

Diagnostic Methods Commission

Annual Report 2023

MEMBERS

Sallie Baxendale (UK), chair
Sarah Wilson (Australia)
Roberto Caraballo (Argentina)

Paolo Federico (Canada)
Eva Fung (Hong Kong)

Neuroimaging Task Force

Anna Elisabetta Vaudano (Italy), chair
John Archer (Australia)
Boris Bernhardt (Canada)
Lorenzo Caciagli (USA)
Fernando Cendes (Brazil)
Yotin Chinvarun (Thailand)
Luis Concha (Mexico)
Paolo Federico (Canada)

William Gaillard (USA)
Eliane Kobayashi (Canada)
Godwin Ogbole (Nigeria)
Stefan Rampp (Germany)
Irene Wang (USA)
Shuang Wang (China)
Gavin Winston (Canada)

Neuropathology (LEAT) Task Force

Ingmar Blumcke (Germany), co-chair
Imad Najm (USA), co-chair
Armin Nikpour (Australia)
Eleonora Aronica (Netherlands)
Fernando Cendes (Brazil)

Caterina Giannini (USA)
Hajime Miyata (Japan)
Patricia Okiro (Kenya)
Laura Tassi (Italy)

Neuropsychology Task Force

Mary Lou Smith (Canada), chair
Gus Baker (UK)
Sallie Baxendale (UK)
Aimee Dollman (South Africa)
Mayu Fujikawa (Japan)
Bruce Hermann (USA)

Vicki Ives-Deliperi (South Africa)
Carrie McDonald (USA)
Genevieve Rayner (Australia)
Urvashi Shah (India)
Sarah Wilson (Australia)

Neurophysiology (EEG) Task Force

Stefan Rampp (Germany), chair
Sandor Beniczky (Denmark)
Firas Fahoum (Israel)
Daniel Gams Massi (Cameroon)
Louis Maillard (France)
Jayanti Mani (India)
Luis Carlos Mayor-Romero (Colombia)
Nobukazu Nakasato (Japan)
Fabio Nascimento (USA)

Margitta Seeck (Switzerland)
William Tatum (USA)
Manjari Tripathi (India)
Kollencheri Vinayan (India)
Hela Zouari (Tunisia)

HIGHLIGHTS

- **Neurophysiology Task Force:** In 2023, two projects reached the important milestone of manuscript preparation: “Clinical practice guidelines and recommendations for minimum standards for electrical source imaging” and “Systematic review and clinical practice guidelines on EEG in patients with a first seizure”. Both manuscripts are now under discussion in separate working groups and are expected to be completed in 2024.
- **Neuropsychology Task Force:** The International Classification of Cognitive Disorders in Epilepsy (IC CODE) team has produced numerous papers, and the classification is now being explored in non-English speaking populations.
- **Neuropathology Task Force:** The joined venture with the EpiCare European Reference Network (ERN) histopathology working group has resulted in the development of a roadmap for international terminology use in LEAT, integration of genotype-phenotype associations and grading schemes.

MEETINGS

The full commission held one face-to-face meeting in Dublin, Ireland during the 35th International Epilepsy Congress (IEC 2023) in September 2023. The individual task forces also met regularly.

ACTIVITIES

The Task Force members were involved in teaching, specialist training, the ILAE Academy schools, webinars, the production of systematic literature reviews and the development of new classification systems. They were extremely active as individual Task Forces and meet regularly.

Neuroimaging Task Force

Educational Activities:

- Conception and Organization of “Full-day Neuroimaging Course: What the Clinician Should know”. This teaching activity is on its 5th edition.
- Completion of the second edition of the Neuroimaging VIREPA course. The course started on 11 November 2022 and ended on 16 April 2023. This year the course was extended to 30 participants. The course obtains 38 credits.
- The third edition of the Neuroimaging VIREPA course is in progress. The course started on 10 November 2023 and will end on 22 April 2024. A total number of 24 students are attending. The course obtains 38 credits.
- The *Neuroimaging case report series* project is in progress. The following works have been produced in 2023:
 - [Neurocysticercosis and epilepsy: Imaging and clinical characteristics](#), *Epileptic Disorders* (2023)
Ildefonso Rodríguez-Leyva, Karla Cantú-Flores, Arturo Domínguez-Frausto , Anna Elisabetta Vaudano, John Archer, Boris Bernhard, Lorenzo Caciagli , Fernando Cende, Yotin Chinvarun , Paolo Federico, William D Gaillard, Eliane Kobayashi, Godwin Ogbole, Stefan Rampp, Irene Wang, Shuang Wang, Luis Concha

- [ILAE neuroimaging task force highlight: Subcortical laminar heterotopia, *Epileptic Disorders* \(2024\)](#)
Burkhard S. Kasper, John Archer, Boris C. Bernhardt, Lorenzo Caciagli, Fernando Cendes, Yotín Chinvarun, Luis Concha, Paolo Federico, William Gaillard, Eliane Kobayashi, Godwin Ogbole, Anna Elisabetta Vaudano, Irene Wang, Shuang Wang, Gavin Winston, Stefan Rapp

Research Activities:

Two research projects started in 2022 are still ongoing.

