European
Reference
Network
for rare or low prevalence
complex diseases

EpiCARE

European Reference Network for Rare and Complex Epilepsies

BOOKLET

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What you always wanted to know

The European Reference Network (ERN) EpiCARE is one of the 24 ERNs, funded, by the European Commission. In 2024, 1.619 expert medical teams working in 382 hospitals located in all European Union Member States plus Norway, are accredited as Centres of Expertise by their respective health authorities and the European Commission. They bring together experts from different disciplines and specialities. Their role, as networks, is to support all possible interactions between the medical teams, in each area of disease, and to facilitate collaboration with patent advocates at all levels (knowledge generation; fostering research; producing guidelines and clinical recommendations; support the development of national networks of expertise; ...).

In the seven years since its launch in 2017, the **ERN for Rare and Complex Epilepsies, EpiCARE**, has developed strong collaborations between epilepsy specialist departments: 50 accredited members, representing nearly 60 medical teams in 24/27 EU countries and Norway; other collaborating medical teams and individual experts within the European region, such as the UK, Switzerland, Ireland, Greece, Bulgaria, and others. The medical teams with expertise in epilepsy care are multidisciplinary, composed of adult and child neurologists, working in close collaboration with other specialities: neuroradiologists, neurophysiologists, geneticists, neuropsychologists, neuropathologists, neurosurgeons etc. as well as dieticians, epilepsy nurses and EEG technicians.

The main challenge when developing a trans-boarder EU health care network for rare and complex epilepsies derive from the nature of the area of disease

Indeed, the epilepsies are considered a “spectrum disorder” because of the different causes, different seizure types (symptoms), its ability to vary in severity and impact from person to person, and its range of coexisting conditions. There are also, many different types of epilepsy, resulting from a variety of causes. However, **all types of epilepsies initially manifest themselves with epileptic seizures**, a common symptom not always allowing an easy recognition of a potentially rare or complex epilepsy-disease. This is a significant specificity of ERN EpiCARE when compared to other ERNs. EpiCARE is dealing with more than 160 rare forms of epilepsy, a number steadily augmenting as new forms of genetic epilepsies are identified every year.

Added to these rare epilepsies are the highly complex cases of focal epilepsies that could benefit from a surgical treatment. This treatment option can be proposed to patients concerned only after a long presurgical evaluation, a process assessing eligibility to a surgical treatment, an evaluation that can only be performed by multidisciplinary medical and surgical hospital-based teams.

The above-mentioned specificities are reflected in **the structure of EpiCARE**. Compared to other ERNs, EpiCARE could not be structured per individual or grouped rare or complex diseases.

Consequently, a structure of not less than 10 Work Groups (WG), **defined by fields of expertise**, deals with standard and best practices in epilepsy care. Systematic interaction between those WGs ensures a multidisciplinary approach. The comprehensive actions provided by experts involved in the "*standard and best practices*" WGs are in parallel shared with those involved in a set of "transversal" WGs. So, another 10 transversal WGs focus on *healthcare policies, data collection and sharing, innovative research, knowledge generation and guidelines, training of both medical doctors and nurses*, etc.

All transversal actions developed by EpiCARE, particularly those related to cost effective healthcare policies, sharing of best practices, educational and training activities, guidelines, and clinical tools are systematically developed in very close partnership with the scientific societies in the field (ILAE-Europe; EAN; EPNS) and the patient advocates lay association (IBE). EpiCARE also contributes to the development of inter-ERNs transversal panels of experts, particularly with the ERNs that are also caring for disorders with neurological and neurodevelopmental disabilities. Individual experts from many of the EpiCARE members and beyond are progressively joining the different Working Groups, a unique forum for knowledge generation and sharing.

This booklet provides useful information about EpiCARE activities and how you can contribute to their further development by sharing your competencies and expertise.

Where is EpiCARE?

NORWAY Norwegian National Unit for Epilepsy, Oslo

SWEDEN Sahlgrenska University Hospital, Gothenburg

FINLAND HUS-Oulu ERNEpi Consortium / Helsinki University Hospital (HUS)

DENMARK Rigshospitalet, Copenhagen / Danish Epilepsy Center Filadelfia, Dianalund / Aarhus Universitets Hospital

GERMANY Bonn University Hospital / Universitatsklinikum Erlangen / University Hospital, Freiburg / Universitatsklinikum Tübingen

THE NETHERLANDS University Medical Center Utrecht (UMCU)

BELGIUM University Hospital Gasthuisberg KUL, Leuven / BRACE Brussels Rare and Complex Epilepsies Consortium

LUXEMBOURG Centre Hospitalier de Luxembourg

FRANCE EPIRARES Consortium, Paris /
CHU Necker - Enfants Malades APHP, Paris /
CHU Marseille APHM / CHRU Lille /
CHU Lyon HCL /
EGEE Consortium Strasbourg-Nancy

SPAIN Hospital Sant Joan de Déu and Hospital Clínic, Barcelona /
Hospital del Mar, Barcelona /
Hospital Universitario La Fe, Valencia

PORTUGAL Unidade Local de Saúde de Coimbra / Hospital de Santa Maria, Lisbon / Centro Hospitalar do Porto

50 accredited members (60 medical teams)

Present in 24/27 EU countries and in Norway

ITALY IRCCS Istituto Gaslini, Genova / IRCCS Carlo Besta (Milano Consorsium) / IRCCS Fondazione Mondino, Pavia / Ospedale Pediatrico Bambino Gesù, Rome / AOUI di Verona / IRCCS Institute of Neurological Sciences of Bologna / Azienda Ospedaliera Universitaria Meyer, Firenze

ESTONIA Tartu University Hospital / Tallinn Children's Hospital

LITHUANIA Hospital of the Lithuanian University of Health Sciences, Kaunas / Vilnius University Hospital Santaros Klinikos

POLAND Children's Memorial Health Institute Warsaw

LATVIA University Children's Clinical Hospital, Riga

CZECH REPUBLIC Brno Epilepsy Center / Motol and Homolka University Hospital

AUSTRIA Christian Doppler Medical Centre, Salzburg /
Medical University of Vienna

SLOVENIA Ljubljana University Medical Centre

HUNGARY National Institute of Clínical Neurosciences Budapest

CROATIA University Hospital Centre Sestre Milosrdnice, Zagreb /
University Hospital Centre, Zagreb

ROMANIA Alexandru Obregia Clinical Hospital, Bucharest

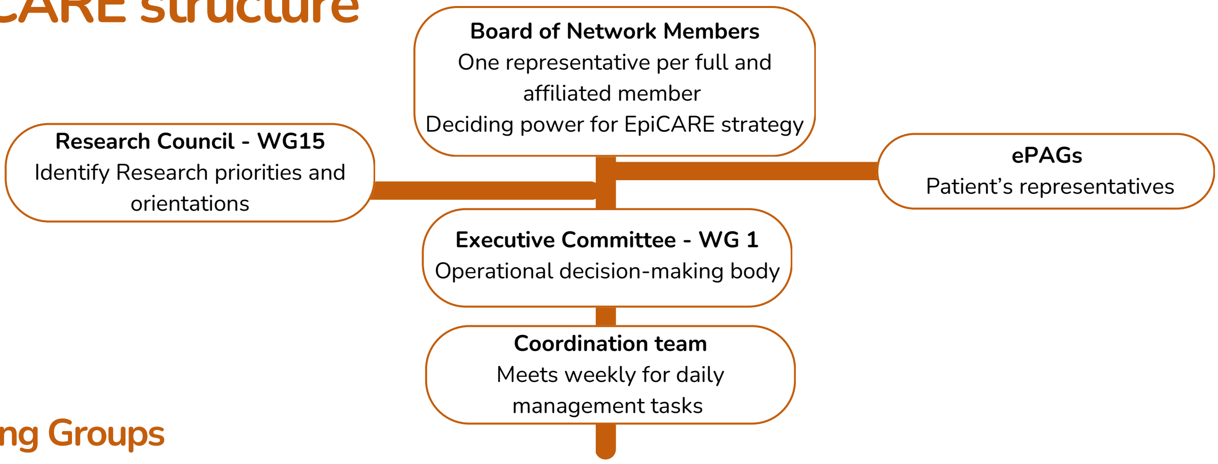
CYPRUS The Cyprus Institute of Neurology and Genetics, Nicosia

MALTA Mater Dei Hospital

The figure below illustrates the current operational structure of EpiCARE. A detailed description of the WGs missions follow. The WGs welcome contributions from all experts working in the European region.

