Acronym based on the mount “Everest” for the development of clinical reasoning and diagnostic hypotheses during medical graduation

Rodrigo Galvão Bueno Gardona[1], Robbson Haugusto Dambros[2], Joslaine Schuartz Iachinski[2], Gisele Arruda[3], Beatriz Castro Reis[4], Carlos Frederico de Almeida Rodrigues[2], Michel Henrique Baumer[2], Renato Miranda Lima[5], Wladimir Bocca Vieira de Rezende Pinto[6]

Abstract

Introduction: Acronyms can be an interesting educational tool to guide medical scholars and non-specialist physicians in systematically developing diagnostic hypotheses. **Objective**: The present study aims to develop an acronym for the step-by-step development of clinical diagnosis to assist medical scholars in constructing diagnostic hypotheses. **Method**: Classic structures related to clinical reasoning steps and investigative inspirations from Sherlock Holmes were used to create an acronym with educational-indicative content. The acronym was crafted with reference to a natural phenomenon, which, much like medical diagnosis, inspires challenge, technique, and skill to be “conquered.” The acronym was internally validated by three medical professionals. **Result**: EVERESTE was formulated to be used in academic settings to encapsulate the essence of medical practice. It metaphorically relates to ascending a mountain: E stands for interviewing the patient, VE for the practice of proper semiology, RE for reorganizing collected information, S signifies sensing and presenting diagnostic hypotheses developed through tools of anamnesis, semiology, and clinical epidemiology, the T step involves tests to confirm/exclude clinical suspicions, and E represents the stage of choosing the therapy that best suits the patient, always considering the therapeutic option with the strongest evidence. **Conclusion**: Rare clinical conditions and common diseases share symptoms, posing significant challenges in scenarios where data, whether clinical or laboratory-based, are scarce for forming an effective diagnosis. This approach correlates clinical elements, aiming to reach the pinnacle of the “EVERESTE.”

Keywords: Education, Diagnosis, Medicine, Clinical medicine.

INTRODUCTION

Before Hippocrates (460-377 BC), the practice of Medicine was in the hands of the priests of Asclepius. Disease was seen as a result of the gods’ anger towards humans. The sick would go to the temple of Asclepius seeking the assistance of the priests. Hippocrates denied the healing powers of the gods. He sought explanations for diseases in the world around them rather than the whims of the gods. He taught that the physician should carefully observe the patient and record the symptoms of the disease. In this way, he established a norm that showed how the patient could be healed, a teaching that was upheld for centuries, even millennia[1].

It wouldn’t be unfounded to say that for some time now, medical practice has been moving away from Hippocratic methods, with

[1]Faculdade de Medicina da Universidade de São Paulo, São Paulo (SP), Brasil.
[2]Centro Universitário de Pato Branco, Pato Branco, Paraná (PR), Brasil.
[3]Universidade Estadual do Oeste do Paraná. Centro de Ciências da Saúde, Francisco Beltrão, Paraná (PR), Brasil.
[4]Hospital Regional do Sudoeste Dr. Walter Alberto Pecóits, Francisco Beltrão, (PR), Brasil
[5]Instituto do Coração da Faculdade de Medicina da Universidade de São Paulo, São Paulo (SP), Brasil.
[6]Escola Paulista de Medicina da Universidade Federal de São Paulo. Departamento de doenças neuromusculares, São Paulo (SP), Brasil.

https://doi.org/10.11606/issn.2176-7262.rmrp.2024.202925

a tendency to “treat complaints,” distancing itself from one of the classic and fundamental objectives of medicine, proper diagnosis. Outside major centers, diagnoses also follow a different trend, limiting themselves to those common in regional medical practice.

As the text unfolds, it is stated that the medical profession needs to resist the metamorphosis of distributing symptomatic diagnoses, or those common in professional practice[2]. An example of this is the prevalence of fibromyalgia diagnoses. The excess of diagnoses of this condition in individuals with muscular pain symptoms seems to overlook many other diagnostic possibilities that can significantly impact patients’ quality of life, such as metabolic myopathies. Depending on the specialty, diagnostic frameworks are developed; in neurology, for instance, syndromic, topographic, and etiological diagnoses are observed. It is understood that new medical academics should not limit themselves to syndromic diagnoses. Patients undoubtedly need relief from their signs and symptoms, yet they also need, when possible, a diagnosis to plan their lives.