1. “The when’s and why’s of functional MRI in focal epilepsy: A systematic review and meta-analysis”- A research project aiming to critically appraise the extant literature on functional MRI (fMRI) in focal epilepsy by addressing, the when’s, what’s, why’s of an fMRI study throughout a systematic literature review and meta-analysis.
Leads: Lorenzo Caciagli, Boris Bernhardt, Anna E Vaudano
 - a. Project status:
 - i. The panel of experts has been constituted. It is composed by ten people from the NITF.
 - ii. Project outline has been approved by the expert panel.
 - iii. The project protocol has been registered as a review on PROSPERO (<https://www.crd.york.ac.uk/prospéro/>) in September 2023 [referral number 465097].
 - iv. The search strategy has been completed.
 - b. Next steps:
 - i. Starting abstract revision using Covidence (we are waiting for license for a Covidence account, request formally asked to ILAE on 2 February 2024).
 - ii. Proposed end of this project: March 2025
2. “MRI essentials in infants with epilepsy: Consensus Review and Recommendations”- A research project aiming to produce a consensus protocol for imaging in infants and to discuss its practical applications for the investigation of (1) children presenting with a first seizure; and (2) with newly-diagnosed epilepsy.
Leads: Anna E Vaudano, Gavin Winston, William Gaillard
 - a. Project status:
 - i. The project outline has been sent to the Standards and Best Practice Council for approval (1 June 2022).
 - ii. The panel of experts has been constituted (July 2022).
 - iii. First search strategy ended with 1271 items from two sources: The National Library of Medicine’s MEDLINE and Embase.
 - iv. Abstract revision ended with 153 papers (September 2023)
 - v. Full text revision ended with 26 papers (December 2023)
 - b. Next Steps:
 - i. Extraction of important information is going to start shortly: Template for data extraction and quality check of evidence has been completed and shared
 - ii. Start second search strategy on advanced imaging (DTI, ASL, MRS) in infants with epilepsy
 - iii. Proposed end of this project: December 2024

Achievements:

- Successful completion of the VIREPA Neuroimaging course, second edition 2022-2023
- Producing of two educational neuroimaging case report series
- Successful completion full-day Neuroimaging Course at the IEC 2023 in Dublin, Ireland

Neuropathology (LEAT) Task Force

The joined venture with the EpiCare European Reference Network (ERN) histopathology working group chaired by Dra. Angelika Mühlebner (see previous report) proved most helpful to develop a roadmap for international terminology use in LEAT, integration of genotype-phenotype associations and grading schemes.

In 2023, we had eight interactive Zoom meetings of the joined LEAT ILAE and ERN Task Force on 9 January, 16 March, 27 March, 25 May, 6 July 19 October, 16 November and 21 December 2023, as well as an in-person meeting in Berlin, Germany during the International Congress of Neuropathology on 14 September 2023.

Based on our meeting in Berlin and further discussion afterwards, it was planned to draft a first manuscript provisionally entitled “A practical approach for the clinical management of epilepsy-associated congenital brain tumors”, to be published by any of the three ILAE journals upon approval by the Publication Council. This white paper will delineate a use-case scenario for the clinical management of people with a congenital (low-grade), epileptogenic brain tumor illustrating the perspectives of epileptologists/neurologists, neurosurgeons, neuroradiologists, neuropathologists and geneticists.

Activities:

- Monthly postsurgical case discussion series: The LEAT Task Force has engaged in the monthly postsurgical case discussion series of the EpiCare European Reference Network (ERN) which met online every second Thursday per month (13.00h CET) to review and discuss histopathology diagnosis and to enable the attendance beyond European countries.
- In person meeting during the Cleveland Clinic International Epilepsy Summit, 11-15 September 2023
 - We have the possibility to organize a half-day in person meeting during the Cleveland Clinic International Epilepsy Summit in September 2024.
 - It is planned to review and discuss the draft manuscript with all attending Task Force members.
- In person meeting during the 14th ILAE School for Neuropathology and Epilepsy surgery, 19-22 September 2023
 - We also have the possibility to organize a half-day in person meeting during the ILAE school in September 2024 after the Cleveland Summit.
 - It is planned to review and discuss the draft manuscript with all attending Task Force members.