Best practices, healthcare policies and innovative research

EpiCARE structure



Board of Network Members
One representative per full and affiliated member
Deciding power for EpiCARE strategy

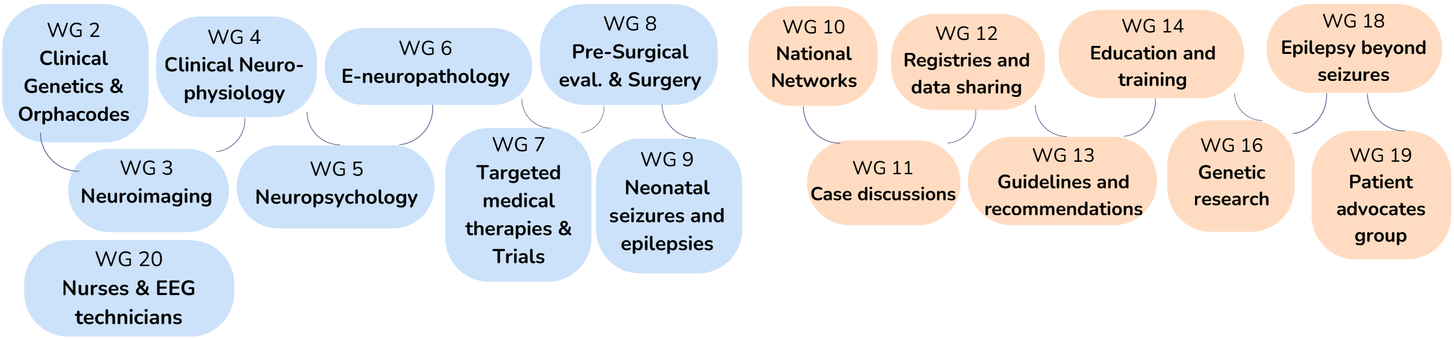
Research Council - WG15
Identify Research priorities and orientations

ePAGs
Patient's representatives

Executive Committee - WG 1
Operational decision-making body

Coordination team
Meets weekly for daily management tasks

Working Groups



WG 2 **Clinical Genetics & Orphacodes**

WG 4 **Clinical Neuro-physiology**

WG 6 **E-neuropathology**

WG 8 **Pre-Surgical eval. & Surgery**

WG 3 **Neuroimaging**

WG 5 **Neuropsychology**

WG 7 **Targeted medical therapies & Trials**

WG 9 **Neonatal seizures and epilepsies**

WG 20 **Nurses & EEG technicians**

WG 10 **National Networks**

WG 12 **Registries and data sharing**

WG 14 **Education and training**

WG 18 **Epilepsy beyond seizures**

WG 11 **Case discussions**

WG 13 **Guidelines and recommendations**

WG 16 **Genetic research**

WG 19 **Patient advocates group**

1 Executive Committee

ERN EpiCARE Coordinator : Alexis Arzimanoglou, Spain

- Barba Carmen (Italy)
- Beniczky Sandor (Denmark)
- Blümcke Ingmar (Germany)
- Braun Kees (The Netherlands)
- Cross Helen (UK)
- Helmstaedter Christoph (Germany)
- Kälviäinen Reetta (Finland)
- Kotulska Jóźwiak Kasia (Poland)
- Floor Jansen (The Netherlands)
- Lagae Lieven (Belgium)
- Lesca Gaetan (France)
- Lossius Morten Ingvar (Norway)
- Malenica Maša (Croatia)
- Marusič Petr (Czech Republic)
- Nabbout Rima (France)
- Pressler Ronit (UK)
- Rubboli Guido (Denmark)
- Ryvlin Philippe (Switzerland)
- Specchio Nicola (Italy)
- Trinka Eugen (Austria)
- Vigevano Federico (Italy)

Patient representatives:

- Brambilla Isabella (Italy)
- Irena Bibic (Croatia)

The ExCo is the operational decision-making body of EpiCARE composed by established clinicians or researchers with a strong track record in the field of epileptology. It reports to the Annual Convention and at the meetings of the representatives of the 50, full and affiliated, members of EpiCARE (Board of Members).

The ExCo is composed of the following voting members:
o The Coordinator, directly elected by the Board of Members.
o The Chair and co-chair of the EpiCARE Research Council.
o The Chairs of the EpiCARE core Working Groups (as per action plan).
o Two patient advocate (ePAG) representatives

One representative of each of the following scientific societies is invited to participate, as non-voting member: European Executive Committee of the International League Against Epilepsy (ILAE-EUROPE); the International Bureau for Epilepsy (IBE); the European Academy of Neurology (EAN); and the European Paediatric Neurology Society (EPNS).

At the discretion of the Coordinator, of the Research Council and/or WG chairs, other experts, actively involved in EpiCARE actions, can be invited to contribute as non-voting participants

2 Clinical Genetics & Orphacodes

The identification of aetiological groups throughout the EU will provide appropriate genetic, metabolic and immune testing to a wider population.

Increasingly genetic, autoimmune and metabolic epilepsies are being recognized although few characteristic epilepsy phenotypes have been identified (i.e. PCDH19, SCN1A, NMDA encephalitis, GLUT1 deficiency) that permit prediction of which aetiology is likely involved. Progressive refinement of the phenotype will reduce the number of patients who require molecular genetics, for diagnostic purposes (with consequent financial impact, particularly for patients with poor social coverage).

Neural autoantibody testing and metabolic testing can also be targeted more. Refining phenotypes requires that specific features (seizure, EEG, MRI characteristics, cognitive profile, psychiatric, movement and other possible comorbidities,) are identified accurately by physicians with appropriate expertise. Knowledge of these additional symptoms and their prediction may permit actions to reduce their impact.

For given conditions, few experts have devoted time on the identification of the phenotype. The WG is open to clinicians and geneticists who may contribute to this phenotypic refinement across age groups, share expertise when discussing complex cases and provide genetic counselling.

We also work for a homogeneous, optimal, ethical and cost- benefit approaches of genetic testing within the EU and for a regular update of the Orphacodes and corresponding summaries.

Leaders

Rima Nabbout
Hôpital Necker – Enfants Malades
Paris, France

Rikke Møller
Danish Epilepsy Centre, Filadelfia
Dianalund, Denmark

3 Neuroimaging

Neuroimaging investigations are fundamental in the diagnosis of patients with epilepsy, in identification of aetiology and in selected cases for surgical planning.

In recent years, there have been tremendous advances in the availability and acquisition of structural MRI, functional MRI, PET and SPECT imaging. Furthermore, advanced post-processing methods and machine-learning algorithms have been applied to neuroimaging data in patients with epilepsy. This working group aims to promote harmonisation of best practices in neuroimaging evaluation of rare and complex epilepsies to enable and ensure state-of-the- art care across EpiCARE centres and beyond.

We have a group of radiologists and neuroimaging post-processing experts from across the EpiCARE network. We organise EpiCARE webinars on neuroimaging in rare and complex epilepsies as well as education interactive workshops on neuroimaging post-processing and radiological interpretation. These workshops aim to improve the clinical and technical neuroimaging skills of EU professionals involved in the management of rare and complex epilepsies.

They aim to facilitate the use of state-of-the-art neuroimaging post-processing tools as research adjuncts for surgical evaluation of epilepsy patients as well as facilitating the participation of EU centres in multi-centre research projects, such as ENIGMA-Epilepsy (https://enigma.ini.usc.edu/ongoing/enigmaepilepsy/) and the MELD Project (https://meldproject.github.io).

Leaders

Petr Marusic

Motol University Hospital, Prague, Czech Republic

Sophie Adler

UCL Great Ormond Street Institute of Child Health London, United Kingdom

4 Neurophysiology

Experience and expertise in clinical neurophysiology are required to recognise the advantage of accurate recording and interpretation.

Clinical Neurophysiology methods, especially EEG, provide valuable information for diagnosing the epilepsies, with specific patterns identified in many diseases requiring expert interpretation. We are focusing on practices and development of tools that integrate recent advances into EpiCARE centres and National Reference Networks.

