

Božena Džuganová*

English medical terminology – different ways of forming medical terms

ABSTRACT

In medical terminology, two completely different phenomena can be seen: 1. precisely worked-out and internationally standardised anatomical nomenclature and 2. quickly developing non-standardised terminologies of individual clinical branches. While in the past new medical terms were mostly formed morphologically by means of derivation and composition from Latin and Greek word-forming components, nowadays it is the syntactic method which prevails – the forming of terminological compounds that subsequently turn into abbreviations. Besides the most frequent ways of term formation, there are also some marginal ways, the results of which are acronyms, backronyms, eponyms, toponyms, mythonyms etc. To understand the meaning of these rather rare medical terms requires us to become familiar with their etymology and motivation. In our paper we will take a look at individual ways of word-formation with focus on marginal procedures.

Keywords: English medical terminology, derivation, composition, compound terms, abbreviations, acronyms, backronyms, eponyms, toponyms, mythonyms

In the last century clinical medicine developed into many new branches. Internal medicine for example started to specialise in cardiology, endocrinology, gastroenterology, haematology, infectology, nephrology, oncology, pulmonology, rheumatology etc. All this could happen thanks to the great development of science and technology. New diagnostic devices and methods were invented, e.g. computer tomography, sonograph, mammograph, laparoscope, endoscope, colonoscope, magnetic reso-

* Correspondence address: PhDr. Božena Džuganová, PhD., Comenius University, Jessenius Faculty of Medicine, Department of Foreign Languages, Martin, Slovakia, e-mail: dzuganova@jfmed.uniba.sk

nance image (MRI), etc. New diseases appeared such as AIDS, BSE (Bovine spongiform encephalopathy or so-called mad cow disease), avian flu (virus H5N1), swine flu (virus H1N1), etc. All these new things and phenomena had to be named, documented and propagated among scientists as well as common people. New words – medical terms – had to be formed. How were these new terms formed? Which ways of term-formation prevail nowadays?

Formation of new terms in each field medicine deserves an appropriate attention because the terms become successively a part of general language. Between general (codified) language and the language of science, there is a very close relationship. The language of science forms about three quarters of all written and printed materials of the general language in each nation. While general language serves all of its users, the language of science requires a certain level of scientific education because the terms as names of certain concepts only indicate their meaning. Only experts know their exact meaning.¹

Most anatomical and clinical terms used in medicine today, are Latin or Latinized Greek words, the origin of which can be traced back to the 5th century BC.² If medical terminology has to function effectively and be understandable to its users, the terms have to be formed, derived, and pronounced properly. Seminars on Latin and English or German medical terminology are an obligatory part of teaching programs in the first academic year at Slovak medical faculties. Basic information on word-formation and word-analysis enables the students to manage medical terminology in a more effective way. Instead of memorizing lists of terms they can easily predict the meaning of other terms.

Situation in medical terminology

In medical terminology there can be observed two completely different phenomena: a very precisely worked-out, internationally standardized anatomical terminology and a quickly developing clinical terminology of all medical branches, characterised by a certain terminological chaos. The main cause of this phenomenon is quick development of scientific knowledge and a need to name promptly new devices, diseases, symptoms etc. All attempts to unify clinical medical terminology on international level have mostly been unsuccessful till now. The first attempt to create a unified international classification of diseases was done already in the 19th centu-

¹ Poštolková, B. et al. (1983): O české terminologii. Academia. Praha, p. 11.

² Bujalková, M. (2011): Lekárska terminológia v súčasnom a historickom kontexte. Univerzita Komenského. Bratislava, p. 14.

ry. This classification had no united rules and similarly as today's International Classification of Diseases (ICD)³ it is only a technical tool used for statistic aims. Lack of unified medical terminology is seen especially nowadays when the computers have entered into medicine and when faultless international communication is required.⁴

From the linguistic viewpoint, the research of clinical terminology is much more interesting thanks to its variability and colourfulness. Many of our examples are intentionally taken from haematology, because it is a relatively young branch of medicine without standardised terminology. No specialized haematological dictionaries are available either in English or in Slovak. This terminology is in a process of its development and many interesting phenomena can be observed there.

Structure of medical terms

Medical terms can be basically divided into one-word and multiple word terms. One-word terms can be simple (underived) words, derived words, compounds, or combination of derived and compound words. Drozd – Seibicke⁵ consider derivation and compounding for the basic word-forming ways.

