

# Linking a Medical Practitioner's Use of English for Medical Purposes in Japan to Skills and Abilities Development at University

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In this article, I explore the use of English by a medical practitioner in Japan, and from the results of an interview, consider some of the possible issues in relation to a project on the creation of materials for medical students at university. This research also connects with the work of a colleague (Fraser, 2013) on developing a corpus for medical students, which will act as an important component of materials design and development. Through the creation of the corpus, key language areas for students will be established. However, in designing materials, a number of issues have to be considered, particularly in relation to students' university context and their potential needs as practitioners in the future. As noted in another article in this journal (Davies et al., 2013), English for Medical Purposes is a broad area, and the focus of materials here is on the use of English in a country where the key language is Japanese: For university medical students, the language in which they learn medicine is Japanese, and for the majority, it will be the main language in their professional lives. English is a foreign language that is considered to be an important part of their education. Consequently, the teaching of English for medical purposes is likely to be very different from that taught to visiting medical residents in the U. S. A., a situation described by Eggly (2002). My research is focused on the English language needs of medical practitioners, which can be factored into the design of materials for university medical students. A key aim is to get some understanding of when English is used by Japanese medical practitioners and to what end. A linked aim is to develop an understanding of the thinking that underpins the medical profession, particularly in its relationship to science. The discussion section initially covers this latter aim, followed by issues of language teaching materials development on the basis of the understandings that emerge from the interview data.

## LITERATURE REVIEW

The literature review has developed in parallel with the research itself because the areas to explore emerged through the interview process. As most of the interview has involved a consideration of the different types of research read and undertaken by medical practitioners, the issue of medicine and its relationship to science has emerged, as well as a consideration of the definition of science. Consequently, the first part of this section considers ideas on paradigms and science. The second part briefly lists the key authors in applied linguistics whose ideas are used in the discussion of materials development.

## Paradigm Issues and Science

In relation to paradigms in research, arguments in this area have led to the idea of paradigm wars, the term paradigm originating in Kuhn's (1996) The Structure of Scientific Revolutions. This has relevance to the interview data, as much of it concerns medical research and its categorization. In the social sciences, research is often divided into two paradigms, usually labelled as the interpretative and the scientific paradigms. A very simple categorization of the two is that the interpretative paradigm involves the analysis of discourse, often backed up with descriptive statistics, while the scientific paradigm focuses on testing through inferential statistics to establish whether there are significant differences between groups and to generalize findings from a sample to a wider population. The data collection in this research is focused on medicine, which concerns human welfare while being oriented towards the scientific paradigm.

Medical practitioners' primary concerns are on the healing of the sick and in this research, the narrow focus on generalizability through inferential statistics seems too limiting for the tag of "science." How then can science be described? In a different field, Diamond (2011) uses a natural comparative method, and underlines the problem:

Science is often misrepresented as "the body of knowledge acquired by performing replicated controlled experiments in the laboratory." Actually science is something much broader: the acquisition of reliable knowledge about the world. (p.17)

The research in this study is interview-based and in the course of it, the issue of defining science emerges, particularly in relation to the kind of research that doctors undertake and its relevance to working practice. These issues are considered in more depth in the discussion section, but in following up the initial interview described in this article, the interviewee chose a written definition from an Internet search (<http://www.sciencemadesimple.com>):

*The word science comes from the Latin "Scientia," meaning knowledge. How do we define science? According to Webster's New Collegiate Dictionary, the definition of science is "knowledge attained through study or practice," or "knowledge covering general truths of the operation of general laws, esp. as obtained and tested through scientific method (and) concerned with the physical world" What does that really mean? Science refers to a system of acquiring knowledge. This system uses observation and experimentation to describe and explain natural phenomena. The term science also refers to the organized body of knowledge people have gained using that system. Less formally, the word science often describes any systematic field of study or the knowledge gained from it.*

The definition becomes important because in the interview data for this research there is a discussion of case studies in comparison to clinical studies. In a case study, an unusual case is observed and written up in comparison to previous studies. While a case study does not usually involve inferential statistics, it is important in medical research.