PROMAESIS This is the acronym for Prospective Multicenter-study on Automated EEG Source Imaging in epilepsy Surgery (NCT04218812). The data collection phase (n=392) has been completed, and all EEGs have been analysed (Epilog & BESA). The pre-surgical clinical data have been collected and currently we are waiting for the CRFs on the 1- year postoperative outcomes. The postoperative data are currently streaming in. One side-project on the automated / semi-automated detection of IEDs and the effect of spatial sampling has been published in July 2022 (Heers et al., Epilepsia 2022).

SCORE-EpiCARE Since the last reporting, we have published a paper on seizure-duration, based on the large SCORE dataset (Meritam et al., Epilepsia 2023). An inter-rater agreement on periodic and rhythmic EEG patterns using SCORE is currently ongoing in several EpiCARE Centres. The inter-rater agreement is intended as a means of standardizing the recognition of these difficult-to-interpret patterns and improving the management of these challenging entities. The working group participated in regular online meetings and an increased knowledge of the SCORE program has been spread among EpiCARE centres. Nearly 300 EEGs have been collected, which will allow determining inter-rater agreement with higher numbers than previous studies in the literature, using a highly standardized program for the detection and classification of EEGs (SCORE). Future developments of the project have been discussed in the working group, including the possibility to consider the EEG material collected for educational purposes - to be developed and disseminated through EpiCARE.

Leaders

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Denmark

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Pavia, Italy

5 Neuropsychology

Epilepsy is more than having seizures. Behavioral and cognitive comorbidities are very common and sometimes affect everyday life and functioning more than seizures.

The WG aims to improve the assessment of cognitive and behavioural comorbidities at disease onset and along the disease course (e.g., treatmentrelated changes, the impact of epileptic dysfunction, developmental hindrance, mental decline, etc.). Neuropsychology can also serve as a differential diagnostic indicator of epilepsy subtypes and syndromes when related to imaging, electrophysiology, pathology, and genetics data. It allows monitoring of disease dynamics and can be used for outcome and quality control of treatments.

Composed of both adult and paediatric neuropsychologists, it is structured in 2 core subgroups (Children and Adolescents; Adults).

Special Interest Groups, open to those interested to lead them or contribute focusing, between others, on: Patient-centred outcome measures; uniform reporting and neuropsychological data collection; EEG-logged assessment of cognition; Psychosocial consequences of late-onset epilepsies; Epilepsy with continuous spike-wave during slow-wave sleep; Right cerebral hemisphere and Autism Spectrum Disorders; Cognitive outcome of preschool children after epilepsy surgery; Transition from childhood to adulthood.

We lead regular sessions of case presentations to share knowledge on best practices in neuropsychological evaluation and contribute to surgical and nonsurgical case discussions. We closely collaborate with WG 18 on challenges “beyond seizures”.

Leaders

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6 Neuropathology

Microscopic tissue diagnosis of human brain disorders remains the gold standard in modern medicine. Yet, histopathology training in epileptic disorders is difficult to obtain in many European countries.

EpiCARE offers a comprehensive neuropathology service for all of their members. Currently, our working group mainly addresses three activities:

1) The European Epilepsy Brain Bank with a collection of more than 10.000 histopathology diagnoses obtained from epilepsy surgery. This unprecedented dataset is further used for benchmark EpiCARE projects on disease aetiologies, outcome and pathomechanisms.

2) We offer a diagnostic histopathology consultation for surgical brain samples obtained from epilepsy surgery using standardized protocols. The results are available through the CPMS platform. Formalin- fixed and paraffin- embedded tissue specimens should be sent to the neuropathology laboratory in Erlangen, Germany or can be shared online as fully digitized slides.

3) Finally, we offer an interactive, online post-surgical patient management conferences to discuss surgical brain specimens from various European epilepsy surgery centres.

Our efforts will help guide histopathologists in Europe to harmonize their diagnosis and diagnostic tools according to current medical standards, i.e. ILAE and WHO classification schemes, and help to deliver best medical care for our patients with difficult-to-treat rare and complex epilepsies. This work is likely to also influence the histopathology work-up outside Europe.

Leaders

Ingmar Blümcke
Director Institute of Neuropathology Universitatsklinikum Erlangen

Angelika Mühlebner
Department of Pathology
University Medical Center Utrecht

7 Targeted therapies & Clinical trials

For many of the rare and complex epilepsies, approved and evidencebased treatments do not exist. Thus, there is an urgent need to support high quality evidence of clinical studies and to identify and develop novel treatments targeting specific aetiologies.

Recognition of the epilepsies as a group of rare diseases with known aetiologies give us insight as to the underlying mechanisms involved in both development of seizure-generating networks, as well as comorbidities such as cognitive, physical, emotional and behavioural disturbances.

To improve study designs and choice of relevant interventions, there is a need to collect standardized data on outcomes associated with specific treatments such as anti-seizure medications, repurposed drugs targeting underlying mechanisms, disease-modifying treatments (including immunosuppression, treatments targeting protein and gene expression), and non- pharmacological treatments (such as diets, neurostimulation, and surgical therapies) or interventions (cognitive, behavioral and physical therapies) in people with rare and complex epilepsy. To foster advancements, special interest groups (SIG) for specific epilepsies (e.g. autoimmune epilepsies, tuberous sclerosis, etc), and with focus in specific aspects of trial design (e.g. n-of 1- methodology, use of PCOMs etc.) were established to identify the particular needs of an entity to enable conduction and ultimately performance of clinical trials.

The goals of this working group are to support and review initiatives in identifying unmet needs, study development and designs, provide expertise by contributing to activities of the European Consortium for Epilepsy Trials (ECET), disseminate these initiatives and study results. We also contribute to educational initiatives to improve the knowledge of novel trial designs, analysis, and outcome measures.

Leaders

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Emilio Perucca
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Nazionale Casimiro Mondino
Pavia, Italy

8 Pre-surgical evaluations & surgery

Surgery is now long established as standard management of carefully selected patients with focal epilepsy. There are many aspects, however, that can be particularly challenging and deserve special consideration in the evaluation for surgery and planning of surgical strategy.

Epilepsy-surgery in appropriately evaluated patients is seen to be effective over a wide age range, and over a spectrum of clinical presentations and pathologies. Furthermore, the likely impact that can result from early evaluation and surgery with resulting seizure control suggest that patients, especially children, should be referred and assessed early in their clinical course.

The members of this WG contribute to:
- Regular e-care visioconferences, led by experts, to discuss best practices in pre-surgical evaluation; epilepsy-surgery indications; results of surgery, both successes and failures. The case discussions are also of high educational value and are open to all EpiCARE members.
- IT platform: it allowed each EpiCARE centre to get access and use sophisticated neuroimaging and EEG postprocessing tools (e.g. Curry8).
- Epilepsy Surgery REDCap eCRF: This comprehensive eCRF aimed at collecting all relevant data from patients undergoing presurgical evaluation and epilepsy surgery. Its regular use by the centres will allow collection of comparable data on the natural history of focal epilepsies per aetiology, both retrospectively and prospectively.
- The CogniEEG project: EpiCARE centres are core members of the CogniEEG project which aims at leveraging cognitive research performed in patients with epilepsy undergoing intracerebral EEG recordings (iEEG).

It is expected that all data collected through the above activities will progressively populate the EpiCARE Registry, thus facilitating the design and performance of academic studies related to epilepsy-surgery needs and outcomes. Members of the WG are active participants to the just launched process for Guidelines on pre-surgical evaluation; epilepsy-surgery; and invasive neuromodulation.

Leaders

Philippe Ryvlin
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9 Neonatal seizures

Neonatal seizures are associated with poor outcome, but their management is challenging due to difficulties in diagnosis and treatment.

In contrast to seizures in older children, EEG monitoring is essential to accurately detect ongoing seizures in neonates given the high frequency of electrographic-only seizures and their variable clinical expression. EEG monitoring needs to be available 24 hours a day in neonatal intensive care units for optimal surveillance, which is challenging. Many units in Europe therefore use amplitude integrated EEG (aEEG), which is less accurate in detecting seizures. Accurate seizure detection is essential for appropriate and prompt treatment and for randomised trials of new treatments.

