

## 2024

### **SIG | Basic Mechanisms and Neuroscience of Epilepsy: The Emerging Roles of Ras-MAPK Pathway in Drug-Resistant Epilepsy**

#### **Overview**

Genetic variants in the Ras-MAPK pathway are well-described in low-grade epilepsy-associated tumors, and they are a newly recognized cause of malformations of cortical development and temporal lobe epilepsy. This SIG highlights current progress in understanding the genetic and molecular mechanisms of Ras-MAPK signaling in epilepsy and its clinical implications. The session includes talks and moderated discussions. Speakers present new human genetic findings and discuss mechanistic investigations into how Ras-MAPK variants and signal dysregulation may lead to neural dysfunction and epileptic networks. Speakers also discuss the interplay between the Ras-MAPK and PI3K-mTOR pathways in epilepsy and targeted treatment avenues.

## 2023

### **SIG | Basic Mechanisms and Neuroscience of Epilepsy: Human iPSCs-based Neuron and Brain Organoid Models to Dissect Genetic Epilepsy**

#### **Overview**

Recent developments in the human induced pluripotent stem cells (iPSCs)-derived neuron and organoid models provide transformative tools for us to dissect genetic epilepsies with human cells. This session highlights the current progresses in this emerging field. Panelists, in an interactive seminar talk format, will discuss cutting-edge technologies and present mechanistic investigations into how genetic variants identified from patients may lead to an epileptic network. Panelists will discuss how phenotypes identified in the human cell-based models could be targeted to develop next-generation interventions that advance treatments for genetic epilepsies.

## 2022

### **SIG | Basic Mechanisms and Neuroscience of Epilepsy: Paradoxical mechanisms of hyperexcitability in epileptic circuits**

#### **Overview**

Historically, epilepsy and seizure generation have been considered to represent an imbalance between neuronal excitation and inhibition. This concept, born from recordings of synaptic and membrane potentials in early animal models, has been invaluable for guiding our understanding

the physiological basis of seizure and antiseizure drug mechanisms. However, evolving knowledge of developmental changes, cell type specificity, and neuronal circuit complexity suggests that a straightforward concept of E/I imbalance is inadequate in many ways, and at least requires expansion if we are to use it as a guide to further our mechanistic understanding of genetic epilepsies and how to treat them. This session will feature three short presentations and moderated discussion. It will highlight recent studies in animal models of epilepsy demonstrating how changes in molecular function that would be expected to decrease excitability of neurons lead to hyperexcitable circuits and seizure.

**2021**

### **SIG | Basic Mechanisms and Neuroscience of Epilepsy**

Title: mTOR Dysregulation in Epilepsy – Targets and Pathways Beyond the Usual Suspects

#### **Overview**

The mechanistic target of rapamycin (mTOR) pathway is highly conserved across species and is ubiquitously found in numerous cell types, where one of its basic functions is the regulation of protein synthesis. Activation of serine/threonine protein kinases within this pathway is necessary for the biogenesis of a myriad of molecules that promote cellular growth, survival and proliferation, and control autophagy. In addition, cell-specific roles of mTOR signaling include regulation of dendritic protein translation and synaptic plasticity in neurons, inflammatory and phagocytic properties in microglia, and glutamate transport mechanisms in astrocytes. Abnormal mTOR activation can negatively impact these systems resulting in the instability of neural circuitries by promoting neuronal hyperexcitability. Consequently, mTOR hyperactivation is associated with the construction and maintenance of epileptic networks, as well as with cognitive defects in drug-resistant human epilepsies and in experimental models. Most of the previous work has focused on determining the roles of dysregulated mTOR or MTORC1, but more recently, other upstream and downstream components of this pathway have come into focus as important mediators of mTORopathy-associated epilepsies. This SIG will highlight and discuss some of these novel mTOR signaling components, their dysregulation and how and if they could serve as potential treatment targets.

**2024**

### **SIG | Children's Hour: No Spike Left Behind – Does Resecting IEDs Outside of the SOZ Improve Outcomes?**

#### **Overview**

In pediatric epilepsy surgery, the usual target is the seizure onset zone (SOZ). However, interictal epileptiform discharges (IEDs) are often present outside of the SOZ. Factors that play a role in determining whether to target IEDs for surgery include the patient's degree of cognitive dysfunction, distance of IEDs from the SOZ, presence of eloquent cortex in the target region(s), and institutional preferences. Including IEDs in the surgical plan is controversial. This Children's

Hour SIG explores the pros and cons of surgically targeting IEDs outside of the SOZ, balancing evidence and experienced-based perspectives of providers.

**2023**

## **SIG | Children's Hour: Pediatric Epilepsy Surgery: 'Go Big or Go Home' vs. Staged Approaches**

### **Overview**

In pediatric epilepsy surgery, while targeting the entire epileptogenic zone for removal is ideal, a staged approach rather than a single complete resection may be needed. Factors that play a role in determining the surgical plan include: the potential for post-operative deficits, the ability to delineate the surgical target and eloquent cortex, clinical and developmental urgency, and institutional preferences.

This Children's Hour SIG aims to explore how these two approaches balance evidence-based medicine with the biopsychosocial context and preferences of patients and providers. Additionally, each speaker will support the learning objectives with a case that illustrates the surgical trajectory chosen.

**2022**

## **SIG | Children's Hour: Pushing Boundaries: Epilepsy Surgery in Infants and Young Children**

### **Overview**

Epilepsy surgery in the very young population (children younger than 2 years of age) introduces unique challenges compared to older children and adults. Bland symptomatology in infants, and the inability to describe auras or ictal sensations in children produce an incomplete semiology to guide surgical planning. Limitations in development and anatomy may compromise localization of the epileptogenic zone with traditional neuroimaging methods. And finally, the size of the patient themselves affects decisions for stereo-EEG (sEEG) coverage and surgical decision-making. This Children's Hour SIG will consist of a moderated panel, with each speaker exploring a common barrier and illustrating a case that highlights how a creative approach was both successful and safe. First, while pediatric anatomy may limit sEEG coverage, expansive sampling is possible and, in some cases, necessary. Second, advanced imaging and neurophysiology techniques may effectively visualize an epileptogenic zone or identify critical nodes as potential targets. And third, repeated "smaller" surgeries may be favored over a single "big" intervention in specific situations during this developmentally critical period. The discussion period will focus on how to apply these techniques in individual patients.

**2021**

**Special Interest Group: Children's Hour**

**Overview**

Precision medicine, involving specialized therapy targeted to underlying disease and genetic factors of individual patients, has made tremendous progress in pediatric epilepsies. As precision therapy first relies on detailed genetic characterization of patients, advances in genetic testing have identified a number of molecular etiologies for epilepsies and assessed the pathogenicity of variants of uncertain significance (VUS). Innovative approaches for developing "designer drugs" targeting specific molecular defects have led to novel therapies for genetic epilepsies, particularly ion channel modulators for channelopathies. Furthermore, gene therapy, the ultimate precision treatment, has begun testing in clinical trials in some pediatric epilepsies, such as Dravet syndrome. This Children's Hour SIG will explore recent advances in precision therapy in pediatric epilepsies, from diagnostic testing, to drug development and gene therapy. First, the use of deep mutation scanning to identify pathogenic mutations and assess VUS in glucose transporter deficiency will be reviewed. Next, the development of targeted drug therapies, utilizing molecular and electrophysiological characterization of mutant channel proteins for individualized patient screening, such as for KCNQ2 channelopathies, will be investigated. Finally, exciting progress in gene therapy trials for Dravet syndrome will be reviewed. The discussion period will focus on how to customize these approaches to individual patients.

**2024**

**SIG | Clinical Epilepsy for the Advanced Practice Provider: Filling the Gap in Mental Health Care**

**Overview**

APPs in epilepsy are often de facto mental health providers for people with epilepsy or PNEA who lack access to behavioral medicine specialists. In response to requests for more detailed information on these topics, this SIG provides concrete examples and resources to enable APPs to provide cost-effective treatment for PNEA and pharmacological management of common mental health conditions in people with epilepsy, including depression, anxiety, ADHD, and disruptive behavior. A panel discussion follows two lectures and APPs are invited to ask questions and share successful approaches to meeting the mental health needs of our patient population.

**2023**

**SIG | Clinical Epilepsy for the Advanced Practice Provider: Integrating APPs in Epilepsy Surgery Evaluation**

**Overview**

Identification and planning for surgical intervention in patients with epilepsy is a complex process that involves multiple team members to be successful. This session will include

discussion regarding the identification of surgical candidates, brain imaging and EEG interpretation, decision making about further testing, and presenting patients at surgical conferences. This SIG will enhance the APPs clinical skills, promote optimization of APPs in clinical practice thereby increasing access to comprehensive care for patients with epilepsy.

**2022**

**SIG | Clinical Epilepsy for the Advanced Practice Provider: Subspecialty Clinics: Leveraging APPs to improve access**

**Overview**

This session will utilize subspecialty clinic APPs who will describe development as well as management of a variety of subspecialty clinics including Functional Neurologic Disorder, Ketogenic Diet Clinic, and Transition Clinic. A panel discussion will support the learner to identify ways to implement subspecialty clinics in their practice.

**2021**

**Special Interest Group: Clinical Epilepsy for the Advanced Practice Provider**

Title: Clinical Epilepsy for the Advance Practice Provider

**Overview**

Neuromodulation device therapies and the role of the Advance Practice Provider in patient selection, education, counseling and clinic management

**2024**

**SIG | Cognitive and Behavioral Treatment for Epilepsy: CBT in Pediatric Epilepsy – Practical Application of EBT Components**

Sunday, December 8, 6:00 PM - 7:30 PM (PST)

**Overview**

The meeting will focus on results from an RCT evaluating evidence-based psychological intervention in YWE with psychiatric conditions. The study protocol, research findings, and implications for clinical care in a neurology clinic are discussed. Additionally, an overview of an evidence-based mental health system (i.e., tool kit) that guides clinicians seeking to implement EBT protocols for the management of common mental health concerns is included. Discussions include research findings, clinical experiences, and concrete strategies to help providers integrate CBT strategies in clinical care. The final portion is dedicated to a group discussion and Q&A with invited speakers.

**2023**

**SIG | Cognitive and Behavioral Treatment for Epilepsy: Anxiety in Epilepsy – Evidence Based Practice for the Epilepsy Clinic**

**Overview**

The SIG meeting will include a presentation from an epilepsy psychologist on the epidemiology of anxiety in youth and young adults, epilepsy-related predictors of anxiety, and evidence-based practice (i.e., CBT) for the management of anxiety. The meeting will also be dedicated to a discussion about a neurologist's care model for managing anxiety in an epilepsy clinic and research on the bidirectional relationship between anxiety and epilepsy. Both discussions will include research findings, clinical experiences, and concrete strategies to help providers manage anxiety in clinical care. The final portion of the meeting will be dedicated to Q&A and resource sharing.

**2022**

**SIG | Cognitive and Behavioral Treatment for Epilepsy: Disparities in Cognitive Behavioral Therapy**

**Overview**

The SIG meeting will begin with introductions and a brief didactic presentation from an epilepsy psychologist on the use of CBT in racial/ethnic minority populations (20 min). The multi-level barriers affecting engagement in and response to CBT among minority groups will be discussed, including personal, cultural and socioeconomic factors. The second portion of the meeting will be dedicated to a discussion of specific barriers relevant to the African American and Hispanic populations, respectively. This discussion will include research findings as well as clinical experience working with these populations, and will focus on concrete strategies to help providers engage patients from these minority groups in CBT related programs (40 to 50 min). The final 20-30 minutes of the meeting will be dedicated to group discussion and Q&A with the invited speakers, resource sharing, and generation of new business items for the upcoming year.

**2021**

**Special Interest Group: Cognitive and Behavioral Treatment for Epilepsy**

Title: CBT in the Pediatric Epilepsy Clinic: Applications for Patients and Caregivers

**Overview**

The SIG meeting will begin with introductions and a brief didactic presentation on adult epilepsy comorbidities, the role of the caregiver with adults and children with epilepsy, and CBT applications in these distinct populations. This will be followed by two pediatric epilepsy psychologists on the role of individual and group treatment and family education in the outpatient setting. The speakers will address current models, evidence-informed practice,

research gaps, and future directions (40 min). The second portion of the meeting will be dedicated to pediatric and adult skill development using small group exercises (receiving instruction, observing modeling, and practicing) in four key aspects of cognitive behavioral therapy (CBT): creating patient and caregiver buy-in, relaxation strategies, thought challenging, and behavioral activation (30 min). The final 20 minutes of the meeting will be dedicated to group discussion focused on activity debriefing; Q&A with the invited speakers; resource sharing; and generation of new business items.

## **2024**

### **SIG | Critical Care: Building a Critical Care EEG Program**

#### **Overview**

The use of EEG monitoring in the critical care setting continues to expand as a result of the increasing recognition of the diagnostic and prognostic significance of ICU EEG findings. This SIG provides an overview of how to set up a critical care EEG program in resource-intensive and resource-limited settings. Additionally, we review how to increase the impact, quality and effectiveness of established critical care EEG programs. The session includes talks by recognized experts and an interactive panel discussion with the audience, followed by young investigators Blitz presenting high-rated abstracts.

## **2023**

### **SIG | Critical Care: Advances in EEG and Multimodal Neuro-monitoring for Seizures in the ICU**

#### **Overview**

The field of Neuro-monitoring for seizures in the critical care settings continues to evolve. Recent advances and controversies in the use of quantitative EEG, multi-modality monitoring and recently described potential prognostic markers in the EEG of patients suffering cardiac arrest pose new opportunities and challenges to clinicians working in the Critical Care setting. This session will start with a young investigators Blitz presenting high-rated abstracts related to Critical Care Epilepsy followed by 3 Lectures by well recognized experts and an interactive panel discussion between the panel and audience.

## **2022**

### **SIG | Critical Care: Status Epilepticus Management: Beyond Antiseizure Medications and Anesthetics**

#### **Overview**

Clinicians' approach to treating Refractory Status Epilepticus is based on limited data, and while this often is initiated with anti-seizure medications and anesthetics, in some patients RSE persists despite these approaches. Subsequent management is often extremely variable. Some approaches including immunomodulatory therapies, neuromodulation, and dietary therapies and recent data are available to guide these approaches. the implementation of non-

pharmacological treatments in the critical care settings poses unique challenges to the epilepsy and critical care teams. This session will showcase national and international experts with expertise in these approaches, who will inform the audience's knowledge of these therapies, in addition to providing practical guidance for implementation of these therapies. Prior to the expert talks, we will also feature a data blitz: oral presentations from junior investigators of three abstracts in the field of critical care epilepsy/EEG accepted to this year's scientific program.

