language from Mitteleuropa and an East Altaic-Polynesian fusion language in a West Pacific island chain show any similarities? When the first is written in Latin letters and harbors Latin and Greek roots, while the second is written in kanji characters and a kana syllabary, and harbors Chinese roots?

A first similarity comes from the fact that the Western-style science and medicine introduced into Japan during the Meiji Era (latter 19<sup>th</sup> century) came from Germany via Dutch merchants. This is exemplified by the fact that the names of many chemical elements and other constructs are direct morpheme translations from German, and many of the loanwords in science and medicine are transliterations from German pronunciation.

A second similarity is that in all but the simplest sentences, both German and Japanese place a crucial verb at or toward the end of a sentence or phrase. For someone translating into English, this frequently means starting at the end of the sentence/phrase and working frontward.

Now some differences. Japanese is written with a modified set of Chinese characters in which approximately two characters correlate with a word in English. Japanese also employs two syllabaries derived from simplified or partial Chinese characters; one of these, katakana, is used to render loanwords. Reading German requires only a knowledge of the Latin alphabet, a few diacritics, and a couple of conventions. However, reading Japanese requires familiarity with the syllabaries (48 times 2 = 96 kana characters) and a reasonable number of kanji—the jōyō (*regular use*) set of 2,136 plus more specialized characters used in medical writing.

A third similarity between German and Japanese is that medical vocabulary frequently uses compounds of easily recognized elements, while by contrast medical English uses words derived from Latin or Greek that can be opaque to a reader without further education. For example, the English phrase cerebral hemorrhage is derived from classical languages, and an uneducated reader would be confused about the meaning. However, this is *Gehirnblutung* in German, made up from roots easily recognized as meaning brain and bleeding. In Japanese, this is 脳出血 (*nōshukketsu*), likewise made up from roots easily recognized by a native as meaning brain and bleeding. Thus, though specialized, much German and Japanese medical terminology is made from common building blocks.

## 2.2 Types of medical texts

Some medical articles describe original work with one or a few patients within the framework of case studies that share some feature such as the symptoms, diagnosis, or treatment. A second type concerns a slightly larger group of patients, and is often done in collaboration with several other physicians at the same facility or across a few facilities. A third type can involve a large number of patients, and a number of physicians from various facilities. This could be a formal clinical trial, or a retrospective or prospective study.

Other types of medical document include doctor's reports (discharge summary, pathology/surgery/operation report, etc.), patient diaries, case report forms (CRFs), clinical lab reports, clinical trial protocols and reports, and product/drug information sheets. These all use medical terminology, but differ from medical articles in the intended audience, register, and structure. All of these other types of document involve medical translation, but are outside the scope of the medical articles discussed here. We assume that the translation is for informing other researchers, and not for a general audience, so the register should be high, as one scholar communicating with another. With this background, we will proceed through the steps taken in carrying out the translation of a medical article: assessment, research, translation, and validation.

### **3. Assessment**

The first step in any translation assignment is assessing the source document, the entire source document, before deciding to accept an assignment. In the case of a medical article, one must decide what type of article is in hand. As with any translation task, the translator must understand the subject matter to do a credible job of rendering it in the target language. At some point early on, a sober decision must be reached about one's capability (Smith, 2011).

For medical translation, this doesn't necessarily mean having had a medical education, but the topic, the terms, and the message must be reasonably well understood if the translation is to make sense. Subject matter that is new and unfamiliar terms must be researched. Happily, there are many resources available on the internet, such as WebMD (English), and Roche Lexicon Medezin (German). General web-based resources can also be quite helpful, which calls to mind the observation that, Wikipedia is the Sesame Street™ of science (Smith, 2011, 22). Likewise for medicine. If the subject matter and point of the article are still confusing, one should decline the task.

### **4. Research**

Part of the assessment stage requires research to determine familiarity with the subject matter, but most of the research will be done after a translator has decided to accept the assignment. This is the time to locate original articles in the target language to see how language is used and to compare formats. Many times, a Japanese or German medical article will also have a title, abstract and keywords in English, and the keywords will form the initial entries in the project glossary. Comparison of the abstracts in both languages will also help identify terms and phrases for the glossary. Terms collected in this way should be double-checked because the English language abstract might not parallel the source

language one; it might have been prepared independently, or translated poorly by the author or publisher.