Our WG began work on a protocol for neonatal EEG monitoring and reviewed all the published protocols at the same time as the Italian Neonatal Seizure Collaborative Network (INNESCO) worked, with contribution from EpiCARE members, on a comprehensive protocol (Dilena et al 2021), which was adopted by EpiCARE. The ILAE have recently published guidelines and consensus-based recommendations for the treatment of seizures in the neonate, which have been developed with members of the EpiCARE neonatal WG. The group also:

- developed a free neonatal EEG eLearning module to help centres across Europe get EEG monitoring up and running, to recognise the common neonatal seizures types and to distinguish them from common artefacts encountered in the NICU.
- working on the development of a Neonatal Seizures Registry with a multicentre open cohort design that includes acute symptomatic seizures and neonatal-onset epilepsies, the results of diagnostic biochemical, MRI and genetic tests, together with the aetiologies. In the next phase, we will assess if this real-world data can be used to promote collaborative research across Europe.

We will also assess neonatal EEG and seizure AI algorithms and develop guidelines for their use in neonatal EEG monitoring but also in clinical trials of new treatments.

Leaders

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10 National Networks

Strengthening the links between EpiCARE and existing, or under development, national epilepsy networks and pathways for optimal epilepsy care is one of our priorities.

The governance structure of ERN EpiCARE that facilitates, pooling and sharing knowledge, fostering research and innovation, as well as the discussion on rare or low prevalence complex epilepsies is now in place. To reap all benefits for patients, effective mechanisms to connect EpiCARE medical teams with national health systems need to be developed.

The National Networks WG aim is to reinforce building national/regional epilepsy care pathways to ensure timely referral to the right level of care, systematic follow-up, awareness of treatment options and self- care, good communication between the different actors and flexible consultation possibilities including national case discussions before referring the case to the ERN-level discussions. National networks need also to include peer support to reinforce care and a service plan, where appropriate.

Our upcoming tasks are:
- to complete the mapping of the current situation of national epilepsy care pathways in EU countries and to provide a thorough analysis of the mapped pathways to identify strengths, weaknesses, gaps, and opportunities for building better epilepsy care pathways;
- to harmonize minimum requirements for level 3 and 4 epilepsy centres within the EU; via systematic literature review and Delphi process among EpiCARE ERN members;
- to reinforce national and regional activities to link EpiCARE ERN to the national health care systems serving epilepsy patients.

Our actions also take into consideration the ILAE-IBE recommendations for an integrated approach to «epilepsy and other neurological disorders» (WHO iGAP) and contribute to actions taken at the level of the EU member states, within the frame of the Direct-Action grant, **JARDIN**, funded by the Commission.

Leaders

Reetta Kälviäinen
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Hospital Finland

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11 Case discussions

Case discussions are an integral part of all ERNs and are in line with the European Commission's Directive. EpiCARE undertakes regular case discussions in specialised areas of the rare and complex epilepsy field, including surgical and non-surgical cases, neuropsychology and neuropathology

Case discussions utilise the Clinical Patient Management System (CPMS) which is an online secure and encrypted platform, provided by the EU. It allows for freeflowing discussion amongst experts, enabling complex patient cases to have multi expert input and therefore optimise the care and treatment of rare and complex epilepsy patients. There are two ways in which cases can be discussed and these are in an online meeting area within the CPMS platform or via written contributions, both avenues allow for detailed examination of each case and feedback provision.

Other clinical cases are discussed at face-to-face meetings, organized by EpiCARE members (ex. U-Task; Stereo-EEG course; EPIPED and Tagliacozzo courses, endorsed by ILAE-Europe).

The members of this WG are working to increase attendance and participation in these case discussions and to highlight areas within the rare and complex epilepsy field that would benefit from these multi-disciplinary discussions. Currently we have at least 3 regular sessions per month: for both potentially surgical cases and/or surgical successes or failures, as well as for non-surgical cases. We also support sessions organized by other EpiCARE WGs bringing together experts in neuropathology, neuropsychology, neuroimaging and genetics.

Detailed information on how an EpiCARE member can submit a complex case for discussion or how to join a discussion as an expert or simply for educational purposes are provided on our website: https://epi-care.eu/case-discussionsepicare/. If you are interested to join one of our expert panels and be informed about sessions related to your field of expertise you can inform the EpiCARE Helpdesk: helpdesk@epi-care.eu.

Leaders

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Bonn, Germany

12 Registry

Developing a Registry for rare and complex epilepsies is a very dynamic process, with continuous challenges and needs to update and refine the content. We are confident that its creation will offer the EU epilepsy community a unique tool to support bth clinical practice and research.

This group includes epilepsy specialists, as well as patient representatives and IT specialists (a subcontracted company, BIOMERIS).

At present, the Registry contains the EU defined Common Data Elements (eg demographics, ORPHANET codes) and specific epilepsy items, focusing on aetiology. The EpiCARE Registry is designed to be user-friendly and requests information almost exclusively related to the aetiological category, as per the ILAE classification: genetic, structural, immune, inflammatory, metabolic and unknown background parameters. It is being implemented as a local tool in all EpiCARE centres - an obligation for all EpiCARE members, full or affiliated - on a dedicated REDCap platform. The Registry template content can be offered to all other epilepsy centres wishing to homogenize the collection of essential data in their respective Institutions. Pseudonymisation with the SPIDER software will soon allow to eventually congregate all EpiCARE local registries within one central server. At that point dedicated clinical research questions can be supported with our registry data. It will soon be possible to link to our main Registry, sub-registries, or more detailed databases, funded by academic research projects and developed for specific projects (eg. Neuropsychology; neonatal epilepsies; TuberousSclerosisComplex;...)

We are fully aware of the difficulties encountered by the medical teams, usually due to legal issues and/or lack of support from their respective Institutions. Indeed, many hospital administrations interpret the creation of an across the EU Registry for Rare Diseases as a research project per se, which is definitely not the case. The issue becomes even more complex, due to the diversity and autonomy of national health systems when the discussions concern data sharing. Our WG will contribute to the procedures to be initiated within Direct Action grant to member states, JARDIN, aiming at the development of recommendations for national RD data governance models that will be interoperable with the ERN registries and CPMS.

Leaders

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Helen Cross
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13 Guidelines

The development of clinical guidelines and recommendations is essential for the implementation of best practices in epilepsy care.

The WG on Guidelines and Recommendations involves several EpiCARE members from different countries and is organized in topic-related Task Forces. Its objectives are: quality assessment of existing guidelines for rare and complex epilepsies; identification of the areas where development of epilepsy guidelines are required; development of new guidelines when needed; evaluation of the dissemination and implementation of guidelines across Europe.

All developments follow the rules of the GRADE Methodology (Grading of Recommendations Assessment, Development and Evaluation), which uses the best available evidence along with expert opinion and patient representatives to develop explicit criteria to guide clinical care. To ensure contribution from all available experts a Memorandum of Understanding was signed between EpiCARE, the European-based scientific societies (EAN and EPNS) and the ILAE. Following a large survey to identify areas where development of guidelines is needed, the following are already in the pipeline:
o Pharmacological and non-pharmacological interventions in the treatment of:
- Lennox-Gastaut syndrome - infantile spasms syndrome
- Dravet Syndrome

o Pharmacological treatment of status epilepticus in adults
oGuidelines for presurgical evaluation and surgical treatment of patients with complex and drug resistant epilepsies, divided into 3 sections: pre-surgical evaluation; epilepsy surgery proper; invasive neuromodulation.

Under the leadership of the EpiCARE Salzburg centre the WG is composed by discipline/ content experts, a neurologist-methodologist (Dr Teia Kobulashvili) and, when needed, statisticians and information specialists. We also work in close collaboration with the Cochrane epilepsy group. EpiCARE members wishing to contribute to the guidelines work can contact the Project Manager of the WG, Martin Geroldinger: martin.geroldinger@epi-care.eu or the EpiCARE Helpdesk: helpdesk@epi-care.eu.

Leaders

Eugen Trinka
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Salzburg, Austria

Teia Kobulashvili
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14 Education & Training

Our main goal is to develop educational practices favouring dissemination of highly specialized knowledge and expertise within the members of the ERN and beyond, and to operationalize complementarity. We aim to adapt the educational orientations recommended by the ILAE Roadmap for education to the needs of experts working in Europe.