In this regard, acronyms can be an interesting educational resource to guide medical scholars and non-specialist physicians in systematically developing diagnostic hypotheses. Sharing the same intent, the acronym “CHOICE” was published in 2019. It was devised to assist in diagnosing potential causes of toxic leukoencephalopathy[3]. Another well-known example of an acronym is “CRUMPLED,” constructed to aid physicians in identifying possible etiologies of diffuse cortical injury[4].

To clarify, an acronym, derived from the Greek άκρος [ákros], ‘extreme’ + ὀνομα [onoma], ‘name’), is a term or literal reduction of labels based on the initial letters or syllables of each or some of the components of the label. In other words, it’s a word formed by joining the first letters or the initial syllables of a group of words, typically representing a title. The acronym and the initialism (abbreviations formed from the initial letters of a phrase) have differences in pronunciation when read: while an acronym is read as a regular word as if it were traditionally present in the language (e.g., MELAS: “Myopathy, Encephalopathy, Lactic Acid and Stroke”), an initialism is read by naming each letter, similar to spelling (e.g., FGTS, initialism for “Fundo de Garantia do Tempo de Serviço,” a Brazilian labor-related fund)[5].

Given the described idea, the objective of this study was to develop a step-by-step acronym for the construction of diagnostic hypotheses among medical scholars.

METHODS

The acronym consists of a morphological process that allows the formation of lexical units through combinations of initial letters. Acronyms have become widely used in academic contexts as a way to memorize knowledge inherent to everyday medical practice, for example. The developed acronym metaphorically referenced a natural phenomenon that, much like medical diagnosis, inspires challenge, technique, and skill to be “conquered.” The present acronym was internally validated by three medical professionals.

Classic structures and elements related to the stages of clinical reasoning and investigative inspirations from Sherlock Holmes based on “clues” were used to craft an acronym with educational and directional content.

The development took place within an academic environment, involving medical students and professors. Literature reviews on the construction and use of acronyms, as well as evidence-based clinical reasoning, were conducted. A deeper dive into investigative literature was also undertaken. Graphic design was carried out with the assistance of a professional in the field. The image depicts a progressive path in a "step-by-step" format, conveying a sense of stage by stage or step by step. Each stage presents a challenge to be experienced.

RESULTS

Based on the information above, the EVERESTE acronym was developed. Despite ending with the vowel "E," it directly alludes to Mount Everest, including its sound. Below is the structure of the acronym according to the initial letter.

E: interview. This is the actual anamnesis. In this stage, the "clues" are initially questioned and synthesized by the examiner.

VE: verify with evidence. The intent of VE is to encourage students to practice evidence-based semiology. When applying certain semiological tests/maneuvers, the examiner needs to be aware of the accuracy (sensitivity, specificity, positive and negative predictive value) of those performed maneuvers. For example, classic semiological signs used in the investigation of meningeal irritation syndromes, such as Kernig and Brudzinski signs, have low sensitivities of 28.0% and 33.4% respectively, in detecting acute meningitis. The absence of these signs should be appropriately interpreted regarding the validity of their negativity[6].

RE: involves gathering the information obtained so far and organizing it, when possible, into a syndrome (e.g., pyramidal, extrapyramidal, cerebellar, vestibular).

S: sense, sum up, and present diagnostic hypotheses. This is probably the most challenging stage. Diagnostic hypotheses should preferably be formulated using resources such as anamnesis, evidence-based semiology, and clinical epidemiology. This tripod allows students to develop and prioritize their diagnostic hypotheses. The intention of S is for the student to sensitively perceive the patient's complaints and organic changes, combining them with the epidemiological probabilities of a specific disease in a specific patient. Naturally, new medical graduates might have limitations in presenting diseases that are not within their field of expertise. However, based on semiological findings and epidemiological relevance, they can, for example, present both trivial diagnostic hypotheses and clinical triads/signs that, despite being unfamiliar, they believe to be relevant in a particular individual. Many signs and symptoms are underestimated precisely because they do not fit into the realm of diseases known to certain professionals.

T: tests to confirm or exclude hypotheses. Selecting the best diagnostic method for investigating an undefined clinical context is a fundamental step in complementary evaluation. The clinician must understand analytical and pre-analytical factors related to the results of requested investigations.

E: evidence-based therapy selection, considering the patient's inherent characteristics and the state of the art related to their clinical condition. There are numerous resources available to the medical community for choosing the best therapeutic option, following the principles of personalized medicine in therapeutic decision-making.

To illustrate and make this initiative's use closer to medical practice, Figure 1 was created, directly referencing the mountain and the "climbing" process.