**2021**

**Special Interest Group: Critical Care**

### **Overview**

New Onset Refractory Status Epilepticus (NORSE) and the subcategory Febrile Infection-Related Epilepsy Syndrome (FIRES) are increasingly recognized clinically and the focus of bench and clinical research. This year's SIG will focus on the ICU management of NORSE/FIRES, including discussions of both mechanisms and optimal treatment approaches in the absence of definitive evidence. As in prior years, the SIG will begin with three junior/trainee members presenting high-rated abstracts related to Critical Care Epilepsy.

**2024**

**SIG | Data Science in Epilepsy: Needle in the Haystack – Using Large Language Models to Interpret Epilepsy Data**

### **Overview**

We begin with an introduction to large language models (LLMs) and its emergence in the field of artificial intelligence. Our speakers then provide an overview of multiple applications of LLMs in epilepsy research and clinical practice, including a discussion of the challenges and ethical implications of implementing LLMs. We provide a brief live demonstration of applying an LLM to an example clinical question. Finally, we engage the speakers and the audience in a lively discussion of the next steps in integrating LLMs into epilepsy research and clinical practice.

**2023**

**SIG | Data Science in Epilepsy: TinyML: Platforms and Embedded Systems for Portable Data Science in Epilepsy**

### **Overview**

This session will feature a series of talks from experts on tiny machine learning (TinyML) architectures for data science to be performed onboard devices with low processing power and memory. We will discuss hurdles in scalability of complex artificial intelligence algorithms developed and validated in large, offline datasets, data integration across multiple devices simultaneously, and cross-modal, back translation of methods developed for neurological disorders outside of epilepsy. This will be followed by a panel discussion on the challenges of



hardware and algorithm development for devices, impact of low power constraints on therapy, and implications toward security and privacy.

**2022**

### **SIG | Data Science in Epilepsy: Open data ecosystems: Language, tools, & pipelines for open science in epilepsy**

#### **Overview**

The session will include 5 speakers followed by a moderated panel discussion. The speakers will introduce the FAIR Data Principles and NIH guidelines for data sharing/reuse and access. They will speak on obstacles that have arisen related to issues including data sharing/reuse, development of a common language and common data formats, data standardization, and reproducibility. Several representative data repositories will be discussed as examples, including wearable sensors, scalp EEG, intracranial EEG, subscalp EEG, and neurophysiology. Strategies toward moving toward an open data ecosystem in epilepsy will be discussed. explain the benefits of data sharing.

**2021**

### **Special Interest Group: Data Science in Epilepsy**

Title: Natural Language Processing and EMR Phenotyping for Precision Epilepsy

#### **Overview**

A wealth of information is contained in electronic health records (EHRs) that can be harnessed to improve diagnostics, anti-seizure medicine (ASM)/device discovery, monitoring of ASM safety/efficacy, and efficiency of clinical trial design for people with epilepsy. However, EHRs are difficult to model due to noise, sparseness, incompleteness, high dimensionality, and biases. A large amount of information is hidden in free-text clinical notes, which remains the most common way of documenting events in outpatient/EMU notes and surgical case conferences. In this session, we will discuss how natural language processing (NLP) can be used to advance precision epilepsy efforts through EHR phenotyping, including a basic NLP primer, followed by discussion of state-of-the-art NLP applications for advancing clinical care and drug/device discovery in epilepsy. Applications of NLP in epilepsy covered will include phenotype detection, improvement of efficiency in clinical trials, pharmacovigilance, SUDEP risk evaluation, and prediction of high-risk clinical events.

**2024**

### **SIG | Developmental and Epileptic Encephalopathies: DEEs Due to X-link Diseases**

#### **Overview**

The X chromosome has more than 800 known protein-coding genes which cause more than 500 X-linked diseases. X-linked diseases account for nearly 16% of genetic epilepsies. Although the X-

linked neuronal migration disorders are probably the most recognized, some of the X-linked DEEs are encountered frequently in our practice. In this SIG, we focus on the electroclinical syndrome of X-linked DEEs (CDKL5, PCDH19, MECP2 duplication syndrome, and others), update our audience about the advances in the understanding of these diseases in preparation for gene therapy, and discuss the X chromosome reactivation as a promising treatment for patients with X-linked DEEs.

**2023**

## **SIG | Developmental and Epileptic Encephalopathies (DEE): Opportunities and Discoveries From Bench to Bedside**

### **Overview**

Developmental and Epileptic Encephalopathies (DEEs) are amongst the most severe of the epilepsies but hold much promise in terms of potential therapies. As the majority of DEEs are monogenic, they represent targets for drug development and the future of precision medicine. In the DEE SIG we will discuss animal models of DEE and the development of precision medicine in DEE. We will also review current and upcoming gene therapy trials and the lessons learned from ongoing DEE trials in humans.

**2022**

## **SIG | Developmental and Epileptic Encephalopathies (DEE): Developmental & epileptic encephalopathy: From diagnostic to treatment odyssey.**

### **Overview**

There are several gaps between diagnosing a patient with DEE and finding an effective treatment. This SIG will focus on the current odysseys for patients with DEEs: 1) diagnostic odyssey: new genes causing DEEs were identified in the last 2-3 years. This talk will present an overview of DEE gene discovery, discussing trajectory and trends, and then delve into detail regarding several phenotypes associated with novel genes reported over the last few years (e.g., BRAT1, CSNK2B, NBEA, etc). 2) treatment odyssey: DEEs are mostly still resistant to antiseizure treatment and no traditional treatment aims at restoring cognitive and behavioral dysfunction. This SIG will address the precision therapies for DEEs, including those in the pipeline, in clinical trials and those already approved. 3) resources odyssey: since these are rare diseases, there is not much resources available. However a few family-led organizations have stepped up and created important ways to facilitate and fund research towards a cure for DEEs. See here how these organizations are promoting research-patients-physicians initiatives and results.

**2021**

**Special Interest Group: Developmental and Epileptic Encephalopathies**

Title: Moving from a Seizure-centric to a Holistic Evaluation of DEE Patients

### **Overview**

Developmental and Epileptic Encephalopathies (DEEs) are amongst the most severe epilepsies. The management of the DEEs extends beyond just treatment of seizures, as these epilepsies are associated with severe comorbidities and high risk of mortality. It is about time to leave the seizure-centric approach to DEEs and explore how a holistic evaluation and treatment may affect outcomes. In this SIG, we will explore the complex relationship between seizure control and comorbidities in DEEs and the potential impact of seizure control. We will review what can be learned from animal models of DEEs and how can we apply this knowledge to patient care. We will also discuss the role of natural history studies and what they are teaching us.

**2024**

### **SIG | Dietary Therapies for Epilepsy: Beyond Seizures – Quality of Life Implications from Ketogenic Therapies**

#### **Overview**

Dietary Therapies (DT) are effective for intractable epilepsy across the lifespan. As with any intervention, the impact to quality of life (QoL) is as, if not more important, than efficacy. Patients on DT often report improvement in cognition, mood, and comorbid medical conditions. However, DT may be difficult to maintain. The session reviews and debates this topic from a basic science, medical, nutrition, and patient perspective. The format includes two short lectures, a pre-recorded patient perspective, and a debate between clinicians on DT on QoL outcomes. Attendee participation is encouraged during the debate.

**2023**

### **SIG | Dietary Therapies for Epilepsy: Looking to the Future - Enhancements and Personalization**

#### **Overview**

We will discuss the future of dietary therapies for epilepsy including creative ways to enhance and personalize dietary therapies to improve long term adherence and increase effectiveness while taking a patient-centered approach. We will also discuss exciting research updates from the Global Symposium on Ketogenic Therapies. New this year is the inclusion of a patient perspective, along with expert speakers who will provide clinical and research updates and advances. This SIG will include brief lectures and case-based presentations along with a moderated panel discussion with plenty of time for attendee participation.

**2022**

### **SIG | Dietary Therapies for Epilepsy: Dietary Therapies: Sex-Specific Hormonal and Reproductive Consideration**

## **Overview**

In this SIG, we plan to address a number of unique considerations related to sex-specific hormonal and reproductive health in dietary therapy for epilepsy, including topics such as pregnancy, pre-pregnancy planning, lactation, catamenial epilepsy, and relevant differences in metabolism and physiology. Expert speakers will provide a review on the current literature, update on recent research, and clinical experience on the topics, with a QnA panel discussion following the talks.

**2021**

### **Special Interest Group: Dietary Therapies for Epilepsy**

Title: Therapy Innovations and Ketogenic Diet Mechanisms

## **Overview**

This SIG will explore two areas of dietary therapy research and practice. COVID-19 has imposed significant difficulties on the practice of medicine, including epilepsy, and particularly for those who are managed on dietary therapies for epilepsy. Dr. Bergqvist will focus on the practical management of dietary treatment of epilepsy utilizing remote monitoring, e-mail communication, and telemedicine. Helpful tools and potential problems will be addressed. The second talk will focus on the role of the gut microbiome in mediating the ketogenic diet. Dr. Elain Hsiao will review recent basic research and explore mechanisms by which the gut microbiome may affect epilepsy and its treatment. The third part of the session will include presentations from authors of selected Annual Meeting posters.

**2024**

### **SIG | EEG: Hybrid Human-artificial Intelligence EEG Reading**

## **Overview**

There has been considerable development of computer-assisted EEG interpretation using artificial intelligence (AI) over the last decades. The common goal is to design algorithms that perform at least as well as experts for core tasks, making these models a valuable resource to assist or replace some or all aspects of clinical EEG reading. In this SIG, the speakers summarize the advancements in automated EEG reading and present a novel web-based EEG platform that incorporates AI algorithms and optimally displays EEG studies. Further, they detail the hybrid human-AI EEG reading practice and discuss the future directions of this ever-advancing field.

**2023**

### **SIG | EEG: Should Epileptiform Spikes Be Treated in Patients Without Seizures?**

## **Overview**

Based on the emerging evidence about the significance of epileptiform spikes that may disrupt functional brain networks, we should rethink our current strategies in clinical practice in

ignoring epileptiform spikes in people with no history of seizures. The speakers will summarize the evidence related to the studies that describe the significance of epileptiform discharges in the pathophysiologic processes of cognitive problems (e.g., ASD in children and AD in adults). They will also discuss that how we can appropriately diagnose epileptiform discharges in these patient populations. Finally, they will discuss the antiseizure medication drug trials in such conditions.

**2022**

### **SIG | EEG: What is an epileptiform discharge?**

#### **Overview**

Evaluating scalp EEG for interictal epileptiform discharges (spikes and sharp waves) is an important tool in the diagnosis and management of seizures and epilepsy. The presence and distribution of epileptiform discharges have important implications for supporting the diagnosis of epilepsy, determining epilepsy type, and localizing epileptogenic cortex. However, numerous studies have shown that identification of epileptiform discharges is often prone to error and significant variability - even among experts- which can have serious consequences in clinical care. In the 2022 EEG Special Interest Group, we will discuss address the fundamental question of what is an interictal epileptiform discharge. Speakers will discuss a standardized definition of interictal epileptiform discharges on scalp EEG, the neural mechanisms underlying these discharges, and discuss ambiguities in determining the nature of sharp transients on scalp EEG. Sessions include: What is an epileptiform discharge on EEG? - towards a reproducible definition; Neural mechanisms of interictal epileptiform discharges; and When benign variants are not always benign. This activity is of relevance to all learners who interpret EEG as part of clinical or research practice.

**2021**

### **Special Interest Group: EEG**

Title: The Problem of EEG Over-interpretations: Causes, Consequences, and Solutions

#### **Overview**

In this session, we will review the causes and consequences of the over-reading, discuss potential solutions, and discuss whether computers and software can offer a solution to this problem.

**2024**

### **SIG | Engineering and Neurostimulation: Optimizing Neuromodulation Detection and Stimulation Parameters – The Wild West**

#### **Overview**

Intracranial neuromodulation for epilepsy has exploded in the past decade, but which of the seemingly infinite combinations of parameter settings in these devices are truly effective? This panel+debate session highlights emerging research behind distinct detection and stimulation parameters of neurostimulation using RNS and DBS, and quantitative evidence of how they specifically influence seizures and interictal epileptiform activity. Three presentations and a final debate address biomarker detection, stimulation optimization, and emerging network-based neuromodulation, providing a roadmap for data-driven strategies and future standards. Advances in predicting treatment responders and personalizing parameters based on pre-implantation recordings are also covered.

**2023**

### **SIG | Engineering and Neurostimulation: Advances in the Surgical Treatment of Children with Refractory Epilepsy**

#### **Overview**

Pediatric epilepsy surgery is associated with unique challenges, such as considerations of neurodevelopmental plasticity and other age-related factors, as well as the commonality of imaging negative and generalized epilepsies. Neurostimulation treatments, computational biomarkers, and less-invasive approaches offer unique solutions that could produce groundbreaking advances in this clinical procedure. This session will highlight these novel tools, including advances in technology for neural stimulation, noninvasive methods for presurgical evaluation, and biomarkers for predicting surgical outcomes. After individual talks, speakers will lead an interactive discussion on the future of pediatric epilepsy surgery, including remaining barriers and novel solutions on the horizon.

**2022**

### **SIG | Engineering and Neurostimulation: Understanding and modulating networks with multimodal data and stimulation**

#### **Overview**

Resection and brain stimulation are valuable tools that can be used to alter epileptic networks as we seek to improve patient outcomes. With the wide range of technologies available today, it is increasingly important to incorporate multiple data types prior to making treatment decisions. Brain stimulation, in particular, is fraught with uncertainty as mechanisms influencing the effects of electrical stimulation remain unclear. The goal of this session is to examine how we integrate information about the structure and function of the brain and consider how brain stimulation affects networks in unforeseen ways. Speakers will discuss incorporating structural and functional data into the prediction of network dynamics and the wide-ranging impacts of brain stimulation on neuronal networks. Speakers will end their talks by discussing future engineering and neurostimulation applications. An interactive discussion will then synthesize aspects of multimodal data, brain stimulation, and network modulation.

2021

**Special Interest Group:** Engineering and Neurostimulation

Title: Next Generation Approaches for Neurostimulation in Epilepsy

### **Overview**

Electrical stimulation is a well-established technique to modulate seizures. Many different neurostimulation approaches exist, and the study of neurostimulation spans fields in neuroscience, including animal modeling, computational modeling, and clinical care. However, the optimal neurostimulation strategies for treatment of epilepsy remain unknown, and establishing links across insights in different fields remains a challenge. To advance understanding and application of neurostimulation treatments in epilepsy will require an integration of insights across fields, from animal models, computational models, and clinical applications. To that end, the goal of this session is to discuss recent advances in neurostimulation research across different fields of study. Speakers will discuss their efforts to advance understanding of invasive and non-invasive stimulation strategies to treat epilepsy, and the translational roles of computational and animal models in designing optimal approaches. We will then collectively discuss ways to integrate approaches for a deeper understanding of neurostimulation in epilepsy.