Even for highly experienced medical translators, unfamiliar vocabulary terms and expressions are often found in a new project. Various authors have their own styles and preferred expressions, and technical language evolves at a faster rate than the general lexicon. Medical research by its nature wanders into unknown territory, and researchers glean and adopt concepts from others in the field.

An initial research phase is completed before starting the translation, but much will also occur during the translation phase using print glossaries, dictionaries, medical encyclopedias, or online resources. Print and online glossaries are helpful, but the corpus of medical terminology is vast and evolving. Reviewing other articles on a similar theme in both the source and target language is helpful, as these will have abstracts and keywords from which term pairs can be harvested. Finding term pairs or correspondences in several sources, especially by different authors, increases confidence in having an accurate glossary.

Some clients provide a glossary for use with the project. If there is any doubt about a new or existing term or phrase in the glossary, it is advisable to contact the client for an opinion. As a rule, the client-supplied term should be used, but a responsible translator will mention any discrepancy during the translation process or in the message that accompanies delivery of the translation. It is also recommended to ask the client whether they would appreciate receiving a copy of the translator's project glossary.

Not all of the research will be completed before beginning the actual translation. Some issues will not become apparent at the assessment stage, and additional items will require attention while the target text is being created. Moreover, some terms and phrases might require fine tuning for meaning, emphasis, and differentiation from related concepts. Still, it is most efficient to get a solid start on the glossary prior to starting the translation phase.

## **5. Translation**

A first step in translation is the title and abstract of the paper. If these are already supplied in the source and target languages, the extant target should be compared with the source and revised if necessary. If the differences are significant, the source should be retranslated.

The typical procedure once the title and abstract are done is to proceed with the introduction or background section, which establishes a context. Next comes the results section(s), and it is here that most of the new vocabulary and the author's preferred usages will become apparent. Unfamiliar terms and phrases are researched as described above. Finally, address the discussion and conclusions sections, which can sometimes be the most difficult. An author might allude to a conclusion rather than stating it clearly, especially if the conclu-

sion is controversial. These nuances must be conveyed accurately. Not all medical professionals can write well, and so the thread might wander or be repetitious. Non sequiturs might appear, possibly introduced in the internal revision process and not caught by the journal editor. Anything that makes the text confusing should be mentioned to the client.

It is important to remember that the style of the target text should reflect current usage in the target language. Repetitions or excessively long sentences that are more common in the source language, or that might be part of the source author's style, should not be carried over as is unless they are essential to the meaning. The target text should not look translated, exhibiting peculiarities that are out of place in English medical style. The American Medical Association publishes a Manual of Style, and medical journal sites offer author's guidelines, but a comparison with other extant medical articles in the target language usually offers good models to be followed.

There are some simple guidelines to mention. The generic name of a drug is not capitalized, while a trade name is capitalized and should bear a <sup>TM</sup> or <sup>®</sup> mark. In case of doubt, the manufacturer's web site will usually provide the proper usage. In some cases, a trade name mentioned is not known in the target language. A literal representation is then appropriate, and depending on client preference, and the generic drug name found through term research can be provided a footnote or included in the project delivery message. Disease conditions are generally not capitalized (e.g., attention deficit hyperactivity disorder) unless they contain a proper name (e.g., Asperger syndrome). Avoid euphemisms, such as 永眠/*eternal sleep*, and instead write 'death'.

## 6. Validation

The validation task is not difficult, but is important. If some key term or phrasing in the translation seems troublesome during the translator's own quality check phase, it is necessary to check whether that term or phrasing appears "in the wild". Use a search engine to search the exact phrase. When it appears, check to ensure the authors are likely to be native English speakers. If it doesn't appear, try some alternatives to see whether a substitute would be preferred. The problem might be as simple as using a different preposition, i.e. "on the patient's liver" rather than "in the patient's liver". If no support for a choice of phrasing can be found, the client should be informed that this is a best guess.

## 7. Examples

Two medical articles are used here as examples to illustrate the translation strategies. The first page of each is reproduced here, and the full documents can be accessed at the presenter's web site to follow the discussion. A Japanese article Hirayama et al., 2011, is a case study that concerns a single patient, and

will exemplify that format. The German article by Horstmann et al., 2006, is a prospective study that includes 317 patients at two facilities, and exemplifies that slightly different format. In each case, the title and abstract appear both in the source language and in English, which facilitates initial assessment. As mentioned before, a medical encyclopedia or a general article in an internet resource such as WebMD or Wikipedia could be consulted to provide the background for a rudimentary understanding of the article content.