## Approaches to Materials

As this research forms part of the background to materials design, it is important to consider theory in relation to teaching and materials. The orientation taken in the study falls under the broad umbrella term of the communicative approach, but it is important to note that in this article, it is a broad umbrella, a point noted by Nunan (1989; 2004) who argues that the communicative approach incorporates a number of approaches. In this article, I argue that there is one approach containing a diverse number of schools that can be identified by their family resemblances. I do not seek to align with a particular school's theoretical framework to rule in or rule out acceptable materials, rather I seek to draw on useful ideas that can be used to shape possibilities in relation to the issues that emerge from the interview data and which are brought into the discussion section: Work by Widdowson (1978; 1991) helped develop the broad base of the communicative approach and is particularly useful in consideration of the use of different types of texts in relation to coherence and cohesion; Nunan's (1989; 2004) ideas on materials offers practical insights and ways of defining them; Nation's (2008) four-strand model of Input, Output, Language-Focus, Fluency is a useful way of considering balance.

## RESEARCH METHOD

This study forms part of some initial exploratory research on building courses for medical students, and can be categorized as interpretative. One of the key tools in research is the interview, and this form of data collection is central to the study. Cohen, Manion and Morrison (2001) point out that the interview is intersubjective:

Interviews enable participants... to discuss their interpretations of the world in which they live, and to express how they regard situations from their own point of view. In these senses the interview is not simply concerned with collecting data about life: it is part of life itself, its human embeddedness is inescapable. (p.267)

They note Kitwood's three-way division of interview types: (1) The interview as a potential means of pure information transfer; (2) The interview as a transaction which inevitably has bias, which is to be recognized and controlled; (3) The interview as an encounter necessarily sharing many features of everyday life.

Interviews can be approached in different ways, and in this article I wish to contrast two types of interview: One is to treat the interview in a way similar to counselling, where the interviewee speaks as little as possible, but on the basis of what he/she is looking for, steers the interview through a process of asking questions; the other is to conduct the interview more on the basis of a discussion, with both interviewer and interviewee producing ideas and commenting on them. It is the latter form that I used in this research. The interview is both a means of information transfer and a constructive activity: As the participants discuss the topic there are some areas which become clear and others which are difficult to define, and only become categorizable through further reflection and discussion. The approach to the study has been

one of joint construction of ideas on medicine, with the interviewer trying to gain an understanding of medicine, and both interviewer and interviewee seeking to accurately summarize the key points of the interview in English.

In the first interview, data were obtained on the basis of a semi-structured interview: This meant that I approached the interview with a set of topics for discussion in mind. As the interviewee (Dr. S) was someone that I knew and to whom I had already talked about medicine on a number of occasions, these topics were ordered in a way I considered to have the highest likelihood of getting rich data. From previous conversations, I knew that he read medical papers in English, and so the discussion of research and its value to a doctor would help to establish some core aspects in relation to the approach to medicine. After developing ideas in this area, we would then talk about the interviewee's use of English in his work, then about his own English learning, particularly in relation to university study, and any views he had on what would be important for study at university.

The interviewee was selected opportunistically, as someone that I know, who has a very high level of English, which he is dedicated to improving. He is a Japanese brain surgeon in his mid-forties, working in a small city which has a national university campus. After completing his undergraduate degree in medicine and passing the national examination for medical practitioners, he did one year of residency<sup>9</sup>. He then joined a graduate school and did basic scientific research on the treatment of brain tumours with gene therapy.

The first interview took place at the interviewee's hospital. It was recorded and transcribed, ordered and summarized for the article. The description and the article summarization were shown to the interviewee to check understandings and avoid mistakes. In addition further questions were asked to investigate outstanding issues. The reason for doing this was clarity, and the basis of the interview was a joint construction of meanings that emerged through dialogue. Given that as interviewer and interviewee we came from two different fields, medicine and applied linguistics, it was often necessary for me to explain my understanding of medicine and to receive confirmation or correction, then ask questions based on what had been understood. A second interview discussion took place as a follow up to the first.

Also, in many ways, this is piece of research that does not include sensitive information. Some interview-based research may involve a group of interviewees revealing information that they would not usually discuss in public. However, the information contained in this interview is about a more open form of knowledge. It is concerned with what a medical practitioner does and the relationship between medicine and science. This differs strongly from interviews that are oriented towards areas such as power relationships and tensions in a hospital, where information can be very sensitive. With only one interviewee, it was also possible for him to read the evolving article in a way that would be impossible in the case of multiple participants discussing more sensitive issues.

