Gained in Translation

Exploring the classical roots of medical terminology

SECTION EDITORS

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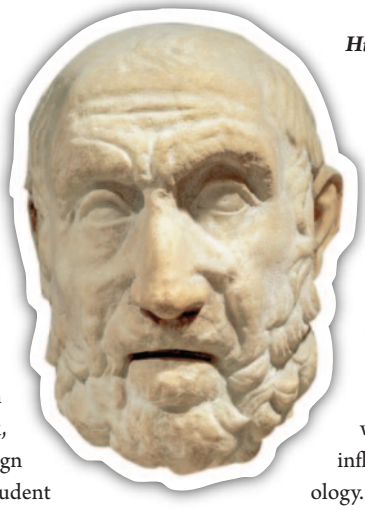
Introduction

Teaching and learning medical terminology is considered a problem, both for teachers, who are supposed to convey scientific concepts hidden in ambiguous lexemes, and for students, frightened by long and unfamiliar words that they do not know how to pronounce, spell, or understand. As most medical terms derive from Latin and a Latinised form of Greek, usually seen as strange foreign languages, the journey for the student pursuing a career in the medical sector seems impossible.



Hippocrates

This is indeed a daunting task and most students wonder whether it is worth it. And yet, a basic knowledge of classical terminology would allow them to break down medical terms into component parts, continuously repeated in several combinations, and understand how they describe body parts, functions, conditions, and symptoms (see Table 1).

Perhaps, having a look at why it is that classical terms flooded into English to such an extent might be of benefit to contextualise the question within the right framework.

History

The oldest written sources of Western medicine are the Hippocratic writings, dating back to the period between the end of the 5th and the beginning of the 4th century BC. They are a collection of about 60 medical works credited to the Greek physician Hippocrates. The works cover all aspects of medicine as it was available then and contain clear and exact medical terms that replaced the old jargon of magic and necromancy, a testimony of the importance given by the Greeks to a precise scientific terminology.

When a plague broke out in Rome in 293 BC, the Romans, who had no medical tradition, called the doctors from Greece[1] and medicine began to spread and develop within the Roman Empire. As most of the doctors practising in the Roman territories, like Galen of Pergamum and Soranus of Ephesus, were Greek or had studied in Greece, Greek became the language of medicine until the fall of the Roman Empire, when it gradually lost its influence over medical terminology.

The Romans began to take over medical knowledge starting from the 1st century AD, when they began to translate and rewrite Greek medical books. Of great interest in this regard is the work of the Roman medical writer Aulus Cornelius Celsus, known as the *Cicero medicorum* (the Cicero of doctors) because of his elegant Latin and of his *De Medicina*, an encyclopaedic overview of the medical knowledge available at that time. As most of the Greek medical terms had no equivalent in Latin, he solved this problem by importing directly into Latin a few Greek terms, Latinising some Greek words with Latin alphabet and Latin ends and preserving the vivid imagery of Greek anatomical terms with a literal translation, like *dentes canini* from the Greek *kynodontes*, which means dog teeth. This resulted in the development of a bilingual Graeco-Latin terminology, with the grammar and structure of Latin and with Greek elements, which still survives today and for which Celsus was given the epithet of founder of the Latin medical terminology.

Galen of Pergamum

During the Middle Ages, between the 9th and 15th century, Arabic gained importance and a few Arabic terms were assimilated by Western medicine. But the situation changed by the Renaissance, as both Greek and Arabic works began to be translated into Latin, and almost all the important medical works were published in this language. International medical communications began to be conducted in Latin, and the era of medical Latin had started. The role of Latin in medical terminology is especially evident in the current anatomy, with an anatomical nomenclature that was founded in 1543 by the Flemish anatomist Andreas Vesalius with his work *De humani corporis fabrica libri septem* ("on the fabric of the human body in seven books") and whose international version fully remains in Latin.[2] And here lies the historical irony of Latin: it had to vanish first as a living language at the end of the Roman Empire before becoming the international language of medical communications during the Middle Ages and up until the 18th century.

