Eponymous medical terms as a source of terminological variation

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Abstract. The use of eponyms in medical terminology has been more frequent than in other domains, which has in some cases resulted in the use of two or more synonyms for the same concept. This is one of the reasons why terminological variation seems particularly prevalent in medicine. This paper analyses the use of eponyms in anatomical and physiological medical terminology within the Croatian national terminological database Struna, and analyses the creation of terminological variants as one of the results of this use. It also classifies analyzed eponymous terms and their non-eponymous synonyms according to changes both on term- and concept-level. The analysis shows how linguistic and non-linguistic changes lead to change in the term used for this concept, as well as in its use within the relevant field of knowledge. The analysis includes both Croatian and English eponyms, since there are differences in the use of these eponyms between the two languages and their corresponding medical discourse. The research has been carried out within the Croatian Anatomical and Physiological Terminology (HRANAFINA) project, which is a part of the terminological work being performed in the Croatian national terminological database Struna.

Keywords. Eponyms, medical terminology, synonyms, terminological variation.

1. Introduction

It is generally known that medicine is a domain in which terminological variation – the existence of two or more terms for the same concept – is a particularly dominant characteristic of the field. To any layperson, the attribute of medical terminology that first stands out is the co-existence of Latin terms and their counterparts in a particular language. However, another major characteristic of medical discourse is the frequent use of eponyms, which is largely the result of numerous scientific discoveries both in medicine and other related scientific fields.

This paper focuses on the use of eponyms in anatomical and physiological medical terminology as researched within the Croatian Anatomical and Physiological Terminology (HRANAFINA) project. The project was carried out from May 2012 to October 2013 as part of the larger framework of Struna – Development of Croatian Special Field Terminology. Struna is a program initiated in 2007 to create the necessary prerequisites for the standardization of Croatian terminology across various professional domains. The program is financed by the Croatian Science Foundation and is being executed by the Institute of Croatian Language and Linguistics, which was chosen to serve as its national coordinator. The key component of the program is coordination between domain experts on one side, and terminologists and language experts on the other. The anatomical and physiological terminology project involves a significant number of medical professionals, most of whom work as university professors. Therefore, their work has a particular didactic characteristic that other terminological projects within Struna perhaps lack, which is not irrelevant when the difference in usage between eponymous and non-eponymous terms is taken into account.

Due to the nature of this kind of terminology work, which is part of national terminology planning, the Struna terminological database was designed to serve primarily as a prescriptive term base. However, developments and changes in data categories in several term base versions since the creation of the first version in 2008 have significantly changed both its intended aim
and the methodology of work and terminological description. In the current term base version, various synonyms can be added along with a preferred term for each terminological entry in order to document terminological variation and the diversity of usage contexts. Eponyms are an especially interesting type of terms within medical terminology, but for a number of reasons it is not always easy to decide if an eponym should be listed as a preferred term in the term base. In order to find possible answers to this question, a possible classification of eponymous terms and patterns of their variation is also provided.

2. The classification of eponyms

Eponymization “honours a person who makes a certain contribution to our culture” (Garfield 1983: 384), and eponymy is considered to be the highest standard of acknowledgment in science. As previously pointed out, medicine has a particularly rich eponymic tradition. Some medical fields, such as rheumatology and neurology, are so fond of eponyms that even the term “eponymophilia” has been coined to describe their affinity (Matteson and Woywodt 2006), and as Garfield (1983: 386) concludes, “in no other field is their use so hotly debated”.

The first and most common meaning of the word eponym is “a person after whom a discovery, invention, place, etc., is named or thought to be named”. However, a second meaning will be used in the context of this paper: “a term derived from a name of a person”. Strictly speaking, eponym in medicine refers to terms named after people, although there are also examples of geographic eponyms or toponyms: Spanish flu, Lyme disease. Apart from these two definitions, Dirckx (2001: 18) points out that The American Heritage Dictionary of the English Language lists a twisted definition after the traditional one: “a name of a drug, structure, or disease based on or derived from the name of a person”, preceded by the label “medicine”.