A further point to note is that, in the case of some interview-based research, the main purpose is to develop concepts and categories that come out of a range of interviews. While there is some consideration of concepts and categories in this research in relation to medicine

itself, the main purpose is to generate ideas and questions on the grading and selection of English language teaching content and types of materials for medical students.

In terms of the English spoken and written by the interviewee in the process of the study, it has been italicized, punctuated, and small mistakes in grammar have been corrected. The key focus is on the meaning and content of what was said and written, not on how it was said or written, and my purpose in the corrections has been to make the quotations as clear as possible. The final version has been seen by the interviewee.

Finally, as the study concerns a single interviewee talking about routine aspects of his work, who made time in a busy work schedule to assist with the research, I have, with his permission, taken the rather unusual step of thanking him at the end of this article and thereby revealing his identity<sup>13</sup>.

## RESULTS

The results are based on two interview discussions and are documented in sequence. The first interview was recorded, transcribed, and summarized. After analysing the data, a second interview took place, which was different in process from the first: I had asked Dr. S for some clarifications, mainly in relation to types of research article, and he provided his own written descriptions of different types of research and examples of them. In the interview, I read through his written descriptions and asked questions to clarify anything I could not understand.

### Summary of the First Interview

Dr. S had studied reading texts at university. These were general English texts rather than medical texts. On graduating from university he had only basic abilities in spoken English, which became apparent to him when he attended an international medical conference. Some of the doctors in his graduate school were very fluent in English, and this made him feel it was possible to master English. About three years after completing graduate school, he started to study English conversation through NHK's English teaching programmes.

At the end of his year of residency, Dr. S had started reading medical articles in English. At first this was very difficult, partly because he was using the reading to develop his conceptual understandings on neurosurgery. After about three years he had developed a conceptual framework of the field, and this made the reading of further articles in English easier. Also, in his particular specialism, he found that the number of medical terms that he needed to understand was relatively small compared to the wider medical field; the number of terms in medicine as a whole is very large, but for a specialist reading in a particular field, the number of key terms is much more manageable.

The English ability that is most used by Dr. S is reading: He usually reads between 30 and 40 articles in English annually as well as a similar number of articles in Japanese. He does most of this reading to keep up with his specialist field. A main reason is to find out how patients are being treated in other countries. He also reads to check up on rare cases that may give insight into his own patients' conditions:

*Now what, I'm doing in clinical research is the brain aneurysm. I sometimes check the clinical research about brain aneurysms and, other than that, whether there are rare cases.*

As can be seen from the quotation, there are two main types of research that Dr. S reads: clinical studies and case studies. In addition, he has experience of reading basic scientific research in English. He regards case studies as very important when doctors encounter unusual cases. If they publish such cases, they carefully note the ways in which these differ from other cases:

*The main purpose that I have for writing a case study is to describe new things which have not been described previously... I compare previous reports and our case, so the discussion points are the differences between our case and previous cases.*

In terms of a rough estimate for his own field of neurosurgery, about 1% of Dr. S's cases are unusual. In dealing with an unusual case, there will be a discussion between the neurosurgeons in the hospital to pool experience and ideas, and the surgeon will also search the internet for articles related to the case, usually case study research. The other 99% of Dr. S's cases fall into standard categories in which there is a standard procedure for dealing with them.

In relation to Dr. S's views on skills that it would be useful for university students to learn, he feels it is important for them to learn how to read medical papers, as it is an important skill for medical doctors. If this starts at university it becomes, easier to do it as a practising doctor. He also considers doctor-patient conversation to be important, but that this is a skill that can be developed later.

