Preface

# Updates in the medical management of pediatric epilepsy

Epilepsy has been increasingly recognized as one of the most significant disorders facing humanity, with nearly 65 million people affected globally (1). One in 26 people will have epilepsy in their lifetime (1). It is a disease that has been documented in human history for millennia, and continues to be a diagnosis surrounded by fear, misunderstanding, and discrimination. The burden of epilepsy has unfortunately been placed disproportionately on individuals living in low and middle income countries, often leaving the most vulnerable with limited treatment options and access to care (2). Children also suffer more frequently from the disorder and face the additional challenges of disrupted cognitive and social development. Additionally, in the pediatric population, individuals with epilepsy face the challenging prospects of decreased academic achievement, lower quality of life, and higher mortality when compared to their unaffected peers (3).

Despite these challenges, over the past half century, significant progress has been made into better understanding the mechanisms of and potential treatments for epilepsy. Epilepsy surgery has been acknowledged as the preferred management option in many instances of drug-resistant focal epilepsy (4), providing many patients with epilepsy the only chance at a definitive cure. In children, appropriately implemented resective surgery may have the added benefit of enhancing cognitive development (5). Neuromodulatory approaches such as vagal nerve stimulation and responsive neurostimulation, although often limited to resource-rich countries, have provided additional management options in the treatment of drug-resistant epilepsy, as have increasingly varied dietary modification paradigms, such as the ketogenic diet, modified Atkins diet, and Low Glycemic Index Diet.

Nonsurgical management of pediatric epilepsy remains one of the most challenging domains in medicine. Despite rapid expansion in the number and types of available anti-seizure medications, the percentage of medication failures has remained essentially unchanged over the past century (6). Additionally, with the advent of new and progressive medical therapies for epilepsy comes increasing complexities and cost of care. Inevitably, questions arise as to how to maximize resources and healthcare value.

In this issue of *Translational Pediatrics*, we review timely topics in both surgical and medical management of pediatric epilepsy. Cannabidiol, the primary cannabinoid extract of marijuana, has gained increasing notoriety as potential treatment option in childhood catastrophic epilepsy. The pharmacology, potential therapeutic applications, and preliminary outcomes are reviewed in detail in the following pages. Additionally, the management of infantile spasms, one of the most common seizure types in infancy and a topic of ongoing international discussion, is reviewed in detail, highlighting the challenges involved with allocating resources for treatments that are remarkably low (prednisolone) and remarkably high (ACTH, vigabatrin) cost. Lastly, despite having minimal changes in its underlying technical composition or bedside application, electroencephalography (EEG) remains a powerful clinical tool that has had increasing influence in the management of critically-ill children. In this issue, a detailed look at its application and utility in identifying and treating non-convulsive seizures is included. We hope the topics covered help to highlight the challenges and accomplishments within the broad and rapidly-changing field of pediatric epilepsy care.

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