With the generous contribution of experts in the corresponding fields, jointly with ePAGs, we continuously develop a program of educational webinars. Together with the e-learning modules developed in partnership with the ILAE, they offer comprehensive state-of-the-art reviews, accessible to all and free of charge. At first presentation, all our webinars also offer a “meet the expert” opportunity during a live Q&A part. Collected evaluation surveys following educational webinars and their outcomes are used as a tool for reflection and improvement of future webinars and other educational materials. The webinars are available on our website and present a library of knowledge that can also be used for training purposes at all medical departments caring for the epilepsies.

Members of ERN EpiCARE, in close collaboration with ePAGs, also regularly develop and disseminate leaflets for caregivers and patients with rare epilepsies and comprehensive patient’s journeys descriptions. Training in clinical epileptology and related disciplines requires the physical presence of young clinicians and researchers at epilepsy reference centres. All ERN EpiCARE members and collaborating partners offer training possibilities and can be directly contacted by those interested. We also support next-generation experts wishing to present the results of their studies at epilepsy congresses or at the annual Rome workshop, endorsed by EpiCARE and ILAE-Europe. A mentor-mentee program was also launched in 2024.

EpiCARE is one of the 3 pilot ERNs, missioned to contribute to the future development of an ERN ACADEMY and an active member of the ERNs Knowledge Generation WG, focusing upon the development of a joint strategy of the ERNs for training and education to overcome the gap between the increasing awareness on rare and complex diseases and the lack of a specific training in the medical curricula.

Leaders

Maša Malenica
University Hospital Centre, sestre milosrdnice
Zagreb, Croatia

Victoria San Antonio
Freiburg University Hospital
Freiburg, Germany

15 Research Council

Fostering research and innovation is, according to the EU Directive for the creation of the ERNs, one of their main missions.

The ERNs, although funded by the EU4Health program, are not research projects per se and cannot directly fund research and innovation initiatives. But they offer unique opportunities to medical teams who wish to develop, lead, and submit grant applications for research projects or just be partners in a funded project. This opportunity is offered to all medical teams, independently of their status (full or affiliated member, collaborating partner). To foster research, EpiCARE developed several Working Groups covering all aspects of epilepsy care. Every effort is also made by our patient advocates group to be represented in all WGs and contribute a better understanding of patient needs and expected outcomes.

To ensure an optimal coordination to foster research and innovation, EpiCARE funds a Project Manager competent in epilepsy research, Sébile Tchaicha (sebile.tchaicha@epi-care.eu). The Research Council aims to stimulate multicentre studies; optimize ethical, methodological, and statistical approaches; improve and optimize trial feasibility and reliability. Between other missions, the members of the Research Council also contribute and/or follow the activities of projects such as the **EJP RD, SOLVE-RD, ERICA, EBRAINS, Human Brain Project, EpiCLUSTER** and others.

Upon request, the Research Council supports EpiCARE members wishing to evaluate a research project before submission, provides advice for collaboration with other medical teams, members or not of the network. It can also provide letters of support by the network, particularly by reinforcing the feasibility information for a given project (use of the Registry; proposal for EpiCARE partners etc.). The council shares with all, 3 times per year, a newsletter including updated information on HORIZON and other research calls.

Members are: Alexis Arzimanoglou (Spain), Sandor Beniczky (Denmark), Ingmar Blümcke (Germany), Philippe Ryvlin (Swithzerland), Renzo Guerrini (Italy), Rainer Surges (Germany), Eugen Trinka (Austria), Lieven Lagae (Belgium), and Rima Nabbout (France).

Leaders

Helen Cross
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London, UK

Kees Braun
University Medical Center Utrecht
The Netherlands

16 Genetic Research

Genetic research in the field of epilepsies is confronted with an extremely large number of new genes, for which the clinical spectrum and/or natural history is often barely known; usually, the number of patients published is limited to a handful, their recruitment may be strongly biased towards a few clinical features, and their clinical description is often limited.

In a joint effort to promote genetic research, members and non-members of EpiCARE, conveyed into this WG the knowledge and opportunities that have derived by their participation as active members to major concluded and existing EU research networks on epilepsy research in genetics and rare epileptic encephalopathies. To boost the genetic research activities we contributed to the development of a web-platform for patients' matchmaking, interoperable with other discovery services, based on the RD-NEXUS tool, and provided by the European Joint Project in Rare Disease (EJPRD) to support the wider ERN community. Furthermore, a dedicated webpage offers the possibility to all medical teams to share opportunities of collaborative calls, recruit cohorts of patient carrying rare variants in genes without a well-defined phenotypic spectrum, where single-centre studies would not yield significant series.

ERN-EpiCARE has also joined, as an associated ERN, Solve-RD, a Horizon2020-funded project, dedicated to "solve the unsolved rare diseases". This will permit the re-analysis of unsolved exomes and genomes of patients with rare developmental and epileptic encephalopathies (DEE) or other rare epilepsy syndromes. Members of the WG regularly contribute to educational webinars focusing on genetic epilepsies, organized by the Education and Training WG. The presentations systematically combine a clinician and a geneticist. When appropriate a patient advocate in also involved. A "training in genetics of the epilepsies" workshop is under preparation.

Leaders

Gaetan Lesca
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Simona Balestrini
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Florence, Italy

Renzo Guerrini
Azienda Ospedaliero-Universitaria A. Meyer
Florence, Italy

17 Dissemination

Dissemination and communication is essential ensure maximal impact of the network's activity, projects and events.

Dissemination pursues 6 main objectives:

- Continuous, detailed and transparent reporting on ERN EpiCARE to give visibility, raise awareness of the project and engage relevant stakeholders.
- Raise interest about rare and complex epilepsies, the ERN ecosystem and ERN EpiCARE. Strengthening the presence of it.
- Empower those affected by rare epilepsies and their families to actively participate in EpiCARE activities and missions, learn about their condition and ask for support. Build a patient-centred communication.
- Use all available means of dissemination to ensure maximum impact of all activities and results.
- Ensure good internal communication to support practitioners and foster effective exchanges and collaborations.
- Strengthen the integration of ERN EpiCARE into national healthcare systems.

The current dissemination plan is based on the past 7 years' experience. Correct communication planning in EpiCARE will help to improve outreach to external audiences and positioning, and it will improve the feeling of relevance among members. The role of its active members is to propose and advise on actions at EU level, check before dissemination all material with scientific content, promote the webinar and issue Newsletters. The dissemination efforts cover different target groups, using various tools: the EpiCARE website, social media (LinkedIn, Twitter and Facebook), regular mailings (contact list of more than 6000 e-mails) and the intranet (reserved to members). EpiCARE is also present at all major congresses in the field: ILAEEurope; EAN; EPNS.

Leaders

Laura Roig
EpiCARE Communication Manager
Hospital Sant Joan de Déu,
Barcelona, Spain

18 Epilepsy beyond seizures

Psychosocial issues, quality of life, sleep disorders, patient perspectives (PROMS), sexuality, ASM adherence and many others, are essential to a comprehensive care of the epilepsies, independently of age and seizure severity.

The main aim of WG18 is to focus on issues related to global epilepsy care, such as:

- Comorbidities in general
- Psychiatric, behavioural and emotional regulation issues;
- Sexual dysfunction;
- ASM adherence-issues;
- Lifestyle and seizure-precipitating factors;
- HRQOL-issues; - Patient reported outcomes (PROMS).
- Social integration issues
- Transition of epilepsy care from childhood to adulthood Chair Morten Lossius National centre for epilepsy Oslo, Norway Co-chair Sergiusz Jozwiak Children's Memorial Health Institute (Warsaw, Poland).

The WG is structured in two subgroups. One focusing more on adult patients and another on children, particularly those presenting with comorbidities related to a Developmental and Epilepcti Encephalopathirs (DEEs). The subgroups regularly interact to develop a common strategy and shared actions. A Special Interest Group (SIG) on Transition was created, lead by V. De Giorgis (Italy) and M. Malenica (Croatia). A survey was launched, aiming to have a "photo" of the practices in EpiCARE centres and on how our members deal with transition from childhood to adolescence and adulthood of patients with: Epileptic & Developmental Encephalopathies; Drug-resistant Juvenile Myoclonic Epilepsy or focal idiopathic/LKS/CSWSS; Drug-resistant Focal Structural Epilepsies that could not benefit from surgery (following pre-surgical evaluation) or already operated on without a full control of seizures or persisting comorbidities.