There are altogether 91 eponyms or eponymous terms in the Struna project of anatomical and physiological terminology, whether labelled as preferred terms or synonyms to preferred terms. Seventy-five of them have a Croatian equivalent. First, the extracted eponyms were classified according to different criteria concerning the namegiver (the person after whom the term is named), and both Croatian eponymous terms and their English equivalents have been taken into account.

2.1. Classification according to the namegiver

The first classification of eponyms – according to the namegiver – distinguishes those eponyms in which the namegiver is a physician or a scientist from those in which the namegiver is a patient. Only 4% of the eponyms are derived from a patient’s name. It is interesting to note that these eponyms are all in the same semantic group (Tab. 1), i.e. they all designate coagulation factors (Giangrande 2003).

<table>
<thead>
<tr>
<th>Clotting Factor</th>
<th>Synonyms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibrinogen</td>
<td>Factor I</td>
</tr>
<tr>
<td>Prothrombin</td>
<td>Factor II</td>
</tr>
<tr>
<td>Tissue factor</td>
<td>Factor III; tissue thromboplastin</td>
</tr>
<tr>
<td>Calcium</td>
<td>Factor IV</td>
</tr>
<tr>
<td>Factor V</td>
<td>Proaccelerin; labile factor; Ac-globulin (Ac-G)</td>
</tr>
<tr>
<td>Factor VII</td>
<td>Serum prothrombin conversion accelerator (SPCA); proconvertin; stable factor</td>
</tr>
<tr>
<td>Factor VIII</td>
<td>Antihemophilic factor (AHF); antihemophilic globulin (AHG); antihemophilic factor A</td>
</tr>
<tr>
<td>Factor IX</td>
<td>Plasma thromboplastin component (PTC); Christmas factor; antihemophilic factor B</td>
</tr>
<tr>
<td>Factor X</td>
<td>Stuart factor; Stuart-Prower factor</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Factor XI</th>
<th>Plasma thromboplastin antecedent (PTA); antihemophilic factor C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor XII</td>
<td>Hageman factor</td>
</tr>
<tr>
<td>Factor XIII</td>
<td>Fibrin-stabilizing factor</td>
</tr>
<tr>
<td>Prekallikrein</td>
<td>Fletcher factor</td>
</tr>
<tr>
<td>High-molecular-weight kininogen</td>
<td>Fitzgerald factor; HMWK (high-molecular-weight) kininogen</td>
</tr>
<tr>
<td>Platelets</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Terms for clotting factors in blood and their synonyms (adapted from Guyton and Hall (2006))

The second classification of eponyms is according to the gender of the namegiver. According to this analysis, 3% of the eponyms are named after a female person. In some languages, as in Croatian, gender can be a source of terminological variation, as there are different gender inflections.

The third criterion for a possible classification of eponyms was the place, or more specifically, the state of birth of the namegiver. Almost a third of the namegivers were from Germany. Another third were born in the UK or the USA, and Austria and Denmark also have a share of namegivers. As is seen in Tab. 2, six countries are represented with 2 to 4 namegivers, and 8 countries with just one namegiver to an eponym.

<table>
<thead>
<tr>
<th>State</th>
<th>Number of namegivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>26</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>16</td>
</tr>
<tr>
<td>United States of America</td>
<td>11</td>
</tr>
<tr>
<td>Italy</td>
<td>8</td>
</tr>
<tr>
<td>Denmark</td>
<td>6</td>
</tr>
<tr>
<td>Austria, France, Ireland</td>
<td>4</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3</td>
</tr>
<tr>
<td>Czech Republic, Switzerland</td>
<td>2</td>
</tr>
<tr>
<td>Belgium, Canada, Finland, Mauritius, New Zealand, Russian Federation, Sweden, Ukraine</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2: State of birth and number of namegivers

The final classification was made according to the year of birth of the namegiver. It was performed for Croatian and English eponyms separately as there is a slight difference between the two of them: Croatian language lacks eponyms of older origin, i.e. those created before the mid-18th century.