ILAE Neuropsychology Task Force

The Neuropsychology Task Force held two meetings in 2023, one virtual and one hybrid, the latter in Dublin, Ireland, at IEC 2023.

The Task Force members are collaborating on writing a paper on diagnostic challenges in neuropsychological assessment in epilepsy.

Presentations:

- Update on Task Force initiatives presented in a webinar to the International Neuropsychological Society Epilepsy Special Interest Group, 4 August 2023
- Organized and presented a plenary session at IEC 2023 in Dublin on *Newly diagnosed epilepsy: identification and intervention of neuropsychological sequelae*

Projects:

1. "What I wish I had known" - Identifying gaps in service provision for newly diagnosed patients
Lead: Gus Baker; in collaboration with the IBE and the ILAE Psychoeducation Task Force
 - a. Completed systematic reviews of the impact of newly diagnosed epilepsy from a psychological and neuropsychological perspective; a manuscript is in progress
 - b. Design of a questionnaire underway for completion by people with epilepsy and healthcare professionals in relation to newly diagnosed epilepsy
 - c. Planning to produce short reports on the difference strands of activity
2. "Epilepsy Futures: Technological innovations" – Uses in and influences on neuropsychological assessment
Lead: Genevieve Rayner
 - a. Epilepsy neuropsychologist professionals survey finalised
 - b. Ethics for survey submitted at the chair's host institute, The University of Melbourne
 - c. Planned data collection to begin as soon as ethics approval is received
3. "International Classification of Cognitive Disorders in Epilepsy (IC-CoDE)" - The IC-CoDE group has been active with publications and presentations of their work which are listed below. These efforts have generated interest as reflected in editorials including three in *Epilepsy Currents* and one in a general neurology periodical. In addition, several additional IC-CoDE based projects are underway.
Leads: Carrie McDonald and Bruce Hermann
 - a. Papers
 - i. [Development and application of the International Classification of Cognitive Disorders in Epilepsy \(IC-CoDE\): Initial results from a multi-center study of adults with temporal lobe epilepsy](#), *Neuropsychology* (2023)
Carrie R. McDonald, Robyn M. Busch, Anny Reyes, Kayela Arrotta, William Barr, Cady Block, Erik Hessen, David W. Loring, Daniel L. Drane, Marla J. Hamberger, Sarah J. Wilson, Sallie Baxendale, Bruce P. Hermann
 - ii. [Establishing the cross-cultural applicability of a harmonized approach to cognitive diagnostics in epilepsy: Initial results of the International Classification of Cognitive Disorders in Epilepsy in a Spanish-speaking sample](#), *Epilepsia* (2023)

- Anny Reyes, Lilian Salinas, Bruce P. Hermann, Sallie Baxendale, Robyn M. Busch, William B. Barr, Carrie R. McDonald
- iii. [Association of Neighborhood Deprivation With Cognitive and Mood Outcomes in Adults With Pharmacoresistant Temporal Lobe Epilepsy](#), *Neurology* (2023)
Robyn M. Busch, Jarrod E. Dalton, Lara Jehi, Lisa Ferguson, Nikolas I. Krieger, Aaron F. Struck, Bruce P. Hermann
 - iv. [The relationship between mood and anxiety and cognitive phenotypes in adults with pharmacoresistant temporal lobe epilepsy](#), *Epilepsia* (2023)
Nolan Bingaman, Lisa Ferguson, Nicolas Thompson, Anny Reyes, Carrie R. McDonald, Bruce P. Hermann, Kayela Arrotta, Robyn M. Busch
- b. Editorials
- i. [Breaking the CoDE of Cognitive Disorders in Epilepsy](#), *Epilepsy Currents* (2023)
Peter Widdess-Walsh
 - ii. [Update in Progress: Cognitive Phenotypes in Temporal Lobe Epilepsy](#), *Epilepsy Currents* (2023)
Rani A. Sarkis
 - iii. [Hiding in Plain Sight-Neighborhood versus individual determinants of psychological outcomes in patients with epilepsy](#), *Epilepsy Currents* (2024)
Samuel W. Terman
 - iv. [Depression Tied to Worse Cognitive Phenotype in Epilepsy](#), *Physician's Weekly* (2024)
Robyn M. Busch
- c. Conferences (paper or workshop presentations): American Epilepsy Society, International Neuropsychological Society, Philippines Epilepsy Society, Canadian League Against Epilepsy, Podcast for the journal *Neuropsychology*
4. "Consensus Statement on reporting the impact of epilepsy treatments on neuropsychological function"
Lead: Sallie Baxendale; in collaboration with the ILAE Guidelines Commission

Neurophysiology (EEG) Task Force

The EEG Task Force had one virtual meeting on 27 February 2023 and one hybrid meeting during IEC 2023 in Dublin.