I. Main types of word-formation

Generally vocabulary spreads in three possible ways: 1. *forming new names*, 2. *forming new meanings* and 3. *borrowing words from other languages*.⁶ Other linguists⁷ divide forming of new terms according to their ways of formation: 1. *morphological* by means of derivation, compounding, abbreviation; 2. *syntactic* by forming collocations and multi-word phrases and 3. *semantic* by narrowing (specifying) the meaning of common words; by metaphoric and metonymic transfer of the previous meaning; 4. *borrowing words from other languages*.

³ World Health Organization. International statistical classification of diseases and related health problems. Retrieved from www.who.int/classifications/apps/icd/icd10online

⁴ Šimon, F. (1989): O historickom výskume medzinárodnej lekárskej terminológie. Bratisl Lek. Listy; 90 (1), p. 52.

⁵ Drozd, L. – Seibicke, W. (1973): Deutsche Fach- und Wissenschaftssprache. Wiesbaden: Oscar Brandstetter Verlag.

⁶ Peprník, J. (1992): Anglická lexikologie. Rektorát Univerzity Palackého. Filozofická fakulta. Olomouc. p. 7.

⁷ Poštolková, B. et al. (1983), p. 34.

The most productive type of terms formation is **derivation**.⁸ Derived medical terms can consist of a prefix, one or two word roots, and a suffix in various combinations, as witnessed in the following examples:

myocardium = myo- (prefix) + card(ium) (root)
endocarditis = endo- (prefix) + card (root) + *-itis* (suffix)
cytology = cyt(o) (root) + *-logy* (suffix)
gastroenterology = gastr(o) (root) + enter(o) (root) + *-logy* (suffix)
adenoma = aden(o) (root) + *oma* (suffix)

The second most productive type of word-formation is **compounding**. A compound word is a fixed expression made up of more than one word, e.g. *human being, blood donor, hay fever, Black Death*. While in German compound words are easily recognizable because they are always written together, in English writing of the compound words varies. Compound words may be written: 1. as two/three words: *blood pressure, blood group, heart attack, sleep walker, central nervous system*; 2. with a hyphen: *life-span, collar-bone, birth-control*; or 3. as one word: *gallstone, haemophilia, leucocytopenia, pseudopolycytemia*. There are no strict rules for writing the compound word. Occasionally some terms are written with a hyphen, occasionally as two separate words or one word. For instance: *life span – life-span; gall bladder – gallbladder*.⁹

Composition seems to be older than derivation from a diachronic viewpoint because the word-forming affixes developed from independent words. Similar process can be seen nowadays in the process of prefixoids (pseudoprefixes) and suffixoids (pseudosuffixes)¹⁰ e.g. *myo-, arthro-, haemo-/haemato-, adipo-, hepato-, onco-, patho-; -aemia, -logy, -tomy, -pathy, -cyte, -algia, -ectomy, -scope* etc. Each of these pseudo-affixes hides certain meaning, but they are not used as independent words. They have been developed artificially from Greek and Latin word roots for scientific purposes – to name new concepts.

Both mentioned types are also classed as morphological because they undergo certain morphological processes. While derivation and compounding prevailed in the past and preferred Latin and Greek roots and affixes, nowadays a syntactic way prevails – the **forming of multi-word phrases**, e.g. *Acquired Immune Deficiency Syndrome, Bovine Spongiform Encephalopathy, Severe Acute Respiratory Syndrome, Irritable Bowel Syndrome*, which successively undergo process of abbreviation because they are too long and uneconomical. Many English abbreviations have become in-

⁸ Peprník, J. (1992), p. 10

⁹ Peprník, J. (1992), 13.

¹⁰ Pošťolková, B. et al. (1983), p. 42.

ternationally so well-known that many laymen may not know their English full-forms (*AIDS, HIV, BSE, SARS, and IBS*).

The fourth type of word-formation is **abbreviation**. An abbreviation is a shortened form of a word or phrase. There are many ways of forming abbreviations. Usually but not always, they consist of a letter or group of letters taken from a word or phrase. Abbreviations arise in written language and their spoken varieties can be either only a graphic one (*g – gram, h – hour*) or both a graphic and phonetic one, e.g. (*G.P.*) for *general practitioner* or an acronymic one e.g. [*eits*] for *AIDS*, which developed from its initialism. According to Crystal¹¹, acronyms are initialisms pronounced as single words, like *HIV (Human Immunodeficiency Virus)*. Sometimes acronym can be formed from parts of words as in *Ameslan (American Sign Language)*. Normally acronyms and initialisms are regarded as subgroups of abbreviations: "Some linguists do not recognize a sharp distinction between **acronyms** and **initialisms**, but use the former term for both."¹²

Initialisms are very popular in written medical English to shorten long descriptive terms. For instance terms from biochemistry such as: *deoxyribonucleic acid "DNA, ribonucleic acid "RNA, adenosine triphosphate "ATP*; clinical medicine: *acute lymphocytic leukaemia "ALL, chronic lymphocytic leukaemia "CLL, thrombotic thrombocytopenic purpura "TTP, autoimmune thrombocytopenia "AITP, idiopathic thrombocytopenia "ITP*, etc. Usage of initialisms is so frequent that in each text, it is necessary to introduce the full phrase first and then its abbreviation in brackets to avoid misunderstanding, e.g. the initialism *CML* – can mean either *chronic myeloid leukaemia*, or *chronic monocyte leukaemia*.

