The Coexistence of Latin and English in Medical Terminology and its Contribution to ESP Teaching

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Abstract: Long before English became the lingua franca of science, Latin was the dominant language of medicine. In general, Greek and Latin shaped the conventions of scientific, primarily medical, writing for over 2000 years. The study presents the advantages of the coexistence of Latin and English in medical terminology and its contribution to ESP teaching. One advantage is the parallel teaching of Latin and ESP courses in the first year of General Medicine programmes at our faculty. Another advantage is the affinity of Latin and English, which results from the historical development of both languages. These advantages will also be reflected in teaching ESP courses, because students can easily combine their knowledge of both languages, compare differences in word formation and adapt terminology of English-speaking professionals. We consider strategies for teaching and learning of medical terms (vocabulary) to be crucial. To understand the importance of teaching medical vocabulary in ESP courses, both English teachers and students need to understand its historical background. Knowledge of technical terms as well as a layperson (patient) vocabulary is essential for the development of communication skills, i.e. has a significant impact on effective reading and listening comprehension.

Keywords: Latin/Greek Medical Terminology; ESP Courses; Medical English; Vocabulary Teaching Strategies; Historical Background

1. INTRODUCTION

In the modern era in which English is the world's language, the fact that interference of English into the modern language of medicine is getting more powerful cannot be denied. The latest results of research are published mostly in English and also new medical terms for diseases, laboratory and investigation procedures are in English. Karwacka [1] confirms that the scientific world is predominantly English-speaking and major scientific journals publish papers in English. The share of scientific papers written in English in the total number of papers published is 80% according to Montgomery [2] and 85% according to Kaplan [3]. In contrast, anatomical terms remain in their original form. Despite the tendency of English to be the new ‘lingua franca’ of medicine, English medical terminology is strongly rooted in Latin. In other words, medical English is latinized. The latest revision of anatomical nomenclature, ‘Terminologia Anatomica’(1998)[4] is in Latin which serves as a basis for national versions including English language versions.[5] [6]

Medical terminology may be divided into two main parts: anatomical (based on Latin) and clinical (based on Greek). The modern anatomical terminology is based on the centuries-old tradition and knowledge that is constantly revised. Clinical medicine has not finished its development yet and there are many questions for it to answer regarding the aetiology of the existing diseases as well as new ones. The names of diseases were formed empirically in various times and places therefore clinical terminology is not uniform. Besides, clinical subjects continue to develop, so their knowledge must be continually revised.

While Latin dominates in medical records and communication among doctors, English is mostly used in doctor-patient communication and as a language of international cooperation. Therefore, medical English is taught with reference to Latin. We see advantages in the parallel teaching of Latin and English in the first year of study at our faculty because students can easily combine their knowledge, compare differences in word formation and adapt terminology of English speaking professionals.
2. BRIEF OVERVIEW OF THE HISTORY OF MEDICAL TERMINOLOGY

In the textbook ‘Greco-Latin Medical Terminology’, Bujalková and Jurčeková[7] explain that the history of medical terminology is a part of the history of medicine because medical terms reflect to a certain extent the development of medicine in a given period. The modern language of medicine employs modern derivatives of Greek and Latin words “with no concern for etymological purity” [8]. The corpus of Greek and Latin terminology is still the base of contemporary medical language, which also uses new eponyms, acronyms and trade names.

The founders of scientific Medicine and terminology were the Ancient Greeks. Since the 6th century BC, they gradually got rid of practices rooted in magic and started to develop medical practice based on experience and Ancient Greek philosophy. They realized the importance of clear and exact terms in the sciences. Ancient Greek Medicine came into existence with Hippocrates, the Father of Medicine. In his time, primitive terms and descriptions were no longer used.

