Surgical Therapies Commission

Lara Jehi

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Lara Jehi (USA)

Core Commission Attendees
Guoming Luan (China)
Karl Rössler (Germany)
Bertil Rydenhaag (Sweden)

Management Committee Liaison
Sam Wiebe (Canada)

Taskforce Chairs and Commission Members

Epilepsy Surgery Developing World
Mario Alonso (Mexico), Chair
Jorge Burneo (Canada)
Sarat Chandra (India)
Katia Lin (Brazil)
Guoming Luan (China)
Andrew McEvoy (UK)
Jo Wilmshurst (South Africa)
Farrah Mateen (USA)

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Fernando Cendes (Brazil)
Rei Enatsu (Japan)
Stefano Francione (Italy)
Enrico Ghizoni (Brazil)
Moosa Naduvil (USA)
Cigdem Özkara (Turkey)
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Epilepsy Surgery Outcomes
Lara Jehi (USA), Chair
Fabrice Bartolomei (France)
Robyn Busch (USA)
Mark Keezer (Canada)
Guoming Luan (China)
Kristina Malmgren (Sweden)
Americo Sakamoto (Brazil)
Laura Tassi (Italy)
Jose Tellez-Zenteno (Canada)

Evidence-based Practice of Epilepsy Surgery
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Kees Braun (Netherlands)
Ed Faught (USA)
Dan Friedman (USA)
Nathalie Jette (USA)
John Rolston (USA)
Felix Rosenow (Germany)
Michael Sperling (USA)
Sumeet Vadera (USA)
Satsuki Watanabe (Canada)
Lily Wong-Kiesel (USA)

Pediatric Epilepsy Surgery
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William Gaillard (USA), Past-chair
Thomas Czech (Austria)
Bertrand Devaux (France)
Martha Feucht (Austria)
Wirgina Maixner (Australia)
Andre Palmini (Brazil)
Karl Rössler (Germany)
Bertil Rydenhag (Sweden)
Howard Weiner (USA)
Natrujee Wiwattanadittakun (Thailand)

Working Group Meeting: AES meeting, Baltimore, December 7, 2019

Opening remarks: high-level highlights of progress made since last year. Mission of the commission was re-emphasized: to advance the surgical care of patients with drug-resistant epilepsy.

Discussions throughout the day covered the different projects now underway:

1. **Memory Assessment Clinics Self-Rating Scale (MAC-S) validation study in adult epilepsy.** Presentation by Robyn Busch.
   a. ***Rationale***: Existing memory assessment tools

through formal neuropsychological testing are time consuming and do not always correlate with a patient's subjective assessment of function (before or after epilepsy surgery). A patient-reported outcome measure evaluating memory function can be a very useful tool for clinical care and for research.

b. ***Goal***: Develop and validate an abbreviated measure of MAC-S (measure of subjective assessment of memory function) for epilepsy to improve feasibility of future research.
c. ***Data***: CCF using MAC-S clinically since 1989 (1,333 patients).
d. ***Aims***: Examine structure of MAC-S in epilepsy using a large sample and up-to-date psychometric evaluation techniques. Identify an abbreviated measure to improve feasibility of future research. Externally validate at US partner sites. Translate and validate measure at international partner sites. Conduct a large-scale, international study using shortened version along with ESSQ in patients who have undergone epilepsy surgery.
e. ***Progress***:
    i. Study sites identified so far: Cleveland Clinic (Busch, Jehi); New York University (Friedman, Barr); Northwestern University (Schuele, Sieg); Istanbul University (Yagci, Ozkara); University Federal de Santa Catarina (Lin); Sahlgrenska University Hospital (Malmgren).
    ii. English abbreviated version is already developed from Cleveland Clinic patients (N=1,333). Measure was shortened from 49 items down to 23.
f. ***Next steps proposed by study team***:
    i. Publish internal validation data in a neuropsychology journal.
    ii. US sites to start administering MAC-S with epilepsy surgery neuropsychological evaluations for external validation project.
    iii. Northwestern – DUA executed and IRB approved.
    iv. NYU – DUA drafted; CCF edits under review by NYU.
    v. MAC-S and neuropsychological data entered into REDCap database hosted by CCF.
    vi. Analyze and publish external validation data.
    vii. Translate validated measure into Turkish, Portuguese, Swedish, etc.
    viii. Validation studies in other languages/ countries.
    ix. Large scale international study administering MAC-S and ESSQ.
g. ***Additional next steps proposed by Commission during meeting:***
    i. Translate also to French and German.
    ii. Explore alternative statistical methods for factor analysis and shortening of scale to its critical components (proposed by Mark Keezer)
    iii. Several commission members expressed interest in joining this project at the external validation stage, including Americo Sakamoto and Bertrand Devaux.

