

## **Surgical Therapies Commission**

Annual Report 2023

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### **HIGHLIGHTS**

We assessed the fellowship education in epilepsy and epilepsy surgery in Latin America, Africa, and Asia.

### **ACTIVITIES**

The goal of the Commission is to promote scientific inquiry, assessment of evidence, access, education, and safety in epilepsy surgery across the world. The Commission is comprised of core members and five task forces charged with advancing specific goals in the field of epilepsy surgery. In 2023, the five task forces have been pursuing several projects which are summarized below. In addition to several meetings of the individuals task forces, the Commission had an in-person and virtual meeting of all core members at the 35<sup>th</sup> International Epilepsy Congress in Dublin, Ireland.

#### **Epilepsy Surgery Education Task Force**

Neurosurgical Education Video Library: This project aims to provide educational videos for core surgical procedures with contributions obtained from widespread social and geographic distribution. The videos received from authors are transcribed and legends are added. Additionally, self-evaluation questions are embedded in the videos. There are 13 videos live on the ILAE website, and production is ongoing with a goal of 40 videos.

Epilepsy Surgery Education Questionnaire: This project aims to document how epilepsy surgery is taught and learned worldwide trying to define the gaps and opportunities among the different geographical and development status regions. It also aimed to evaluate how epilepsy surgery is practiced, how much of individual surgeons' careers are dedicated to it and how to increase engagement. The survey was distributed using SurveyMonkey. A manuscript summarizing the results has been submitted to the Publication Council; we are waiting their feedback.

Epilepsy Surgery Competencies for Neurologists: It was noted that the quite extensive ILAE curriculum did not include significant surgical competencies for neurologists. In its surgical competencies item, it does include competencies for preoperative and postoperative care. This proposal is meant to improve on that gap of knowledge. It was agreed upon with the Education Council that these competencies will be included in the epileptology curriculum that is going to undergo review in 2024. It was also agreed that epileptology competencies will be included in the neurosurgical curriculum being developed.

Epilepsy Surgery Core Curriculum: This project aims to develop a core curriculum for neurosurgeons dedicated to epilepsy surgery. It would guide to structure and evaluate future fellowship and educational programs for surgeons. It would also serve a backbone for future ILAE educational initiatives such as courses for surgeons. The knowledge curriculum was developed and is now being formatted together with the Education Council to fit the format of previous ILAE curriculums.

Local Educational Mentorship Program Feasibility: This project aims to explore the usefulness of local mentorship as opposed to traditional fellowships carried out in well-developed centers. Outside and local training have their value. On the other hand, there is a subset of centers that already have some capability in evaluating and treating patients surgically that might benefit from an intensive short duration visit from experts to boost their capability, maximizing their local resources. A very successful mentorship program was carried out in Asuncion, Paraguay, during which the first epilepsy surgery center in the country was opened. There are four other centers worldwide already prospected; these are waiting for the budget to be approved.

Neurosurgical Meetings' Representation: This project aims to evaluate how neurosurgical related issues are discussed worldwide in local, national, regional, and international meetings to ensure that the surgical treatment of epilepsy is adequately and conveniently represented in a way that more patients could benefit from this approach. We have seen an increase in surgical-related sessions in the regional and international meetings as well as participation of surgeons in their scientific organizing committees and hope this would translate in better surgical education for the general public. This is an on-going effort.

### **Epilepsy Surgery Evidence and Outcomes Task Force**

Standardized Outcomes Reporting: The goal of the project is to work towards improved outcomes reporting in epilepsy surgery. A systematic review of EQUATOR guidelines to assess the landscape of available reporting standards is being planned. Next steps include a complete narrative review on existing EQUATOR guidelines to then use these results to prepare a Delphi study of reporting outcomes which will be proposed to ILAE publication council.

Outcomes Beyond Seizure Freedom: The goal is to better define and report outcomes beyond seizure freedom in epilepsy surgery. The proposal was vetted and approved by the ILAE Publication Council. IRB approval for multi-site study on surgical satisfaction is complete. Multiple data sharing agreements have been completed, with Cleveland Clinic as the lead site. Data collection is now underway.

Neuromodulation Outcome Scale: As epilepsy surgery seizure outcome scales were not designed with neuromodulation in mind, the goal is to create an outcome scale that better reflects clinical results after neuromodulation treatments. Proposal of scale generation was vetted and approved by the ILAE Publication Council. IRB approval was obtained and focus groups were used to identify important aspects of neuromodulation outcomes at the patient and caregiver level, with one additional focus group planned for this year. Additionally, a systematic review of the literature

was conducted to identify outcomes of interest, along with a survey of expert opinion. After the final focus group is complete, these data will be synthesized to begin a Delphi process.