By the beginning of the 18th century, the use of Latin in medicine began to wither, until it was finally replaced by national languages, with a flow of concepts and words moving from one to another. The national medical languages had much in common, since most of their medical terms were derived from Greek and Latin, and scientists not only limited themselves to importing

Aulus Cornelius Celsus

medical terms from classical languages, but also created new ones for the new scientific concepts being developed. As those scientists were classically schooled, most of the new words had classical origins, especially from Greek, which lends itself more easily than Latin to the creation of composite words. Thus developed that huge neoclassical word stock with Greek roots, in words such as *nephrectomy* or *erythrocyte*, which is still currently in use.

In the current times of globalisation, English has become the language of choice for the most influential medical journals, at international conferences, and for international communications. However, English vocabulary, spelling, grammar, and sentence structure is considerably influenced by French, brought to England by the Normans in 1066 and officially used up until 1558, when Elizabeth I became queen. For more than three centuries, three completely different language groups coexisted: the Norman ruling class that spoke Old French, the native common people that spoke Old English, and the academic and ecclesiastic community that spoke Latin. However, Old French ended up having far less influence over medical terminology, and its real philological function was that of a medium for the penetration of Latin words into English and English medical terminology.

When English subsequently began to emerge towards the end of the 16th century, it turned out to be saturated with French words, and through this a large number of Graeco-Latin words were introduced in English medical terminology. The undeniable and profound influence of classical languages in the development of the English medical terminology is well-grounded,[3–5] as approximately 95% of the currently used English terms are borrowed or created from Latin or Latinised Greek.[6]

Final message

This brief historical summary outlines a centuries-old history of medical development, where Latin and the Latinised form of Greek are deeply rooted in medical terminology and remain extremely productive for the creation of new terms. This is an extraordinary tradition established over a period of more than two millennia, which undoubtedly proves that the presence of Greek and Latin is simply a natural matter of course.

Therefore, it is possible to conclude that English medical terminology cannot be reasonably mastered without a basic knowledge of classical languages, especially Latin.[2] This situation involves all the areas of theoretical and practical medicine, together with nomenclature corpora, as the development of medicine and science was done in universities speaking Latin, just as indicated by the Latin locution "*non est via in medicina sine lingua Latina*" (there is no going into medicine without the language of Latin).

Andreas Vesalius

The teaching of classical terminology by medical faculties is not only necessary but even legitimate,[7] as students would benefit a lot from a basic knowledge of the classical languages.[8] They would learn how to correctly spell and use classical terms to avoid mistakes, not just in terms of incorrect spelling[9-13] but also in terms of meaning.[2,14] Their academic performance would be improved by the awareness of Latin and Greek etymologies,[15,16] the training process and memorisation would be enhanced and reinforced by the understanding of the Latin anatomical etymology, and finally the development of core skills would be strongly promoted by the knowledge of medical terminology.[17,18]

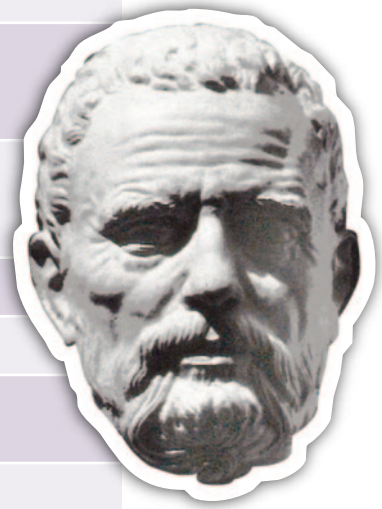
Conclusions

The picture given so far highlights a state of natural symbiosis between the Graeco-Latin element and English in modern medical terminology, which confirms the important and relevant position of Latin and Greek in the modern world. This position is made stronger by the advantages connected with it:

1. **Functional terminology**. The Latin medical terminology provides an elegant system based on prefixes, suffixes, and roots continuously repeated in several combinations, which allows you to easily describe body parts, organic functions, pathological conditions, and symptoms.
2. **Terminological continuity and constancy.**[3] As Western medicine is deeply rooted in history[19] classical languages represent a rich and well-established stock of words which can be easily used by modern researchers without the need of renaming terms already defined in the past.
3. **Terminological universality**. The continuity and constancy of Latin is also reflected in special terms, as it presents itself as a globally neutral vehicle for medical communication that respects other languages and cultures.
4. **Lack of ambiguity.** The use of Latin appears unambiguous, succinct, and concise, because as a dead language it undergoes no spatial and temporal variations.
5. **Correct spelling and understanding**. The knowledge of Greek and Latin etymologies also promotes a correct spelling and understanding of English medical terms, directly derived from the first.