The Greek physician Galen (2nd century AD) synthetized the medical knowledge of Antiquity. The Romans (as in many fields) took over Greek medical knowledge, translating and re-writing Greek books. The greatest Roman scholar was Celsius who is considered a founder of Latin medical terminology. The Latin language lacked the names for many medical notions, especially the terms for pathological conditions, which is why Celsius and others had to translate Greek terms into Latin, while simultaneously using Greek terms in the Greek form. This way the two-fold Latin-Greek medical terminology was founded. The Greek part of the terminology was latinized.

Even long after the fall of the Roman Empire, Latin was still the language of communication. It was used in two forms: spoken, also called Vulgar Latin, which gradually evolved into many Romance languages, and written or literary Latin, which was used as a language of educated people in schools, offices and churches. Medieval Latin differed from classical Latin because it was not the language of any ethnic group. In this respect, it was a dead language. In the Middle Ages, Latin was a means of communication for all educated people in Europe. All scientific texts were written in Latin. In this period, universities were established in Western Europe, and Medicine as one of the ‘Arts’ (Sciences) could be studied there under master physicians. The period after 1500 AD is called New Latin.

This lasted till the first half of the 19th century. The replacement of Latin was a consequence of a significant progress in the development of Medicine, and Latin as the language of ‘the old world’ became too limited to express all the newly acquired knowledge reached in Medicine and Natural Sciences. In the second half of the 19th century, medical literature written in languages other than Latin started to prevail. However, medical terms in literature remained in Latin or Greek as they were widely used but were also quickly assimilated into modern languages.

Since the 20th century, English has dominated in Science. Research on the interference of Latin into English confirmed that 98% of all English medical terms have Latin or Greek roots, as do new medical words which arise every month [9]. However, Turmezei[10] found out that 89% of English anatomical terminology is of Latin (65%) and Greek (24%) origin. This provides evidence that medical students cannot successfully accomplish their study, if they ignore the course in Medical Latin. Marečková, Šimon and Červený [11] emphasize that medical students need to learn what specialist words mean, how they are used, and how they are pronounced. It is difficult to argue that one can successfully learn anatomy, physiology, and many aspects of Medicine without a basic working knowledge of Latin. It is the contention of some experts that English will not utterly eclipse Latin, but that its origin as a Latin-derived language serves the role of promulgating Latin into the next era.

Medical terminology based on Latin and Greek has several advantages:

- it provides continuity between the past and the present as well as continuity in space – Latin terminology is used all over the world;
- the grammatical system and vocabulary of Latin and Greek does not change, therefore modern terms are still based on these dead languages;
- it has a practical importance in Medicine – the patient does not understand it and cannot draw adequate conclusions.
3. **The Development of the English Language in Short**

In 55 and 54 BC, Julius Caesar invaded Britain. The Romanization of Britain, however, did not occur until almost 100 years later when expeditionary forces were sent out by the Roman emperor Claudius. Although Latin was the official language during the Roman occupation of Britain, Celtic, the native language of the people of Britain, was little affected by it.\[12\]

As is stated in Dunmore and Fleischer’s Medical Terminology \[12\], the English language began its development as an independent language with the migration of Germanic people (Angles, Saxons, and Jutes) from Western Europe across the English Channel to Britain during the 5th and 6th centuries AD. These Germanic invaders, in contact with the Romans from the 1st century BC on, brought with them not only their native language but also the Latin words they had borrowed from the Romans. Their language, known as Old English or Anglo-Saxon, was a member of the Germanic family of Indo-European languages and gradually superseded the Celtic dialects in most of southern Britain. Many Old English words have survived, with some linguistic change, to form the basic vocabulary of the English language (Anglo-Saxon had some basic medical terminology, e.g. head, skull, brain, nose, blood, wound, sore). Words borrowed from others languages – mostly Latin, French, and Greek – have been added to the English language.

During the 7th century AD, the inhabitants of Britain gradually converted to Christianity. Latin, the language of the Western Church, was spoken, written, and read in churches, schools, and monasteries. This brought many Latin words into the evolving English language, most having to do with religious matters and many derived from Greek.