### **Pediatric Epilepsy Surgery Task Force**

Survey of International Practice in Pediatric Epilepsy Surgery: The goal of this project is to determine the frequency of epilepsy procedures and etiologies in pediatric epilepsy surgery in a calendar year by conducting an international survey, ensuring representation across all ILAE regions. We plan to update the highly-cited paper on this topic, [Defining the spectrum of international practice in pediatric epilepsy surgery patients](#), *Epilepsia* (2008). The objective is to identify crucial issues requiring attention in terms of healthcare and research. Our proposal has received approval from the ILAE publication council. We have established a dedicated web-based electronic data entry form and commenced a survey for the calendar year 2023, starting from the 10 epilepsy centers represented in our task force.

*Next steps*: We plan to 1) curate and analyzing this pilot dataset; 2) enhance the user interface of the electronic data entry form based on feedback from participants; 3) scale up the project by initially involving the epilepsy centers represented in the Surgical Therapies Commission before reaching out to all eligible centers globally; 4) analyze and publish the multicentric data. We have submitted applications for dedicated funding from Swiss foundations that support research in neuropediatrics to ensure the successful execution of our project.

Criteria for Referral and Evaluation of Children for Epilepsy Surgery: The goal of this project is to formulate a pediatric epilepsy surgery guideline that encompasses the referral and evaluation aspects, updating the highly-cited paper on this topic, [Proposed criteria for referral and evaluation of children for epilepsy surgery: recommendations of the Subcommittee for Pediatric Epilepsy Surgery](#), *Epilepsia* (2006). Alongside the global advances in epilepsy surgery, which encompass rising trends in SEEG and stimulation procedures, as well as the provision of surgery for non-drug-resistant lesional epilepsy, there has been notable growth in both the volume and complexity of pediatric epilepsy surgery. These developments warrant addressing in an updated guideline. We will avoid overlapping with the 2020 paper on “Establishing criteria for pediatric epilepsy surgery center levels of care” from the previous Pediatric Epilepsy Surgery Task Force and the 2021 paper on “Recommendations for the timing of epilepsy surgery evaluation” from the Surgical Therapies Commission. Our proposal has received approval from the ILAE Publication Council.

*Next Steps*: We planned to 1) perform a scoping review of the existing evidence; 2) employ a Delphi process for consensus-building; 3) formulate an updated pediatric epilepsy surgery guideline. However, it should be noted that, two members of the task force, Georgia Ramantani and Elaine Wirrell, concurrently been engaged in the development of epilepsy surgery guidelines for both children and adults through the collaborative efforts of EAN/EpiCare/EPNS. This collaborative involvement ensures a cross-pollination of insights and expertise, potentially enriching the content and applicability of our ILAE pediatric epilepsy surgery guideline.

Non-seizure Outcomes of Pediatric Epilepsy Surgery: We aim to develop assessment scores/questionnaires for the standardized evaluation of non-seizure outcomes, such as developmental, cognitive, behavioral, emotional, quality of life, and vocational outcomes, drawing from the existing knowledge and performing a rigorous Delphi process. We plan to perform scoping reviews for other non-seizure outcomes other than cognitive, where only limited data is available. Our ultimate goal is to provide recommendations on evaluating and reporting non-seizure outcomes.

In the meantime, we have investigated possible synergies with other task forces.

- Mary Lou Smith, Neuropsychology Task Force, Diagnostic Methods Commission, has shared preliminary material on the Pediatric Epilepsy Severity Scale, comprising questionnaires for parents and youth (ages 10+ or 12+). This tool is intended to be used for monitoring the progression of epilepsy and for evaluating treatment outcomes. These forms are yet to be piloted, but they could give a starting point for a simple scale to measure non-seizure surgery outcomes.
- Robyn Busch, Epilepsy Surgery Evidence and Outcomes Task Force, Surgical Therapies Commission, has shared published material on the Epilepsy Surgery Satisfaction Questionnaire (ESSQ-19), a recently developed and validated measure of patient satisfaction with epilepsy surgery. This questionnaire has been developed for adults but could give a starting point to develop a similar tool for pediatric epilepsy surgery.

*Next Steps:* We will review the available evidence on non-seizure outcomes. We will assess the existing questionnaires mentioned above as starting point to develop questionnaires for the standardized evaluation of non-seizure outcomes following epilepsy surgery.