2023

**SIG | Epidemiology: Epidemiology in Action: How Our Findings Change Epilepsy Clinical Practice**

### **Overview**

The first portion will be for 2 trainees, chosen from those abstracts submitted to the annual meeting. Each of these investigators will have 7-minutes to present the topic of their poster at the 2023 meeting.

The second portion will respect the theme “Epidemiology in action-how our findings change epilepsy clinical practice.” Two speakers, known for their research/leadership in this field, will present (25 minutes each) on: 1)pediatric epilepsy perspective of how epidemiological studies change and are applied to clinical practice; 2)an adult epilepsy perspective.

2022

**SIG | Epidemiology: Beyond prediction: Can Big Data and Advanced Analytics Catalyze Epidemiology?**

### **Overview**

We propose using a mixed format for this year’s Epidemiology SIG, which will encompass the theme ‘Beyond prediction: Can Big Data and Advanced Analytics Catalyse Breakthroughs in Epidemiology?’.

The first portion of the session will be reserved for 2 trainee investigators, chosen from those abstracts submitted to the annual meeting for the poster sessions. Each will be given 7 minutes to present their research on a topic complying with our theme.

The second portion of the session will involve didactic lectures by world leaders in Big Data. Two speakers, known for their research and leadership in this field, will present (25 minutes each) on: 'Breaking it down: what every clinician should know about big data' and 'Applying big data to epilepsy: the past, present, and future'. The first lecture will be a general overview that teaches attendees how to interpret and critique these unique study designs. The second will be a tour de force on what has been done and where the future lies with specific respect to epilepsy.

## **2021**

### **Special Interest Group: Epidemiology**

Title: Epidemiology

#### **Overview**

After the very positive response at the 2018 and 2019 AES meetings to the mixed format for the Epidemiology SIGs, we have chosen to propose a similar mixed format for the 2021 SIG. The first portion of the session will be reserved for 2 trainee investigators, chosen from those abstracts submitted to the annual meeting for the poster sessions. Each of these trainee investigators will be allowed 7 minutes to present the topic of their poster at the 2021 AES meeting. The second portion of the session will respect the theme "Knowledge Synthesis in Epilepsy." Two speakers, known for their research and leadership in this field, will present (25 minutes each) on: speaker 1, "Systematic reviews: bridging gaps and navigating bias to inform decisions and policy"; speaker 2, "The what, why and how of clinical practice guidelines"

## **2024**

### **SIG | Epilepsy and Aging: Frailty and the Spectrum of Aging in People with Epilepsy**

#### **Overview**

The Aging SIG explores frailty and the spectrum of aging in epilepsy. The ILAE Task Force on Epilepsy in the Elderly offered recommendations for the optimal management of epilepsy in older people, including healthy older adults, those with multiple comorbidities, and frail people. This SIG addresses these unique aging epilepsy populations. Clinical and basic science experts discuss the range of aging states in epilepsy, the practical considerations of managing epilepsy in older people with aging-related comorbidities that may influence frailty, the neurocircuitry of stress in epilepsy, and the association between frailty and adverse effects of antiseizure medicines.

## **2023**

### **SIG | Epilepsy and Aging: Unique Aspects of Epilepsy in Aging**



## **Overview**

The Aging SIG 2023 will explore unique aspects of epilepsy in the aging population, framed by a case presentation of an older adult with new seizures and many questions. We will present the case of a 65-year-old woman who develops unexplained epilepsy, and experiences significant medication side effects. After some online reading, she has concerns about her risk for dementia and for early mortality due to her epilepsy. We will use this case to explore unique aspects of epilepsy in older adults, including pharmacokinetics, cognitive impairment, and mortality. Experts will provide insight into developing areas of research, and stimulate discussion.

## **2022**

### **SIG | Epilepsy and Aging: Pharmacotherapy challenges in managing older adults and elderly with epilepsy**

#### **Overview**

We will start the session with a talk on the progress being made in the basic science field with an appraisal of how aged rodent models are currently used in epilepsy research, current data on ASM efficacy in aged rodent epilepsy models, and a discussion of the remaining gaps in knowledge on the future integration of aging-related neurological disease models to discover ASMs and/or uncover novel therapeutic targets for epilepsy. This will be followed by a talk on a therapeutically challenging form of epilepsy, unique to older adults and the elderly - autoimmune LGI1/CASPR2 epilepsy, including a discussion on the recent randomized controlled trial of immunotherapy for this condition. Finally, we will discuss insights gained about the management of late-onset epilepsy among the elderly from one of the longest-running registries of newly diagnosed epilepsy patients, spanning over 30 years, at Western Infirmary at Glasgow. The SIG will be in a moderated panel format. Three speakers of different career stages will address these topics, representing a spectrum of clinical and basic science expertise.

## **2021**

### **Special Interest Group: Epilepsy & Aging**

Title: Late-onset Epilepsy: A Unique Clinical Entity?

#### **Overview**

New-onset epilepsy disproportionately affects older adults and can be difficult to diagnose. Since older adults represent one of the fastest-growing segments of our population, there is a pressing need to better define late-onset epilepsy. This session will focus on demographical, clinical, neuroimaging, and animal model evidence that suggests that late-onset epilepsy may be a unique disease phenomenon. We will highlight the latest data on machine learning-based identification of clinical features that separate late-onset epilepsy from early- and adult-onset epilepsies and discuss the incidence and prevalence of epilepsy in the aging population. We will

also discuss modifiable (cardiovascular, dietary, etc.) and non-modifiable (genetic susceptibility) risk factors that we will describe neuroimaging findings unique to late-onset epilepsies using structural and functional imaging modalities. The recognition of such clinical and neuroimaging features are critical for the identification of at-risk individuals, timely diagnosis, and treatment of our older patients. Finally, we will discuss insights from animal models, with emphasis on electrophysiological studies that identify novel features and potential biomarkers that will be critical for early diagnosis and mechanism-based therapies. Three distinguished speakers will address these topics, representing a spectrum of clinical and basic science expertise. We will provide examples from case studies and new research findings, and anticipate this session will be well attended by clinical and basic researchers.

**2024**

### **SIG | Epilepsy Education: The Why, What and How Should We Teach EEG To Neurology Residents?**

#### **Overview**

The Education SIG focuses on why it is important to teach EEG to neurology residents during training and best practices for how to teach EEG and assess competence. The session is broken into 2 brief talks followed by a debate. During the debate, each speaker makes the two opposing arguments that EEG education and assessment of competence should be about quality (qualitative approaches, i.e., quality of interpretation or reports) versus quantity (quantitative approaches, i.e., number of EEGs read).

**2023**

### **SIG | Epilepsy Education: Epilepsy Education Throughout the Training Pipeline**

#### **Overview**

Epilepsy education occurs throughout the training pipeline and impacts interests in pursuing epilepsy fellowship and ultimately epilepsy related careers. Epileptologists play critical roles in the education of medical students, residents, and fellows – but often lack a framework specific to each target audience that captures interest, motivates interest in epilepsy, and teaches towards minimum competency goals. This SIG examines features and structures of four epilepsy specific educational programs targeting trainees, followed by audience discussion, with the objective of identifying core components that could be adapted to the broader epilepsy education community.

**2022**

### **SIG | Epilepsy Education: Epilepsy Education: Diversity, Equity and Inclusion in Epilepsy Education**

## **Overview**

We plan to use a moderated panel format in order to promote a discussion of some of the many ways that diversity, equity and inclusion (DEI) are essential components of epilepsy education. We plan to address the need for enhanced education in health disparities in patients with epilepsy by discussing principles of developing a curriculum for health disparities education. Our hope is that we can discuss ways to share tools between institutions, so that we can benefit from collective knowledge and ensure that a broader range of learners has access to this training. We will also discuss disparities in epilepsy education both nationally and internationally, where there can be a high degree of variability in local expertise. We will discuss how to increase equity in epilepsy education using virtual education tools, and we will discuss the development of epilepsy educational programs in Latin America. We also plan to have a discussion of strategies to increase diversity in our epilepsy education community using best practices in recruitment, retention and promotion. As with previous Epilepsy Education SIG sessions, we hope that this discussion will spark collaboration on new projects to promote DEI in epilepsy education.

**2021**

**Special Interest Group:** Epilepsy Education

Title: E-learning In Epilepsy In The Times Of Pandemic And Beyond

## **OVERVIEW**

We will highlight the latest data on machine learning-based identification of clinical features that separate late-onset epilepsy from early- and adult-onset epilepsies and discuss the incidence and prevalence of epilepsy in the aging population. We will also discuss modifiable (cardiovascular, dietary, etc.) and non-modifiable (genetic susceptibility) risk factors that We will describe neuroimaging findings unique to late-onset epilepsies using structural and functional imaging modalities. The recognition of such clinical and neuroimaging features are critical for the identification of at-risk individuals, timely diagnosis, and treatment of our older patients. Finally, we will discuss insights from animal models, with emphasis on electrophysiological studies that identify novel features and potential biomarkers that will be critical for early diagnosis and mechanism-based therapies. Three distinguished speakers will address these topics, representing a spectrum of clinical and basic science expertise. We will provide examples from case studies and new research findings and anticipate this session will be well attended by clinical and basic researchers.

**2024**

**SIG | Epilepsy Surgery: Thalamic Stimulation for Epilepsy – A Patient-centric Network-based Approach**

## **Overview**

A moderated panel of epilepsy surgeons present updates on thalamic neuromodulation as well as patient-centric epileptic network-based decision-making in thalamic stimulation for epilepsy.

The increasingly recognized role of the thalamus as a critical integrative hub in the propagation of epilepsy provides therapeutic opportunities for neuromodulation of this key node in extensive epileptic networks. Advancements in neuromodulation offer increasing options for neuromodulation approaches that can be tailored to a patient and their specific epilepsy network. This SIG presents a patient- and network-based approach to this decision making for the busy clinician.

**2023**

### **SIG | Epilepsy Surgery: Homunculus Revisited – Managing Central Lobe Epilepsies**

#### **Overview**

A moderated panel of epilepsy surgeons will present updates on the evolving surgical approaches to focal epilepsy localized to the central lobe.

**2022**

### **SIG | Epilepsy Surgery: Neuromodulation: techniques, challenges and opportunities**

#### **Overview**

This Special Interest Group discusses and debates the challenges and opportunities provided by the expanding field of Neuromodulation for Epilepsy.

**2021**

### **Special Interest Group: Epilepsy Surgery**

Title: The Learning Curve of Laser Ablation for Epilepsy

#### **Overview**

Laser ablation is a novel surgical technique in epilepsy surgery. The goal of this SIG is to take advantage of the experience gained to date within the epilepsy surgery community to minimize the learning curve for AES members as they adopt this technology. We have chosen five epilepsy surgeons, all of whom have considerable experience in utilizing laser ablation for epilepsy. Our speakers will focus on the application of laser ablation to specific epileptic pathologies, including mesial temporal lobe epilepsy, cavernous malformations, corpus callosotomy, hypothalamic hamartoma, and tuberous sclerosis complex. Focusing on case based discussions, we will highlight when laser ablation was applied successfully, and, equally importantly, when laser ablation was tried unsuccessfully. The discussions will help teach AES members when laser ablation should be considered, and when other surgical techniques should potentially be prioritized.

**2024**

### **SIG | Genetics: Molecular Genetic Pathologies – A Path to Precision Medicine in Focal Epilepsy**

#### **Overview**

Post-zygotically-acquired (somatic) variants are increasingly recognized as significant genetic contributors to focal epilepsy risk. These discoveries have led to the identification of gene/pathway-specific neuropathologic signatures (PI3K-mTOR pathway-associated FCDII, SLC35A2-associated MOGHE, and beyond) and potential novel targeted therapies. These advancements suggest that molecularly-informed precision medicine, much like what is available in oncology, is on the horizon for focal epilepsy. This SIG discusses the recent somatic genetic discoveries, how these findings are leading to the identification of new genomically-informed neuropathologic and radiographic entities, and the challenges and opportunities for these discoveries to improve diagnostics and treatment approaches in focal epilepsy.

**2023**

### **SIG | Genetics: Clinical Genetics in 2024 – What You Need to Know**

#### **Overview**

People with epilepsy and a clinically identified genetic variant typically do not respond to treatment and often have severe lifelong disabilities. Rates of progression, comorbidities across the lifespan, and prognosis are poorly established. These factors challenge not only the interpretation of genetics tests and the design of personalized treatment plans but also the design of clinical trials for precision medicines. We will critically discuss current best practices for using genetics to enhance clinical care and learn how to prepare ourselves to enroll patients into clinical trials in the future efficiently.

**2022**

### **SIG | Genetics: Prophecy of bioinformatics vs functional modeling in predicting variant function**

#### **Overview**

Genetics SIG presented in a traditional interactive debate format will bring together experts in bioinformatics and functional modeling to debate new approaches used in the functional assessment of genetic variants. The experts will discuss individual methods (in silico approaches, traditional and high-throughput biological systems, the role of iPSCs and organoids) and debate their strengths, limitations, relevance for clinical practice, and vision for the future.

**2021**

### **Special Interest Group: Genetics**

Title: Astute Clinical Observation vs Data Analytics

#### **Overview**

"How do we improve in our understanding and care of patients with genetic epilepsies?" We will have a debate that pits big data mining approaches (e.g., PELHS) against the astute observations of thoughtful clinicians (e.g., Charlotte Dravet). As you are aware, the Genetic SIG has a history of

presenting cartoonish caricaturized strawmen beating each other up for education/entertainment. And so we anticipate an impassioned debate between zealous enthusiasts! - It is the promise of the future versus the glory of the past! It is quantity of observations versus quality of observations! Ultimately, the opposing viewpoints will be reconciled and the audience will come to a deeper appreciation of the topic.

## **2024**

### **SIG | Global Health: Managing Refractory Epilepsy in a Resource-limited Setting – Doing More with Less**

#### **Overview**

The 2024 SIG, a moderated panel discussion, presents an original outlook on management of refractory epilepsy in a resource-limited setting, impacting over 16 million globally. Our diverse global expert panel covers key aspects: Dr. Amza Ali, a Jamaican epilepsy care pioneer, discusses cost-effective antiseizure medication use. Professor K. Radhakrishnan, responsible for introducing epilepsy surgery in India, discusses optimal pre-surgical test selection. Dr. Pauline Samia, with her significant contributions to epilepsy in Africa, speaks about status epilepticus treatment in constrained environments, and Beth Zupec-Kania, a world-renowned expert on Ketogenic diet, reviews epilepsy-specific diet utilization worldwide.