II. Marginal types of formation of terms

Besides these main types of word-formation, there is also enough space for minor types, such as conversion, back-formation, and clipping.

In **conversion**, words transfer from one word category to another word category without using any morphological means. This process has developed through the semantic need to attach a new meaning to a word. In this way verbs develop from nouns and adjectives, or nouns develop from verbs and so on. For instance *position*® to *position*, *lecture*® to *lecture*, *blind*® to *blind*, *to check*® *check-up*. Sometimes, instead of learning new adverbial suffixes our students misuse conversion i.e. by putting a noun in front of another noun to fulfil the function of an adjective, e.g. *connection*

¹¹ Crystal, D. (1995): The Cambridge Encyclopedia of the English Language. CUP, p. 120.

¹² Crystal, D. (1995): p. 120.

tissues instead of *connective tissue*, *skeleton muscles* instead of *skeletal muscles*, *nerve system* instead of *nervous system*.

Back-formation is the process of creating a new lexeme, usually by removing actual or supposed affixes. The resulting neologism is called *back-formation*, a term coined by James Murray in 1889.¹³ This process of word-formation is very rare in medical terminology. We have found just two medical terms formed in this way. The word *syringe* was formed from its plural form *syringes* dropping -s, see Greek sg. *syrix*, pl. *syringes*. The verbs *euthanase* or *euthanize* come from the noun *euthanasia*. While back-formation may change the part of speech or the word's meaning, clipping creates shortened words from longer ones, but it does not change the part of speech or the meaning of the word.

Clipping is a type of word-formation that is apparently used rather more in professional slang than in regular terms. According to Marchand¹⁴, clippings are not coined as words belonging to the standard vocabulary of a language. They originate as terms of a special group like schools, army, police, the medical profession, etc. Clipped words arise after dropping either the beginning, final or central part of the word. Back clipping is the most common type, in which the beginning is retained, e.g. *exam*(ination), (*polio*)myelitis, *lab*(oratory), *doc*(tor), *vet*(erinarian) = *veterinary physician*. In middle clipping, the middle of the word is retained, e.g. *flu* (influenza). Fore-clipping retains the final part, e.g. (uni)*versity*.

Users of each language tend to express themselves as economic as possible and to omit redundant parts of long compounds or multi-word terms without diminishing their meanings. This type of shortening is much more used in English than in Slovak. In haematological terminology we have noticed that the stem morpheme -cyto is often omitted in many terms, e.g. erythro(cyto)poiesis, granulo(cyto)poiesis, thrombo(cyto)penia, thrombo(cyto)pathia, thrombo(cyto)asthenia.

A very interesting process of forming a new term by means of clipping, blending and abbreviating can be seen in the phrase:

polymorphonuclear neutrophilic leucocyte
neutrophilic polymorphonuclear -----
poly-----nuclear neutrophilic leucocyte
polymorphonuclear ----- leucocyte
----- neutrophilic leucocyte

¹³ Crystal, D. (2008): A Dictionary of Linguistics and Phonetics, 6th Ed. Blackwell Publishers.

¹⁴ Marchand, H. (1969). The Categories and Types of Present-Day English Word-formation. München. C.H.Beck'sche Verlagsbuchhandlung.

----- **neutro**-----**cyte**
 ----- **neutrophil** -----
 professionalism: **polymorph** -----
 poly-----**nuclear** -----
 poly -----
 Abbr. **PMN** (*polymorphonuclear*)

Today from all these terms the term *neutrophil* is used in the international terminology.¹⁵

Too many synonymic terms for one concept is an unwanted phenomenon in scientific language and contributes to misunderstanding. Although **polysemy**, **homonymy** and **synonymy** are unwanted phenomena in medical terminology, however, their occurrence is relatively abundant and no branch of medicine can avoid them. Polysemy and synonymy accompany the development of each new branch of medicine. This situation is typical for a time of rushed forming of new terms and theoretical processing of scientific terminology.¹⁶ While homonyms are rather rare within one branch of medicine, synonyms quantitatively enlarge the vocabulary. Synonyms are defined as words with similar or very close meanings. Synonymy is very closely connected with **calques** (words translated from other languages).