Table 1. Examples of Latin and Greek origins of medical terms

Term	Meaning – example
1. ***Trauma*** *(Greek term)*	Severe injury to the body or severe emotional or mental distress
2. ***Abdomen*** *(Latin term)*	Region between the thorax and the pelvis
3. ***Bakterion – bacterium*** *(Latinised Greek)*	Single-cell organisms without nucleus
4. ***Mandibula – mandible*** *(Anglicised Latin)*	Lower jawbone
5. ***Anti*** – against, opposed to, opposite of *(Greek prefix)*	Anti-done = against a certain thing Anti-acid = against an acid
6. ***-ia*** a pathological state or condition *(Greek suffix)*	Hyster-ia = chronis neurosis believed to be of uterine origin (hystera = womb)
7. ***Anthropo-genesis*** *(compound word of Greek origin)*	Anthropos = man Genesis = origin The origin of man
8. ***Bio-logy*** *(compound word of Greek origin)*	Bios = life Logos = study The study of life
9. ***Extra-*** (outside of, outer side) *(Latin prefix)*	Extra-cellular = outside the cell
10. ***Intra-*** (within, inside of) *(Latin prefix)*	Intra-cellular = within the cell
11. ***-al*** (pertaining to) *(Latin suffix)*	Abdomin-al Relating to the abdomen
12. ***-ation*** (process) *(Latin suffix)*	Civilis-ation Civilis = relating to a citizen or public life Ation = process The process that brings human societies out of barbarism
13. ***Mal-aria*** *(compound word of Latin origin)*	Mal = bad Aria = air Bad air
14. ***Postero-lateral*** *(compound word of Latin origin)*	Postero = behind Latero = side Behind and to one side
15. ***de-hydr-ation*** *(hybrid term of Greek and Latin origin)*	De- = down, downward; sometimes a privative (Latin) hydr- = hydor, hydr-water (Greek) ation-, -atio = action or process (Latin) Loss of water
16. ***Appendic-itis*** *(hybrid term of Greek and Latin origin)*	Appendic- = appendix (Latin) Itis = adjectival ending -itis used with nosos-disease (Greek) (used to indicate a type of inflammation) Inflammation of the appendix



Soranus of Ephesus

6. **The study of Latin helps students learn and understand English medical terminology**. As Latin is incorporated in most European languages, English included, its study becomes a key to comprehend medical terminology and learn any other Western language.[20]

This state of symbiosis seems to have helped the spread of both Latin and English, as elegantly put by Marecková et al. in 2002:[2]

> One can well speculate that, on the one hand, it is a lucky solution for Latin in medicine to have its "continuation" in the English medical terminology because it so maintains its unique standing and, on the other hand, for the English medical terminology its Latin origin is an advantage because in that way its spread is accelerated and facilitated. (p. 586)

This leads us to wonder what the precise status of Latin in modern medicine is. Contradictory views exist in this regard, which go from that of H. Lippert,[21] according to whom English has taken over the role of Latin, to that of H. Schipperges,[22] who stated that Latin and Greek have masterfully outlived the influence of Arabic in the Middle Ages and English in current times and inferred that in the future English pressure will only be seen as a momentary historical interlude. Regardless of the answer that can be given to this question, it seems clear that removing the study of classical terminology from academic curricula has really been a bad decision.

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This is called the **hash**, **pound**, or **number character.** A hashtag is a keyword or set of keywords that is preceded by the # character. It is used in social media to create a thread of conversations around a specific theme or topic conveyed in short texts or microblogs. It is commonly used in Twitter, Instagram, YouTube, Pinterest, etc.

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