The Norman invasion in 1066 AD brought a French-speaking aristocracy to England, and for the next 150 years, French was the official spoken and written language of the governing class. In this period, French with its roots in Latin, existed alongside English. However, in the following 300 years – from about 1200 to 1500 AD – although English was once again the dominant language, many words were borrowed from French because its vocabulary was far richer. French words penetrated first of all into administrative, legal, religious, political, military, artistic, and culinary terminologies, less into medical vocabulary, though there are some French terms, such as jaundice, poison, faint, etc. French played a far more important role as a medium for the penetration of Latin words into English, e.g. superior, inferior, male, female, face, gout, migraine, odour, ointment, pain, venom. \[13\] During these years, the changing English language reached the stage we know as Middle English.

With the Renaissance (1400-1600 AD) came a revival of classic scholarship. English words began to be formed directly from Latin and Greek and were no longer borrowed through the intermediary of French. Beginning about 1500 AD, for the first time the writings of the ancient Greeks were read in England in their original language. Words were borrowed extensively from Greek and Latin, both with and without change, and new words were created that combined both Latin and Greek elements. The English of this period is now known as Modern English.

4. **Coexistence of Latin and English in Medical Terminology**

The extensive borrowing of words from Latin and Greek into English that began about 1500 AD continued for hundreds of years and continues to this day. New advances were made in the field of Medicine and Science during and after the Renaissance (and continuing up to the present day) and words were needed to describe these new discoveries and inventions. Medical scientists turned to the early Greek and Roman physicians, especially Hippocrates, Galen and Celsius, and borrowed words from their medical treatises.

Latin, Greek and latinized Greek medical terms penetrated into English medical terminology in various forms \[14\]\[12\]

- terms preserved in original ancient Greek form (e.g. diabetes, pneumonia, carcinoma, trauma);
- latinized Greek medical terms (bronchus/from Gr.bronchos; colon/from Gr.kolon; comal/from Gr.koma; bacterium/from Gr.bakterion);
- terms preserved in original Latin form (abdomen, aorta, tonsillitis, virus);
- Latin terms assimilated into English (mandible → mandible; musculus → muscle; pulsus → pulse; corona → crown).
• terms with dropped endings (organon → organ; orgasmos → orgasm; spasmos → spasm; stomachos → stomach.

What is especially characteristic of specialized terminology is the use of Latin and Greek affixes e.g. prefixes: all(o) – another, differ(o) – different, adip(o) – fatty, cran(o) – of the cranium, onco- relating to cancer, hyper – excessive, hypo – insufficient suffixes: -itis – inflammation, -algia – pain, -lepsy – attack, seizure, -logy – the knowledge of something), and the obvious correspondences between suffixes, roots, and meaning of the term.

One of the characteristic features of medical language is the presence of acronyms, initialisms and clipped forms. With English having the status of the lingua franca of Medicine, English acronyms enter other languages and are used by both the medical professionals and patients, especially if no native acronym is commonly used in the local language, e.g. CT, MRI, ERY, TEP, CRP, LDL, HDL, etc.

The feature described by Salager-Mayer [15] is the doublet phenomenon – terms (usually of Greek and Latin origin) which have their counterparts (usually of Anglo-Saxon origin) in the general language: search – investigate, shot – injection, heart attack – myocardial infarction.

Several synonymous terms are presented as eponyms, but they also have a parallel Latin name, e.g. Hashimoto’s thyroiditis or chronic lymphocytic thyroiditis, Morbus Kaposi also referred as sarcoma idiopathicum haemorrhagicum multiplex, Morbus Hodgkin or lymphgranuloma malignum, Morbus Cushing also basophilismus pituitarius, etc. [6]

5. STRATEGIES FOR TEACHING AND LEARNING MEDICAL TERMS IN ESP

Learning technical terms, Latin – English equivalents as well as counterparts of medical English and layman (patient) vocabulary related to health conditions is essential for development of student’s communication skills in English.[16]