Surgery in Non-drug-resistant Lesional Epilepsy: The goal of this project is to assess both seizure and non-seizure outcomes of surgery in pediatric patients with non-drug-resistant lesional epilepsy. The recent paper providing expert consensus recommendations by the ILAE, [Timing of referral to evaluate for epilepsy surgery: Expert Consensus Recommendations from the Surgical Therapies Commission of the International League Against Epilepsy](#), *Epilepsia* (2022) has expanded the possibilities of surgical intervention for patients with a lesion in non-eloquent cortex before meeting the criteria of pharmacoresistance. We aim to gather real-world data on this approach through the survey of international practice in pediatric epilepsy surgery, which will assess the global landscape of epilepsy procedures in pediatric epilepsy surgery in a calendar year.

*Next Steps:* We plan to collect multicentric data on the frequency of surgical procedures in pediatric non-drug-resistant lesional epilepsy through the survey of international practice in pediatric epilepsy surgery. Given that the survey of international practice in pediatric epilepsy surgery is focused on collecting information about the frequency of procedures and does not encompass outcome data, we will then reach out to epilepsy centers performing surgery for non-drug-resistant lesional epilepsy. We will acquire comprehensive data regarding both seizure and non-seizure outcomes for these patients. We will analyze and publish this multicentric data.

## Epilepsy Surgery Networks Task Force

iEEG Connectivity Analysis to Localize Epileptogenic Tissue: Systematic review and meta-analysis from ILAE Epilepsy Surgery Networks Taskforce: This project aims to quantify the added value of intracranial EEG (iEEG) connectivity analysis methods in identifying epileptic networks for pre-surgical planning in patients with focal drug-resistant epilepsy. The objective of this review is to investigate whether iEEG connectivity analyses offer additional data that can determine surgical outcomes more effectively.

### *Progress:*

Following the recommendation made during the ILAE meeting at the American Epilepsy Society Annual Meeting in 2022, we made several changes to narrow down the scope of the review. To ensure feasibility, the consensus opinion of the task force was to focus only on the intracranial EEG modality in this systematic review. Since then, we have made the following progress:

- Revision of study protocol including revised inclusion and exclusion criteria, control, data extraction and coding methods.
- Revised strategy for data synthesis.
- Registration of study protocol on PROSPERO 2023 CRD42023446587 (available from: [https://www.crd.york.ac.uk/prospero/display\\_record.php?ID=CRD42023446587](https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42023446587)).
- Article screening following the PRISMA guidelines using the Covidence systematic review management system. Each task force member assessed the eligibility of approx. 300 studies each and applied the pre-defined inclusion and exclusion criteria outlined in the registered protocol. To minimize bias each article was screened by two reviewers and conflicts were adjudicated by a third reviewer.

*Next steps:* The remaining steps in this project include 1) data extraction, which is currently ongoing; 2) risk of bias assessment; 3) meta-analysis using the xmeta R package; 4) write-up and dissemination. Our task force anticipates presenting our findings on this project at the 15th European Epilepsy Congress in September 2024.

## Epilepsy Surgery in Low Resource Settings Task Force

### Epilepsy Surgery in Low-Resource Settings

Even though it is known that 30-40% of patients with epilepsy will become refractory to treatment with anti-seizure medications, the number may be higher in low-income areas. In a recent presentation at the American Epilepsy Society Meeting, Diaz-Alva et al, presented the results of a systematic review that found that the percentage of those affected by refractory epilepsy in Latin America, may be as high as 61%.

To improve care for those patients, the task force felt that it would be important to survey the number of specialized epilepsy training programs, namely fellowships in epilepsy and epilepsy surgery. This knowledge would allow us to improve education and identify potential barriers of care. During 2023, we surveyed the region of Latin America, Asia and Africa. Questionnaires were

sent to all Presidents of the different ILAE chapters. In order to improve response rate, the surveys were sent four times in different occasions.

The survey contained the following questions:

1. Information on the responder
2. Country
3. Number of EEG and epilepsy fellowships, as well as epilepsy surgery fellowships in the country, location, and number of fellows per year

We found that there are limited numbers of specialized training programs (fellowships) in resource-limited areas. The existent ones are in centers where epilepsy surgery is performed on a routine basis.

Results from the assessment of epilepsy fellowship education in Latin America and Africa:

- Latin America
  - Epilepsy fellowships: two in Mexico, two in Colombia, 17 in Brazil, nine in Argentina, six in Chile; most countries without fellowships
  - Epilepsy surgery fellowships: five in Brazil, one in Argentina
- Africa
  - Only one epilepsy fellowship in South Africa
  - No epilepsy surgery fellowships
- Asia: information was inconclusive

It would be important to create partnerships with centers interested in the creation of specialized training programs, like the former program called: Partnership in The Americas, run by ILAE-North America. Finally, we strongly feel that there is a need to create minimal standards for fellowship training.

## MEETINGS

The Surgical Therapies Commission met three times virtually and once at the 35<sup>th</sup> International Epilepsy Congress in Dublin, Ireland.

*Report submitted by Jorge G Burneo*