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## Are the methods to use historical lexicology (etymology) in contemporary medical terminology teaching reasonable?

### ABSTRACT

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Latin medical terminology is an obligatory course in the curricula of the Slovak medical faculties, encompassing history of medicine condensed in origins of medical terms and their current meanings, both in theory and practice.

Course lecturers believe that terminology teaching should not be reduced to building supportive grammatical structures serving only the function to use it correctly. At present, we find terminology taught in relation to etymology and definition especially contributing. We have developed and subsequently applied a 4-type model presenting these relations in teaching it.

Students' feedback to teaching medical terminology also from etymological aspect showed their interest in this way of teaching. In the academic years to come it calls for more specific verification of the efficiency of this teaching method in a follow-up survey.

If the methods presenting etymology in confrontation with the present term definition are applied in teaching, they are reflected in better understanding and more effective fixation of terms. Our teaching experience has found this model effective in providing an easy-to-memorize aid applicable in manipulation with terms.

**Key words:** medical terminology teaching, etymology, definition, history of medicine

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## Introduction

Knowledge of the medical terminology belongs to the target competencies of medical students, which is the reason why its teaching is included into the medical curricula on an obligatory basis at the medical faculties in Germany<sup>1</sup>, as well as in the Central Europe -Poland, the Czech Republic, Austria, and Slovakia.

The goals in teaching medical Latin include achievement of terminological competence, i. e. capability to use medical terminology accurately and correctly both in oral and written forms (based upon grammatical structures and word-formation teaching), as well as basic orientation in general characteristics of medical terminology supported by cultural and historical aspects (in the development) of the ancient and medieval medicine and its terminology.<sup>2</sup> These viewpoints are also shared by didactic conception of German medical terminology textbook *Lingua medica*<sup>3</sup>: "Terms, we use nowadays are living witnesses of an uninterrupted tradition that has its roots in antiquity and is still valid. Ignoring these sources and using helplessly nomenclature that carries signs of thousand-year cultural process means to miss a chance and accept the gaps in comprehension and in knowledge." Wolfgang Caspar in his handbook *Medizinische Terminologie* adds<sup>1</sup>: "Knowledge of medical terminology is now no longer able to be mediated only on the basis of classical Latin and Greek. In the didactic process must be taken into account the post-classic development of Latin and Greek". From the quotations stated above it is clear that the Basics of Medical Latin Terminology course are taught by classical philologists focused on medicine and its history.

There exist, of course, opposite views and/or experience as is for example demonstrated in an American study provided in *Anatomical Sciences Education*<sup>4</sup>, which, based on comparison of the Anatomy test results in students with and without previous medical terminology course, denies the necessity and reasonability of medical terminology to be included in the medical schools' curricula, claiming that medical terminology teaching does not directly increase the effectivity of medical terminology acquisition. Another American academic view that is represented by L. A. Dean-Jones in her study *Teaching medical terminology as a classics course*<sup>5</sup>, where she claims: "Now that I have ceased to undercut the value of learning roots, prefixes and suffixes, the students more readily see the advantage of having the course taught by an instructor conversant with the basic Greek and Latin meaning of these roots".

Medical terms as all the other professional terms can be specified from two basic viewpoints: from etymological point of view and from the point of view of their definition. While etymology responds to the questions where, when and how a con-

cept came to its existence, definition specifies such concept providing its basic, typical signs, which means that it is its language expression. Therefore, we consider it necessary in providing the students with the guidance in presentation of the terms as language phenomena and in their semantic orientation. Together with a "true" terminology taught in anatomy and clinical disciplines, the student simultaneously obtaining a comprehensive professional and linguistic background of many medical terms.

Etymology (from Greek word ἔτυμος /*etymos*/ = certain, right, true, obvious) is a part of historical lexicology dealing with origin and development of a word, usually by means of comparative linguistics. Precise definition of etymology can be found in *Webster's II Dictionary*<sup>6</sup>: "The origin and historical development of a linguistic form is shown by determining its basic elements, discovering its earliest known use, recording its changes in form and meaning, tracing its transmission from one language to another, and identifying its cognates in other languages". In short: in each word the type of sounds, meanings and use are inseparately interconnected. Each of these components is exposed to changes in time and place.