## **2023**

### **SIG | Global Health: The Global Approach to Tele-care Delivery – Bridging the Epilepsy Gap**

#### **Overview:**

The 2023 SIG explores how telecommunication globally may reduce the treatment gap. Dr Herrera, from Peru will explore Telemedicine as a means of expediting epilepsy surgical work-up through a joint venture between North America and Lima. Sameer Zuberi, from Glasgow, will review how video uploads may reduce time to treatment across Continents. Ruta Yardi, will present research in rural care delivery, and directly address ways to improve access in remote global regions. Lastly, , we will hear from Kisansa Mugoya Safi, from Uganda, and, Armela Becic-Huling, an EEG technologist originally from Bosnia, on their collaborative approach to EEG education.

## **2022**

### **SIG | Global Health: Optimizing epilepsy care in areas in need: Training and program building**

#### **Overview**

The 2022 SIG will include testimonies of 2 patients with epilepsy living in poor resource areas. They will share with audience the challenges they faced in order to receive appropriate care. This will be followed by a panel of 3 speakers with short practical talks. The president of epilepsy society from Mexico will discuss challenges in building epilepsy-training programs in Spanish Speaking Latin America. A speaker from the Caribbean will deliberate on use of QI projects to

improve epilepsy care in areas with minimal resources. A nurse from Kenya will emphasize the role of nurses and clinical officers in poor resource region an important of establishing local training programs. Finally, Dr. Philip Pearl from the USA will moderate a panel discussion about ways to support training and improve epilepsy care in LMICs

## **2021**

### **Special Interest Group: Global Health**

Title: Overcoming Hurdles to Sustainable Care During a Pandemic

#### **OVERVIEW**

After a brief introduction, our speakers will present several important topics that are especially important during this COVID pandemic. As we have seen, the use of virtual platform has increased. The first talk will be about the use of virtual platforms in the creation of long term, sustainable projects. During this pandemic we have also seen new challenges in collaborations. The next talk will be about the challenges for collaborative training in low and middle-income income countries. The final talk will be about building infrastructure using online resources and steps to success. We will leave time for Q&A and networking and collaborations.

## **2024**

### **SIG | Health Disparities: Health Disparities in Epilepsy - Building Bridges to Equity**

#### **Overview**

Our session begins with a discussion of a real-life case about common barriers people with epilepsy (PWE) face every day. A moderated panel follows to propose ideas and potential solutions that could help bridge the gap for our most vulnerable populations and minoritized groups. We foster an environment of shared knowledge and collaboration by focusing on where the gaps exist in access to care, how to empower non-specialists in the field to care for our PWE, and how to develop clinics that will focus on addressing patients with high burden of social determinants of health.

## **2023**

### **SIG | Health Disparities in Epilepsy: Creating a Roadmap for Action**

#### **Overview**

We plan to use a case discussion followed by a moderated panel to promote discussion about Health Disparities (HD) solutions in people with epilepsy (PWE). We aim to increase and develop practical ideas in specific minoritized groups that can be emulated in other programs across the country. We wish to address specific groups including socioeconomic disparities, Low English Proficiency PWE, LGBTQA+ PWE and PWE with a high burden of social determinants of health. The goal is inspiring discussion that will drive innovative and viable ideas to mitigate disparities and achieve epilepsy health equity.

**2022**

### **SIG | Health Disparities: Moving Beyond Talk and Into Action**

#### **Overview**

There is increasing recognition of the ubiquity of health disparities throughout medicine. Indeed, multiple studies have documented health disparities/inequities in epilepsy care and outcomes based on factors such as race/ethnicity, socio-economic deprivation and insurance status. While documentation of health disparities must continue, there must also be a push towards understanding the underlying factors, including systemic (e.g. the absence of a national health insurance system), provider-based (e.g. implicit bias, degree of cultural competency) and patient-based factors (e.g. cultural beliefs, limited health literacy).

The goals of the Health Disparities SIG are 1) to raise awareness of the rampant nature of health disparities/inequities in epilepsy, and 2) to better understand the specific factors contributing to these disparities in order to design effective interventions.

For 2022 we will start with a case presentation (a health disparity “M&M”), followed by speakers providing 1) a brief overview of documented health disparities in epilepsy (moving beyond rates of epilepsy surgery and into topics such as QOL and mortality), 2) our understanding of the underlying factors contributing to these disparities, and 3) examples of successful interventions. The speakers will be followed by an interactive panel discussion of possible interventions that could have prevented the negative case outcome.

**2024**

### **SIG | Ictal Semiology: Anatomico-clinical Correlation of Seizure Onset and Propagation**

#### **Overview**

This session presents the learners how to relate subjective and observable seizure semiology to anatomical region(s) in order to construct a hypothesis of localizing seizure onset and propagation network. The session format is interactive case discussion. Five cases of typical or unusual seizures are presented. Each speaker presents a case in a video to illustrate seizure semiology. Both panel and learners are challenged in analyzing seizure semiology in detail and constructing a hypothesis of localization. The speaker gives the final explanation based upon neuroimaging, intracranial EEG, and surgical outcome. Brief didactic material is delivered.

**2023**

### **SIG | Ictal Semiology: Localization of Seizure Onset and Propagation Networks**

#### **Overview**

The aim of this session is to present the audience how to use subjective and observable seizure semiology to localize the seizure onset and propagation network. The format of the session is interactive case discussion. Five cases of typical or unusual seizures are presented. Each presenter presents a case in a video to illustrate seizure semiology. Both panel and audiences are



challenged in examining seizure semiology in detail and constructing a hypothesis of localizing seizure onset and propagation network. The presenter gives the final explanation based upon neuroimaging, intracranial EEG and surgical outcome. Brief didactic material is delivered.

**2022**

### **SIG | Ictal Semiology: Generators of Seizure Semiology: Localization and Propagation Patterns**

#### **Overview**

The audience is invited to examine the seizures and stimulation responses to form hypotheses. The faculty will then comment on the material with brief discussion of clinical features. The presenter will give the final explanation based upon neuroimaging, intracranial EEG and the surgical outcome. Brief didactic material is delivered for each case. The format of the session is interactive with the main aim to show the audience how to use subjective and observable clinical elements to localize the seizure onset and reconstruct the propagation pattern of the ictal discharge.

**2021**

### **Special Interest Group: Ictal Semiology**

Title: Generators of Motor Symptoms Linked to Auras: The Localizing Significance of Propagation Patterns

#### **Overview**

A panel of experienced clinical epileptologists will present four to five surgical cases. Each panelist will show a video of the ictal semiology and direct cortical stimulation. The moderator will provide feedback from the audience regarding the characterization of the semiological features as well as their localizing value. The moderator will then ask the presenting faculty member and/or other members of the panel to discuss the findings. The presenting faculty will then discuss EEG and neuroimaging findings, functional concerns, as well as the proposed or completed surgical plan.

**2022**

### **SIG | Intractable Generalized Epilepsy: Prognosis, Therapies, & Deep Brain Stimulation**

#### **Overview**

This SIG will be a discussion of topics pertaining to generalized epilepsy, discussing prognostic factors, and medical treatment strategies as well as current strategies for DBS implantation. The format will be a lecture format with three speakers allotted 20 min each to speak with 9 minutes for questions after each speaker. With 3 minutes for introductions and other insensible losses of time.

**2021**

## **Special Interest Group: Intractable Generalized Epilepsy**

Title: Intractable Generalized Epilepsy

### **Overview**

Treatment of generalized epilepsy in the genomic era continues to be challenging. Unlike its counterpart, focal epilepsy, curative options are limited. The multi-facet purpose of this Intractable Generalized Epilepsy Special Interest Group is to: i) Outline genetic criteria that will help to avoid misdiagnosis of GGE and identifying genetic findings relevant for drug response; ii) The role and practical approach of the ketogenic diet and its modified forms in the treatment of adult epilepsy; iii) Explore the role of Responsive Nerve Stimulation in generalized epilepsy. The main purpose of this SIG is to encourage the use of novel techniques for accurate diagnosis and treatment early rather than later in management, with the ultimate goal of better seizure control. While generalized seizures appear electrographically widespread on EEG, data indicates these seizures do involve specific networks, conferring the base for using VNS, DBS, Corpus Callosotomy, and more recent RNS targeting the anterior thalamic nucleus in appropriate cases. Clinical cases presented will cover a wide range of diagnostic and therapeutic dilemmas and their response to the above-mentioned interventions. This session is intended to help clinicians with options that will impact the treatment of intractable generalized epilepsy and its comorbidities.

**2024**

### **SIG | Magnetoencephalography: Does Every Pre-Surgical Epilepsy Evaluation Deserve a MEG?**

#### **Overview**

MEG has been shown to increase the number of surgical candidates but the optimal way to integrate it with other non-invasive testing to guide surgical treatment may be unclear to some epilepsy specialists. Additionally, data is reviewed showing how MEG can guide treatment decisions associated with neuromodulation. This didactic session addresses these issues by reviewing best practices for integrating MEG results into the surgical plan, from pre-surgical evaluation to invasive monitoring, to decisions regarding neuromodulation. Finally, access and utilization of MEG are discussed to determine barriers to its inclusion for every surgical evaluation.

**2022**

### **SIG | Magnetoencephalography (MEG): From Spikes to Seizures to Networks: Magnetoencephalography in Focal Epilepsy**

#### **Overview**

Magnetoencephalography (MEG) is an integral diagnostic study in the presurgical epilepsy evaluation. Most commonly, MEG is an "interictal" study and localizes sources of interictal epileptiform activity. However, seizures occur in approximately 15-25% of MEG studies and the source analysis of ictal activity in MEG can provide useful information with respect to the seizure onset zone (SOZ). Furthermore, advanced analysis methods, beyond the conventional equivalent

current dipole (ECD), using connectivity-based network analysis may better define epileptic networks. This special interest group organized by the American Clinical MEG Society (ACMEGS), will have three diverse speakers who will address MEG analysis from different perspectives: interictal activity, ictal activity, and network activity.

## 2021

### **Special Interest Group: Magnetoencephalography (MEG)**

Title: What are Dipoles Anyway? What Source Location Means and what it doesn't Mean

#### **Overview**

Several studies have demonstrated the utility of MEG, and in particular, the equivalent current dipole (ECD), in the epilepsy presurgical evaluation. However, for some neurologists and epileptologists it can be challenging to understand what the ECD means as well as what it does not represent. This may create confusion between the “MEG user” (referring physician) and the “MEG reader” (MEG reading physician). This special interest group, organized by the American Clinical MEG Society, will have three speakers who will address key issues of source interpretation from 3 different aspects: Expectations, Science, and Clinical Interpretation.<br>Expectations from a referring physician: How do I know where to refer? What makes a good MEG lab? What do I hope, and would like, the MEG report to contain? What is the meaning of the dipoles or other source localization? Science of source locations: What is source modeling and what are the common types used in clinical practice? What makes a spike model-worthy? Clinical Interpretation: Review orientation of sources and their anatomical localization. Discuss spike propagation and differentiating focal and generalized discharges. Discuss the interpretation of MEG and meaningful sources. Outline an appropriate MEG report based on the ACMEGS clinical practice guidelines.

## 2024

### **SIG | Neonatal Seizures: Seizures and Neuromonitoring in Pre-term Infants**

#### **Overview**

Advances in the recognition, diagnosis, and treatment of neonatal seizures in term infants have led to a greater need for understanding neonatal seizures in the pre-term brain. Unanswered questions in this unique and fragile population include which infants should be monitored, which antiseizure medications are safe and effective, and outcomes. This session addresses these gaps with a review of aspects of seizures and treatments and of the recently developed ACNS guidelines. The session ends with interactive polls and a debate on the pros and cons of treating seizures in the pre-term brain.

## 2023

### **SIG | Neonatal Seizures: Seizures in Neonates – Advances in Identification and Management**

#### **Overview**

Neonatal seizures are difficult to clinically recognize depending on the seizure type. Over the past few years, there have been updates to our knowledge of neonatal seizures. The new neonatal seizure classification has clarified the seizure semiology and included EEG in the definition of neonatal seizures. It has also increased our understanding and heightened the importance of etiology and specific anti-seizure treatments. This SIG informs participants regarding the latest evidence based management of neonatal seizures and provides a platform for discussion for applying these guidelines in different practice settings while addressing challenges of access to care.

**2022**

## **SIG | Neonatal Seizures: Update on Treatment of Neonatal Seizures**

### **Overview**

Over the past few years, there have been updates to our knowledge about the treatment of neonatal seizures. Because most neonatal seizures are acute reactive seizures, it is important to correctly identify and treat neonatal seizures. This session will present a recent randomized control treatment trial that has added new knowledge to the field and defines all clinically available approaches. There is a recent ILAE systematic review to evaluate the current literature and update the existing WHO guidelines. It emphasizes how identifying the specific seizure type and epilepsy diagnosis can lead to personalized treatment. There is wide variability of practice with regards to stopping or continuing treatment with antiseizure medications for neonatal seizures. At times, neonates are transported many miles from their homes for a higher level of care and may not have pediatric neurology follow-up or gaps in care following discharge. This important topic will be reviewed with emphasis on access to care. Finally, the panel discussion will be led by clinicians who will answer questions regarding how to provide appropriate care for newborns with high risk for seizures at the full spectrum of practice settings from academic hospitals to community NICUs.

**2021**

### **Special Interest Group: Neonatal**

Title: Neonatal Seizures Around the Globe: Accurate Diagnosis with Limited Resources

### **Overview**

The 2011 Neonatal EEG Monitoring Consensus Statement from the American Clinical Neurophysiology Society included recommendations that all neonates at high risk for seizures be monitored with a conventional EEG for 24 hours. Since then, we have only learned even more about the importance of early diagnosis and treatment of neonatal seizures. This session will present newly revised ILAE neonatal clinical seizure terminology and illustrate how identifying the specific seizure type can contribute to seizure and epilepsy diagnosis. Continuous EEG is not available in all practice settings, so monitoring all high-risk neonates may not be possible, leading to inadequate treatment. Although EEG is the gold standard, there are other clinical strategies

for diagnosing electrographic seizures. Techniques used in Brazilian and Indian NICUs with limited resources will be presented. Finally, the panel discussion will be led by clinicians who face similar issues in the USA- providing appropriate care for newborns with high risk for seizures at community NICUs.

**2023**

### **SIG | Neuroendocrinology: The Influence of Sex Hormones on Neuronal Excitability from Mice to Humans**

#### **Overview**

There is solid evidence that sex hormones and their neuroactive metabolites modulate neuronal excitability and neural network activity. Despite new breakthrough research findings, the clinical approach does not commonly incorporate consideration of sex hormones when treating seizures. This Neuroendocrinology SIG will highlight the necessity of a continuous dialogue between scientists and clinicians to bridge this gap. The speakers will present new animal models and clinical research findings on sex hormone actions that challenge the current dogma on how sex hormones influence neuronal function and offer novel perspectives on how to improve therapeutic options for patients living with epilepsy.