Synonyms

Synonymy can appear in several levels: 1. Along with an international Greek/Latin term, another synonym formed from foreign (Greek/Latin) elements has developed at the same time, e.g. *erythrocyte* x *normocyte*; *neutrophil* x *polymorphonuclear leucocyte*; *antihæmophylic factor A* x *coagulation factor*; *asiderotic anaemia* x *sideropenic anaemia*; *haematopoiesis* x *sanguinification*, etc. Such synonyms arise due to the different motivation of word-formation of individual terms. For example in the term *erythrocyte* the red colour is emphasized. In its synonymic term *normocyte* the normal development of the cell is emphasized. Similarly in the term *neutrophil* the neutral stain used in staining of leucocytes in laboratories was the basic motivating element in development of this term, while in its synonymic variety *polymorphonuclear leucocyte* it was the amount of differently shaped cores which the white cell contains.¹⁷

¹⁵ Besa, E. C. et al. (1992): Hematology. Harwal Publishing. pp. 464 - 477.

¹⁶ Horecký, J. (1984): Grécko-latinské elementy v terminológii. Kultúra slova. 18 (5), 135-137.

¹⁷ Besa, E. C. et al. (1992): Hematology.

2. An international Greek/Latin term has been translated into English, e.g. *erythrocyte* – *red blood cell (RBC)*; *leukocyte* – *white blood cell (WBC)*; *thrombocyte* – *blood platelet*; *monocyte* – *mononuclear cell*; *haematopoiesis* – *blood cell production*; *coagulation* – *blood clotting*; *haemolysis* – *blood destruction*; *haemostasis* – *arrest of bleeding*. Translations (calques) of Greek/Latin terms into English have different stylistic value and validity. While the international terms *erythrocytes*, *leukocytes*, *thrombocytes* and *coagulation* serve for specialists, their English equivalents *red blood cells*, *white blood cells*, *blood platelets* and *blood clotting* are used in articles or speech determined for the common reader or listener.

3. Sometimes along with a borrowed term, several variants of a translation occur and enter mutually into synonymic relations, e.g. *erythrocyte* – *red (blood) cell* *x* *red (blood) corpuscle*; *phagocyte* – *phagocytic cell* *x* *defensive cell*, or the colloquial expression *scavenger cell*; *haematostasia* – *control of haemorrhage* *x* *control of bleeding* *x* *prevention of blood loss*. A similar synonymic relationship exists between varieties of the following terms: *Hodgkin's disease* – *Hodgkin's granuloma* – *Hodgkin's sarcoma*; *myeloproliferative syndrome* – *myeloproliferative disease* and *myeloproliferative disorder*.

While in the past, national medical terminologies often borrowed medical terms from Latin, nowadays this process of word-formation is rather unproductive. Loanwords are typical for the modern period. A great number of English scientific words have entered the language from French.¹⁸

Loanwords are words borrowed from other languages, also called borrowings. According to different sources, nearly 30 % of all English words are of French origin. From medical terms we have selected the following examples: *bowel*, *cartilage*, *cramp*, *curette*, *degeneration*, *deglutition*, *delivery*, *denture*, *diarrhoea*, *diphtheria*, *disease*, *dislocation*, *malaise*, etc. Another 29 % of words are of Latin origin (*femur*, *humerus*, *occiput*, *mandible*, *puncture*, *pulp*), 26 % of words are of Germanic origin – usually common everyday word (*hand*, *finger*, *nose*, *arm*, *chin*, *wrist*, *foot*, *head*, *hip*, *hair*) about 6 % of Greek origin (*bregma*, *chorion*, *diabetes*, *emphysema*, *myopia*, *ophthalmia*, *pneumonia*, *stigma*, *trauma*) and about 6 % are taken from other languages, and 4 % are derived from proper names.¹⁹ While loanwords are lexical borrowings, calques are borrowings taken from other languages by literal, word-for-word or root-for-root translation (for examples see section on synonymy).

¹⁸ Marchand, H. (1969). *The Categories and Types of Present-Day English Word-formation*. München. C.H.Beck'sche Verlagsbuchhandlung.

¹⁹ Dzuganova, B. (2002): A brief outline of the development of medical English. *Bratisl Lek Listy*; 103 (6): 223-227.