Therefore, when we are looking for *etymon* of some word, we are also discovering changes it underwent in place and time from the beginning of its existence. In this respect scientific etymology does not look for "strictly stipulated obligation", but it reveals, describes and sets its changing semantic form into contemporary historical and cultural interrelations. By means of medical etymology we are getting into contact with the history of medicine, history of human ideas and struggle how to understand the power of human being and nature.

## **History reflecting language knowledge in medical terminology**

Basic task of terminology work is to determine semantic and professional validity of a lexical unit – term. To do so, etymological and definition aspects have to be employed. That is why majority of terminological dictionaries as well as terminology textbooks present the data of both of them.

It is a long time since we have come to the conclusion that didactic process based on textbooks listing only components/roots of medical terms and explaining specific features of Latin and Greek grammars is frustrating and unappealing for students and their comments that any medical dictionary would equally help are legitimate. L. A. Dean-Jones shares similar experience : "I was mystified both by the student's frustration at the number of individual words they felt they had to learn".<sup>5</sup> In her paper dealing with teaching Latin etymology she concludes that "the modern clini-

cal definitions of cholera, typhus and eczema cannot be gleaned from their etymology because this enshrines ancient medical theory".<sup>5</sup> On the basis of exploring the relations of etymology and definition in medical terms, we have established **four basic types** of relations for teaching medical terminology depending on the fact that an established idea of harmony existing between etymology and definition of a term cannot be accepted generally. The etymological meaning in this paper is understood as an original meaning (the earliest cited/found meaning). Original meanings are to be understood as the meanings presented in the works of ancient medical writers or those listed in medical dictionaries or thesauri.

### ***Type 1: Etymology equals definition***

The first group includes the terms which have preserved their original meaning, i. e. etymological meaning and definition (= present meaning) tally, e. g. the word *cor* (Lat.) denoting the heart means today as well as 2000 years ago the same organ. The same holds for *oculus* (Lat.) eye, *hepar* (Gr.) liver, etc. Our typology is based on an older source<sup>7</sup> and schematic visualization of this relation between etymology and definition is as follows:

Etymology = Definition

### ***Type 2: Etymology as a reference to definition***

Quite different situation may be observed in the case of *anemia*. Its etymological "wording" is as follows: Gr. *-an* neg. + *haima* – blood + *-ia* <sup>[8] and [9]</sup>. Etymological meaning of this term stemming from its components does not tally completely with its present meaning defined as: "The condition characterised by reduced quantity of the red blood cells, hemoglobin"<sup>10</sup>; or: "A reduction below normal in the number of erythrocytes per cu. mm., in the quantity of hemoglobin, or in the volume of packed red cells 100 ml of blood which occurs when the equilibrium between blood loss and blood production is disturbed".<sup>9</sup>

Similar case is that of the term *morbilli* – measles. Etymology of the Latin word *morbilli* shows that it is a deminutive of the word *morbus*.<sup>11</sup> This term (meaning literally "minor diseases") has its origin in the Middle Ages and is understood as an opposite to "major diseases"<sup>12</sup> that were afflicting people in those times (plague, cholera). The deminutive was obviously used also because the disease afflicted just children population. Its nowadays definition as: "Acute viral infectious disease afflicting mainly children, manifested in typical exanthem, fever; it is caused by the virus of measles from the Paramyxiviridae family", <sup>[10] and [8]</sup> shows the only fact it has in common with the original understanding of this notion is that it relates to children.

The meaning of the Latin word *promontorium* – a mountain ridge, a headland, from *promineo* – to jut out<sup>11</sup>, suggests the meaning of a modern medical term. In the medical terminology it was introduced on the turn of the 18<sup>th</sup> and 19<sup>th</sup> century by German gynecologist Osiander to indicate "pelvic promontory", the most prominent point of the lumbosacral symphysis, i. e. that of the sacrum and of the last lumbar vertebra.<sup>12</sup> In anatomy it is currently known as *promontorium ossis sacri*<sup>13</sup> – promontory of the sacrum: the prominent anterior border of the pelvic surface of the body of the first sacral vertebra<sup>9</sup>. Later on the same metaphoric meaning was transferred to "the prominence on the medial wall of the tympanic cavity, formed by the first turn of the cochlea" which corresponds to another anatomical term *promontorium tympani* – promontory of the tympanic cavity.<sup>[9] and [13]</sup>

Etymological meanings of these terms provide the first signs of their present meanings shown in the word elements. It can be observed in the name of *anemia*, whose literal translation as "lack of blood" points at least to that it is a pathological condition connected with "reduction" of blood; the term *morbilli* shows as well the connection between etymology and nowadays meaning as is presented above. The basic concept *promontorium* refers to its new meaning which is based on the original metaphor indicating "a projecting eminence". It can be put in the following scheme:

Etymology - - - » Definition

### ***Type 3: Old concepts – new meanings***

There are also medical concepts that have undergone significant changes in their meanings in the course of centuries. In this respect etymology may lead to an incorrect interpretation of modern meaning. The anatomical term *artery* can be presented as an example of this. The word artery probably consists of the Greek word ἀήρ / *aḗr* / - air and the verb τηρεῖν / *térein* / – to keep, because the arteries were supposed by the ancients to contain air, or from Gr. ἀείρειν / *aeirein* / – to lift or attach.<sup>9</sup> Its meaning thus was that of keeping air, the pipe keeping air, which corresponds to the understanding of the ancient Greek medicine that veins contain haima (blood) and arteries pneuma (air). Therefore, according to the works in *Corpus Hippocraticum* as well as those by Aristotle, the meaning of ἀρτηριᾶ / *artēriā* / was windpipe. <sup>[14] and [15]</sup> For comparison here is a modern definition of the term of artery: "The vessel in which the blood expelled from the heart is flowing"<sup>8</sup>, or: "The blood vessel that carries blood from the heart to an organ or tissue".<sup>16</sup>

The name *phrenopathy* also belongs to the concepts that have adopted new meanings in the course of their development. Original meaning of the word φρήν / *frḗn* /

was diaphragm. But because the Greeks believed that thinking and feeling was seated in this organ<sup>12</sup>, this word started to denote also mind, soul, spirit or brain power. Therefore we know the term *phrenoptosis* as a fall down (prolapse) of the diaphragm, but also the term *phrenopathy* – any emotional or mental disorder<sup>11</sup>, or *schizophrenia* – mental disease leading to the split of personality.<sup>10</sup>

The term *hysteria* can be also included among the terms denoting notions that have changed their meanings and are not connected with the meaning expressed in etymology of such word. The old Greek word ὑστέρα /*hystéral* = womb can be found in many present medical terms as a word component, e. g. *hysterectomy* – surgical removal of the uterus, or *hysteroscopy* – visual examination of the inside of the uterus by means of a special

instrument, etc. The oldest sources<sup>14</sup> present uterus as "a cause of thousands of diseases". Hippocratic physicians therefore believed that *hysteria*, manifested in a neurotic way of behaviour, was an illness caused by the disease of uterus, that it was a typically female disease.<sup>12</sup> This concept has preserved up today, it is defined as "a diagnostic term, referable to a wide variety of psychogenic symptoms which may be mental, sensory, motor, or visceral"<sup>11</sup>, or "a neurosis by conversion symptoms, a calm mental attitude, and episodes of hallucination, somnambulism, amnesia, and other mental aberrations".<sup>6</sup> Nowadays, of course, it concerns both sexes.

Several concepts (*artery*, *phrenopathy* and *hysteria*) show that in the course of time notions sometimes changed their meanings and their word-formation components do not tally with their present meanings. It can be put in the following scheme:

Etymology › - - - || Definition

***Type 4: Etymology – Definition: a questionable relation***

In some concepts it is very difficult to derive etymological deductions that would lead to meaningful result, because despite the fact that there are relations, they are not obvious and unequivocal, i.e. not generally comprehensible.

The concept *chronaxia* from Gr. χρόνος /*khronos* = time + Gr. ἀξία /*axía* = price, merit<sup>17</sup> is defined as follows: "chronaxy – the minimum time an electric current must flow at a voltage twice the rheobase to cause a muscle to contract".<sup>9</sup> This definition must be left misunderstood unless studied by a professional in that particular technical branch and within its close relations. An attempt to explain the term presented in the Italian Historical Etymological Dictionary of Medical Terms in more details shows that this term was introduced in 1909 by L. and M. Lopicque to denote time duration of the electric current basis in physiology opposite to reobasis ("I

suggest to call this duration as *chronaxia*, "ἄξια – value, χρόνου – of time"<sup>18</sup>), but it does not help us to understand this term just from its etymological basis.