**2022**

### **SIG | Neuroendocrinology: Females and cycling hormones in epilepsy: Misconceptions, methods, mechanisms**

#### **Overview**

There is much evidence that neural functions change with the female ovarian cycle (menstrual cycle in humans, estrous cycle in rodents) in ways highly relevant to seizures and epilepsy. However, misconceptions about the cycling hormones have led to hesitancy to incorporate female subjects, particularly in preclinical research. This reluctance hinders knowledge of which facets of seizure activity and susceptibility may change with the cycle, and which do not, which may provide insight regarding underlying pathophysiological mechanisms. This Neuroendocrinology SIG will highlight the necessity of inclusion of female animals and discuss preclinical studies demonstrating impacts of estrous cycle stage on excitability and seizure activity in different models of epilepsy. Collectively, the speakers will address the misconceptions and methodological concerns that have impeded incorporation of females and the menstrual/estrous cycle in epilepsy research. Finally, there will be a group discussion and debate regarding the best practices for applying strategies to incorporate female subjects and when and how to assess the cycling hormones in preclinical epilepsy research.

**2021**

### **Special Interest Group: Neuroendocrinology**

Title: Impact of Stress on Epilepsy Outcomes

## Overview

Stress is a common trigger for seizures and stress hormone levels are elevated in people with epilepsy. The body's physiological response to stress is mediated by the hypothalamic-pituitary-adrenal (HPA) axis, leading to elevated levels of stress hormones, implicated in worsening epilepsy outcomes. This Neuroendocrine SIG will highlight clinical and preclinical evidence supporting the negative impact of stress on epilepsy outcomes and discuss potential mechanisms and therapeutic strategies to mitigate these effects. Dr. Sheryl Haut will discuss emerging evidence supporting the relationship between stress and seizures/epilepsy in both animals and humans. This presentation will focus on human data from prospective seizure diary studies as well as the results of randomized controlled trials of stress management for the treatment of refractory epilepsy. Dr. Aynara Wulsin will discuss the role of the glucocorticoid receptor in epileptogenesis/status epilepticus as well as the use of GR modulators to mitigate the development of epilepsy and behavioral comorbidities associated with temporal lobe epilepsy (TLE). Finally, Dr. Jamie Maguire will discuss the negative consequences of seizure-induced activation of the HPA axis on seizure frequency, psychiatric comorbidities in chronically epileptic mice, and vulnerability to sudden unexpected death in epilepsy (SUDEP).

**2024**

### **SIG | Neuroimaging: Neuroimaging Biomarkers of Cognitive and Therapeutic Outcomes in Focal Epilepsy**

#### Overview

Quantitative structural and functional imaging has improved our understanding of the underlying network changes in focal epilepsy. There is now evidence that these changes can be predictive of response to our treatment interventions. Nonetheless, epilepsy is a variable and evolving condition and quantifiable neuroimaging has not been consistently integrated into the clinical assessment of these different situations. In this SIG, we focus on new approaches and evidence related to the use of quantifiable neuroimaging to identify cognitive and treatment response in newly acquired, drug-resistant, and pediatric epilepsy. We focus on biomarkers that can be leveraged in clinical care.

**2023**

### **SIG | Neuroimaging: Clinical and Mechanistic Neuroimaging Assessment of Drug Resistant Epilepsies**

#### Overview

Quantitative imaging can reveal network properties that may be associated with epilepsy etiologies and clinical trajectories related to anti-seizure medication response. Nonetheless, quantifiable neuroimaging markers have not been consistently integrated into the clinical assessment of epilepsies. In this SIG, we will focus on new approaches and evidence related to the use of quantifiable neuroimaging to identify and provide mechanistic insight of drug-

resistant epilepsies in both children and adults. We will be particularly interested in discussing markers related to anti-seizure medications and how they can inform on the mechanisms underlying different epilepsy syndromes and be leveraged to improve future clinical workflows.

**2022**

### **SIG | Neuroimaging: Imaging of Cognitive Reorganization in Epilepsy**

#### **Overview**

One of the most remarkable characteristics of the human brain is its ability to reorganize in response to injury, and this is frequently observed in patients with chronic epilepsy. This "injury" includes both early life insults (e.g., repetitive seizures) which can disrupt typical patterns of brain organization during development. Or, late events, such as surgical insults, which can promote re-organization of cognitive networks post-operatively. In this SIG, we will cover new evidence from functional neuroimaging of both pre- and post-operative re-organization of language and memory in both children and adults with epilepsy. This SIG will also cover how compensatory brain mechanisms can be leveraged to enable successful cognitive performance. Finally, we will describe how bilingualism and other sociocultural characteristics may influence cognitive re-organization and/or provide a means of cognitive reserve in patients with epilepsy. The SIG format will use a moderated panel of 3-4 experts and include both junior and senior investigators.

**2021**

### **Special Interest Group: Neuroimaging**

Title: Large Multicenter Databases: Big Data and Open Science

#### **Overview**

Multicenter neuroimaging databases - Big data and open science: Big data science provides significant insights into universal and clinically impactful aspects of disease pathophysiology and outcomes. Epilepsy neuroimaging is now being supported by large multicenter databases that provide unprecedented access to clinical and neuroimaging data. They permit researchers across the world to leverage rich information to evaluate salient and shared disease traits. This SIG will provide an overview of the existing datasets and their contained information. It will also discuss recent analytical engines that were constructed to fully explore the existing databases and imaging data at large. The target audience for this SIG will be researchers involved with neuroimaging and computational neurobiology of focal and generalized epilepsies. This session will also target clinicians and researchers with a special interest in future diagnostic approaches and advanced statistical and machine learning methods.

**2024**

### **SIG | Neuropharmacology: Challenges in Immunotherapy for Epilepsy – Seizing Control Across the Ages**

## **Overview**

The utilization of immunotherapy as a therapeutic approach for epilepsy has garnered interest for its potential effectiveness in managing drug-resistant epilepsy. Yet, immunotherapy presents a complex set of challenges and clinical considerations requiring careful attention to optimize its application and management among infants, children, and adults. This SIG addresses the challenges and considerations with immunotherapy through interactive case-based learning that focuses on the pharmacologic mechanisms, dosing strategies, effective monitoring, navigation of drug interactions, mitigation of adverse effects, and factors determining treatment duration. Following the presentations, a panel featuring speakers with diverse clinical expertise offers additional multidisciplinary perspectives.

## **2023**

### **SIG | Neuropharmacology: Medication Misadventures: Management of Anti-seizure Medication Adverse Effects**

#### **Overview**

Anti-seizure medications (ASMs) are the mainstay of treatment for patients with epilepsy. However adverse effects from ASMs remain one of the leading causes of impaired quality of life, poor patient adherence, treatment failures, and increased risk of mortality and morbidity. Anticipating the adverse effects of ASMs and developing a structured plan for prevention, monitoring and management is imperative to optimizing pharmacologic treatment regimens for patients with epilepsy. The 2023 Neuropharmacology SIG will take an interactive case-based approach to recognizing and managing ASM adverse reactions with a focus on hypersensitivity reactions, cardiac, behavioral, and psychiatric side effects.

## **2022**

### **SIG | Neuropharmacology: Anti-Seizure Medication Withdrawal: Who, What, and When?**

#### **Overview**

The 2022 neuropharmacology SIG will take a deep dive into the process of anti-seizure withdrawal in three special patient populations – acute symptomatic/acute TBI patients, post resective surgery/neuromodulation patients, and infants who had neonatal seizures.

For effective learning, we will use case-based learning. The speakers will include relevant cases with questions to encourage audience participation during the session. The results will be reviewed on time by using Poll Everywhere or Zoom Poll (depending on meeting structure). The use of the poll feature enables the assessment of the knowledge level of the audience before and after the session as well as their knowledge improvement.

## **2021**

### **Special Interest Group: Neuropharmacology**

Title: Managing Breakthrough Seizures – An Art or Science?



## **Overview**

Two-thirds of people with epilepsy experience seizure-freedom with optimization of anti-seizure medications. Breakthrough seizures interrupt the seizure-freedom in a subset of these patients. Breakthrough seizures pose threat of injuries, unemployment, sudden death and increase health care costs. Management of breakthrough seizures is of paramount importance in maintaining seizure-freedom in medically responsive epilepsy. However, management of breakthrough seizures continues to be a challenge to health care teams and we will focus the 2021 SIG to address the management nuances of breakthrough seizures. Several factors including medication nonadherence, drug-drug interactions could be the underlying etiology of breakthrough seizures. We will delve into deeper understanding of medication nonadherence, utilization of drug monitoring and explore typical to rare drug interactions during 2021 Neuropharmacology SIG with our 3 speakers. For effective learning, we will use case-based learning. The speakers will prepare a case and create questions for audience so that the audience can actively participate in the session. The results will be reviewed in a timely manner by using Poll Everywhere or Zoom Poll (depending on meeting structure). The use of Poll feature enables to assess the knowledge level of audience before and after the session as well as their knowledge improvement.

**2024**

### **SIG | Neuropsychology: Integrating Technology into Epilepsy Neuropsychology**

#### **Overview**

Traditional pen and paper approaches are still the dominant method by which cognitive and psychological information are gathered in epilepsy neuropsychology. The field has been slow to incorporate new technologies and approaches despite their potential to improve the efficiency and availability of neuropsychology. Harnessing technology to electrophysiological methods also offers the potential to further our mechanistic understanding of neuropsychological dysfunction in epilepsy. This SIG brings together a panel of experts in these techniques, encompassing both junior and senior investigators working in pediatric and adult epilepsy. Each provides a brief presentation, followed by a moderated panel discussion.

**2023**

### **SIG | Neuropsychology: Mapping Cognition in Epilepsy: From the Lab to the Clinic**

#### **Overview**

Advanced functional mapping methods are necessary for the comprehensive presurgical evaluation of cognition in epilepsy. These methods include functional magnetic resonance imaging (fMRI), subdural mapping, and stereoelectroencephalography (sEEG). Important sociocultural factors, such as bilingualism, need to be incorporated in functional mapping methods and conceptualization. The SIG format uses a moderated panel of experts in these methods and includes both junior and senior investigators.

2022

**SIG | Neuropsychology: BIG Data in Cognition in Epilepsy: Clinical and Research Utility**

**Overview**

The purpose of this learning activity is to identify and explore how Big data can provide a mechanism to study large numbers of individuals with epilepsy to better understand risk factors and cognitive phenotypes associated with cognitive difficulties and cognitive changes in epilepsy. Utilizing these big datasets will also advance clinical care and clinical decision making, and enable development of personalized neuropsychological care. Four speakers will provide information about their projects that incorporate the use of clinical data across multiple sites. Each speaker has a different focus including pediatric data from a large network, cognitive data from brain mapping, a large dataset from Australia, and adult data from multiple sites using a data harmonization approach. Each speaker will present an overview of their projects and we will have a 30-minute panel discussion to review the barriers and opportunities of developing larger datasets. Additionally, there will be discussions about how to grow these data networks to utilize multiple sites providing access to more data to improve our understanding of cognition in epilepsy. This learning activity is relevant to the learner's professional practice by providing additional information to inform our understanding of the impact of epilepsy on cognitive abilities.

2021

**Special Interest Group: Neuropsychology**

Title: Reimagining Memory: Transient Amnesia, Long-term Forgetting, Early Dementia

**Overview**

This session is concerned with diagnosis of memory disorders in patients with epilepsy across the lifespan. The session will critically evaluate current practices used to diagnose memory disorders in patients with epilepsy against recent applied clinical research. Three topics will be included: transient epileptic amnesia, accelerated long-term forgetting and differentiating age-related memory changes from the mild cognitive impairment/early dementia. Given that memory deficits are the most frequent cognitive comorbidity in patients with epilepsy, the topic of this session is of high relevance to clinicians working with patients with epilepsy.

2024

**SIG | Pediatric Epilepsy Case Discussions: Spotlight on Infantile Epilepsy Syndromes – How Can We Optimize Outcomes?**

**Overview**

Defining epilepsy syndromes in infancy remains clinically useful to guide investigations, treatment options, recognize comorbidities, and enable prognostication. There is a complex relationship between underlying etiology and epilepsy syndrome. There is lack of familiarity of the classification of the electroclinical features of infantile epilepsy syndromes among the

epileptologist, neurologists, and advanced practice providers. This Pediatric SIG explores the latest scientific knowledge on the classification, treatment approaches, advances in etiology-based management and global-issues related to care of infantile epilepsy syndromes. Each speaker supports the learning objectives with a case that illustrates the developments in epilepsy diagnosis and management.

**2023**

### **SIG | Pediatric Epilepsy Case Discussions: Difficult Discussions in the Pediatric Epilepsy Clinic**

#### **Overview**

There are many difficult conversations that arise in the pediatric epilepsy clinic every day. We chose three such discussions and present a case each related to the topics, followed by a presentation focusing on the important aspects of the selected topic and how to best address these topics in the clinic with patients and families. Each speaker will discuss a case and recommendations for addressing the topic in the clinic for 20 minutes followed by 10 minutes of an interactive discussion with the audience.

**2022**

### **SIG | Pediatric Epilepsy Case Discussions: Complex and intractable infantile onset epilepsy – a medical and a surgical case**

#### **Overview**

This year we aim to discuss two cases of complex and intractable epilepsy of infancy. One case will be an infant who presented with status epilepticus, and later diagnosed with an intractable genetic epilepsy. Second case will be of a patient with infantile onset intractable epilepsy that later in the course of the disease had a successful epilepsy surgery. We will use an interactive case discussion format involving all the faculty members. One faculty will present the case overview, and at each critical point during diagnostic work up and treatment steps, pose questions to the faculty as the clinical story unfolds. Additionally, audience remarks and questions will be taken as well at key points during and at the end of each case. The chair and co-chair will moderate and participate the discussion of one case each. In-coming vice chair will be presenting one case. Each case will be discussed for 45 minutes allowing ample time to bring forth the complexities of diagnosing and treating epilepsies in this young population. Our SIG will stimulate discussion from the panel of experts as well as the audience debating best management options in each case while weighing benefits and risks of different clinical approaches.

**2021**

### **Special Interest Group: Pediatric Epilepsy Case Discussions**

Title: Pediatric Epilepsy Case Discussions: Diagnostic and Treatment Challenges

## **Overview**

For more than 20 years, this special interest group has provided an engaging platform to share complex challenges in the management of pediatric epilepsy. Early-career and seasoned epileptologists from both academic and private centers worldwide have the opportunity to explore and interact around illustrative clinical experience. This year, this SIG highlights pediatric cases demonstrating the importance of precision medicine and treatment options for epilepsy due to genetic etiologies.