Figure 1: Year of birth and number of namegivers
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Fig. 1 shows that the majority of namegivers were born in the mid-19th century. It is interesting to note the fact that there are no living people among the analyzed namegivers: the last, Mr. Iggo, passed away in 2012.

The four classifications of eponyms according to the namegiver point to the conclusion that the vast majority of medical eponyms are coined after male German scientists born in the mid-19th century. This analysis clearly shows that the trend of eponymization has stopped.

2.2. Classification according to the nametaker

The second classification of analyzed eponyms takes into account the nametaker’s role in the creation of eponyms, i.e. it refers to the concept the name was given to. There are several ways in which eponyms can be classified according to their concept level. However, for the purpose of this research, a semantic classification was opted for – one which considers the nature of the analyzed concept. Thus, eponyms in Struna can be classified into five major groups: anatomy (terms labelling various anatomical structures), diseases (terms for both diseases as a whole and for syndromes or stages of diseases), various phenomena, tests and coagulation factors. Terms belonging to the first two groups, anatomy and diseases, are the most numerous, and they are typical sources of terminological variation.

At the 1955 International Congress of Anatomy in Paris, a decision was taken suggesting that a great number of eponyms be banned from the field of anatomy (Garfield 1983: 386). It was proposed instead that more descriptive, non-eponymous terms should be introduced. The latest edition of Terminologia Anatomica lists only two eponyms, cornu ammonis and stratum purkinjese corticis (Rudeš and Marušić 2009). This decision created a sudden outburst in terminological variants, much as any prescriptive terminological or linguistic decision would spur the sudden creation of new terms or words. For example, the Croatian textbook Eponimi u anatomiji (Rudeš and Marušić 2009) lists 413 eponymous terms, but only 27 of them are listed in our term base as preferred or admitted terms. However, a certain number of eponymous terms still remain in use in anatomy, if only in less formal types of discourse.

Another decision reached at an international level contributed to the creation of variants, although its consequences have not been of the same extent as those of the decision concerning anatomical terminology. In 1974, the United States National Institutes of Health held a conference at which the naming of diseases and conditions was discussed. One of the conclusions was that “the possessive use of an eponym should be discontinued, since the author neither had nor owned the disorder” (Classification and nomenclature of malformation, 1974; Classification and nomenclature of morphological defects, 1975), which led to the creation of many syntactic eponymous variants.

Currently, the World Health Organization prefers non-eponymous terms to eponyms in processing the “International statistical classification of diseases and related health problems”. It is interesting to note that eponyms such as Gottlieb syndrome and Urbani syndrome for two of the greatest medical discoveries of the late 20th century, AIDS and SARS respectively, do not exist at all (Hopper 2011). These two examples also show that eponyms are not so welcome any more as disease names in modern medical discourse.

3. English and Croatian eponym formation

According to Sager (1997: 25), term formation differs from general word formation processes in the fact that it is a conscious activity with “social responsibility for facilitating communication and the transmission of knowledge”. Although this is not always valid where primary term formation is concerned, eponymous terms are formed in a conscious and well-thought manner, taking into account rules for naming inventions or scientific discoveries of known origin. Eponyms are generally formed in the same way in both English and Croatian, however there are certain differences regarding the morpho-syntactic structure of Croatian eponyms and their
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English equivalents due to the morphological rules of the two languages.