The terms *sympathicus* – *parasympathicus* appeared quite late and to understand them properly the substantive *nervus* has to be supplied. According to their definitions they

denote parts of the vegetative nervous system which as the autonomous nervous system serves to control the vital functions (breathing, digestion, metabolism, etc.). According to *Duden – Das Wörterbuch medizinischer Fachbegriffe*<sup>16</sup> abbreviated term *sympathicus* comes from the original Greek word συμπαθεῖν /*sym/ path/ ein/* = to sympathize with someone who has a problem, to show that you understand and care, and no links are found in it with the modern definition stated above. As late as in the 19<sup>th</sup> century the term *nervus parasympathicus* was coined to denote the nerve with the opposite effect of that of *nervus sympathicus*.<sup>12</sup> Both of them have to be understood as parts of the vegetative nervous system which works in antagonistic way. In the present *Terminologia Anatomica*<sup>13</sup> both of these expressions occur just in these terms: *pars sympathica divisionis autonomici systematis nervosi* and *pars parasympathica divisionis autonomici systematis nervosi*.

Relations between etymology and definitions in the terms *chronaxia*, *sympathicus* – *parasympathicus* are rather questionable and may be put down as follows:

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Etymology - - - - || Definition

## Students' feedback

In line with the latest didactic principles we find it important to keep "the content and methods of teaching custom-made to suit students' individual as well as professional needs"<sup>19</sup> i.e. students actively participate in didactic process and freely express their opinions about the content and teaching methods.

We can claim that students in our course expressed an exceptional interest in historical viewpoint on medical terms preferring even this type of teaching rather than grammatical rules. During the terminology classes students became interested in development of etymology background in other interesting medical terms, comparing them with their recent meaning (definition) thus giving rise to short papers which were presented in groups in front of other students. To write a paper, they collected

data consulting medical and etymological dictionaries, or electronic sources whilst applying our typology.

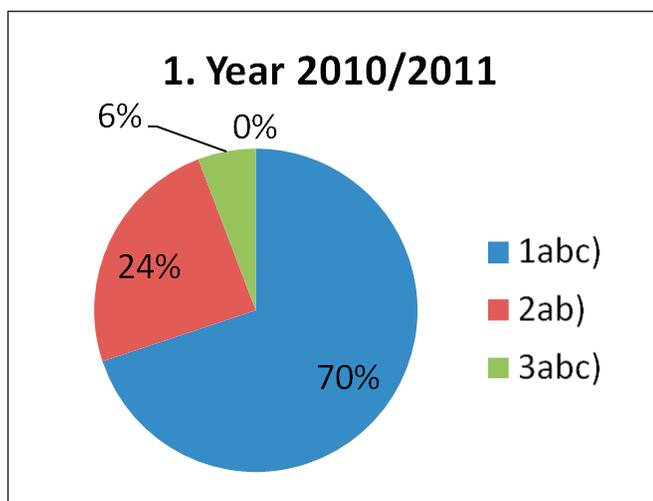
To elicit students' opinions on history reflecting language knowledge in medical terminology, a method of the end-of-course questionnaire was used for the first time for students to express their attitude towards this type of teaching. Anonymous end-of-course questionnaire on importance of teaching medical terminology **with the use of typology** of etymology - definition relationship comprised these prompts:

1. teaching conducted in this way is important for me mainly for
  - a) practical reasons (better understanding and memorization of terms)
  - b) interest in history of medicine
  - c) other reasons (please state)
2. teaching conducted in this way is of some importance, but I prefer standard way of teaching (i.e. based only upon grammatical structures and word-formation)
  - a) because it is sufficient for me
  - b) other reasons (please state)
3. the method of teaching medical terminology is unimportant, because
  - a) it is not a primary course of study
  - b) I am not interested
  - c) other reasons (please state).

Basics of Medical Terminology course in the academic year of 2010/2011 was completed by 121 first year students out of which 103 participated in the survey.

The survey results confirmed students' interest in this type of teaching manifested during the semester - etymology teaching approach is important for 72 students (69.9%). Thirty-six respondents who opted for preference 1.a (stating practical reasons, which was most repeated preference) were represented by 34.9%. Two reasons (practical aspect and interest in history of medicine) were stated by 17 students (16.5%). Sixteen students (15.5%) chose only one option – 1.b (interest in history of medicine). Options 1.ac and 1.abc were picked and justified by 3 students (2.9%). Twenty-five respondents (24.3%) would prefer standard, traditional way of teaching medical terminology; all of them stated that classical way of teaching is satisfactory. Six students (5.8%) expressed the opinion that the method of teaching medical terminology is irrelevant, out of them 3 students (2.9%) think that this course is not of crucial importance and 3 students (2.9%) are not interested in this subject. Option 3.c was not selected at all.