**2024**

### **SIG | Post-traumatic & Military Epilepsy: Research**

#### **Overview**

Traumatic brain injury (TBI) is a major etiology for epileptic and nonepileptic seizures in both the civilian and military population and the development of new treatments hinges on collaboration among basic, translational, and clinical TBI investigators. This Post-traumatic & Military Epilepsy Research SIG brings together benchtop and clinical investigators to meet this need. In this SIG, speakers present their latest research in animal models and patient populations. Time at the end of the SIG is reserved for open discussion among the speakers and attendees to brainstorm new research pathways to improve the lives of patients with post-traumatic seizures.

**2024**

### **SIG | Practice Management: Advanced Practice Practitioners – More Than a Physician Extender**

#### **Overview**

Access to high-quality epilepsy care correlates with improved outcomes; nonetheless, patients requiring such care continue to outstrip supply. One increasingly popular strategy to improve access to epilepsy care is enhancing the work force through incorporation of advanced practice providers (APPs) into practices. This strategy poses challenges in terms of training, operations, and revenue. This SIG presents several institutions' models involving successful incorporation of APPs into quality epilepsy care, including the perspectives of APP and physician leaders. This SIG remains unique with a focus on operations, financial sustainability, and outcome measures with support from the literature.

**2023**

### **SIG | Practice Management: Optimizing Your Practice, Getting the Time and Resources You Deserve**

#### **Overview**

Building an epilepsy practice is particularly daunting when clinicians and administrators seem to disagree. This Practice Management Special Interest Group provides clinicians with tools to successfully partner with administrators and obtain the resources and support needed to provide patients with the highest level of care.

The speakers in this diverse panel will address how to obtain funding for three critical elements of a thriving epilepsy practice: ample clinic time, subspecialty clinic services, and EEG reviewers.

As always, this SIG remains unique with a focus on successful programs, overcoming obstacles, financial sustainability and outcome measures with support from the literature.

## **2022**

### **SIG | Practice Management: Navigating Specialized Services in an Epilepsy Program**

#### **Overview**

The 2022 Practice Management Special Interest Group focuses on topics essential to build and maintain a strong and sustainable epilepsy practice in today's complex and evolving world. Epilepsy is a significant cause of disease burden across the globe, with the estimated proportion of those with active epilepsy being between four and ten per 1,000 people. As the world's population ages and grows, there is an ever-increasing need for quality epilepsy AND subspecialty care. The process of building an epilepsy practice can be daunting due to complexities of healthcare systems, access limitations, and the need for multidisciplinary care to deliver treatments to patients and families living with epilepsy.

The speakers for this session come from diverse experiences and backgrounds and will address four critical elements of a successful epilepsy practice: subspecialty epilepsy services, the epilepsy navigator, the role of a physician liaison, and the non-epileptic seizure clinic.

As always, this SIG remains unique in that it provides a broad review of the topics presented including a description of the highlighted program, obstacles to implementation, benefits to clinical care, financial sustainability, outcome measures, and a literature review to illustrate how the program fits in to a larger clinical and practice management context.

## **2021**

### **Special Interest Group: Practice Management**

Title: Building an Epilepsy Practice

#### **Overview**

Epilepsy is a significant cause of disease burden across the globe, with the estimated proportion of those with active epilepsy being between 4 and 10 per 1000 people. As the world's population ages and grows, there is an ever-increasing need for good epilepsy care. Fortunately, epilepsy practices continue to grow in countries with modern healthcare systems and are actively being developed in places of the world without such specialty services. However, the process of building an epilepsy practice can be daunting due to complexities of healthcare systems, technology, and the growing role of digital platforms used to connect with and deliver care to patients and families living with epilepsy. Our 2021 Practice Management SIG focuses on topics essential to building an epilepsy practice in today's complex world. We present three speakers, each with expertise in topics critical for a successful epilepsy practice: the epilepsy provider

team, epilepsy monitoring unit, and connecting to patients in the community. The speakers will each give a “How To” discussion on building an epilepsy team from the ground up, creating an epilepsy monitoring unit, and how to reach patients in the community.

**2024**

### **SIG | Pregnancy Outcomes: Non-pharmacological Treatment for Epilepsy**

#### **Overview**

In the past, the pregnancy outcomes SIG focused on antiseizure medications. But our knowledge about the effects of non-pharmacological treatment for epilepsy on pregnancy outcomes is limited. This year's SIG focuses on pregnancy outcomes of patients treated with epilepsy surgery, neuromodulation, or dietary therapies. The invited experts present up-to-date data from literature review, multicenter studies, and pregnancy registries, followed by a moderated panel discussion. Our SIG provides the opportunity for AES attendees to review the constantly evolving data and be able to optimize treatment and counselling of this vulnerable group of patients.

**2023**

### **SIG | Pregnancy Outcomes: Pregnancy Registries: Updates, Outcomes, and Future Directions**

#### **Overview**

This year's SIG will re-focus on the latest updates from the largest international registries and the most prominent neurodevelopmental studies. Information from pregnancy registries often takes many years to be incorporated into guidelines making this platform an essential opportunity to bridge this gap in knowledge. Our SIG will provide the opportunity for AES attendees to review the constantly evolving data and be able to optimize their treatment and counselling of this vulnerable group of patients. Our experts will be presenting pivotal data on teratogenesis and neurocognitive outcomes related to ASMs which will be followed by a moderated panel discussion.

**2022**

### **SIG | Pregnancy Outcomes: Neurocognitive Outcomes in Adolescents, Fertility, Depression and Folic Acid Use**

#### **Overview**

This SIG will provide information on the fertility considerations in women with epilepsy (WWE) and folic acid and its use and effects in WWE during pregnancy. This SIG will also discuss how postpartum depression effects neurocognitive outcomes for children of women with epilepsy with new findings being shared by the Maternal Outcomes and Neurodevelopmental Effects of AEDs study and neurocognitive outcomes in adolescent children of WWE per the Kerala registry. In addition, experts will discuss a case on the management in a women with epilepsy.

**2021**

**Special Interest Group: Pregnancy Registry Outcomes**

Title: Pregnancy Data Outcome Update

**Overview**

This SIG will provide updates on antiepileptic drugs and teratogenicity and cognitive outcomes from the North American AED Pregnancy Registry, the European Registry of Antiepileptic drugs and Pregnancy, the Maternal Outcomes and Neurodevelopmental Effects of AEDs study, and the Danish National Prescription Registry. In addition, experts will discuss an illustrative case on management in a woman with epilepsy.

**2023**

**SIG | Professional Wellness in Epilepsy Care: Of Hearth and Home: Professional Wellness After Hours**

**Overview**

Medical professionals are vulnerable to burnout and profound work stressors. The impact of stressors on clinical practice and work-based strategies for burnout prevention are common topics of discussion. However, the impact of burnout on home life is less frequently discussed but has profound implications for quality of life. In this special interest group, we will have two engaging speakers discuss the impact of stress and burnout on sleep and family, along with strategies to mitigate its impact. We will then have an opportunity for an extended panel discussion and an opportunity for participants to share their personal experiences and solutions.

**2022**

**SIG | Professional Wellness in Epilepsy Care: Clinician Burnout: Causes, Consequences and Cures**

**Overview**

The format of this session will consist of a combination of invited speakers, audience participation, and panel discussion. The first talk will describe Biomarkers of Burnout to include biochemical, physiological, and anatomical aspects of the disorder as a basis for ideas for approaches to interventions. Coaching distinct from mentoring and advising has been of great value to professionals and has been shown in a few studies to benefit those in the healthcare industry. The second talk will describe the role of coaching healthcare professionals gained from their experience at a nationally recognized center for professional wellbeing. The other parts of the session will include audience participation to describe the progress and successes of wellbeing initiatives in their departments. The session will conclude with a panel discussion and audience polling on the above topics and related issues.

2021

**Special Interest Group: Professional Wellness in Epilepsy Care**

Title: Professional Wellness in Epilepsy Care

**Overview**

This year's SIG will have a thematic focus on interventions and their implementation for individual and group wellness to increase professional health in the workplace. Reading, narrative medicine, and medical humanities are being recognized as means to gain perspectives and interactions with others to increase resilience and wellbeing. Evidence-based assessment of wellness suggests that only mindfulness and coaching have proven efficacy. The SIG will address how initiatives in the area of promoting wellness in Neurology can be more successfully implemented once pilot projects are proposed. AAN, a sister organization of AES, has programs to train future leaders that could be easily applied to the field of epilepsy empowering professionals to develop self-care and employee wellness and take the best care of patients with seizure disorders.

2024

**SIG | Psychogenic Non-epileptic Seizures: Evidence-based Guidelines for the Management of PNES/Functional Seizures**

**Overview**

Evidence-based guidelines play an important role in improving and standardizing patient care. Guidelines are especially important in disorders like PNES/functional seizures where there is a lack of formal clinical training and a rapidly expanding body of evidence. In this SIG, we review clinical practice guidelines, their advantages and limitations, the reasons why evidence-based guidelines might be especially beneficial in the management of functional seizures, and the steps that must be taken to create such guidelines. We also collect feedback on a draft guideline from clinical and research experts in the field of functional seizures.

2023

**SIG | Psychogenic Non-Epileptic Seizures (PNES): Cognitive impairment in PNES: From Mechanisms to Therapeutic Approaches**

**Overview**

Cognitive complaints are frequent in patients with psychogenic nonepileptic seizures (PNES). These deficits can significantly interfere with the ability of patients to participate in treatment and may further contribute to disability. This session will include a review of updated assessment tools to identify and characterize cognitive deficits and understand their functional impact. Various etiological mechanisms behind cognitive impairment in PNES will be discussed. Finally, therapeutic approaches to address cognitive symptoms in PNES will be proposed. The session will include an interactive Q&A panel discussion, where cases will be reviewed.



**2022**

**SIG | Psychogenic Non-Epileptic Seizures (PNES): Update on neuroimaging of PNES and other FNDs**

**Overview**

In the last 10 years, the field has made a great progress in identifying many structural and functional underpinnings of PNES/FNDs. Several large PNES/FND neuroimaging studies have been conducted and results have been reported. In this context, the presenters will discuss the recent findings of structural (e.g., voxel based morphometry), structural connectivity (diffusion MRI and application of advanced structural connectivity measures), resting state functional connectivity, fMRI task (e.g., valence or stress induction) studies, and EEG studies.

**2021**

**Special Interest Group: Psychogenic Non-Epileptic Seizures**

Title: Virtual Tools for Nonepileptic Seizures

**Overview**

Given the recent move to telehealth from the effects of the pandemic and how successful the move has been for epilepsy and for psychiatry, this SIG will review telehealth materials currently available or in progress for education, clinical care, advocacy or research in the area of nonepileptic seizures.

**2024**

**SIG | Psychosocial Comorbidities: Psychosocial Burden and Suicidality in Epilepsy**

**Overview**

This SIG provides an update on the current understanding of psychosocial burden, self-harm, and suicide in epilepsy. The session focuses on biopsychosocial underpinnings, features of patients at highest risk of self-harm and lifetime variance. Data surrounding high-risk subpopulations inclusive of DRE, post-surgical patients, and patients with PNES and mixed epilepsy/PNES are shared. Evidence-based self-management programming supporting patients at highest risk of self-harm and depression are discussed. Moderated audience discussion enables thought sharing around the challenges of identification, intervention, and treatment, allowing for potential innovative management strategies relevant to multidisciplinary clinicians and community social service networks.

**2023**

**SIG | Psychosocial Commorbidities: Strengthening Multisector Engagement to Address Social Challenges in Epilepsy**

**Overview**

This SIG will explore nuances in the social domains of family, education, employment, and relationships in epilepsy. Emphasis on the coordination of epilepsy-specific services to address social comorbidities is vital. This SIG will review common social challenges and examine impact and outcomes, offering practical strategies to integrate clinical care with support at the community level. An emphasis on population based approaches and evidence based programming, inclusive of enhancing screening for social comorbidities and referral options to improve care will be discussed. Panel/audience discussion will allow for innovative management strategies relevant for clinicians, epilepsy centers and community networks to be shared.

**2022**

### **SIG | Psychosocial Comorbidities: Autism and Epilepsy: From Theory to Practice**

#### **Overview**

This SIG will address the common clinical comorbidity of autism spectrum disorder and epilepsy, and suggest practical management strategies from experts. Speakers will address theoretical underpinnings of the comorbidity as well as offer practical management strategies to address complex phenomenology and identification of targets for treatment. Time will also be allotted for audience participation in order to consider creative management strategies that will be relevant for a wide variety of clinical circumstances.

**2021**

### **Special Interest Group: Psychosocial Comorbidity**

Title: Beyond Generalized Anxiety Disorder: Unpacking the Various Anxieties in Epilepsy

#### **Overview**

This year's SIG will discuss identification and management of anxieties in epilepsy, with a focus on epilepsy specific anxieties and DSM anxiety diagnoses besides generalized anxiety disorder, such as panic disorder and phobias including agoraphobia and social phobia. A framework for conceptualizing the epilepsy specific anxieties will be presented, including preictal, ictal, and postictal anxiety, as well as epilepsy specific interictal anxieties such as anticipatory anxiety of seizures. Management considerations for these epilepsy specific anxieties will be discussed. Diagnosis of anxiety disorders, with a focus on an instrument developed specifically for epilepsy and diagnostic criteria for panic disorder and phobias will be discussed. An interactive panel debate about the concept of epilepsy specific anxieties versus DSM anxieties will occur. Finally, content on management of panic disorder and phobias will be presented, followed by an opportunity for a brief interactive case-based discussion among attendees and panelists.

**2024**

### **SIG | Quality and Safety: Transition of Care for Adolescents with Epilepsy**

#### **Overview**

Transitioning adolescents with epilepsy, especially those with comorbid IDD and/or autism, poses numerous challenges. This phase, marked by increased autonomy, academic stress, and neurobiological changes, brings unique concerns for neurotypical teens, while parents of those with epilepsy face anxieties about the shift to adult care. Addressing these complexities, our session delves into the comprehensive dynamics of transitioning. Experts explore medical, emotional, psychosocial, and practical facets, equipping participants with a toolkit for safe transition. The goal is to navigate the intricacies involved in moving a teenager from the pediatric to the adult epilepsy clinic, ensuring continuity and quality care.

**2023**

### **SIG | Quality and Safety: Optimizing Interventions for Status: Bridging Gaps Between Protocol & Practice**

#### **Overview**

Despite the mantra “time is brain,” status epilepticus (SE) treatment is often too little, too late, whether from suboptimally dosed benzodiazepines or from delayed administration of a second-line anti-seizure medication. In clinical practice, treatment of status epilepticus spans a variety of settings and requires real time coordination among multiple stakeholders, including EMS, ED staff, pharmacists, nurses, neurologists, and non-neurologist physicians. This panel will explore the barriers to rapid treatment for this neurological emergency, interventions to optimize status epilepticus treatment, and ways to measure patient outcomes.