Leaders

Morten Lossius
National centre
for epilepsy
Oslo, Norway

Sergiusz Jozwiak
Children's Memorial
Health Institute,
Warsaw, Poland

19 Patient involvement

Partnership between medical experts in rare and complex epilepsies with families and patients suffering from them is an important mission of EpiCARE.

European Patients Advocates (ePAGs) for epilepsy care are an independent body of patient representatives, who are either leaders in rare and complex epilepsy patient organisations from across Europe, or patients themselves. The group currently consists of 15 members (https://epi-care.eu/epicare-patientrepresentatives/), from various European countries representing different conditions. They are the voice of patients for EpiCARE, produce deliverables to support patients and their families, facilitate communication between patients and healthcare professionals.

The patient empowerment working groups main mission is to better coordinate interactions between the patient advocates group and the EpiCARE medical teams by:

- Reinforcing the links between existing and under development federations and associations of patients with rare and/or complex epilepsies, the EU chapters of the International Bureau for Epilepsy (IBE) and the ERN EpiCARE community.
- Supporting the patient associations to better defend the need for national and EU plans for epilepsy care. This is of particular importance in the coming years - in a joint effort with EpiCARE and the European chapters of the ILAE and the IBE - aiming to adapt and implement in Europe the Intersectoral Global Action plan (iGAP) on «epilepsy and other neurological disorders (2022-2031) adopted by the WHO Assembly.
- Incorporating the voice of patients from the different EpiCARE WGs and collaborating to develop information, dissemination, guidelines, and support to research projects.
-Pursue, in collaboration with EpiCARE experts, with projects that increase disease knowledge for patients, families and non-expert treating physicians such as: Webinars, definition of Patients Journeys, Leaflets, and publications in scientific journals.

Leaders

Isabella Brambilla
Dravet Onlus,
Patient
representative
ePAG chair

Alexis Arzimanoglou
Hospital Sant Joan de
Déu, Barcelona, Spain

20 Epilepsy Nurses & EEG technicians

Partnership between medical experts in rare and complex epilepsies with families and patients suffering from them is an important mission of EpiCARE.

Nurses and EEG technicians working at epilepsy monitoring units and/or for Neurophysiology, Neurology and Child Neurology Dpts. that care for patients with epilepsy are an essential partner of a multi-disciplinary team.

They are the ones who have an everyd SPATA5 in Rome second rounday contact with the patients and their families, perform the EEG (one of the most essential diagnostic tools), provide counselling on how to take anti-seizure medication or follow a ketogenic diet, administer rescue medications, test the patients during a seizure to better identify localization signs but also protect them from accidents, etc.

The WG was made a part of the ERN EpiCARE programme in late 2022. Its creation results from the successful exchange program (2020-22), funded by the management budget of EpiCARE, supporting nurses and EEG technicians working at EpiCARE centres to visit othe monitoring units. It was launched during a workshop held in Utrecht (06/23) at the EpiCaRE annual meeting, involving nurses and VEEG technicians working in the field of epilepsy care and epilepsy monitoring units. Nicola Lawrence EpiCARE management team CPMS, Patient Advocates and Nurses Project Great Ormond Street Hospital, London, UK Partnership between medical experts in rare and complex epilepsies with families and patients suffering from them is an important mission of EpiCARE. 27

The upcoming tasks are:
- Undertake a coordinated literature review of monitoring practices and the differences in units/centres in the EU.
- Compare and contrast monitoring practice guidelines from ERN EpiCare centres.
- Prepare a manuscript (for submission to an appropriate journal) with findings and recommendations.
- Produce a manuscript on the reasonings behind the launch of this WG and its benefits and aims.
- Assess the learning and practice needs of epilepsy nurses and EEG technicians working in Europe;
- Contribute to the development, and adapt to European standards and needs, of an education curriculum for epilepsy nurses and EEG technicians.
- Learn from each other and improve patient care. The WG works in close collaboration with the Nursing section of the ILAE.

Leaders

Nicola Lawrence
EpiCARE Management Team, CPMS,
Patient Advocates and Nurses Project,
Great Ormond Street Hospital London, UK

SIG

Clinical Trials Outcomes for Seizure Severity Assessment

SIG related to WG7

This Special Interest Group (SIG) was created to address a major gap in clinical trial design for epilepsy: the lack of standardized and meaningful measures of seizure severity. While most trials rely on seizure frequency as the primary outcome, this does not adequately capture the real-life impact of epilepsy on patients' quality of life.

Current Activities

- Initial mapping of existing seizure severity scales
- Identification of key domains (clinical signs, patient-reported symptoms, psychosocial impact)
- Creation of subgroups to work on population-specific tools
- Inclusion of patient advocacy representatives (ePAGs) in the development process

The main goals

- Explore and define relevant domains and criteria to assess seizure severity in clinical trials
- Compare existing scales and identify limitations, especially in rare and complex epilepsies
- Develop improved, patient-centered assessment tools combining objective signs and subjective experiences

Leaders

Andreas Schulze-Bonhage

University Hospital, Freiburg, Germany

SIG

Ketogenic dietary therapies

SIG related to WG7

Ketogenic dietary therapies (KDTs) are well-established, safe, non-pharmacologic treatments used for children and adults with drug-resistant epilepsy.

Diet quality plays a vital role in the achievement and maintenance of optimal ketosis, thus, an individualized approach, constant monitoring and the assurance of a prompt interface with keto-team are fundamental. The achievable success of KDTs in seizure reduction does address a primary therapeutic concern. However, it is now widely shared that the efficacy of KDTs might go beyond seizure reduction. Though, no standardized and repeatable assessment guidelines and tools have been implemented to verify non-seizure benefits of KDTs on other disease aspects such as attention, alertness, social interaction, daily living abilities exc.

Standardized and targeted tools are needed to measure disease outcomes other than seizures control. Moreover, clinicians should identify patients' and parents' unmet needs that might influence quality of life and adherence to KD. Thus, the importance to develop a shared standardized protocol to guide the global clinical assessment among EpiCARE Centers.

Activities

- Webinars
- Case discussions
- Exchange programs
- KD-specific assessment tools under development: IKATE, KD-QOL, Knowledge questionnaires

The main goals

- Rescue unmet needs from the patient and keto-team point of view
- Development of targeted tools to evaluate KDT efficacy and tolerability
- Provide educational activities meant both for patients and HCP to enhance KDT knowledge and dissemination

Leaders

Helen Cross
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London, UK

Valentina De Giorgis
Instituto Mondino
Pavia, Italy

SIG

Autoimmune diseases with seizures and epilepsy as a core manifestation

SIG related to WG7

Autoimmune diseases are increasingly recognised as cause of recurrent seizures and epilepsies. Early diagnosis is crucial, as some of the symptoms including disturbances of vigilance, cognition and faciobrachial dystonic seizures only respond to immunosuppression. The long term outcome appears to depend on the subtype as defined by specific autoantibodies, but a large portion of people fulfilling most clinical criteria do not display common antibodies. To improve clinical care of people with ‚autoimmune diseases with seizures and epilepsy as a core manifestation', our SIG will focus on the following objectives:

- Identification of novel biomarkers for early diagnosis, disease progression, therapy monitoring and outcome
- Address diagnostic/treatment challenges in rare, complex cases
- Sharing research, lab insights, and latest literature
- Dissemination of knowledge on autoimmune diseases with seizures and epilepsy

Activities

- Finalising diagnostic guidelines
- Building consensus on key markers & tools (e.g. FDG-PET, EEG signs)
- Emphasising early diagnosis for immunotherapy responsiveness

Leaders

Rainer Surges
University Hospital,
Freiburg, Germany

Tobias Baumgartner
Bonn University Hospital
Bonn, Germany

Julika Pitsch
Bonn University Hospital
Bonn, Germany

SIG

Tuberous Sclerosis Complex

SIG related to WG7

In recent years, several clinical trials were carried out in TSC-associated epilepsy. The broad spectrum of these trials included new medications for drug-resistant seizures, preventive strategies, and management of the neuropsychiatric comorbidities in TSC. As a result, mTOR inhibitor, everolimus, and cannabidiol were approved for drug-resistant epilepsy in TSC. Close EEG monitoring and early intervention with vigabatrin is widely used in infants with TSC. Despite this progress, TSC is still associated with high risk of drug-resistant seizures and neurodevelopmental disorders. Moreover, the clinical practices in individual centres differ and the existing European consensus on the management of TSC-associated epilepsy does not include the results of the newest trials.