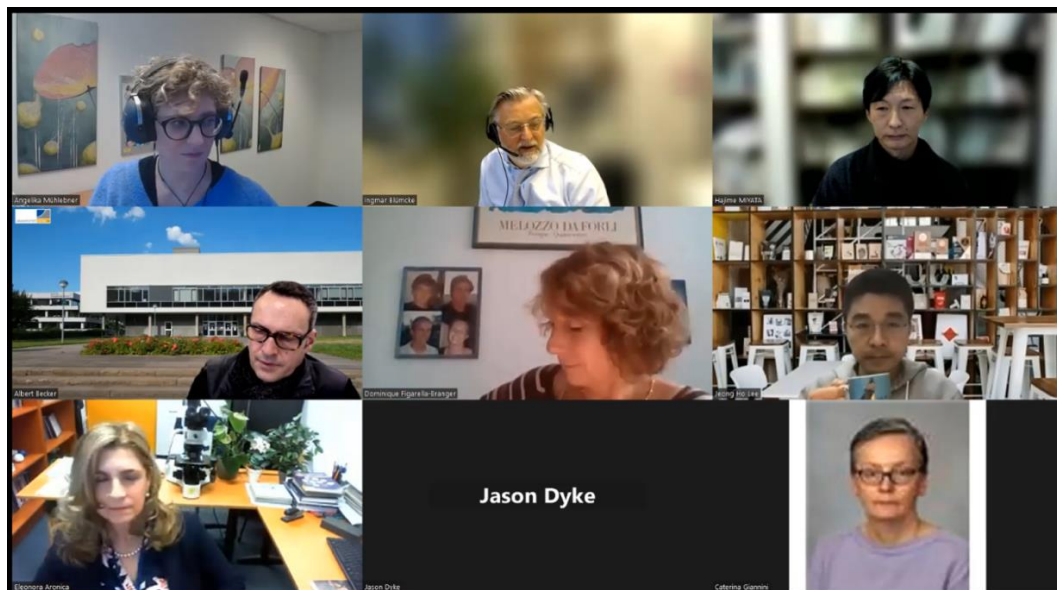
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The Task Force is also involved in other ongoing projects initiated and coordinated outside the EEG Task Force providing input from an epileptology and ILAE perspective: "Extension of the DICOM standard to cover EEG" by DICOM Working Group 32 and "A web-based EEG Database using SCORE", a joint ILAE-IFCN effort.

Three new projects have been planned and discussed. A first project, led by William Tatum and Sándor Beniczky, aims to prepare a systematic review of the current evidence on the use and value of ambulatory EEG. A project proposal has been submitted to the Standards and Best Practices Council and is under review. A further initiative, suggested by J Helen Cross and led by William Tatum, Sándor Beniczky, and Stefan Rampp plans to summarize and evaluate EEG indications in epilepsy. A proposal has also been submitted. Finally, a research project is currently being prepared to investigate the spatial localization accuracy of conventional EEG interpretation, additional voltage maps and source imaging. To this end, a web-based viewer has been implemented to support doing the study.

ACCOMPLISHMENTS

All Task Forces are mid-way through their major projects and are making excellent progress. Many manuscripts are now in the drafting stage and publication is expected next year.



LEAT Task Force kick-off meeting on 9 January 2023

From upper left: Dr. Angelika Mühlebner, Dr. Ingmar Blümcke, Dr. Hajime Miyata, Dr. Albert Becker, Dr. Dominique Figarella-Branger, Dr. Jeung Ho Lee, Dr. Eleonora Aronica, Dr. Jason Dyke, Dr. Catherina Giannini



EEG Task Force meeting in February 2023

From upper left: Manjari Tripathi, Nobukazu Nakasato, Margitta Seeck, Fabio Nascimento, Stefan Rampp, Firas Fahoum, Jayanti Mani, Hela Zouari



Social dinner at the “Ständige Vertretung” in Berlin, Germany, on 14 September 2023

From back left: Dr. Jason Huse, Dr. Hajime Miyata, Dr. Eleonora Aronica, Dr. Ingmar Blümcke, Dr. Lucas Hoffmann, Dr. Dominique Figarella-Branger, Dr. Jason Chang; From front left: Dr. Jesus Cienfuegos, Dr. Erica Cecchini, Dr. Angelika Mühlebner

Report Submitted by Sallie Baxendale