2. **Addressing the epilepsy surgery treatment gap**:
    a. New project idea presented by Americo Sakamoto.
    b. ***Rationale***: despite clear superiority data, epilepsy surgery continues to be underutilized. A better understanding of this underutilization is needed.
    c. No clear study design exists at this point. The discussion is early, geared mainly towards judging interest of the group.
    d. The group discussed at length that the problem is multifaceted and complex. However, it is an important issue that clearly falls within the mission of the Commission. Group expressed interest to pursue.
    e. ***Next steps***:
        i. Define the goal of the project:
            1. Obtain data to objectively quantify the

surgery treatment gap? (This would require a rigorous survey design and support lobbying for resources to reduce treatment gap).

2. Discuss strategies to reduce treatment gap? (One potential approach may be to publish a white paper with proposals/examples of success in addressing various bottlenecks of care. Examples may be the Ontario Comprehensive Epilepsy Care program (mentioned by Mark Keezer) in health policy framework; direct to patient education (Dario Englot) in fee-for-service consumer-driven health markets like the US and in other referral base driven programs in Europe (Bertil Rydenhaag); reimbursement driven patterns of care (VNS utilization change with change in CMS reimbursement in the US); Centers of Excellence approach (e.g.: UK experience); etc.).
3. Develop a stepwise plan for the project and define team members.
4. Americo Sakamoto will follow up with Lara Jehi in two months with progress.

3. **Survey about current practices regarding epilepsy surgery outcomes captured in clinical practice** (Presented by Jose Tellez):
   a. ***Rationale***: a comprehensive assessment of the current outcome practice assessment practices will be helpful to define existing infrastructure for measuring variation in care and treatment outcomes internationally, to ultimately help drive resources and support to programs.
   b. The ***objectives*** for the overall project are:
      i. To identify the outcomes ascertained in epilepsy centers after epilepsy surgery.
      ii. To identify the methods used to ascertain these outcomes after epilepsy surgery.
   c. ***Survey design*** and content was discussed. Meeting members emphasized need for a succinct survey to optimize completion.
   d. Target ***survey recipients***: major epilepsy surgery programs (project team will coordinate with L. Jehi, who will share a recently compiled such list, Bertil Rydenhag, who will connect with E-Pilepsy team, and Guoming Luan, who can provide a list of 15 centers in China).
   e. ***Suggestions*** from meeting attendees:
      i. Shorten survey. Target completion time should be ten minutes or less.
      ii. Validate survey with commission members.
      iii. Include pediatric and adult programs.
      iv. Ask about when did programs start collecting outcomes systematically.
      v. Clarify breadth and depth of outcome collection (seizure outcomes only or also include cognitive, psychiatric, etc.? Routine inclusion in templated clinic notes? Systematic cataloguing into a database? Regular analysis for clinical care? Research only?).
      vi. Include educational and vocational outcomes.
   f. Current ***team members***: Jose Tellez, Nathalie Jette. Team members added in meeting: Mark Keezer and Martha Feucht.
   g. ***Next steps***: revise survey and circulate to commission leadership for input.

4. **Neurostimulation in Drug-Resistant Epilepsy systematic review** (Dario Englot and Mark Keezer):
   a. ***Objective***: provide practical and accessible guidance on the use of three available neuromodulation options (RNS, VNS, DBS).
   b. ***Method***: systematic review to include RCT and observational large studies.
   c. Team reviewed progress so far:
      i. Systematic review: close to completion
      ii. Develop professional consensus (using Delphi method): planned as next step.

d. Suggestions during meeting:
   i. Mike Sperling: compare outcomes and complications between RCTs/post-marketing studies done under FDA regulation vs open-label observational series with no oversight; compare quality across studies and assess for biases in reporting.
   ii. Several members: highlight value in developing consensus over areas where new data are needed. Opportunity for collaboration with other societies e.g., AAN, NAEC.