### **Summary of the Follow-up: Reading and Discussion**

Given the importance of reading for Dr. S, I asked him if he could provide more information on the types of research he described in the first interview, particularly in relation to case study research, clinical research, and basic scientific research. Dr. S provided both written summarizations and articles that are examples of case studies and clinical research. His descriptions of the case studies are as follows:

#### Case Studies

*Describing the rare diseases or cases in which the clinical courses are unusual. When you write case reports, you usually refer to the same or similar cases that are previously reported and discuss the distinctive or problematic points of the author's case. Writing a case report gives the refinement of knowledge about a rare disease and sometimes gives new information that has not been reported previously. It is also meaningful to accumulate the clinical data of rare diseases.*

Clinical reports are a different category of medical research, and these can be developed

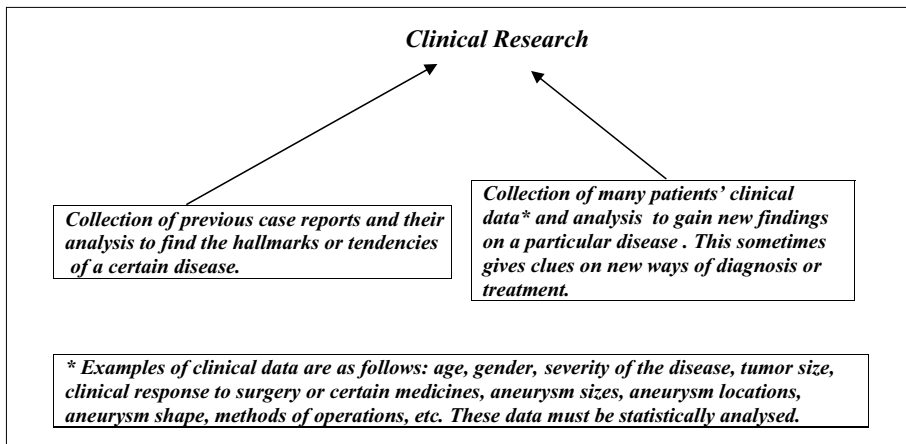
in two ways, shown in Table 1: A clinical report may be developed through a collection of case studies, but this is rare (about 5% of clinical studies); the great majority of clinical reports are made through the direct collection of data of patients, which are then statistically analysed (about 95% of clinical studies).

### Clinical Reports

*Clinical research is performed to find the hallmarks of diseases that were unknown previously or to obtain new findings on a certain disease which sometimes give the clues of new ways of diagnosis or treatment. Moreover, it is also done in order to clarify the effectiveness of certain treatments including new medicine or new types of surgery.*

*The materials (clinical data) are the information that have been reported previously and the information of patients that were obtained from daily clinical practices. This kind of research is done exclusively by medical doctors.*

Table 1. The Two Forms of Clinical Research



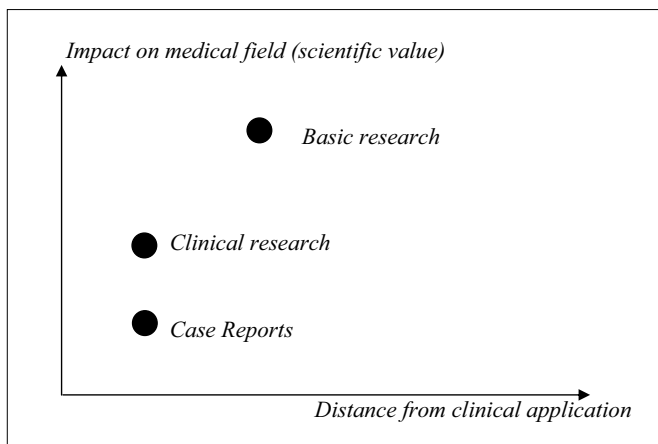
One further area of research that Dr. S describes is basic research, which does not involve patients, and the way he evaluates the different types of research is shown in table 2:

*Basic research is usually performed to reveal the mechanisms of genesis of a certain disease or the mechanisms or functions of human organs or body. Sometimes this research leads to new ways of treatment for diseases.*

*The materials that are used in basic research are usually cells, tumor cells, some kind of viruses, animals, artificially produced gene products and many kinds of analysing machines. Basically, human bodies are not used. These kinds of research are done in laboratories and performed not only by medical doctors, but also researchers\*. When clinical doctors do basic research, many of them take periods of focus on this activity without clinical practice.*

*\* Researchers are the people who have graduated from a science department of a university and are doing research professionally.*

**Table 2. Three Types of Research**



## DISCUSSION

In this section, there are three important areas to cover. The first is the connection between medicine and science in the context of the different types of research described in this article. Following from this, I consider the importance of reading to a medical practitioner, and how materials might be created for developing this ability.