Terms with a -onym ending

A very special type of medical terms are various ‘-onyms’, such as eponyms, toponyms, mythonyms, and backronyms. The -onym words come from the Greek *onyma* meaning ‘name’. Although this type of terms seems to be rare, the reverse is true. Of all the “-onyms” **eponyms** are the most frequent. Some authors also call this type of word formation “anthroponyms” from the Greek word *ánthropos* meaning “man”.²⁰ Medicine has been enthusiastic in naming tests, symptoms, and diseases after their discoverers. Some sources state there are about 8,000 eponyms²¹; others estimate their number to be up to 30,000.²² In some branches of medicine, there are even eponymic dictionaries.

It is not always easy to explain the origin of the -onyms, because they do not reflect any essential characteristic of the term. They do not inform us about the content of the term. Eponyms have a long tradition in Western medicine. Being awarded an eponym is regarded as an honour: “Eponymity, not anonymity, is the standard.”²³ At a time when medicine lacked the tools to investigate the underlying causes of many syndromes, the eponym was a convenient mechanism for attaching a label to a disease. Some diseases have been named after the persons who first described the condition or after a patient or literary figure who suffered such a disease. This usually involves publishing an article in a respected medical journal. Such was the case of a progressive degenerative disorder of the central nervous system, named after the English doctor, James Parkinson, or of a special form of dementia studied and first described by the German neuropathologist, Alois Alzheimer, these two very serious diseases afflicting mainly the older generation nowadays.

Eponyms are not a completely new phenomenon in medicine. They were known already in Galénos’ era (appr. 125 – 199 BC).²⁴ The wider use of eponyms, however, started in the first half of the 19th century²⁵, when in honour of the physician-discoverer a discovered part of the human body, disease, symptom, syndrome, factor, anomaly etc. were first named, e.g. *Fallopian tube*, *Bartholin’s gland*, *Golgi apparatus*,

²⁰ Karenberg, A. (2005): *Amor, Askulap & Co. - Klassische Mythologie in der Sprache der modernen Medizin*. Stuttgart. Schattauer-Verlag.

²¹ Retrieved from <http://www.whonamedit.com>

²² Bujalková, M. (2011): *Lekárska terminológia v súčasnom a historickom kontexte*. Univerzita Komenského. Bratislava, p. 20.

²³ Merton R K (1973): *What is a Name? The eponymic route to immortality*. Retrieved from www.wikipedia.org/wiki/List_of_eponymous_diseases.

²⁴ *Kronika medicíny*. (1994) Fortuna Print. Bratislava, p. 629.

²⁵ Šimon, F. (1989): *O historickom výskume medzinárodnej lekárskej terminológie*. Bratisl Lek Listy. 90 (1), p. 51.

von Willebrand diseases syndrome, Werlhof's disease, Cooley's anaemia, Alder's constitutional granulation anomaly, as well as deviations in the colouring of an erythrocyte or morphological changes of leucocytes – *Heinz bodies/Heinz – Ehrlich bodies, Howell – Jolly bodies, Döhle bodies* etc. As you can notice some eponyms occur in more than just one variety, e.g. *Franconi's syndrome/Franconi's pancythopenia/de Toni Franconi syndrome*, or more physicians – discoverers appear in one eponym, e.g. *Chediak – Steinbrinck – Higashi syndrome*.²⁶

English physicians such as Sir James Paget (2), Richard Bright (3) and Thomas Addison (2) all gave their names to more than one disease. Andrews²⁷ says, however, that only one eponym has survived. We have found out that in the *International statistical classification of diseases and related health problems* there are two eponyms named after the British physician Thomas Addison – *Addison's disease* (a disorder that occurs when the adrenal glands do not produce enough hormones, in the past often combined with tuberculosis) and *Addison's anaemia* (a blood disorder caused by a lack of vitamin B12, better known today as pernicious anaemia, or *Biermer's anaemia*, or *Addison–Biermer anaemia*). Another English physician Christopher Addison has given his name to a part of the anatomy – *Addison's plane*.²⁸

Occasionally an eponymous disease may be named after a patient (examples include *Christmas disease, Hageman factor, Hartnup disease, Mortimer's disease, and Lou Gehri's disease*). Christmas and Hageman were the first patients described with blood clotting disorders due to a deficiency of factor IX and factor XII.²⁹ Six of 12 blood clotting factors have, besides their biological and numeric designation, also an eponymic name (factor VIII – *von Willebrand factor*, factor X – *Stuart – Prower factor*, factor XI – *Rosenthal factor*, factor XIII – *Laki-Lorand factor*, factor XII – *Hageman factor*, IX antihaemophylic factor B – *Christmas factor*).³⁰

Two-name eponyms are often shortened to one name only: e.g. *Howell – Jolly bodies* to *Howell's bodies* or *Jolly's bodies*; *Cabot – Schleip rings* to *Cabot's rings*; *Wiscott – Aldrich syndrome* to *Aldrich's syndrome*. Similarly with three-name eponyms, e.g. *Chediak – Steinbrinck – Higashi anomaly*, which is shortened to *Chediak – Higashi anomaly*.