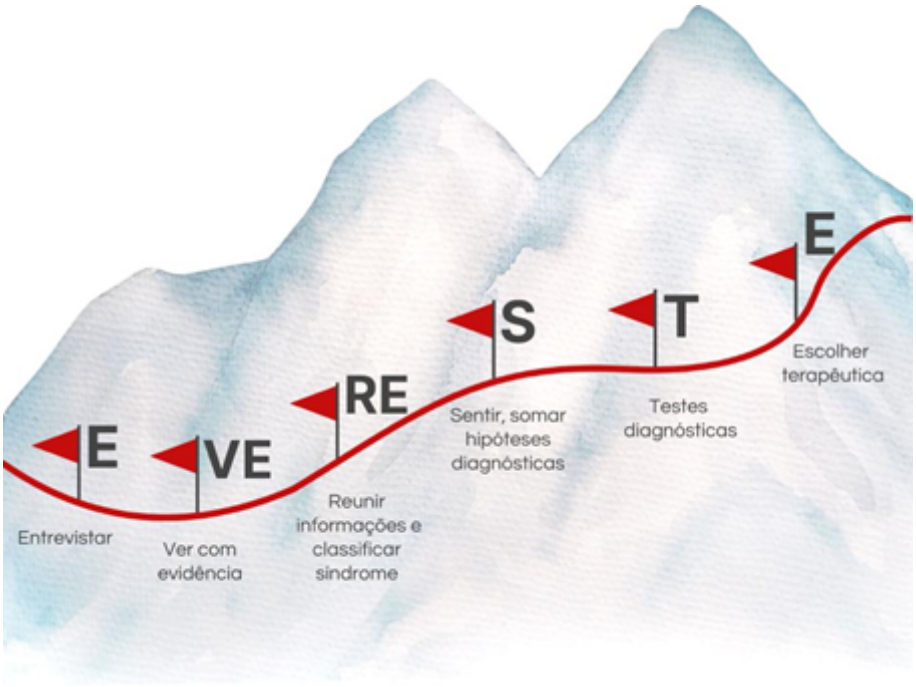

Figure 1: “Climbing the mountain” process with its described stages.
Source: Authors (2022)

The Everest, named “Chomolungma” (mother of the universe) by Tibetans, is the highest mountain in the world. Its official English name was given by the Royal Geographical Society in honor of Sir George Everest. It represents the greatest challenge for climbers. Reaching its summit is the ultimate achievement.

CONCLUSION

Rare clinical conditions and common diseases in clinical practice share signs and symptoms, often leading to diagnostic difficulties in scenarios where limited additional clinical or laboratory data are available for appropriate diagnostic hypotheses. Diagnostic hypotheses stem from the construction and elaboration of a logical sequence of events, where the most determining elements are represented by the clinical history. Diagnostic construction is a complex exercise in medical practice, involving successive approach and correlation of clinical elements to reach the peak of the route to “EVERESTE.”

Reference

1. Rebollo RA. O legado hipocrático e sua fortuna no período greco-romano: de Cós a Galeno. Scientiae Studia. 2006; 4:45–81.

2.Kushner I, Greco PJ, Saha PK, Gaitonde S. The trivialization of diagnosis. J Hosp Med. 2010;5(2):116-9.

3. Koksel Y, Ozuemiz C, Rykken J, Ott F, Cayci Z, Oswood M, McKinney AM. “CHOICES”: an acronym to aid in delineating potential causes of non-metabolic, non-infectious acute toxic leukoencephalopathy. Eur J Radiol Open. 2019;6:243-57.

4. Koksel Y, Benson J, Huang H, Gencturk M, McKinney AM. Review of diffuse cortical injury on diffusion-weighted imaging in acutely encephalopathic patients with an acronym: “CRUMPLED”. Eur J Radiol Open. 2018;5:194-201.

5. CIBERDÚVIDAS/ISCTE-IUL. Acrónimo - Ciberdúvidas da Língua Portuguesa. Iscte-iul.pt. Disponível em: <https://ciberduvidas.iscte-iul.pt/consultorio/perguntas/acronimo/77#>.

6. Akaishi T, Kobayashi J, Abe M, Ishizawa K, Nakashima I, Aoki M, Ishii T. Sensibilidade e especificidade dos sinais meníngeos em pacientes com meningite. J Gen Fam Med. 2019;20(5):193-198.

Corresponding Author:
Gisele Arruda
giselearrudabioq@gmail.com

Received: jan 18, 2023
Approved: jun 16, 2023
Editor: Prof. Dr. Felipe Villela Gomes