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Review Article

Challenges and Debates Regarding the New Classification of Epileptic Seizures of 2025

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Abstract

The introduction of the 2025 Epileptic Seizure Classification has generated considerable debate in the neuroscientific community. Although it seeks to optimize diagnostic accuracy and communication, this article examines the main criticisms related to its complexity, the learning curve for clinicians, and its potential impact on patient management. It is argued that, while innovation is crucial, the implementation of this classification must consider its inherent challenges to ensure its effective adoption and clinical benefit. We analyze potential limitations, resistance to its adoption, its impact on clinical practice and research, and considerations for future revisions.

Keywords: *Epileptic Seizure Classification; Epilepsy; Clinical Practice and Research*

Introduction

Epilepsy is considered the second most common neurological disease and, at the same time, a global health problem that deserves an adequate response [1].

The history of epileptic seizure classifications has been largely based on keen observations and expert opinions. Its evolution is related to the constant need for updating as knowledge advances.

The Sakikku (1067-1046 BC) is considered the first known treatise on epilepsy in human history and, at the same time, the first human classification of epilepsy [2-4].

Following the invention of the electroencephalogram (EEG) by Hans Berger in 1929, Frederic Andrews Gibbs and Erna Leonhardt Gibbs (1937) classified seizures based on their electroclinical presentation [5].

However, the first International League Against Epilepsy (ILAE) classification of epileptic seizures was published by Henry Gastaut in 1969 [6,7].

Twelve years later, in 1981, an ILAE Committee, led by Fritz E. Dreifuss, revised and standardized the clinical and electroencephalographic classification of epileptic seizures [8]. Later, in 1985 [9], the proposed classification of epilepsies and epileptic syndromes was published, which was revised in 1989 [10].

Hans O. Lüders and other authors from the Cleveland group in 1998 were the first to develop a semiological classification of seizures, based exclusively on ictal semiology. The preliminary form was published in 1993 and then presented in its final form in 1998 [11]. Since 1997, the ILAE Commissions on Classification and Terminology, chaired by Pete Engel (1997-2005) [12] and Anne Berg [13], have made significant efforts to achieve improved and internationally consistent classifications, as reflected in their reports of 2001 [14], 2006 [15,16] and 2010 [13,17].

In 2013, a new ILAE Commission report on the classification and terminology of epilepsies was published [18,19] and in 2017, the ILAE Operational Classification of Seizure Types was presented in its report: Position of the ILAE Commission on Classification and Terminology [20].

This classification, presented by the Fisher group, is considered operational (practical) and based on the 1981 classification and the one extended in 2010. The classification framework is columnar, and certain seizure types can be focal, generalized, or of unknown onset.

Accordingly, in 2023, the ILAE Executive Committee appointed a working group to recommend adjustments to the 2017 classification, and the updated ILAE position has recently been presented [21].

The purpose of this article is to explore and analyze the critical voices and challenges that this new classification has raised.

The 2025 classification and its purposes

The International League Against Epilepsy (ILAE) classification of seizures is a constantly evolving field, and the 2025 update [21], which is based on the 2017 framework [20], introduces significant changes aimed at achieving a common language and greater diagnostic accuracy. However, like any new proposal, it has generated diverse opinions and criticisms, as with the previous one [22].

Significant aspects of the 2025 classification and potential points of criticism

The classification introduces six changes, which aim to address limitations of previous versions and improve clinical applicability: Elimination of term “onset” in the names of the main classes: This simplifies the terminology, but may require an adjustment period for clinicians accustomed to the previous nomenclature [23,24].

Distinction between classifiers and descriptors

Classifiers: These reflect biological classes and have a direct impact on clinical management (e.g. “focal,” “generalized,” “unknown”).

Descriptors: These characterize specific features within a seizure type (e.g. “motor manifestations,” “nonmotor”). This distinction seeks to provide a more granular description of seizures. Criticism could arise if implementing this differentiation proves complex in daily practice, or if the descriptors are not comprehensive enough to cover all clinical presentations [25,26].

“Consciousness” replaces “awareness” as a classifier: It is operationally defined by awareness and responsiveness. This change seeks greater clarity in assessing the state of consciousness during a seizure. However, the assessment of consciousness can be subjective and vary between observers, potentially leading to inconsistencies in classification [27-30].

Motor vs. non-motor dichotomy replaced by observable vs. unobservable manifestations: This is intended to be more inclusive and better reflect seizure semiology. Criticisms could focus on the potential difficulty in clearly differentiating between "observable" and "unobservable" in all clinical situations, especially in subtle or atypical seizures [31].

Description of seizures by the chronological sequence of signs and symptoms: Rather than relying solely on the first sign, this approach seeks a more complete and accurate description of seizure progression. Criticism could be that it requires even more detailed observation and exhaustive recording, which can be challenging in time-constrained clinical settings.

Recognition of epileptic negative myoclonus as a seizure type: This specific inclusion addresses a previously less well-defined seizure type [32].

This classification does not include neonatal seizures [33-35], status epilepticus nosology, and acute symptomatic seizures [36].