3.1. English

There are several ways to form eponyms or eponymous terms in English, and not all of them are equally common. According to Dirckx (2001), there are seven types of word formation used in creating eponyms, the most common of which is the possessive type of word formation, or the synthetic genitive construction in which an apostrophe and an s is added to the proper name. Synthetic genitives like Parkinson's disease, Fröhlich's syndrome or Reissner's membrane tend to be replaced nowadays with their non-synthetic counterparts, particularly where well-known conditions or diseases are concerned (Down syndrome, Parkinson disease). The uninflective type of formation or substantival adjunct is becoming more and more common instead of the synthetic genitive. The construction in which a proper noun has taken on the role of an adjective (Goldblatt hypertension, Bohr effect, Cushing reaction, Hageman factor) is the form recommended by a large group of experts due to its practicality. One of the linguistic reasons in favour of using a substantival adjunct is that it reflects the capacity of the English language to form adjectival constructions by combining two nouns.

The analytic genitive (canal of Schlemm, duct of Bellini, interstitial cell of Leydig) and the formal adjective (Addisonian crisis, Jacksonian epilepsy, Wormian bones) are less common, but still very plentiful types of eponymous term formation. The final three types of formation listed by Dirckx, the shorter form of the substantival adjunct (a positive Babinski [sign]), a noun (parkinsonism, daltonism) and a verb derived from a proper name (to pasteurize), are much rarer in use. The shorter form of the substantival adjunct, i.e. a term in which only a proper name is used instead of a full term – the full term being a construction of a proper name used in an adjectival function paired with a noun – is common in less formal discourse or everyday communication.

3.2. Croatian

Although it is true that many eponymous terms have entered Croatian use through English, their form has changed slightly due to the morphological and syntactic restrictions of the standard Croatian language. The substantival adjunct construction such as the eponym Cushing reaction, in which the preceding noun plays the role of a possessive pre-modifier, is not considered a standard variant in Croatian and so must be changed into a construction with a possessive adjective, Cushingova reakcija. Other examples of such morphological transformation include: Gartner canal / Gartnerov kanal, Graves disease / Gravesova bolest, Brown-Séquard syndrome / Brown-Séquardov sindrom, etc.

Other common ways of forming eponymous terms in Croatian are the same as in English: a proper name can become an adjective expressing relationship (adisonska kriza), a noun (daltonizam, salmonela) or, very rarely, a verb (pasterizirati).

4. Types of terminological variants

Decades of practical terminology work within the theoretical framework of Wüster and, later, based on the premises of the General Theory of Terminology, have resulted in the creation of prescriptive terminological resources that ban all terminological variation. The idea that terminological variation is a phenomenon with no justified place in terminology was further supported upon the creation of multilingual terminological resources, with a view to providing translators with one-to-one solutions for every concept in a special subject field. However, a great number of recent studies have questioned this principle and support the idea of terminological variation as a source of relevant specialized information that can be beneficial to translators in creating well-structured and informative target language texts. The use of several different eponymous terms for the same concept within the same discourse, however, cannot be equally
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justified, as this variation – especially where medical terminology is concerned – can cause relevant concepts to be misunderstood. Based on an analysis of eponyms within anatomical and physiological terminology in Struna, an attempt was made to classify types of eponymous variation and provide possible answers as to which variants should be the recommended forms in contemporary medical discourse.

Anatomical and physiological eponymous terms and their non-eponymous variants were extracted from Struna and classified into groups of variants according to four types of variation: variation at the orthographic level (i.e. at the term level), variation according to the number and gender of the namegiver, and variation according to the noun following the proper name, while non-eponymous synonyms were used as the fourth type of variation. The first, the second and the third types refer to changes at term level, while the fourth type can reflect changes at concept level. The classification is of a more general nature, and applies both to Croatian terms and to their equivalents in English.

1. The first group of eponymous variants includes orthographic variants, i.e. term variants that differ from each other either in spelling only or at the morpho-syntactic level. The difference in variants at the morpho-syntactic level includes certain semantic changes as well, however these have not been taken into consideration as the changes at term level do not affected the understanding of the concept. Therefore, three subtypes of the first group are eponymous variants with (a) differences in spelling (Fröhlich’s syndrome, van Van den Bergh reaction) (b) morpho-syntactic variants such as English terms expressed in synthetic genitive or in analytic genitive (Schlemm’s canal / canal of Schlemm, interstitial cell of Leydig / Leydig cell), and possessive adjectives in Croatian as opposed to English noun adjunct constructions (Bohr effect / Bohr effect), and (c) variants with spelling differences due to transcription from a foreign language (Purkinje cell / Parkynéova stanica).