The unclear motivation of eponyms causes difficulties in their usage. They are often replaced by descriptive terms e.g. *Christmas disease* " *haemophilia B*. The *Bernard-*

²⁶ Besa, E. C. et al. (1992): Hematology.

²⁷ Andrews, E. (1947): A History of Scientific English. The Story of its Evolution Based on a Study of Biomedical Terminology. Richard R. Smith. New York, p. 77.

²⁸ Dorland's Illustrated Medical Dictionary. (1988): 28th Ed. W. B. Saunders Company. Philadelphia, p. 25.

²⁹ Asimov, I. (1978): Slová ve`dy. Co se za nimi skrýva? Edice Pyramida – Encyklopedie. Nakladatelství Panorama. Praha.

³⁰ Hrubíško, M. et al. (1981): Hematológia a transfúziológia. Vydavateľstvo Osveta. Martin.

Soulier Syndrome (B-SS) is a rare inherited bleeding disorder caused by abnormal platelets and subsequent abnormal clotting. This syndrome was originally described in 1948 by two physicians who were treating a patient with a bleeding problem. The eponym *Bernard – Soulier syndrome* is sometimes replaced by *hemorrhagiparous thrombocytic dystrophy*, or *Giant Platelet Syndrome*. *Non-Hodgkin lymphoma* can be replaced by *lymphosarcoma*, *Schönlein – Henoch purpura* by *purpura rheumatica* etc.

WHO experts prefer descriptive multi-word terms to eponyms in processing the *International statistical classification of diseases and related health problems*.³¹ Sometimes an eponym is too well-known, however, and occurs even in a negative form; *pernicious lymphogranuloma* is better known as *Hodgkin's disease/granuloma/ sarcoma*), its histologically negative variety being called *non-Hodgkin's lymphoma*.

An advantage of eponyms is that they express a complex and very complicated concept in one word. A disadvantage is that they have no meaning, which is why it is more difficult to remember them than descriptive multi-word terms. Only experts are familiar with eponyms; they have no exact scientific accuracy. Usage of eponyms varies in different countries. While in Germany, the eponym *Morbus Basedow* is used, in English the same concept is named *Grave's disease* or *Morbus Graves*.³² Alexander Woywodt and Eric Matteson argue that eponyms are no longer appropriate, but Judith A. Whitworth³³ believes they remain a useful reflection of medical history: "Eponyms bring colour to medicine, they provide a convenient short hand for the profession and the community alike, and they embed medical traditions and culture in our history. The use of eponyms in medicine, as in other areas, is often random, inconsistent, idiosyncratic, confused, and heavily influenced by local geography and culture. This is part of their beauty. For example, *Plummer-Vinson syndrome* in the United States (and Australia), *Paterson-Kelly's syndrome* in the United Kingdom, and *Waldenstrom-Kjellberg syndrome* in Scandinavia all describe *sideropenic dysphagia*. There are even differences within countries. For example, *cholecystography* was known as such in Melbourne but called the *Graham test* in Sydney".

The category of eponyms might be subdivided to add **toponyms**, **mythonyms**, and **backronyms**, all of which occur less frequently than eponyms. **Toponyms** are terms which use geographic names in naming some disease, disorder, syndrome, etc. In haematological terminology, the pathological types of haemoglobin are labelled with capital letters starting with C to S (except for R) or by a letter and a place where

³¹ Šimon, F. (1989): O historickom výskume medzinárodnej lekárskej terminológie.

³² Woywodt, A. – Matteson, E. (2007): Should eponyms be abandoned? Yes. *BMJ*. September 1; 335 (7617), 424. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1962844/>

³³ Whitworth J. A. (2007): Should eponyms be abandoned? No. *BMJ*. September 1; 335(7617), 425. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1962881/>

they were detected for the first time. They are written as upper or lower index under the chain the mutation relates to, e.g. *haemoglobin G_{Philadelphia}* or *haemoglobin M_{Boston}*. Sometimes the term is also written with an abbreviation of the place of discovery, then the transcript is as follows: *haemoglobin M_S* (*M_{Saskatoon}*), *haemoglobin M_M* (*M_{Milwaukee}*). Similarly we have found haemoglobin named after Seattle, Geneva, Hiroshima, Zürich.³⁴ To limit usage of capital letters, new types of haemoglobin are named after laboratories, hospitals and cities where they were discovered e.g. *haemoglobin_{Norfolk}*.³⁵