### 7.1 Sample Japanese article

\*\*\*Graph01.jpg\*\*\*

Read through the titles in both source and target languages, and see that they convey the same content. It is not unusual for the names of specific drugs or disease conditions to be unfamiliar. Next, read through the abstract, and find that the content is again close to the same. In terms of a glossary for the project, the title contains important terms and phrases, and in the abstract, the author has already indicated some pairings parenthetically:

- 骨関連事象/*skeletal-related events*
- 去勢抵抗性前立腺癌/*castration-refractory prostate cancer*
- リン酸エストラムスチン/*estramustine phosphate*.

The next step is to review the structure of this paper, which is fairly standard. Aside from the 要旨/*abstract*, there is an 緒言/*introduction* followed by the details of the 症例/*case*, which give the observable results. The subsection titles are listed below, although most aren't shown in the first page here:

- 患者/*patient*
- 主訴/*chief complaint*
- 既往歴/*medical history*
- 家族歴/*family history*
- 現病歴/*history of present illness*
- 初診時検査所見/*test findings upon initial examination*
- 現症/*current observations and symptoms*
- 画像所見/*imaging findings*
- 治療経過/*course of current illness*

These show that the patient is a 66-year-old male with high PSA values, and nothing remarkable in the medical or family history. The clinical findings are presented, along with the course of treatment.

After these come the 考察/*discussion*, the 結語/*conclusions*, and 文献/*literature citations*. Translation of these can proceed straightforwardly. The literature citations are all already in English. In this article, the graph and imag-

ing data figure (not shown here) already have the labels and legends in English. This seems to be increasingly true in Japanese scholarly journal articles. However, if the labels and legends were in Japanese, the translations could be overlaid in the graphical figures themselves, or presented separately in a key.

While a fax copy is generally what is received from a client, a high-quality copy of many articles can be obtained from a Japanese journal media site such as [www.pieronline.jp] for a reasonable fee, offering more legible and extractable text and better quality graphics to be incorporated into the delivered translation. The graphics in this case can be captured from the PDF source using the Adobe Snapshot tool, and embedded directly into the translation.

## 7.2 Sample German article

\*\*\*Graph02.jpg\*\*\*

Here, not only the titles and abstracts but also the key words are present in both source and target languages. The *Zusammenfassung/Abstract* consists of four parts: *Hintergrund/Background*, *Patienten und Methoden/Patients and Methods*, *Ergebnisse/Results*, and spilling onto the second page (not shown here), *Schlussfolgerung/Conclusions*. To the left are the *Schlüsselwörter/Key words*. Reading these through shows that both versions convey the same content. The key words will form the beginning of our project glossary. Note that the abbreviations used in the German version, GERD as the disease name and GLQI as a statistical measure, relate to the English versions of the full expressions.

This paper describes a prospective study with 317 patients at two facilities. The format of the body parallels and expands upon that of the abstract, and adds an *Einleitung/Introduction* as an expansion of the Background. For this paper, we would follow essentially the same strategy as for the Japanese paper, starting with the abstract, continuing with the introduction and the results, and finishing up with the discussion, which includes the Conclusions from the Abstract.

General information in the Patients and Methods section is followed by the subsections *Chirurgische Technik/surgical technique*, *Statistik/statistics*, and *Follow-up/follow-up* appear. The Results section includes *Patientendaten/patient data* (which appears in a table), *Perioperative Komplikationen/perioperative complications*, *Rezidivrate/recurrence rate*, *Lebensqualität/quality of life* (illustrated in a graph figure), *Evaluation der Symptome/evaluation of symptoms* (illustrated in a graph figure). Note how closely parallel this medical terminology is in English and German!

All but two of the literature citations are in English. The two graph figures and the table are all in German, and translation will involve formatting the table, and either overlaying the graph text in a screen capture or providing a key for the graph figures. In preparing a bid for a project such as this, the time taken for formatting the table and graphics should be included.

## 8. Conclusions

We have outlined strategies for the translation into English of two medical articles, in Japanese and German. The four stages to approach translation of such articles are assessment, research, translation, and validation. Proper research and preparation enables a technically-oriented translator for this work.

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