It is noteworthy, however, regarding the latter, that this classification specifically includes clinical seizures, omitting those events identified solely by electroencephalographic activity.

Given this comment, the concept of epileptic seizures is unclear, as it implies an eminently clinical rather than electroencephalographic element. Based on the above, it can be inferred that events with only electroencephalographic activity can be considered epileptic.

General critical considerations and implementation challenges:

- **Complexity and learning curve:** Each new classification, no matter how simplified it may be, adds a level of complexity that requires time and effort for healthcare professionals to master and apply consistently [37,38].
- **Terminology:** Although the ILAE strives to establish a common language, some terms may remain subject to debate or interpretation. For example, some commentaries have pointed out the potential ambiguity between "awareness" and "consciousness" in the Spanish translation, and the need to adjust the terminology for certain seizure types [29,39].
- **Applicability in clinical practice:** Despite efforts to make the classification more practical, the reality of emergency departments or consultations with limited resources can make it difficult to obtain all the information necessary for optimal classification. The lack of clear information on the semiology of a seizure can lead to classifying it as "unclassified," which, while a necessary category, reflects a diagnostic limitation in practice [40].

Impact on research and data comparison: While the goal is to improve research and understanding, changes in classification can make it difficult to directly compare historical data with new data, which could be a challenge for longitudinal studies and meta-analyses [41].

The new ILAE 2025 classification can be considered an ongoing effort to improve the understanding and management of epileptic seizures, seeking greater accuracy and clinical applicability.

Criticisms and challenges focus primarily on the inherent complexity of any classification system in a field as diverse as epilepsy, the need for careful implementation, and the adaptation of terminology to ensure universal understanding. The ultimate goal is always to benefit the patient through a more accurate diagnosis and more effective treatment.

Why might complexity be an obstacle?

Simplification is undoubtedly a desirable goal in any medical classification system, especially in a field as complex as epilepsy. It is quite valid to say that the new ILAE classification, despite its intentions, may not be practical or simple enough for daily use by all healthcare professionals [42,43].

The main reason a complex classification can be problematic is the learning curve [38].

When a system is too detailed or introduces many new categories, it requires considerable effort for physicians to master and apply consistently [44].

This is especially true for:

- Primary care physicians and non-epileptology specialists: For them, an overly granular classification can be overwhelming and unintuitive, making it difficult to quickly identify the most common seizure types or to communicate effectively with patients and other specialists. Complexity can lead to uncertainty and errors in classification if every nuance is not thoroughly understood [41].
- Emergency departments: In an environment where decisions must be made quickly and information is often limited, a classification that demands excessive detail can slow down the diagnostic and therapeutic process [29,30].

It is our view that the classification should be simpler for use by all professionals, a matter widely discussed within the neurological community. Many clinicians argue that the "reality" of the patient in the office or emergency room often does not perfectly fit theoretical categories, and that a more practical and less exhaustive classification might be more useful for the bulk of cases.

Perhaps the future challenge will be to develop tools or guides that can translate the complexity of the classification into a more accessible and rapid format for general use, reserving the finer details for epileptology specialists or referral centers [31,41].

As our knowledge advances and we discover more nuances about diseases, we tend to create more detailed classifications to reflect this new understanding. However, this precision often comes at the expense of simplicity and practical usability.

The proposal for a "dual classification": Practical for everyone, detailed for experts

The effectiveness of a classification is measured not only by its scientific rigor but also by its ability to be effectively applied in daily practice by the wide range of professionals who use it [20,22].

The value of a classification lies in its ability to facilitate communication, guide treatment, and enable research.

The idea of having a dual or stratified classification emerges as a logical solution to this dilemma, and is something that many healthcare professionals suggest:

- An "essential" or "bedside clinical" version: This would be a simplified, high-level classification designed for rapid identification and initial management by any healthcare professional. It would focus on the most relevant aspects for deciding the first diagnostic and therapeutic steps. For example, distinguishing between generalized and focal seizures with or without impaired consciousness [39].
- An "extended" or "research/specialist" version: This would be the complete and detailed classification, like the current ILAE classification, which would incorporate all the semiological, etiological, and pathophysiological nuances. It would be essential for research, complex therapeutic decision-making, communication between epileptologists, and the training of future specialists [21].

This approach would allow science to continue advancing with more precise classifications, while ensuring that vital information is accessible and usable for all those who care for patients with epilepsy. It is not about rejecting complexity when it is necessary, but rather about managing how that complexity is presented and applied in different clinical contexts.

A call for duality

The fundamental purpose of a classification: a classification is not an end in itself, but a tool. Its value lies in its ability to guide clinical practice, facilitate communication, and advance research.

The idea of a dual classification-a simplified version for general practice and a more detailed one for research and specialists-seems to be a logical and pragmatic solution. This would allow specialists to further delve into the complexity of epileptic seizures, while other medical personnel can apply the essential principles quickly and effectively [20,21].

An overly complex classification can hinder teaching and learning at different levels of medical training.

Reflection and active participation from the medical community should be encouraged so that future classifications are not only scientifically rigorous but also truly useful and practical.