Bornholm disease is caused by a viral infection, causing pain in the chest or abdomen, with flu-like symptoms. The infection can spread easily from one person to another and tends to occur as an outbreak in a community, or even as an epidemic affecting a large number of people in one area. It is named after the Danish island, Bornholm, where early cases occurred.³⁶

In Slovakia, *Lyme disease/Lyme borreliosis* often occurs among forest workers. Lyme disease is spread by bites of infected ticks. Early symptoms may include headache, fever, fatigue, and a characteristic circular skin rash called erythema migrans (EM), later symptoms may involve the heart, joints, and central nervous system. The full syndrome was not recognized until a cluster of cases, originally thought to be juvenile rheumatoid arthritis, was identified in three towns in south-eastern Connecticut in 1975, including the towns Lyme and Old Lyme, which gave the disease its popular name.³⁷

Another term motivated by a place name is *Ebola hemorrhagic fever* – a severe, often fatal disease in humans and primates that has appeared sporadically since its initial recognition in 1976. The disease is caused by infection with the Ebola virus, named after a river in the Democratic Republic of the Congo in Africa, where it was first recognized.

A very interesting group of medical terms are terms motivated by Greek mythology. These terms are also called **mythonyms**.³⁸ Greek myths were a rich source for creation of new medical terms. Ancient physicians familiar with Greek mythology, took inspiration from it in naming new things. Nowadays the situation is completely different. Education in classical languages is declining and there is a fear that the moti-

³⁴ Hule, V. – Hrubisko, M. (1969): Hematologie a krevní transfúze. Státní zdravotnické nakladatelství. Praha. p. 46.

³⁵ Dorland's Illustrated Medical Dictionary, 1994, p. 748.

³⁶ Hopkins J. H. (1950): Bornholm disease. BMJ 1 (4664), 1230-2.

³⁷ Steere AC (2006). Lyme borreliosis in 2005, 30 years after initial observations in Lyme, Connecticut. Wiener Klinische Wochenschrift. 118 (21–22): 625–633.

³⁸ Karenberg, A. (2005): Amor, Áskulap & Co. - Klassische Mythologie in der Sprache der modernen Medizin.

vation of terms by mythological heroes will be lost along with the semantic meaning of such mythonyms. Hopefully mythonyms will not be replaced. Well known mythonyms are *Achilles tendon*, *Diogenes syndrome*, (also known as *senile squalor syndrome*, a disorder characterized by extreme self-neglect, social withdrawal, apathy, compulsive hoarding of rubbish, and lack of shame), *narcissism* (excessive love or admiration of oneself), *Oedipus complex* (in psychoanalytic theory, a desire for sexual involvement with the parent of the opposite sex and a concomitant sense of rivalry with the parent of the same sex; a crucial stage in the normal developmental process. Freud attributed the Oedipus complex to children of about the ages three to five.), *gigantism* (a disorder due to the increased activity of the pituitary gland releasing too many growth hormones). According to Greek mythology, the Giants after having lost the battle with the Olympians, were buried by the gods beneath the earth, where their writhing caused volcanic activity and earthquakes.³⁹

The last type of *-onym* terms are **backronyms**. We have chosen just one term, which was developed for educational purposes as a mnemonic. It is the *Apgar score*, first used to ascertain the effects of obstetric anesthesia on newborn babies. The rating system was devised by and named after Virginia Apgar. She started to apply five signs monitored by anaesthesiologists during surgeries (1. heart rate, 2. respiration, 3. muscle tone or activity, 4. reflex response to stimulation, and 5. colour) in evaluating the life activities of newborn babies. By the early 1960s, many hospitals were using Apgar's scoring method. Later a backronym was created using the letters of her name as a mnemonic device for the five scoring criteria: A – Appearance (Colour), P – Pulse (Heart rate), G – Grimace (Reflex irritability), A – Activity (Muscle tone), and R – Respiration. Another case where Dr. Apgar's name is eponymous for a backronym is *American Paediatric Gross Assessment Record*.⁴⁰

Conclusion

Although the formation of terms may seem to be formal and uninteresting for many people, besides the precise, pragmatic, structural forms of word-formation there are also many marginal types of terms that hide a story in their name. It may sometimes be a challenge for a language teacher to collect, study, summarize and even write a paper about them, while discussing the origin of terms with medical students will give them greater insight into the history of medicine and enable them to look at certain terms from a different perspective. Another important issue is that in teach-