The Polish authors Donesch-Jeżoand Pachońska-Wołowska[17] reviewed theories of various authors. Teaching/Learning vocabulary is a major area of concern in ESP, especially EMP courses, which is consistent with Saville-Troike’s[18] statement related to academic achievements that ‘vocabulary knowledge is the single most important area of second language competence’. Showing how words combine together and behave both semantically and grammatically, and indicating, which words should be used in a particular context, is an important part of syllabi of all ESP courses. The importance of the teaching of vocabulary to participants of ESP courses has been stressed by a number of scientists [18][19][20]. Cameron [21] defines vocabulary learning strategies as “actions that learners take to help themselves understand and remember vocabulary”. Schmitt [22] interprets such strategies as learning processes by which vocabulary knowledge is obtained, stored and used. Memorizing, repeating, and note-taking are common strategies used in vocabulary acquisition. When students use these strategies appropriately, they can comprehend, learn, and retain new vocabulary [23].

Dijk and Kintch[24] define language strategies as strategies of the cognitive system, usually beyond the conscious control of the language user. Also, they apply to sequences of mental steps that perform a number of tasks. These tasks are different in nature and scope – for example, identifying sounds or letters, constructing words, analysing syntactic structures, and understanding sentential or textual meanings. Grammatical strategies allow us to make presumptions about the missing word. “They are not limited to the use of rule-governed information from the cognitive grammar and its specific levels, units, or categories (e.g. morphology or syntax), but will at the same time use information from other levels or even from the communicative context” [24]. Linguistic and grammatical strategies are applied within the category of discourse strategies. According to the authors, as the production and comprehension of sentences depends on textual information of a large scope, then conversely, the semantic and pragmatic interpretation of a discourse will have sentential information as input. Semantic strategies result in text coherence and cohesion and pragmatic strategies lead a language user to a choice of appropriate language means in order to express particular communicative intension within the particular communicative situation.

This is in concordance with the Lexical approach proposed by Lewis[25]. The main premise is that vocabulary learning is in the contrast to memorizing grammatical rules without reference to particular
communication situation. He distinguished four kinds of lexical items, ‘the constituent ‘chunks’ of any language’:

- words – independent units, and poly words – phrases having a degree of idiomaticity (for example, *by the way, on the other hand*);
- collocations – pair of words occurring with very high frequency (usually verb-noun and adjective-noun);
- institutionalised utterances – the chunks, which may have the form of the whole sentences, are most common in spoken language (for example, *It’s nothing to do with me.*);
- sentence frames or heads – common in written communication or when giving a presentation (discourse markers).

He emphasised that lexical items are ‘socially sanctioned independent units. These may be individual words, or full sentences – institutionalised utterances – that convey fixed social or pragmatic meaning within a given community. This definition clearly entails that lexical items are dependent on agreement within a particular social group’[25].

According to Wallace [26], knowing a word is the ability to:

- recognize it in its spoken or written form;
- recall it at will;
- relate it to an appropriate object or concept;
- use it in the appropriate grammatical form;
- spell and pronounce it correctly;
- use it in correct collocations;
- use it at the appropriate level of formality.

For this purpose, a variety of tasks can be used, for example, gap filling exercise (completing sentences with medical terms, linking words), multiple-choice exercise (choosing synonymous meanings or correct term according to definition, matching beginning and endings of statements (focus on syntax), word formation exercise (changing parts of speech) or use of structures and phrases typical for academic writing. [27] Learning and memorizing vocabulary is faster when new words are presented in context which shows how they are used. According to Donesch-Jeżoand Pachońska-Wołowska[17],“the strategy of deducing the meaning of words from the context is one of the indispensable strategies used in vocabulary learning. Vocabulary exercises should offer new information being grounded in the students’ knowledge of the mainstream subjects. These exercises should be interesting, useful and enjoyable.” They also suggest to combine receptive tasks with creative ones. Similarly, Zrníková[27] claims that writing helps students to learn. “The effort to express ideas and the constant use of the eye, the hand, and the brain is a unique way to reinforce learning. When writing, students can strengthen knowledge of the grammatical structures and vocabulary they have acquired. If they write about a topic they are interested in, they become more motivated to use new language.”