The group will closely cooperate with the EPAG (E-TSC). We will also invite the leaders of the ongoing clinical trials in TSC to collaborate.

The TSC group focus on:

- integration of the existing knowledge on medical and other treatment of TSC-associated epilepsy and the existing guidelines and recommendations
- integration of the existing knowledge on the biomarkers of TSC-associated epilepsy and its neuropsychiatric comorbidities
- development of new European consensus on the management of TSC-associated epilepsy
- identification of the unmet needs of patients with TSC and epilepsy
- a comprehensive analysis of the methodology and results of the available (past and ongoing) commercial and non-commercial clinical trials in TSC-associated epilepsy
- use of novel statistical methodologies in clinical trials in TSC-associated epilepsy, based on the results of the EPISTOP-IDEAL project and available data
- concepts of the clinical trial design and methodology in TSC-associated epilepsy
- concepts of the design and methodology for clinical trials aimed to prevent epilepsy in TSC

Leaders

Rima Nabbout
Hôpital Necker – Enfants Malades
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Katarzyna Kotulska-Jóźwiak
Children's Memorial Health Institute
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SIG

N of-1 trials for precision treatment of predefined genetic epilepsies

SIG related to WG7

IThe ultimate goal of the n of 1 project is to improve individualized care of patients with rare, monogenic epilepsies by optimizing the assessment of therapies per patient. An n-of-1 trial methodological and ethical framework will be developed to support the use of this design in rare and complex epilepsies.

The n of 1-project will focus on the following objectives:

- Reviewing the use of precision treatments in patients with monogenic epilepsies across EpiCARE centres over the past 5 years.
- Developing an ethical and methodological framework for N-of-1 trials tailored to rare and complex epilepsies.
- Creating Bayesian hierarchical models for analyzing N-of-1 trials in monogenic epilepsy syndromes.
- Adapting Patient-Centered Outcome Measures (PCOM) for use in epilepsy-specific N-of-1 designs.
- Conducting proof-of-concept N-of-1 trials, including a study of everolimus in GATOR1-related epilepsy, led by the three coordinating centres.

Ongoing Actions: **Multidisciplinary Expert Panel (MEP), a** collaborative EpiCARE and ECET initiative to evaluate proposed off-label precision treatments and assess the feasibility of N-of-1 trial designs.

Registry: 96 cases, 17 centres

Purpose of the MEP: For each submitted project, the MEP will assess: The risks and benefits of proposed off-label precision treatments and The feasibility of N-of-1 study designs.

The MEP will consist of experts in: Clinical trial design, Clinical pharmacology, Genetics and (Pediatric) Neurology.

Role of the MEP: will serve as an advisory team of external experts, providing guidance to local healthcare teams. It would not replace oversight procedures of clinical care at the local center conducting the N-of-1 strategy.

Leaders

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London, UK

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University Medical Center Utrecht
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SIG

Transition of Care in Rare and Complex Epilepsies

SIG related to WG18

Transition from pediatric to adult care is a crucial process for individuals living with chronic neurological disorders, particularly people with epilepsy (PWE). This process becomes even more challenging for young individuals with developmental and epileptic encephalopathies (DEEs) and complex disabilities.

These patients often present with a wide range of phenotypes, including intellectual disability, behavioral challenges, and motor impairments. The level of disability at the point of transition strongly influences the type of care and interventions required. While various models and guidelines for transition exist in neurological conditions, a significant gap remains in the literature and practice specifically addressing rare and complex epilepsies.

In 2024, EpiCARE conducted a survey in collaboration with ePAGs to explore current transition practices across its centers. The survey revealed several key barriers:

- Nearly half of respondents reported a lack of structured transition pathway in their centers.
- Multidisciplinary team involvement is often limited, with inconsistent participation from essential professionals such as psychiatrists and social workers.
- Transition is often initiated late, despite most respondents recommending starting before age 17.
- Clinical transition coordination often relies on informal communication, highlighting the need for standardized protocols.

These findings clearly indicate the absence of a harmonized, multidisciplinary, well-resourced approach to transition in rare and complex epilepsies within Europe.

Objectives

- Develop consensus-based recommendations for effective transition in rare and complex epilepsies across EpiCARE centers.
- Identify minimum standards and core components for adaptable transition models for rare and complex epilepsies in Europe.
- Clarify the roles and responsibilities of healthcare professionals involved in the transition process.
- Provide a framework for harmonization and benchmarking across EpiCARE centers.
- Promote knowledge dissemination and raise awareness of the unique challenges in this patient population.

Activities

- Development of a standardized EpiCARE transition protocol, including:
    - A follow-up Delphi consensus study to define best practices.
    - Integration of survey findings and stakeholder feedback.
- Design and validation of EpiCARE-specific tools for evaluating transition outcomes.
- Organization of webinars, case discussions, and collaborative workshops to promote awareness and training.

Leaders

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Sleep & Seizures

SIG related to WG18

We are a clinically driven Special Interest Group (SIG) within ERN EpiCARE, dedicated to improving the understanding, assessment, and management of sleep disturbances in people living with rare and complex epilepsies across Europe. Our aim is to integrate sleep evaluation as a fundamental component of epilepsy care, both in adult and paediatric populations.

In addition to sleep comorbidities, the SIG is also committed to standardising how sleep assessment is used as a diagnostic and management tool in epilepsy. We aim to define shared criteria on when and how to record sleep to optimise the detection and quantification of epileptic activity across different ages and epilepsy syndromes.

Sleep and epilepsy are deeply interconnected: Sleep disorders are frequent comorbidities in developmental and epileptic encephalopathies (DEEs), meanwhile poor sleep can worsen seizure control, impair cognition and behaviour, and substantially affect quality of life for both patients and caregivers. Yet, sleep problems in epilepsy often remain under-recognised and undertreated due to limited screening and access to specialist expertise.

In addition to DEEs, several epilepsies, including Sleep-related Hypermotor Epilepsy (SHE), self-limited epilepsy with centrotemporal spikes (SeLECTS) and others, show a an intrinsic relationship with sleep underscoring the importance of structured sleep assessment for accurate diagnosis and management.

Our group aims to bridge this gap by promoting awareness, fostering collaboration between epilepsy and sleep medicine specialists, and supporting evidence-based approaches to diagnosis and management. A central goal of our SIG is to develop a shared European standardised protocol for the assessment of sleep disorders in epilepsy, to ensure consistency, quality, and accessibility of care across centres.

By embedding practical, harmonised sleep pathways into everyday clinical practice, we aim to improve patient outcomes, enhance quality of life, and advance the understanding of the complex interactions between sleep and epilepsy within the clinical and research community. This includes both the systematic assessment and treatment of sleep comorbidities and the optimal use of sleep recordings as part of epilepsy evaluation and follow-up. We also aim to improve knowledge and empowerment of families and caregivers by developing clear, accessible information materials (e.g. brochures and online resources) on sleep and sleep disorders in people with epilepsy.