### Medicine and Science

The most difficult area in terms of categorization and definition concerns the relationship between medicine and science. Of the three types of research described in this article, “basic research” fits most closely with the simple definition of the scientific paradigm described in the literature review. In relation to table 2, this kind of research has a high impact on the medical field. However, it is the clinical research and case reports that are closer in terms of medical application. What can be interpreted from this? The first point to make is that medical practitioners are themselves involved in extending the boundaries of medical knowledge, and on the basis of the interview data, this can occur in two ways: There is technical innovation and development in treatment, so that with the introduction of new devices or drugs, better ways of treating medical problems are tested out by doctors. Also, through their own detailed knowledge of patients and medical problems, doctors develop ideas which have not been previously considered. Clinical research and case study research are used to extend the boundaries of knowledge.

On a more sophisticated analysis of the scientific paradigm the picture becomes clearer: Cohen, Manion & Morrison (2000) describe six stages in the development of a science:



1. Definition of the science and identification of the phenomena that are to be subsumed under it.
2. Observational stage at which the relevant factors, variables or items are identified and labelled; and at which categories and taxonomies are developed.
3. Correlational research in which variables and parameters are related to one another and information is systematically integrated as theories begin to develop.
4. The systematic and controlled manipulation of variables to see if experiments will produce expected results, thus moving from correlation to causality.
5. The firm establishment of a body of theory as the outcome of the earlier stages are accumulated. Depending on the nature of the phenomena under scrutiny, laws may be formulated and systematized.
6. The use of established body of theory in the resolution of problems or as a source of further hypotheses. (p.16)

In terms of considering research in an established field such as medicine, the stages offer some insight into the development of new findings in medicine. Basic research, considered as having high impact on the medical field, fits strongly with the description in stage 4. Case study research is at the observational stage, but it seems more realistic to describe it as the development of untested hypotheses on the basis of unusual cases; a medical practitioner, in encountering a rare case and with the knowledge of a patient's medical history, develops a hypothesis, but is not in a position to statistically test it. Consequently, he/she reads and summarizes other case studies that are very similar and provides a hypothesis. In the example case study provided by Dr. S, the hypothesis is that in patients who had cancer of the kidney over ten years prior to the development of brain tumours, these cancers are linked. A key issue is the very long period of time between the two tumours. The example clinical study which involved classification and inferential statistics to show the higher risk of rupture of a particular type of aneurysm, fits with stage 3.

Perhaps the best way of describing medicine is that it is science-based but operates within the very important ethical constraints of the medical profession. For clear ethical reasons, medical practitioners have limits on the data they can collect, but where they have the opportunity to test new hypotheses to further medical understanding from data collected in the course of treating patients, they do so.

### **English Abilities that a Medical Practitioner Needs**

Key issues in syllabus design and materials development are what to teach and how to teach it. In considering a core from which to build, the strategy under consideration is of a lexical syllabus designed from a corpus created from key medical texts. Given the limited time allocation of any course of study, it is important to identify the most valuable items of study. Corpus-based analysis will form a key part of this identification with the further benefit of identifying key collocations. How do the needs of medical practitioners inform materials development

based on this approach?

In this research a key ability is reading. The ability to read in English gives Dr. S the capacity to explore what is happening in terms of medical developments outside Japan, as well as draw on international expertise when dealing with rare and unusual medical cases. Given the quantity of his reading in English, which he considers to be above average for his profession in Japan, this is the most regular aspect of English use in his working life. In contrast, the use of English in terms of dialogue with patients is quite infrequent – once every two months. Consequently, one aim in the building of materials could be towards reading clinical research and case studies.

### Creating Texts

As reading may be the key skill in the students' future it is important to consider how texts might be used or created? The idea of teaching English for medical purposes connects with Widdowson's (1978) idea of teaching English through the medium of other subjects. He suggests three types of text for students: extracts; simplified versions, and simple accounts. All three of these are considered here.