³⁹ Retrieved from <http://www.britannica.com>

⁴⁰ Retrieved from <http://profiles.nlm.nih.gov/CP/Views/Exhibit/narrative/obstetric>

ing and practising medicine, we need to be absolutely and unequivocally sure about the meanings of the terms which we use. Analysing the derivation of important medical terms forces us to reflect on their exact meaning and be aware of any possible ambiguity. "Medical terms are very much like individual jigsaw puzzles. They are constructed of small pieces that make each word unique, but the pieces can be used in different combinations in other words as well."⁴¹

REFERENCES

1. Andrews, E. (1947): *A History of Scientific English. The Story of its Evolution Based on a Study of Biomedical Terminology*. Richard R. Smith. New York.
2. Asimov, I. (1978): *Slová vědy. Co se za nimi skrývá? Edice Pyramida – Encyklopedie*. Nakladatelství Panorama. Praha.
3. Besa, E. C. et al. (1992): *Hematology*. Harwal Publishing. pp. 464 - 477.
4. Bujalková, M. (2011): *Lekárska terminológia v súčasnom a historickom kontexte*. Univerzita Komenského. Bratislava.
5. Chabner, D. E. (1996): *The Language of Medicine*. W. B. Saunders Company, New York.
6. Crystal, David (1995): *The Cambridge Encyclopedia of the English Language*. Cambridge University Press.
7. Crystal, David (2008): *A Dictionary of Linguistics and Phonetics, 6th Ed.* Blackwell Publishers.
8. *Dorland's Illustrated Medical Dictionary*. (1988): 28th Ed. W. B. Saunders Company. Philadelphia.
9. Drozd, L. – Seibicke, W. (1973): *Deutsche Fach- und Wissenschaftssprache*. Wiesbaden: Oscar Brandstetter Verlag.
10. Džuganova, B. (2002): *A brief outline of the development of medical English*. Bratisl Lek Listy; 103 (6): 223-227.
11. Hopkins J. H. (1950): *Bornholm disease*. BMJ 1 (4664), 1230-2.
12. Horecký, J. (1984): *Grécko-latinské elementy v terminológii*. Kultúra slova. 18 (5), 135-137.
13. Hrubíško, M. at al. (1981): *Hematológia a transfúziológia*. Vydavateľstvo Osveta. Martin.
14. Hule, V. – Hrubíško, M. (1969): *Hematologie a krevní transfúze*. Státní zdravotnické nakladatelství. Praha.
15. Karenberg, A. (2005): *Amor, Askulap & Co. - Klassische Mythologie in der Sprache der modernen Medizin*. Stuttgart. Schattauer-Verlag.
16. *Kronika medicíny*. (1994) Fortuna Print. Bratislava.
17. Marchand, Hans (1969). *The Categories and Types of Present-Day English Word-formation*. München. C.H.Beck'sche Verlagsbuchhandlung.
18. Merton R K (1973): *What is a Name? The eponymic route to immortality*. www.wikipedia.org/wiki/List_of_eponymous_diseases
19. Peprník, J. (1992): *Anglická lexikologie*. Rektorát Univerzity Palackého. Filozofická fakulta. Olomouc.
20. Poštolková, B. et al. (1983): *O české terminológii*. Academia. Praha.

⁴¹ Chabner, D. E. (1996): *The Language of Medicine*. W. B. Saunders Company, New York, p. 1.

21. Šimon, F. (1989): *O historickom výskume medzinárodnej lekárskej terminológie*. Bratisl Lek Listy. 90 (1), 48–55.
22. Steere AC (2006). *Lyme borreliosis in 2005, 30 years after initial observations in Lyme, Connecticut*. Wiener Klinische Wochenschrift. 118 (21–22): 625-633.
23. Whitworth J. A. (2007): *Should eponyms be abandoned? No*. BMJ. September 1; 335(7617), 425.
24. *World Health Organization. International statistical classification of diseases and related health problems*. www.who.int/classifications/apps/icd/icd10online
25. Woywodt, A. – Matteson, E. (2007): *Should eponyms be abandoned? Yes*. BMJ. September 1; 335 (7617), 424.

INTERNET SOURCES:

1. <http://profiles.nlm.nih.gov/CP/Views/Exhibit/narrative/obstetric.html>
2. <http://www.britannica.com>
3. <http://www.who.int/classifications/apps/icd/icd10online>
4. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1962844/>
5. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1962881/>
6. <http://www.whonamedit.com>
7. http://www.wikipedia.org/wiki/List_of_eponymous_diseases