Leaders

Lino Nobili

IRCCS Instituto Giannina Gaslini
Genova, Italy

EpiCARE Members

- Austria, Christian Doppler University Hospital, Paracelsus Medical University
- Austria, Medical University of Vienna, Center for Pediatric Epilepsy / Dpt. of Pediatrics
- Belgium, Cliniques Universitaires Saint-Luc (Brussels Rare and Complex Epilepsies Consortium BRACE)
- Belgium, Hôpital Erasme (Brussels Rare and Complex Epilepsies Consortium BRACE)
- Belgium, Hôpital Universitaire des enfants Reine Fabiol (Brussels Rare and Complex Epilepsies Consortium BRACE)
- Belgium, Centre Neurologique William Lennox (Brussels Rare and Complex Epilepsies Consortium BRACE)
- Belgium, Institut de Pathologie Génétique (Brussels Rare and Complex Epilepsies Consortium BRACE)
- Belgium, University Hospital Gasthuisberg KU-Leuven
- Croatia, University Hospital Centre Zagreb, School of Medicine -Department of Neurology
- Croatia, University Hospital Centre Sestre Milosrdnice - Klinički bolnički centar Sestre milosrdnice
- Cyprus, Cyprus Institute of Neurology and Genetics -CFMDR (CING)
- Czech Republic, Brno Epilepsy Center (St. Anne's University Hospital and University Hospital Brno)
- Czech Republic, Motol and Homolka University Hospital
- Denmark, Rigshospitalet-Blegdamsvej and Danish Epilepsy Center Filadelfia, Epilepsiklinikken
- Denmark, Aarhus Universitets Hospital
- Estonia, Tallinn Children's Hospital
- Estonia, Tartu University Hospital
- Finland, Kuopio University Hospital, Pohjois-Savon Sairaanhoitpiiri (KUH)
- Finland, Helsinki University Hospital (HUS)
- Finland, HUS-Oulu ERNEpi Consortium
- France, CHRU Nancy –Regional University Maternity Hospital of Nancy
- France, Strasbourg University Hospital (EGEE Consortium)
- France, Robert-Debré University Hospital, AP-HP (éPiRaReS Consortium)
- France, Adolphe de Rothschild Foundation Hospital (éPiRaReS Consortium)
- France, Pitié-Salpêtrière University Hospital, AP-HP (éPiRaReS Consortium)
- France, CHU Lille - Centre Hospitalier Universitaire de Lille, Epilepsy Unit
- France, Hospices Civils de Lyon (HCL), Epilepsy Departments
- France, Marseille University Hospitals, AP-HM, Epilepsy Dpt.
- France, Hospital Necker-Enfants Malades

EpiCARE Members

- Germany, Bonn University Hospital
- Germany, Erlangen Universitätsklinikum
- Germany, Freiburg University Hospital, Epilepsy Centre
- Germany, Tübingen Universitätsklinikum, Epilepsy Dpt.
- Hungary, National Institute of Clinical Neurosciences - Országos Klinikai Idegtudományi Intézet
- Italy, IRCCS Istituto Neurologico Carlo Besta (Milano Consortium)
- Italy, ASST Niguarda Hospital (Milano Consortium)
- Italy, ASST Santi Paolo e Carlo Hospital (Milano Consortium)
- Italy, IRCCS Institute of Neurological Sciences of Bologna (INSB)-AUSL
- Italy, Azienda Ospedaliera Universitaria Meyer IRCCS, UO Neurologia Pediatrica
- Italy, IRCCS Instituto Giannina Gaslini
- Italy, Fondazione Istituto Neurologico Nazionale Casimiro Mondino
- Italy, Ospedale Pediatrico Bambino Gesù
- Italy, AOUI di Verona, Unità Operativa Complessa (UOC) di Neuropsichiatria Infantile
- Latvia, University Children’s Clinical Hospital - Bērnu klīniskā universitātes slimnīca
- Lithuania, Hospital of the Lithuanian University of Health Sciences Kaunoklinikos
- Lithuania, Vilnius University Hospital Santaros Klinikos
- Luxembourg, Centre Hospitalier de Luxembourg (HUB)
- Malta, Mater Dei Hospital (HUB)
- Norway, Oslo universitetssykehus, Norwegian National Unit for Epilepsy
- Poland, The Children's Memorial Health Institute
- Portugal, Unidade Local de Saúde de Coimbra
- Portugal, Hosp de Santa Maria, Centro de Referencia de Epilepsias Refractrias
- Portugal, Centro Hospitalar do Porto
- Romania, Alexandru Obregia Clinical Hospital
- Slovenia, Ljubljana University Medical Centre, Dpts. of Child, Adolescent and Developmental Neurology & Department of Neurology
- Spain, Hospital Clínic -Adults (HSJD-HC Consortium)
- Spain, Hospital Sant Joan de Déu (HSJD-HC Consortium)
- Spain, Hospital Del Mar-Parc de Salut Mar
- Spain, Hospital Universitario y Politecnico La Fe
- Sweden, Sahlgrenska University Hospital
- The Netherlands, University Medical Center Utrecht (Brain Center Rudolf Magnus)

EpiCARE Management team

Considering the structure in Working Packages of the EU Grant for the coordination of an ERN and all the missions of the ERN EpiCARE the following competences are necessary for a comprehensive management of the network:

- Global Strategy (Health Policy) development;
- Administrative and Finances project management;
- Fostering Research activities and projects management;
- Case Patient Management System (CPMS);
- Registry and Data Sharing management;
- Design and planning of education programs and Guidelines
- Communication and Dissemination;
- Contact with Patient Advocates (ePAG) group

The Project Managers employed by EpiCARE work as a team, under the responsibility of the EpiCARE Coordinator, who is reporting to the Executive Committee. They are recruited for their respective managerial skills in the above-mentioned domains and because they all:
– have the background and motivation to progressively penetrate the complexity of a discipline, such as epilepsy care;
– have the know-how to interact with researchers and clinicians from a wide range of backgrounds,
– are able to adapt to the constraints of the network's European expansion, including the use of at least 2 different languages and differences in time zones
– know-how to synthesise the experience gained from managing all of the network's missions, and
– to make decisions based on complete information.

They meet with the coordinator on a weekly basis and participate at the monthly call of the Executive Committee. They also serve as a direct liaison between the ExCo and the Working Groups.

EpiCARE Management team

Belén Trebino (HSJD, Barcelona, Spain)
Administration, Finances, Evaluation & Global coordination
DG SANTE and HADEA liaison
Executive Committee liaison
WGs 10 and 18 liaison

Laura Roig (HSJD, Barcelona, Spain)
Dissemination, Communication
Patient empowerment
WGs 3, 4, 6, 14 and 19 liasion
WG 17 leader

Sébile Tchaicha (HSJD, Barcelona, Spain)
Fostering Research and innovation
Scientific liaison other EU4Health projects
Liaison European Consortium for Epilepsy Trials
WGs 2; 7 and 16 liaison
Cross-ERNs partnerships

Nicola Lawrence (HSJD, Secondment agreement GOSH, UK)
Healthcare and CPMS activities
Capacity building and best practice sharing-Ukraine Educational webinars management
WGs 5; 9; 11 and 19 liaison, and WG 20 leader

Martin Geroldinger (SALK, Salzburg, Austria)
Clinical Practice Guidelines
WGs 8; 13 liaison

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Contacts

To get **more information on the work groups**, create an account on the EpiCARE intranet (for EpiCARE members only): www.epi-care.eu/member.

To **join a work group**: contact helpdesk@epi-care.eu and briefly describe how you wish to contribute. We will redirect your request to the appropriate WG.

To **refer a patient to an EpiCARE centre**, please see the list of EpiCARE centres: https://epi-care.eu/ern-epicare-centres/.

If you are a member of EpiCARE and think that **the information given about your centre needs to be updated**, please provide the necessary information to helpdesk@epi-care.eu, also copying the leader of your centre.

If you would like to **present a case for discussion with the participation of other experts**, (activity reserved to medical doctors' members of the ERN) please contact: nicola.lawrence@epi-care.eu. You will also need create an account giving you access to the CPMS platform (reserved to doctors working for EpiCARE medical teams): https://epi-care.eu/ case-discussions-epicare/.

If you wish to have information about the **prerequisites and procedures for your medical team to become a member of the ERN EpiCARE**, please refer to: https://epi-care.eu/become-an-ern-member/ . Please note that the ERN coordination is not authorized to accredit new medical teams as members outside of official calls from the European Commission. Of course, individual experts wishing to contribute to any of the ERN activities are welcome. In such a case please inform the helpdesk@epi-care.eu, also providing information about your fields of competence and expertise.

For more information on the **patient representatives and the ePAG**, please refer to: https://epi-care.eu/epicare-patient-representatives/. For any relevant questions you can also write directly to Vedrana, the ePAG secretary: epag@epi-care.eu

For **any other question on EpiCARE**, contact helpdesk@epi-care.eu.

EpiCARE

Funded by
the European Union

European
Reference
Network
for rare or low prevalence
complex diseases

Network
Epilepsies (ERN EpiCARE)

Coordinator
Hospital Sant Joan de Déu
— Spain

Website: epi-care.eu/

Linkedin: ERN EpiCARE

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