As Widdowson (1978) notes, "an extract is quite simply a piece of genuine discourse." He observes that there are several problems with an extract. The most major of these is usually the difficulty of the language in the text. In order to help the reader with this problem, a glossary is often provided: priming glossaries are designed to be studied prior to reading, while prompting glossaries, often printed after a text, are designed to be referred to while students follow the text. In the example Widdowson gives of a priming glossary, he notes that some items may be oriented towards 'signification' of the lexical item concerned" (the general meaning of the word) or its 'value' (the particular meaning of a word in the context given). However, in his analysis, Widdowson considers glossaries that solely use the target language. In more recent work, Cook (2010) has investigated the use of translation in language teaching, questioning the dominance of an "English only" approach to language learning. In the case of a genuine medical text, a glossary of terms with Japanese translations and explanations would lighten the cognitive load for students. This would be preferable to the "simplified" version of a text, where the materials writer identifies the passages that are potentially most problematic for students and re-writes them in simpler English. The problem with this, as Widdowson notes, is that such re-writing may distort use.

The third type of text is the simple account in which a completely new text is written for the purposes of teaching. In many subjects, the role of the teacher is to teach at a level that the students can understand. One possibility for the use of simple texts that follow the structure of a medical article could be in the use of summaries in more general texts. If seminal studies in medicine could be used to create texts by placing them in their historical context, giving the background of the researchers involved, then summarizing the research undertaken and its impact, this would be a natural way of using a summary in simple English as part of a broader article, rather than the re-writing of the original study, which would seem more

unnatural. Through the summarization, key terms relating to that particular kind of research (case study or clinical study) could be given in slightly more detail than in a general English text for non-medical students.

While the preceding paragraphs have focused on written texts that build towards reading medical research papers, consideration could also be given towards using simple accounts in a more general way. These kinds of text could include the following: short biographical texts on famous figures in medical history; the historical development of various aspects of medicine; the prevalence of certain diseases in different parts of the world and current treatments; key cases leading to the development of medical ethics.

The data in this study have led to a focus on reading. However, it is on a very small scale, and as I have noted in this study, consideration of how medical practitioners currently use English is only one factor in the development of a medical course. Building a knowledge of medical terms and how they collocate in English may also require a strong focus on usage. In addition, the ability to build up and integrate the other abilities of writing, listening and speaking needs to be taken into consideration.

## CONCLUSION

This research has used interview analysis to consider how the needs of medical practitioners may affect the writing of materials. In it, I have explored the science-based nature of medicine, and the use of English in the working life of an experienced medical practitioner. The results of the research indicate a possible need to develop reading skills for at least two types of medical research: case studies and clinical reports. In considering how this need might be addressed through the use of texts, I have suggested the use of simple texts on a variety of topics and the use of genuine medical reports supported by translations of key terms.

As noted throughout this article, this is an exploratory piece of research, carried out to gain some understanding of how a medical practitioner in Japan uses English. Further research is needed to follow this up: (1) more interview research, particularly with doctors who are involved in general medical practice (2) survey research based on the results of the interview research. In the case of the findings yielding similar results in terms of reading, then work needs to be done to establish what are the core or seminal medical articles or studies in English that could be used in materials development.

Finally, it is worth considering the grey area that lies between English for Medical Purposes (EMP) and English for General Purposes (EGP). Particularly in the area of reading, it should be possible to develop texts designed for the general reader but with a focus on medical areas. In further research on courses for medical students, the attempt will be made to develop links between EGP and EMP.

## NOTES

- i) The usual period of residency is two years, but Dr. S was invited to undertake research at the end of his first year.

- ii) I would like to express my gratitude to Dr. Takashi Sadatomo, who has patiently explained the nature of his work and his use of English in that capacity. Any mistakes in the article are mine alone.

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## 要 約

### 日本の大学における医学目的のための医者の英語使用と英語力向上との関連性

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本論文では、医者の英語使用に関するインタビュー結果について述べている。研究の主な目的は、学士課程で使用する英語教材に関連した医学生の将来のニーズを考えることである。インタビューの中で医学と科学の関連性について議論され、これを医学研究を分類する背景として使っている。データから明らかになった重要なことは、医学論文を読むことができる英語力の必要性である。医学論文は2つに分類される。一つは、推測統計学に関わる臨床研究で、もう一つは、珍しい事例を綿密に調査し、検証されていない仮説を展開していくケーススタディである。医者の中には、実験室で行われた基礎的科学研究の論文を読む者もいる。

リーディング力向上の観点では、学生用テキストに関するウイドウソンの考えを検討し、重要語（句）の訳がついたグロッサリーのあるオリジナルテキストやとりわけ医学生用の新しいテキストを使う可能性を考える。