**2022**

### **SIG | Quality and Safety: Algorithms for Optimizing Epilepsy Surgery: the Present and the Future**

#### **Overview**

Epilepsy surgery is one of the most effective therapies in our field. As such, epilepsy surgery is a critical component of high quality epilepsy care. Yet the application- from identifying potential candidates for evaluation to choosing a specific surgical intervention to predicting seizure outcomes- is incredibly complex. Furthermore, elements of this process may be overly driven by anecdotal evidence or subjective biases.

With medicine's current ability to capture and analyze a wide range of data, our field stands well-positioned to make better decisions about epilepsy surgery. To practice this "precision medicine", we need well-informed algorithms to optimize patient outcomes.

In this session, we will have a panel of experts discuss current algorithms for epilepsy surgery, review the strengths and limitations of using algorithms to aid treatment decisions, and outline future research endeavors to make such algorithms more robust.

**2021**

**Special Interest Group: Quality and Safety**

Title: Continuous EEG/LTM: Who do we monitor vs. who should we monitor?

### **Overview**

Use of continuous EEG (cEEG) has exploded in the past decade. While cEEG can enhance many aspects of patient care, cEEG is a limited, resource-intensive procedure and practical guidance for pragmatic implementation is lacking. The 2015 American Clinical Neurophysiology Society (ACNS) consensus guidelines for cEEG in critically ill patients and 2021 ACNS cEEG terminology revision have provided quality standards for how to monitor patients, yet hospital systems and epilepsy centers vary widely in availability of cEEG and cEEG employment for screening, diagnosis, and treatment evaluation. Additionally, better understanding of the value of cEEG and opportunities to improve cEEG access are greatly needed. This SIG will explore academic and practical considerations for evidence-based application of cEEG with consideration of how cEEG is currently being utilized and opportunities to refine use of cEEG. In a panel format, speakers will explore current recommendations for cEEG, patient selection for cEEG, using EEG to risk stratify patients, and practical challenges to delivery including considerations of access and equity.

**2024**

### **SIG | Seizure and Cerebrovascular Disease: Post-stroke Epilepsy Prevention Journey – How Close Are We to the Destination?**

#### **Overview**

Post-stroke epilepsy (PSE) accounts for ~12% of the prevalent epilepsy burden and is the most common preventable epilepsy, especially among older adults. Recent developments, including basic science breakthroughs, in PSE prognostication model-enriching anti-epileptogenesis trials with high-risk patients and completion of such trials raise hope that the search for the holy-grail of epilepsy care – epilepsy prevention – may be headed in the right direction. This SIG showcases the latest research on PSE animal model, approaches to PSE prediction, and post-stroke anti-epileptogenesis trials. There is a brief Q&A after each presentation and a moderated panel discussion at the end.

**2023**

### **SIG | Seizure and Cerebrovascular Disease: Seizure after Stroke: Impact of Anti-Seizure Medication Prophylaxis & Treatment**

#### **Overview:**

This SIG will showcase three unique research perspectives on the use of primary and secondary anti-seizure medication (ASM) prophylaxis after ischemic and hemorrhagic stroke. There will be a brief Q&A after each presentation as well as a moderated panel discussion at the end of the group session.

**2022**

## **SIG | Seizures and Cerebrovascular Disease: Seizures After Stroke: Location, Reperfusion, Risk Stratification & Biomarkers**

### **Overview**

Our first speaker will discuss role of stroke location and reperfusion treatment (including IV or IA thrombolysis and mechanical thrombectomy) in development of post stroke seizures. Our second speaker will discuss early imaging biomarkers based on MRI and CT perfusion as well as EEG in identifying risk of post ischemic stroke seizures, and whether the combination of these data streams can help predict post-ischemic stroke epilepsy. Our third speaker will discuss role of biomarkers (including role of functional and miRNA-mRNA networks) to predict which subgroup of patients are at higher risk of developing late seizures after ICH as potential biomarkers for post-ICH late seizures.

**2021**

### **Special Interest Group: Seizure and Cerebrovascular Disease**

Title: Seizure and Cerebrovascular Disease

### **Overview**

This SIG will feature a diverse set of topics within this special interest group and plan to discuss recent publications and findings on epilepsy and small vessel disease, prevalence of epileptiform abnormalities in acute ischemic stroke and how it affects treatment with anti-seizure medication and seizures as a warning sign for stroke.

2024

## **SIG | Seizures in Autoimmune Encephalitis: Autoimmune Encephalitis-Associated Epilepsy**

### **Overview**

Autoimmune encephalitis-associated epilepsy was recognized as a separate entity from acute symptomatic seizures secondary to autoimmune encephalitis in 2020 by the International League Against Epilepsy Autoimmune Taskforce. Since then, both entities have been approached clinically as separate conditions, with different responses to immunotherapy. Here, we focus on the management of autoimmune conditions with an enduring predisposition to seizures, in which competing etiologies (cytotoxic T cell mediated neuronal injury and structural damage) make practical management considerations challenging. We discuss practical implications for the distinction from acute symptomatic seizures, including consequences on management and the prioritization of immunotherapy.

**2023**

## **SIG | Seizures in Autoimmune Encephalitis: Expanding the Clinical Spectrum and Recent Advances in Diagnosis and Treatment**

### **Overview:**

The clinical spectrum of presentations of autoimmune encephalitis and epilepsy, as well as our understanding of disease mechanisms and treatment regimens, is rapidly developing. Since the characterization of anti-NMDA receptor encephalitis over a decade ago, several new clinical entities have been identified. Greater clinician awareness of newly discovered autoimmune epilepsies and their typical clinical presentations will result in earlier recognition and more accurate diagnosis of autoimmune epilepsy. Greater understanding of the diagnostic and treatment algorithms will result in more timely and appropriate treatment and lead to improvement in outcomes.

**2022**

### **SIG | Seizures in Autoimmune Encephalitis: Focus on Diagnosis and Treatment Trials**

#### **Overview**

We propose that the 2022 Seizures in Autoimmune Encephalitis SIG highlight recent updates in the clinical presentation, diagnosis, and treatment of autoimmune encephalitis. The format will include three presentations by a moderated panel, followed by an interactive question and answer session. The session will introduce suggested terminology for seizures in autoimmune encephalitis and autoimmune-associated epilepsy, clinical features of autoimmune encephalitis with special attention to seizure and EEG phenotypes, clinical prediction scores to aid diagnosis, treatment consensus guidelines, and updates on ongoing treatment trials, including special considerations for trial design in autoimmune encephalitis.

**2021**

### **Special Interest Group: Seizures in Autoimmune Encephalitis**

Title: Continuation Proposal Seizures in Autoimmune Encephalitis

#### **Overview**

This SIG will include an interesting clinical case that exemplifies challenges in the diagnosis and management of seizures in autoimmune encephalitis. The SIG will include a basic science angle with two of the the three speakers will be elaborating their research in animal models looking at the epileptogenesis in autoimmune encephalitis and modulation of innate immunity by neurostimulation with a deeper dive in the connection of inflammation and epilepsy.

**2024**

### **SIG | Sleep and Epilepsy: Biological Rhythms, Brain Development, and Chronotherapy in Epilepsy**

Saturday, December 7, 7:00 - 8:30 AM (PST)

#### **Overview**

Sleep has optimal quality when it occurs during the sleep phase of the circadian cycle. However, seizures can adversely affect these relationships. This SIG presents the most recent data on the

relationships between biological rhythms and seizures, how these affect the developing brain, and discuss potential paths towards treatment of circadian disorders in epilepsy patients.

**2023**

### **SIG | Sleep in Epilepsy: Broken Sleep in Epileptic Encephalopathy: Challenges for Patients and Caregivers**

#### **Overview**

The Sleep Epilepsy Workgroup hosts a Moderated Panel presentation that reviews how the pathophysiology of severe epileptic encephalopathies affects normal sleep and circadian function, what role these dysfunctions play in brain development and prognosis, and how disrupted sleep affects patient-caregiver dyads.

**2021**

### **Special Interest Group: Sleep and Epilepsy**

**Title: Stars & Seasons – The Impact of Epileptic Activity in Sleep**

#### **Overview**

This year's Sleep & Epilepsy SIG focuses on young investigators by pairing cutting-edge findings from these rising "stars" with some background from a more "seasoned" mentor. A series of 3 pairings will present exciting new developments on the detection of epileptic activity in sleep, with the latest on the basic science and clinical ramifications of such sleep-related epileptic activity. Each pairing will last 25 minutes to provide ample time for creative ideas, debate, and discussion at the end of the SIG. The first trainee-mentor pair will present a new algorithm, "CAISR" (Complete AI Sleep Report) that will provide complete sleep staging as it detects epileptiform discharges and seizures throughout all sleep-wake states. Another trainee-mentor pair will then discuss the latest on the basic science ramifications of epileptic activity in sleep by exploring self-affinity properties of the human sleep-wakefulness rhythm, and how they may be disrupted in epilepsy. The next trainee-mentor pair will consider the latest on the clinical ramifications of epileptic activity in sleep by discussing new findings on how epileptic activity impacts sleep structure and function in focal epilepsy.

**2024**

### **SIG | Status Epilepticus: Novel Advanced Methods in Status Epilepticus Diagnosis and Prognosis**

#### **Overview**

Diagnosis and prognosis of status epilepticus is often challenging, resource demanding, and far from being perfect. Recent advances in signal analysis and artificial intelligence (AI) are potential game-changers in this field. This SIG gives an overview on novel, advanced methods for diagnosis and prognosis in status epilepticus, with focus on clinical implementation. The three talks focus

on three cutting-edge topics: use of AI in EEG of critically ill patients, neuroimaging in diagnosis of status epilepticus, and using machine learning to predict prognosis of status epilepticus.

**2023**

### **SIG | Status Epilepticus: Controversies in Status Epilepticus: Treat Aggressively or Not?**

#### **Overview:**

While Status Epilepticus is a neurological emergency, there is no standard algorithm for treatment of Non-Convulsive Status Epilepticus(NCSE) or Focal aware Status Epilepticus(FaSE). This interactive session challenges different institutional approaches, which range from conservative to aggressive, and are largely based on expert opinion. Different clinical scenarios of NCSE and FaSE require complex treatment approaches. This SIG provides a platform for discussion of available basic science and clinical evidence, and offers new perspectives regarding treatment and outcomes. The session is carried out in a debate format to enhance engagement of the audience and to ignite a future consensus in the field.

**2022**

### **SIG | Status Epilepticus: Focal Status Epilepticus: Therapeutic Approach and Response to Therapy**

#### **Overview**

This Special Interest Group will address the complex management approach of focal status epilepticus (FSE), from resolution of epileptic EEG patterns to clinical outcomes. The current topic will integrate the lessons learned from the FSE pathophysiology, EEG patterns, and clinical features discussed in the previous session, and will focus on the therapeutic approaches through interactive case discussions.

Successful clinical trials are well known and their proposed treatment algorithm for convulsive status epilepticus is frequently used for FSE treatment. There are potential valuable lessons that can be learned from failed clinical trials and these can advise therapeutic approaches for refractory cases.

Rationale for therapeutic failure will be addressed by discussing specific animal models and human studies with focus on their proposed mechanism. The EEG patterns associated with status epilepticus, benefits of rapid EEG systems versus prolonged EEG monitoring will be discussed. Clinical epilepsy treatment, including timing, medication doses, and their route of administration as possible causes for preventable failed therapy will be evaluated via interactive clinical cases.

This session's objectives are to offer a platform for discussion of treatment options for status epilepticus and to provide a new perspective on the medical algorithm, to help clinicians avoid delays and improve outcomes.

**2021**



## **Special Interest Group: Status Epilepticus**

Title: The Broad Spectrum of Focal Status Epilepticus

### **Overview**

Status epilepticus (SE) is a neurological emergency associated with high mortality and morbidity. One of the main prognostic factors is the underlying etiology of SE. Focal status epilepticus (FSE) can be seen with a wide variety of clinical seizure types or without obvious clinical manifestations. The available scientific evidence may be insufficient to claim that pharmacological treatment of focal SE should be different from the treatment of generalized SE. Diagnosing and treating FSE can be challenging. A variety of potential causes exist for refractory focal status epilepticus, but ultimately involve changes at the cellular and molecular level. This session is intended to provide a platform for discussion of complex approaches in the diagnosis of focal status epilepticus, from insights into its pathophysiology and etiology, to clinical features and electroencephalographic (EEG) abnormalities. Clinical cases will be presented in order to cover a wide range of diagnostic challenges, including interpreting epileptiform discharges not only as a sign of an abnormal cortex but rather as a treatable epileptic condition. This session is intended to help clinicians with options that will impact the treatment of focal status epilepticus and its comorbidities and to illustrate comprehensive and new perspectives in the medical algorithm.

**2024**

### **SIG | Stereoelectroencephalography: Planning SEEG and Tailoring Surgery to Avoid Language and Memories Deficits**

#### **Overview**

The stereoelectroencephalography (sEEG) is an established and safe pre-surgical method for delineating epileptogenic networks in patients with medically refractory epilepsy. In addition, the method allows the mapping of specific functional networks not only to characterize their participation in seizure semiology, but also to map their anatomical interface with epileptic cortex and predict post-operative neuropsychological outcome. The session introduces, in a progressive and didactic fashion, different basic and practical aspects of the sEEG method to characterize language and memory networks, their functional interactions with the epileptogenic networks, and ultimately predict post-surgical language and memories outcome.

**2023**

### **SIG | Stereoelectroencephalography (sEEG): SEEG SIG: The SEEG Methodology Applied to Pre-Frontal Epilepsies**

#### **Overview:**

Pre-frontal epilepsies are surgical remediated epilepsies that are amenable for stereotaxic explorations using the SEEG methodology. The proposed session has the overreach goal to

present, in a progressive, practical, and didactic fashion, different basic and clinically relevant aspects of the SEEG method applied to the pre-frontal epilepsies. The speakers will actively interact with the audience through a progressive journey, starting with basic conceptual aspects related to anatomy and electroclinical correlations (talk 1 and 2), transitioning to a practical and controversial presentation related to the technical nuances in SEEG implantations and guided surgical approaches related to the topic (talk 3).

**2022**

## **SIG | Stereoelectroencephalography (SEEG): SEEG methodology applied to Temporal Lobe Epilepsies**

### **Overview**

Stereoelectroencephalography (SEEG) is an established and safe method for interrogating epileptogenic networks in patients with epilepsy. SEEG enable local field potential recordings from deep cortical structures, identifying the epileptogenic zone (EZ) in a three-dimensional manner, and record epileptic activity across multilobar cortical areas. Temporal lobe epilepsies are common surgically-remediable epilepsies that are amenable for stereotaxic explorations using the SEEG methodology. The proposed session has the intention to present, in a progressive, practical, and didactic fashion, different clinically relevant aspects of the SEEG method applied to temporal lobe epilepsies. The speakers will take the audience through a progressive journey, starting with basic conceptual aspects (talk 1), transitioning to the clinical, epileptological nuances of anatomical electroclinical correlations in temporal lobe epilepsy (talk 2), and finally closing with a practical and controversial presentation related to the different SEEG guided approaches related to temporal epilepsies (talk 3).