*Graphical presentation of the statistical data:*



The survey results are highly significant and undoubtedly a great encouragement for instructors, however, the sample of the students is small and the validity of the approach is not measured by means of objective markers. It will be necessary to repeat the survey in the following academic years to confirm and support the tendency towards this way of medical terminology teaching.

### **Conclusions**

Medical terms as well as all other groups of word classes can be studied from two basic points of view: etymology and definition. While etymology as a part of historical lexicology responds to the questions where, when and how the particular term came to its existence, definition specifies such concept providing its basic, typical signs, which means that it is its language expression.

Therefore, contemporary teaching of medical terminology should be supported by cultural and historical aspects of the ancient and medieval medicine (history reflecting language knowledge in medical terminology), and thus make didactic process more effective. Etymology and definition relation in medical terms brings new aspects into medical terminology teaching. Comparison of meaning and definition in this relationship means that the terms explained from their historical aspect are easier to be understood and remembered. Also it may evoke interest of the students, which was confirmed by the first series of our questionnaire. We consider this linguistic material contributive to teaching of the course of Basics of Latin Medical Terminology from the point of view of both forms, i. e. language, as well as content. Material is ready-to-use and applicable for practicing professionally relevant lan-

guage phenomena and means, mainly on the level of word formation, but also on the lexical level. Besides that, it will enrich the students' background in history of medicine in a distinctive way and offer a number of inspiring and thought-provoking analogies.

## REFERENCES

1. Caspar W. 2007. *Medizinische Terminologie. Lehr- und Arbeitsbuch.* Stuttgart, New York: Georg Thieme Verlag.
2. Bujalková M, Jurečková A. 2003. Application of word-formation models in medical terms fixation. *Bratislavské lekárske listy*; 104(10): 335-338.
3. Gadebusch Bondio M, Bettin H. 2007. *Lingua medica. Lehrbuch zur medizinischen und zahnmedizinischen Terminologie.* Berlin: Logos Verlag.
4. Pampush JD, Petto AJ. 2011. Familiarity with Latin and Greek anatomical terms and course performance in undergraduates. *Anatomical Sciences Education.* Vol. 4, Issue 1, 9-15.
5. Dean-Jones LA. 1998. Teaching medical terminology as a classics course. *Classical Journal* 93. 3: 290-296.
6. Webster's II New Riverside University Dictionary. 1984. Boston: The Riverside Publishing Company.
7. Porep R, Steudel WI. 1974. *Medizinische Terminologie.* Stuttgart: Georg Thieme Verlag.
8. *Encyklopédia medicíny (=Encyclopedia of Medicine) I. – XVI.* 1993 – 2004. O. Kadlec (ed.). Bratislava: Asklepios.
9. *Dorland's Illustrated Medical Dictionary.* 1994. 28th Edition. Philadelphia-London-Toronto-Montreal-Sydney-Tokyo: W. B. Saunders Company.
10. Kábrt J, Kábrt J Jr. 2004. *Lexicon medicum.* 2. edition. Praha: Galén.
11. *Stedman's Medical Dictionary.* 1972. 22nd Edition. Baltimore: The Williams & Wilkins Company.
12. Michler M, Benedum J. 1972. *Einführung in die medizinische Fachsprache.* Berlin – Heidelberg – New York: Springer Verlag.
13. *Terminologia Anatomica. International Anatomical Terminology.* 1998. Stuttgart, New York: Georg Thieme.
14. Hippocrates. 1839 – 1861. *Oeuvres complètes d'Hippocrate.* Éd. par E. Littré, t. I – X. Paris: Boullière, (= L.).
15. Aristoteles. 1907. *De animalibus historia.* Lipsiae.
16. Duden - *Das Wörterbuch medizinischer Fachbegriffe.* 1992. 5. Auflage. Mannheim-Leipzig-Wien-Zürich: Dudenverlag.
17. Prach V. 1998. *Řecko-český slovník (= Greek-Czech Dictionary).* Praha: Vyšehrad.
18. Marcovecchio E. 1993. *Dizionario etimologico storico dei termini medici.* XXIII. Firenze: Festina Lente Edizioni.
19. Bujalková M, Jurečková A. 2001 – 2002. *Autonomy and Foreign Language Learning.* *Cizí jazyky*; 45(5): 155 – 157.