The most common exercises, which teachers can find in various course-books [28] [29] [30] [31] [32], are the following:

- breaking down Latin/Greek terms and writing meaning(*cerebro+physi+ology, an+ox+ia*);
- Latin/Greek and English equivalents (*carpus = wrist, talus = ankle*);
- matching medical terms with non-medical; their substitution in text (*clavicle/collar bone, intestines/bowels*);
- listening to the list of words, sorting out into categories according to word stress pattern (** sternum, *** patella**);
- filling the gaps in the sentences by words given (verbs of action: *perform surgery*; verbs with prepositions: *admit to hospital*; adjective + noun or verb + noun collocations: *heavy drinker, informed consent*).
• matching abbreviations with their meaning (CABG = coronary bypass surgery; BP = blood pressure);
• matching phrasal verbs with their meaning (pass out = to die); distinguishing separable (leave something out) from non-separable phrasal verbs (bring round);
• searching a text for synonyms or antonyms (reliable/unreliable; start/begin);
• word formation, changing word classes (spine/spinal, delivery/deliver);
• matching pictures with names of things (aids for the elderly, types of skin lesions).

In self-study, students can record and organize new vocabulary according to following patterns: pronunciation, translation, definition of a term; irregular forms; prepositions and verb collocations; an example sentence; group vocabulary according to topic; group words with similar meaning or antonyms; the most commonly mistaken collocations; verb forms (transitive/intransitive, separable/inseparable phrasal verbs).

Knowledge of vocabulary and appropriate application of learning strategies have a significant impact on effective reading and listening comprehension. Dudley-Evans and Johns [33] found out that the main difficulties seem to be:

• technical vocabulary – Latin and English medical terms (understanding lectures, reading scientific papers, communication with colleagues at conferences);
• semi-technical vocabulary – vocabulary having high frequency (academic English used in scientific articles);
• colloquial vocabulary – exercises based on ‘translation’ from the colloquial/informal to the written/formal (from Latin to medical English in professional communication – from teacher to students, and from medical English used by a doctor to lay English used by patients without medical education);
• follow-up work – the emphasis moves away from comprehension of the information to application and evaluation of that information (giving presentation or communication with a patient in role-play activities).

From the viewpoint of the teacher, Donesch-Jeżo and Pachońska-Wołowska[17] think that teaching medical vocabulary is challenging for language teachers who are not experts in Medicine. On the other hand, they believe that the majority of students do not expect the teacher to be an expert in Medicine. Rather, students expect to be taught the vocabulary and expressions necessary for conducting doctor-patient interactions, comprehension of scientific literature, and participation at conferences. If teachers lack the knowledge when making their own materials, they can consult medical professionals of particular branches of Medicine or simply ask their students to explain the specialist register which they should know.

6. CONCLUSION

Greek and Latin shaped the conventions of scientific – not only medical – writing for over 2000 years. Anglo-Saxon in Britain had some basic medical terminology, e.g. head, skull, brain, nose, blood, wound, sore etc. In the Middle Ages both Latin and Middle English were acceptable in medical communication: Latin in academic instruction and Middle English as the vernacular language. The 19th century was when the reign of Latin in teaching and writing medicine virtually ended. The effect of that reign, however, is visible to date in the relative similarity of medical languages in the Western world, especially in Western languages. The importance of the exact and precise description of anatomy and disease has been emphasized since the very early stage of the development of Medicine.

We believe that teaching vocabulary is a cornerstone of successful medical language teaching/learning. Knowledge of vocabulary and appropriate application of learning strategies have a significant impact on effective reading and listening comprehension. Students expect to be taught the vocabulary and expressions necessary for conducting doctor-patient interactions, comprehending scientific literature and participating at conferences etc.
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