**2024**

## **SIG | SUDEP: Sleep Biomarkers of Sudden Unexpected Death in Epilepsy**

### **Overview**

SUDEP is the leading category of epilepsy-related death. Evidence suggests respiratory dysfunction after a GTCS as the central mechanism of death. SUDEP frequently occurs during the night, in sleep. In addition, sleep deprivation has been frequently reported in SUDEP victims prior to death. This SUDEP SIG introduces important topics that link sleep, respiration, epilepsy and SUDEP. The presentations composes the first 60 min of the SIG (four 15-min talks) and sets the stage for a concluding 20-min panel discussion, prompted by questions from the audience.

**2023**

## **SIG | SUDEP: Sudden Unexpected Death in Epilepsy (SUDEP) From the Top Down**

### **Overview:**

Sudden Unexpected Death in Epilepsy (SUDEP) is likely multifactorial, in this session we will look at SUDEP from the “top” on down—from mechanisms that might extend seizure effects throughout the brain to the role of socioeconomic disparities on SUDEP risk. We will bring

together clinical and basic scientists from diverse backgrounds spanning epilepsy research. The presentations will compose the first section (four 15-min talks/5 min Q&A) and set the stage for a concluding 10-min panel discussion. The discussion will be prompted by a set of questions the moderators share with the panelists in advance and by questions from the audience.

**2022**

### **SIG | SUDEP: SUDEP through the lens of non-traditional semiologies, genes and models**

#### **Overview**

Most SUDEP is thought to be associated with cardiorespiratory collapse in the immediate aftermath of a generalized tonic-clonic seizure. Genetic SUDEP risk is usually ascribed to mutations in ion channel genes that affect brain and heart rhythms. However, sometimes SUDEP cases do not fit neatly into these categories, providing important exceptions to the 'rules' that can yield important information to help unlock the secrets of SUDEP. From a basic science perspective, the majority of what is known about SUDEP physiology and genetics comes from work in mouse models. However, other types of models exist which can provide critical insights not possible in mice. Thus, this SIG will explore less traditional forms of SUDEP, focusing on examples exhibiting non-canonical semiology and genetic causes. Less widely used non-mouse models of SUDEP will also be discussed considered. To educate the audience on these topics, we will bring together both clinical and basic scientists from diverse backgrounds spanning neurology to engineering. The presentations will compose the first 60 min of the SIG (four 10-min talks with 5-min Q&A) and set the stage for a concluding 30-min panel discussion. The discussion will be prompted by questions/discussion points from the audience and questions from the moderators.

**2021**

### **Special Interest Group: SUDEP**

Title: Failure to Autoresuscitate

#### **Overview**

Why can people with epilepsy autoresuscitate or recover from past seizures, but fail to autoresuscitate from the terminal seizure that results in sudden unexpected death in epilepsy (SUDEP)? The autoresuscitation response to apnea fluctuates between rapid breathing and apnea to promote cardiopulmonary resuscitation. Autoresuscitation involves central chemoresponsive regions that sense changes in blood gases. These regions interact to actuate respiration responses. The responses fluctuate between hyperventilation and apnea until blood gases stabilize. Despite decades of research investigating central and peripheral chemoreception, how chemosensory brain regions interact to actuate an autoresuscitation response is not well understood. The SUDEP SIG introduces important topics that link our current knowledge of autoresuscitation, chemoresponsive brain regions, respiration, epilepsy and SUDEP. Here, we bring together clinical and basic scientists who are within and outside the

field of epilepsy to educate the audience on these key topics and share their research on chemosensation, respiration and apnea in respect to sudden death. The presentations will compose the first 60 min of the SIG and set the stage for a rich discussion among panelists. The discussion will be prompted by a set of questions the moderators share with the panelists in advance and by questions/discussion points from the audience.

**2024**

### **SIG | Temporal Lobe Club: Balancing Seizure and Cognitive Outcomes in Temporal Lobe Epilepsy Surgery**

#### **Overview**

Drug-resistant temporal lobe epilepsy is the most common substrate in patients considered for epilepsy surgery. Decisions to proceed with surgery versus not, and plans of how to design the surgical treatment, are largely driven by needing to balance the likelihood of achieving seizure-freedom (better with more aggressive intervention) with the risk of cognitive side effects. The current landscape of epilepsy surgery offers multiple therapeutic options, including resection, laser ablation, and neuromodulation, each offering its pros and cons. This session offers a cutting-edge discussion through two debates, consecutively tackling seizure and cognitive outcomes, followed by a panel discussion engaging the audience.

**2023**

### **SIG | Temporal Lobe Club: Temporal Lobe Epilepsy Across the Lifespan**

#### **Overview**

This SIG explores variations of temporal lobe epilepsy across the lifespan. Temporal lobe seizures in young children often result from distinct etiologies, involve specific networks and require early surgical treatment. How does this effect prognosis and cognitive function? In adults, we increasingly understand that disease course depends on etiology. We will go back to the question, what can cause epilepsy in an otherwise healthy young adult? Last, we will shed light on the elderly population and discuss interactions between seizures, aging and dementia. Overall, this SIG will discuss how brain age influences the presentation, comorbidity and prognosis of TLE.

**2022**

### **SIG | Temporal Lobe Club: Novel Surgical Therapies**

#### **Overview**

Novel approaches have been developed to surgically treat temporal lobe epilepsy. This SIG will review these newer techniques, discussing new therapies that are currently in use and those under investigation in humans. Topics will include implantation of inhibitory neurons in mesial temporal lobe; focused ultrasound, thermal ablation, and radiofrequency ablation methods;

neuromodulation with electrical stimulation and ultrasound; and network changes resulting from focal modification of the epileptic network.

**2021**

**Special Interest Group:** Temporal Lobe Club

Title: The Network in Mesial Temporal Lobe Epilepsy

### **Overview**

This workshop will focus on three aspects of the network underlying mTLE. Imaging studies using high resolution MRI have shown extensive areas of cortical thinning in multiple lobes of the brain, white matter tract abnormalities, as well as structural changes in basal ganglia, thalamus, and brainstem. These anatomic derangements help define the substrate for the network of mTLE, to be discussed by Dr. Boris Bernhardt. Functional MR research has shown pathological networks associated with some of these anatomic findings, with enhanced connectivity between specific regions, subcortical - cortical and cortical - cortical interactions that are related to the clinical expression of temporal lobe seizures and outcome after surgery. For example, recent research has shown that thalamocortical and thalamobasal ganglia network interactions assessed with fMRI are associated with propensity for mesial temporal lobe seizures to generalize, which reflects recruitment of a wider network in the expression of seizures. This will be discussed by Dr. Caciagli. Lastly, electrophysiological techniques have also demonstrated enhanced connectivity between various cortical regions extending well beyond the mesial temporal lobe, which may relate to the propensity for seizure development, seizure spread, and response to treatment. This will be discussed by Dr. Julia Jacobs. The relevance of these mTLE networks will be critically discussed, with a view to developing new ideas for research and advancing therapeutics. Dr. Sperling will introduce the topic and moderate the discussion.

**2024**

**SIG | Tuberous Sclerosis Complex: Clinical Trials for Epilepsy TSC – Lessons Learned and Future Perspectives**

### **Overview**

Biomarkers that predict impending drug-resistant epilepsy in TSC have enabled randomized controlled trials with pre-symptomatic treatment. These trials are changing clinical practice but optimal timing and long-term epilepsy and neurodevelopmental outcomes are not yet known. Other trials have focused on adjunctive treatment. and with TSC-specific approval these medications potentially alter treatment protocols for established epilepsy. The large phenotypic heterogeneity in TSC calls for a more individualized approach with novel patient-centered trial design. This session brings together clinicians and trialists to share their expertise and experience through thought-provoking presentations and a debate, followed by an interactive discussion with the audience.

**2023**

## **SIG | Tuberous Sclerosis Complex (TSC): Epilepsy Surgery for Everyone with Tuberous Sclerosis Complex?**

### **Overview:**

Tuberous Sclerosis Complex (TSC) represents a model system for epilepsy surgery and one with increasing evidence to suggest that more patients are candidates. Despite this, epilepsy surgery remains an underutilized intervention in TSC. Complex epileptogenic networks, clarity on who is a candidate, and access to care are some of the barriers that prevent more patients from receiving and benefiting from surgical intervention.

This session brings together clinicians and families to share their expertise and experiences through presentations followed by time for interactive discussion with the audience.

Development. Please refer to [aesnet.org/AES2023-accredited](https://aesnet.org/AES2023-accredited) for a complete list of accredited sessions.

### **2022**

## **SIG | Tuberous Sclerosis: TSC Classification: clinical, physiologic, genetic, imaging prognostic features**

### **Overview**

Advances in the understanding of the biology of Tuberous Sclerosis Complex (TSC) have revealed variability in the phenotypic expression of this condition in our patients. Recent insights from clinical, physiologic, genetic and imaging discoveries will be described at this SIG, with the overall aim of developing a broad classification scheme in TSC that will inform more individualized treatment approaches. We will also include 3 authors from among the very highest-rated TSC abstracts, that are most related to this SIG topic, in a short and interactive format.

### **2021**

## **Special Interest Group: Tuberous Sclerosis**

Title: Tuberous Sclerosis Complex

### **Overview**

This SIG proposal will assess the role of EEG interictal epileptiform activity as a biomarker, the impact of interictal epileptiform activity on behavior and cognition, and the use of advanced analytical techniques, machine learning, and connectivity measures with interictal epileptiform activity.

### **2024**

## **SIG | Tumor-related Epilepsy: Dynamics at the Neuron-Glioma Interface**

### **Overview**

A moderated panel discusses the compelling evidence of bidirectional interactions between peritumoral neuronal activity and glioma growth. The group discusses novel pathways underlying glioma-related epilepsy and their clinical relevance in advancing targeted therapeutic opportunities to improve seizure control. This SIG brings together a multidisciplinary community of epileptologists, neuro-oncologists, neurosurgeons, and neuroscience researchers invested in the care of people with brain tumor-related epilepsy.

**2023**

### **SIG | Tumor-Related Epilepsy: Invasive Monitoring in Tumor Related Epilepsy: Why, When, and How**

#### **Overview**

A moderated panel will discuss the modalities used for invasive monitoring for different tumor types in new versus recurrent tumor operations. The group will discuss decision making with the use of different invasive monitoring modalities to address both tumor resection and epilepsy resection, including outcomes.

**2022**

### **SIG | Tumor Related Epilepsy: Establishing Standards of Care in Medical Management**

#### **Overview**

The goal of this SIG will be to review topics in the medical management of tumor-related epilepsy (TRE) along the disease timeline with a focus on evidence-based standards of care, whether they exist or need to be developed. This will be accomplished through a moderated panel of experts in the field and will cover topics such as the perioperative use of anti-seizure medications (ASMs), first-line medications, the role of neuropathology in TRE, standards of care for medical management in the neuro-oncology clinic, management of refractory TRE, and guidance on withdrawal of ASMs.

**2021**

### **Special Interest Group: Tumor-related Epilepsy**

Title: A Focus on Low Grade Gliomas

#### **Overview**

This SIG is dedicated to providing an update in the diagnosis and management of tumor-related epilepsy in the context of low grade gliomas. We will begin with a typical case of epilepsy associated with a low grade glioma, highlighting the role of imaging, challenges with antiseizure medication treatment, and some of the unanswered research questions in this population. The role of diagnostic imaging in low grade gliomas will be discussed. We will then discussed evidence based management for treatment in addition to how to identify and address side

effects from antiseizure medications. Finally, we will end with a presentation of upcoming drug trials in low grade gliomas.

**2024**

**SIG | Translational Research: Fast Forward to Epilepsy Therapies in 2027**

Friday, December 6, 6:00 - 7:30 PM (PST)

**Overview**

What will epilepsy treatment look like in 2027? This Translational Research SIG highlights a few of the pharmacological, cellular, gene-modifying, and stimulation therapies poised for Phase 1-3 clinical trials. Speakers explain the science behind select therapies, and the process of getting these treatments from bench to bedside. After presentations, the audience has an opportunity to engage the panel in a question and answer session. Clinicians and trainees are equipped to explain these next-generation therapies to their patients and non-specialist researchers will appreciate how complementary approaches will change the future of epilepsy treatment.

**2022**

**SIG | Translational Research: Commercializing academic research: An industry perspective**

**Overview**

The Proposed SIG will consist of 4x 15 minute presentations from members of biotech industry partnering with academic researchers in the development of new therapeutics (drugs, cellular/genomic therapies or devices) followed by a 30 minute panel discussion. The talks and discussion will address what industry is looking for in their partnerships with academia, the basics of regulatory issues, IP issues, business plans, targeted product profiles, and other tasks necessary for successful translation of research to therapeutics. The session will also highlight common challenges with collaborating with academic researchers from the industry perspective.

**2024**

**SIG | Women's Issues in Epilepsy: Folic Acid Dosage in Childbearing Age – A Healthy Debate**

Monday, December 9, 7:00 - 8:30 AM (PST)

**Overview**

The risk of neural-tube defect is reduced by folic acid supplementation around the time of conception. The US Preventive Services Task Force recommends a daily supplement of 0.4 to 0.8 mg of folic acid for women of childbearing age. In contrast, high-dose folic acid greater than 1 mg daily is hypothesized to increase risk for autism spectrum disorder and is associated with increased risk of cancer in children of mothers with epilepsy. This SIG brings on heated debate among epilepsy experts for evidence-based views of low-dose versus high-dose folate supplementation in women with epilepsy.

**2023**



## **SIG | Women's Issues in Epilepsy: Controversies in Caring for Women with Epilepsy**

### **Overview**

This session aims to discuss controversies in caring for women with epilepsy. We will present four cases addressing different controversial topics that arise when caring for women with epilepsy. An expert panel will have the opportunity to respond to each case with their opinion about how they would counsel the patient and/or manage the particular case. The audience will be encouraged to participate

**2022**

## **SIG | Women's Issues in Epilepsy: Aging, Menopause, and Bone Health in Women with Epilepsy**

### **Overview**

This SIG will review the current best evidence and expert advice for the care of women with epilepsy undergoing hormonal changes during menopause and their common comorbid issues with epilepsy. We have two invited speakers who will present on a topic of caring for women with epilepsy around menopause and review best practices for improving bone health, optimizing the choice of antiseizure drugs, and treating osteoporosis. Finally, our panel of experts will answer questions with participation from the audience.