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Towards a pragmatic epilepsy classification: future considerations

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Letter to the Editor!

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Towards a pragmatic epilepsy classification: future considerations

We read with interest the commentary "Could the 2017 ILAE and four-dimensional epilepsy classifications be merged to a new 'Integrated Epilepsy Classification'?" [1]. This piece co-authored by a large group of top epilepsy luminaries discusses using comorbidity, epilepsy type, epilepsy syndrome, seizure type, and aetiologies in creating an Integrated Epilepsy Classification system (IEC). It considers merging the 2017 International League of Epilepsy (ILAE) classification and the four-dimensional epilepsy classification updated in 2019 [1]. IEC contains five subcategories: headline, seizure type, epilepsy type, aetiology, and comorbidities and relevant individual preferences [1]. The headline corresponds to epilepsy with aetiology introduced in a 2016 ILAE proposal and includes localization and aetiology [1]. Seizure type is based on ictal symptomatology, while epilepsy type is based on all available information [1]. Aetiology includes one or combinations of structural, genetic, infectious, metabolic, and immune causes or unknown [1]. Comorbidities and relevant preferences include associated conditions and management factors such as individual preferences and predictors of risk and outcome [1]. The efforts in developing the concept of an IEC scheme are encouraging, but consideration of important factors in classification and implementation are still necessary.

Firstly, consideration of "brain age" at onset should be an important factor in the classification of epilepsy. The stage of brain development at seizure onset influences the manifestation and effects of seizures. Brain maturation affects seizure semiology, with children with temporal lobe epilepsy younger than 42 months exhibiting seizures with early and marked motor features, while the frequency of motor components decreases with age [2]. Epilepsy onset at earlier stage of brain development is also associated with more extreme cognitive deficits. Cognitive impairment secondary to uncontrolled seizures lessens with age [3]. People with earlier onset of temporal lobe epilepsy experience major verbal and nonverbal memory deficits, while those with later onset have only minor deficits [4]. Similarly, disease duration reduces verbal memory performance [5]. Current classification schemes suppose uniform applicability for people with epilepsy. Incorporating stages of brain development or "brain age" into the classification system would help to classify and manage people properly throughout the timeline of epilepsy.

Secondly, validation of a classification in contexts that differ in socioeconomic status and with poor healthcare infrastructure is necessary. About 80% of people with epilepsy live in low and middle income countries (LMICs) [6]. Over 75% of people with active epilepsy living in LMICs, however, do not receive treatment or receive inappropriate treatment, particularly in rural areas [7, 8]. Premature mortality in people with epilepsy in LMICs is markedly higher than in the general population mainly due to comorbidities or complications of epilepsy [9]. Classification plays a role in the treatment gap and subsequently increased mortality in people living in LMICs. One study in rural China found that a significant portion of generalized seizures and epilepsy and etiologies classified in prior ILAE classifications changed to unknown after the adoption of the 2017 classification system [10]. Validation of the proposed IEC across different contexts will ensure people with epilepsy living in LMICs may experience the first step in reducing the treatment gap. This involves consideration of culturally-specific conceptualizations and descriptions of the manifestation and effects of epilepsy [11]. Additionally, capacity-

building with field workers, increased availability of low-cost technology such as personal-grade EEG or telemedicine, and educational efforts can ensure proper but pragmatic classification and allow for appropriate treatment in these settings [12-15].

Thirdly, a team-based approach to care needs coupling into a new classification system. Epilepsy specialists mainly developed current classification schemes and they are appropriate for highly specialised settings. Incorporating primary care health workers such as nurses and general practitioners into discussions in addition to the specialists would provide benefits to people with epilepsy. This could include comprehensive care through personalization and screening for side effects, comorbidities or behavioural disorders at a lower level of care. This would also help empower people with epilepsy through provision of increased information and increased self-involvement in care [16-19]. Incorporating other members of the care team in discussions of a pragmatic classification system will ensure representation of the perspectives of medical personnel other than specialists in refinements made to the classification system [20]. Then, the new classification system needs to be explained to all members of the care team to enhance their knowledge base, allow for clear and efficient communication, as this will help provide better care [18]. The headline portion of ICE will be particularly important for standardizing communication between different members of the care team [1].

The classification of epilepsy continues to evolve. The positive changes proposed in the ICE are promising. Further changes in the semantics of classification and application of a classification to various contexts and team-based clinical practice are necessary. These advancements will allow for better clinical management of people with epilepsy and empower people with epilepsy globally.

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