2. The second type of terminological variation is manifested in variants created due to changes on the term level or on the level of the namegiver of the eponym denoting a concept. Such changes are very common, and are mostly the result of conscious decisions to amend some kind of injustice done to one of the people involved in the discovery. They include changes in the number or order of the namegivers, and even changes in the very name. A change in the number and order of namegivers is quite common, as it is often the case that more than one person contributes to the discovery of a new concept, but only one of them receives recognition in the form of an eponym, as can be seen in these terms: Browicz-Kupffer cell / Kupffer cell and Stokes-Adamsov sindrom / Adams-Stokesov sindrom / Morgagni-Adams-Stokesov sindrom in Croatian. A change in the number of namegivers can sometimes result in extreme cases of variation, as in the terms Mayer waves / Hering’s waves / Traube’s waves / Traube-Hering waves / Traube-Hering-Mayer waves. An influence of the namegiver’s gender is less common and is not visible in the term itself in English. However, in certain languages, such as in Croatian, the gender of the namegiver is relevant as it affects the form of possessive adjectives formed out of proper names. Thus, one cannot know from the English terms Michaelis-Menten equation or Stuart-Prower factor that the second name denotes a female scientist or a female patient (in the second example), while it is clear that in Croatian *Michaelis-Mentenova jednadžba is not an appropriate eponym form since this term was coined after German biochemist Leonor Michaelis and Canadian female physician Maud Menten, and should thus be Michaelis-Mentenina jednadžba. The third subtype of terminological variation according to changes in the namegivers results in the creation of terms in which the name itself is changed. These changes are the most obvious example of correcting injustice done to a certain scientist or physician through false acknowledgement.

3. The third group of eponymous variants include changes at term level as well, but in
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this case there are changes in the noun following the proper name that do not make a difference in the meaning of the concept. The English terms Donnan effect, Donnan law and Donnan equilibrium, and the Croatian terms Brown-Séquardov sindrom, Brown-Séquardova paraliza and Brown-Séquardova hemiplegija show how the use of several synonyms can be misleading. These terms contain different nouns (effect, law, equilibrium), but they all refer to the same concept. The same is the case with the Croatian terms Weber-Fechnerovo načelo, Weber-Fechnerov princip and Weber-Fechnerov zakon, which are listed in Struna as Croatian equivalents – the first as a preferred term, and the others as admitted ones – for the English term Weber-Fecher principle.

The opposite, misleading conclusion can be reached when one encounters the terms Purkinje cell and Purkinje fiber, in which the noun following the proper name is also different as in the previous examples, but in which the same proper name can be misleading. Although these terms include the name of the same person, they are not only different concepts but are not even related. Džuganová (2013: 64) provides the eponyms Addison's disease, Addison's anaemia and Addison's plane as examples of a similar possible confusion. Addison's disease and Addison's anaemia (better known today as pernicious anaemia) were coined after British physician Thomas Addison, while Addison's plane refers to an anatomical concept named after another physician, Christopher Addison.8

4. The final type of terminological variation concerning eponyms results in the creation of non-eponymous synonyms for the concepts previously known under eponymous terms only. This phenomenon usually occurs for two reasons. The first is when new knowledge about a certain concept motivates the creation of a new term, as in the case of the term Kupffer's cell, which used to be the only term for the concept known today as the stellate macrophage. What was once called a syndrome or a disease can be discovered to be only a stage of a disease or a variant among a family of diseases, and this new discovery may result in the formation of a new term. Garfield (1983: 387) illustrates this point through the example of Tay-Sachs disease, which was originally a generic term for a syndrome of dementia and blindness in infants, but today stands for any of several forms of this genetic disorder.9 Another cause of the creation of non-eponymous terms is a conscious impact on the terminology of a domain – the decision reached at the International Congress of Anatomy in Paris in 1955 to ban eponyms from anatomical terminology is an example of this. It was decided then that the use of all eponymous terms for anatomical concepts should cease, and that new, more descriptive terms should be coined in their stead.