All these considerations could be summed up in two major difficulties: the complexity and frequency of changes in classifications.

Classifications, while seeking to be precise and operational for specialists, must also be practical and accessible to a wider audience, especially to health professionals who are not neurologists, such as primary care physicians, pediatricians, clinicians, psychiatrists, or nursing staff. If a classification is too complex, it can lead to confusion, errors in diagnosis or initial treatment, and hinder effective communication between different levels of care. Information overload or the subtlety of certain distinctions can be counterproductive in daily practice [22,40].

The constant evolution of classifications is also very pertinent. It is true that knowledge in neurology and epileptology advances rapidly, and it is natural that classifications be updated to reflect these new findings. However, this frequency of changes can be a challenge for the medical community. Each new version involves considerable effort for both training and established professionals, who must dedicate time to learning and adapting to the new terminology and criteria [41,42,45].

The perpetual learning curve

The career path of a neurologist or any physician who treats patients with epilepsy becomes a "perpetual learning curve" regarding classifications. The various updates described above can be noted. This is not just a matter of memorizing new terms, but of reconfiguring clinical thinking to apply the new diagnostic and therapeutic criteria [46].

The impact on homogeneity and communication

This succession of classifications can also have an impact on the homogeneity of diagnosis and treatment among different generations of physicians or even among colleagues who trained at different times. A physician trained using the 1989 classification might interpret a case slightly differently than one trained using the 2017 classification, potentially creating challenges in interdisciplinary communication and continuity of care [10,20,41,42].

The priority: Extreme accuracy or broad clinical utility?

1. **The cost of constant updating: A silent workload**

- The hidden cost and silent workload this imposes on professionals must be emphasized.
- It should also be emphasized that each new classification is not just an "update," but a mental and practice reconfiguration that requires time, effort, and resources (courses, readings, discussions). To paraphrase, "Each new classification is not a simple adjustment; it is a mental reprogramming for thousands of professionals, who must unlearn and relearn in an already demanding field" [6,8,12,13].

2. The gap between academia and general clinical practice: "For neurologists... and no one else"

- Here, the objective is to highlight the disconnect between the academic sophistication of the ILAE and the needs of general practitioners [21].
- We might consider "classifications are becoming a vernacular that only natives of the field of epileptology can fluently master".
- It should be emphasized that the goal should be a balance between scientific accuracy and universal applicability.

3. The risk of "classification fatigue" and resistance to change

- Constant innovation can lead to the opposite effect: burnout and, paradoxically, decreased adoption of new guidelines.
- A term like "classification fatigue" should be coined or used to describe the tiredness and demotivation that can arise [7].
- This fatigue can lead physicians to continue using old classifications or their own simplifications, undermining the desired standardization. "When the torrent of new classifications becomes incessant, the risk is not only confusion, but passive resistance. Many will opt for the familiarity of the known rather than the effort of the new and ephemeral".

Progress or proliferation? classification fatigue

The increasing complexity of diagnostic classifications in specialties such as neurology, coupled with overall caseload, has been identified as a contributing factor to classification fatigue, which can impair decision-making [47].

It is one of the least explored, yet significant, challenges in the adoption and application of classifications. This phenomenon refers to the mental and cognitive exhaustion experienced by healthcare professionals due to the constant demand to interpret, memorize, and apply inherently complex and ever-evolving classification systems [20,48].

Classification fatigue can manifest itself in decreased adherence to criteria, increased diagnostic time, or, in extreme cases, oversimplification to mitigate cognitive load. Addressing this fatigue is crucial to improving diagnostic accuracy and the quality of patient care [47].

The ILAE's admirable pursuit of precision, which drives these periodic reviews, risks generating a paradoxical effect: classification fatigue. When the pace of change is so rapid, practitioners face the choice of devoting valuable time to mastering each new iteration or, consciously or unconsciously, adhering to older versions that are more familiar and operational. This not only undermines the desired standardization but can also lead to a knowledge gap between epileptology experts and the front lines of care [13,49].

Beyond frequency, the intrinsic complexity of the latest classifications raises a fundamental question: Who are they designed for? While for the neurologist specializing in epilepsy, the subtleties can be crucial, for a primary care physician, pediatrician, or even other specialists who encounter epileptic patients, the vast amount of nuances and specific terminology can be overwhelming. If a classification, no matter how precise, becomes a conceptual labyrinth for those who must apply it daily in initial diagnosis and management, are we really serving the patient in the best way? The pursuit of comprehensiveness should not overshadow the need for practicality and accessibility across the broad clinical spectrum [11,50].

We must express, like other authors, that in this modern era of harmonization, the degree of disharmony that exists regarding the classification of this disease is surprising, and therefore it can be considered an unfinished business.

Conclusion

The success of the 2025 Classification will depend on how its limitations are addressed and how consensus is achieved within the global community. While the new classification represents an effort to advance the field, criticisms raise important questions that must be addressed for its successful implementation and universal acceptance. Flexibility and continued adaptation in medical classifications are necessary.

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