5. **Pediatric epilepsy surgery outcome scale development** (Helen Cross and Andre Palmini):
   a. Group reviewed discussions on this topic from the Pediatric Epilepsy Surgery taskforce led by Dr. Cross.
   b. ***Rationale***: Surgical Therapies Commission recognizes the limitation of existing outcome assessment scales exclusively focused on seizure burden in capturing full scope of benefits of epilepsy surgery, particularly in pediatric (and adult) patient population with catastrophic or multifocal epilepsy. A scale that evaluates burden or severity of epilepsy beyond seizures (to potentially also include functional measures, comorbidities, medication side effects, QOL, etc.) is needed.
   c. Existing efforts to develop a scale with these goals (measure seizures AND function) were discussed, particularly by the Porto Allegre team, led by Andre Palmini, to illustrate and emphasize the importance of this initiative.
   d. Consensus on need for such a scale was evident and reaffirmed.
   e. Scope of such a scale was discussed. Multiple members of the commission highlighted that an epilepsy burden scale that is usable throughout the patient treatment trajectory (medical through surgical) can help in providing continuity of disease assessment. However, the team ultimately decided to restrict the scale development to epilepsy surgery at this point (since it is being developed under the umbrella of the Surgical therapies Commission and Pediatric Epilepsy Surgery Task Force) but liaise with other ILAE bodies that may be interested or engaged already in similar efforts for medical epilepsy treatment.
   f. ***Next steps***: Working group to include members from Pediatric Surgery Task Force and Surgical Commission will be developed to pursue this project further.

6. **Survey of training resources for trainees from resource poor countries** (Jorge Burneo):
   a. ***Rationale***: one component of a larger strategy to increase access to epilepsy surgery in resource-poor countries is to build a dedicated specialized workforce. A starting point is to survey what is available.
   b. Jorge Burneo reviewed results of his outreach so far.
   c. Team discussed path forward and had several suggestions:
      i. Expand definition of epilepsy training beyond formal clinical fellowship to also include one-year (or longer) clinical research epilepsy fellowships, and neurology residency training with a dedicated focus on epilepsy (to be better defined by Jo Wilmhurst).
      ii. Expand data collected to also include source of funding, eligibility requirements, duration of programs, and other variables.
   d. ***Next steps***:
      i. Jorge Burneo is to develop a survey draft and circulate to the commission leadership and members of the Taskforce for Resource Poor Countries for feedback.
      ii. He will obtain a list of survey recipients from Lara Jehi (may use list developed for Project 3 once finalized).

7. **Comparative Effectiveness of SEEG and SDE study** (Lara Jehi):
   a. ***Rationale***: in absence of RCT, the community needs a rigorous comparative effectiveness study comparing outcomes and complications across the two main invasive EEG modalities currently in use.
   b. Team development was reviewed (currently ten epilepsy surgery programs, seven countries, three continents).
   c. Data collection progress was reviewed (data available for analysis on 1,217 patients now; expected to expand to 2,554 patients once data collection is completed in NYU and DUA finalized with Utrecht).
   d. Discussion centered on prioritizing research questions. Team decided to start with localization yield/subsequent resection, seizure outcomes, and complications (although the complications will not be available on everyone).
   e. Subsequent more detailed analyses were proposed. Examples included comparative effectiveness re: precision outcomes (successful functional mapping, successful targeting of lesions of interest); healthcare delivery outcomes (cost), and others. These would require additional data collection such as more detailed surgical characterization (frameless vs frame; robot vs no robot, etc.). Team felt that these sub-analyses should be performed on subgroups, rather than requiring additional data collection on all 2,554 patients.
   f. Several commission members expressed interest in joining the project, which was encouraged as several additional research questions will be asked of this large dataset.
   g. ***Next steps***:
      i. Complete data collection.
      ii. Arrangement with statistician to start primary analysis on January 15.
      iii. Sites interested in participating will contact Lara Jehi to start the process (DUA and data collection).

8. Subsequent to individual project presentations, core commission members and task force chairs met to assess the overall progress within the Commission. Impression was that of constructive progress. Opportunities for additional projects were identified, including one for "direct to patient education" efforts to raise awareness on epilepsy surgery (these may leverage existing efforts of other organizations and require building partnerships with EFA, EPICARE, and others) (Stephan Scheule and Dario Englot). Another idea was consideration for an Epilepsy Surgery Consortium that can coordinate and leverage participation of commission sites and partners for comparative effectiveness epilepsy research, and other large-scale projects such as those currently underway within the commission, and others that may address emerging therapies. These exploratory ideas will be brought for discussion with the larger commission group and with the ILAE leadership as they continue to evolve.

Report by Lara Jehi