5. Advantages and disadvantages of eponyms

Despite the long-lasting heated debate over the use of eponyms in medicine (Turnpenny and Smith 2003, Whitworth 2007, Woywodt and Matteson 2007), there are several advantages to their use. From the perspective of term formation, eponymization achieves a more precise concept-term relationship. It can be said that it helps to achieve the ideal of univocity, since the relationship between concept and term in eponyms is more clear-cut.

Eponyms are valuable in the reconstruction of a concept's origin, since they provide relatively precise information about when the concept was created, which is difficult to trace in non-eponymous variants. Eponyms are also usually shorter than their non-eponymous variants. Garfield (1983: 388) cites Schmickel and his praise of eponyms as neutral terms that allow concepts to “evolve, free of any preconceived notions”.

On the other hand, as has often been argued, eponyms are not as transparent as their non-eponymous, more descriptive variants. It is rather obvious that, at first glance, terms like Fallopian tube or duct of Santorini are less evocative to a layperson than the terms uterine tube
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and accessory pancreatic duct. Another disadvantage of eponyms is that they can be misleading. As previously mentioned, the terms Purkinje cell and Purkinje fiber do not even stand for related concepts, let alone for the same concept. While on the other hand, Graves' disease, Basedow's syndrome, and Basedow's disease all refer to the same concept, although at first glance it is reasonable to assume that they denote different conditions. On the other hand, a disease can have more than one eponym.

Eponyms are often the result of false acknowledgement (many discoveries are named falsely after people because of their high social status or high visibility in the field) or reflect bias – either according to gender or nationality. There is no single solution as to whether an eponymous variant should be the preferred term in a certain terminological resource or in medical discourse. Once established, eponyms should be preserved. Although it is true that standardised terminology helps in technical matters (e.g. in spell-checking, documentation, storage and retrieval), the extent to which it “promotes communication […] and avoids confusion both in basic and clinical sciences” (Narayan et al. 2009: 3) is debatable. Through over-consistent use of standardized terminology in target texts, translators can sometimes create “consistency in places where the use of variants was deliberate and well reasoned” (Bowker and Hawkins 2006: 80). The usage of variants in a certain text is not necessarily a sign of carelessness on the part of the author. A very significant variety of medical discourse – doctor-patient communication – must not be forgotten, in which the use of a term variant that the patient is unfamiliar with, albeit descriptive and accurate, will only impede effective communication and create a larger gap between patients and the medical information they are entitled to. Thus, as in every other case in the field of terminology, the use of eponyms and their non-eponymous counterparts depends on context.

6. Notes

1 More information can be found at struna.ihjj.hr.

2 The fourth version of the term base, currently in use, has 46 data categories altogether. Some of them are automatically stored administrative categories.


4 In Struna, terms denoting tests and laws mostly belong to the field of physiology, but it is also justified to say that they are generally more part of the domain of biology or chemistry.

5 In this type of a construction the proper name is formed into an adjective that has a possessive function.

6 Unless explicitly stated otherwise, all examples are taken from Struna.

7 All of them can be found in online references, e.g. http://medical-dictionary.thefreedictionary.com/, http://www.medilexicon.com/ or in Wikipedia medical articles.

8 The online reference site http://www.whonamedit.com/ (accessed 12 October 2013) lists altogether 5 terms under the head entry Addison-Biermer disease (Addison's anaemia, Addison-Biermer anaemia, Biermer-Ehrlich anaemia, Hunter-Addison anaemia and Lebert's essential anaemia), stating that Addison-Biermer disease is a historic term for pernicious anaemia or megaloblastic anaemia.


7. References


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