

# Complex epilepsy



## Group Leader

Morten I. Lossius, Consultant neurologist, National Centre for Epilepsy (NCE), Oslo University Hospital (OUH) ([mortenl@ous-hf.no](mailto:mortenl@ous-hf.no)) and Professor, University of Oslo (UiO) ([morten.lossius@medisin.uio.no](mailto:morten.lossius@medisin.uio.no))

## Group Members

### Senior researchers

- Marit Bjørnvold, MD, PhD, NCE
- Cecilie Johannessen Landmark, MSc/PhD, NCE, Dept. of pharmacology and Oslo Met. University
- Kristin Alfstad, MD, PhD, NCE
- Karl Otto Nakken, MD, PhD, NCE
- Magnhild Kverneland, MSc, PhD, NCE
- Kari Modalsli Aaberg, MD, PhD, NCE
- Hilde Karterud, Cand.san., PhD, NCE
- Oliver Henning, MD, Dr. Philos., NCE
- Erik Sætre, MD, PhD, NCE
- Annette Holth Skogan, Clin. Neuro. Psych, PhD, NCE
- Lisa E. Hauger, Clin. Psych., PhD, NCE
- Silje Alvestad, MD, PhD, NCE

### PhD candidates

- Torleiv Svendsen, MD, NCE and UiO
- Antonia Villagran, MD, NCE and UiO
- Eli B. Kyte, Clin. neuro. Psych, NCE and UiO
- Sigrid Pedersen, MSc, NCE
- Rune Markhus, MD, NCE
- Ellen Molteberg, MD, NCE and UiO
- Konstantin H. Kostov, MD, NCE and UiO
- Gernot Hlauschek, MD, NCE and UiO
- Merete Tschamper, MSc, NCE and UiO
- Truls Vikin, MD, NCE
- Fridny Heimisdottir, MD, NCE

### Associated group members

- Anette Huuse Farmen, MD/PhD, Innlandet Hospital Trust and UiO
- Marte Syvertsen, MD/PhD, Vestre Viken Hospital Trust and UiO
- Kaja Kristine Selmer, MD/PhD, OUH and UiO
- Ine Cockerell, MSc, OUH and UiO
- Margrete Larsen Burns, MD, PhD, Dept. of Pharmacology, NCE, OUS.

## Research profile and aims

Clinical research in patients with difficult-to-treat epilepsy, with particular focus on:

- Characterization of epilepsy syndromes (genotype/phenotype)
- Clinical pharmacology of antiseizure medications
- Diagnostic and treatment options; EEG, pharmacotherapy, surgery, VNS, ketogenic diets
- Psychosocial, psychiatric and neurocognitive aspects
- Psychogenic non-epileptic seizures

## Dissertations 2022

**Torleiv Svendsen:**

*“Real –world experience of four new antiseizure medications in difficult –to-treat epilepsy. Efficacy, tolerability and the importance of pharmacokinetic variability”.*

University of Oslo. 14.june 2022. Supervisor: **Cecilie Johannessen Landmark**, co-supervisor:

**Morten I. Lossius**

## Ongoing projects

### PhD candidates in the PhD program, University of Oslo:

- **Antonia Villagran:** *“Psychiatric comorbidity in patients with psychogenic non-epileptic seizures (PNES)”*. Supervisor: **Morten I. Lossius**. Co-supervisor: Roderick Duncan.
- **Sigrid Pedersen:** *“Epilepsy in Children: The Impact of the Gut Microbiota and Epigenetics in Successful Treatment of Epilepsy”*. Supervisor: **Kaja K. Selmer**. Co-supervisors: Knut Rudi, Per Ole Iversen, and Benedicte Alexandra Lie.
- **Ellen Molteberg:** *“Long term effects of modified Atkins diet in therapy-resistant epilepsy”*. Supervisor: Erik Taubøll. Co-supervisor: Per Medbøe Thorsby and **Karl O. Nakken**.
- **Eli B. Kyte:** *“Impact of epilepsy surgery on cognition, psychiatry and quality of life at the commencement of aging”* Supervisor: **Kristin Å. Alfstad**. Co-supervisors: **Morten I. Lossius and Annette H. Skogan**.
- **Merete Tschamper:** *“Childhood epilepsy and parental health literacy”* Supervisor: Marie Hamilton Larsen, Co-supervisors: Astrid K. Wahl, Rita Jakobsen.
- **Konstantin H. Kostov:** *“Clinical outcomes and determinants of effectiveness of vagus nerve stimulation in a large national refractory epilepsy population”* Supervisor: **Morten I. Lossius**, Co-supervisor: Jukka Peltola
- **Gernot Hlauschek:** *“Identifying novel imaging and clinical biomarkers of epileptogenesis poststroke”*. Supervisor: **Morten I. Lossius**, Co-supervisors: Patrick Kwan and Meng Law

- **Truls Vikin:** «*Epilepsy in children-how are they doing?*». Supervisor: **Kari M. Aaberg**, Co-supervisors: Pål Surén, **Morten I. Lossius**
- **Fridny Heimisdottir:** “*Genetic mosaicism in focal epilepsy. Creating a platform for precision medicine in mosaic disorders*”. Supervisor: **Kaja K. Selmer** Co-supervisors: **Kristin Å. Alfstad**, Inger-Lise Mero.

## Post doc:

- **Silje Alvestad:** “*Scandinavian multi-registry study of antiepileptic drug teratogenicity: The SCAN-A study*”. Co-workers: Marte Bjørk, Torbjørn Tomson, Jacob Christensen.
- **Kari M. Aaberg:** «*Development in childhood epilepsy*». Co-workers: Pål Surén, Morten I. Lossius
- **Hilde Nordahl Karterud:** “*A follow-up study of adolescents with psychogenic non-epileptic seizures (PNES)*” Co-workers: Merete Tschamper, Oliver Henning

## Other projects:

- **Kristin Å. Alfstad:** “*Risk factors for psychiatric symptoms and executive problems in youth with epilepsy*”. Co-worker: Morten I. Lossius
- **EpilepsiNett:** «*Kan vi tette gapet? Sosioøkonomiske forskjeller og helseulikhet hos unge med epilepsi. Et EpilepsiNett prosjekt med data fra registre, kliniske kohorter og brukerstyrt oppfølging*». **Kristin Å. Alfstad, Kari M. Aaberg**, Marte Bjørk, Marte Roa Syversen, Eline Dahl-Hansen, Maryam Shirzadi, Jeanette Koht.
- **Magnhild Kverneland:** “*Who should be treated with ketogenic diet for epilepsy*”. Co-worker: **Kaja K. Selmer**
- **Erik Sætre:** “*Mortality in Epilepsy*”. Co-worker: Michael Abdelnoor
- **Lisa Evju Hauger:** “*Tilpasset fMRI protokoll for barn, unge og voksne med uttalt kognitiv svikt*” Co-workers: **Annette Holth Skogan**, Markus H Sneve.
- **Lisa Evju Hauger:** “*EpiTrack jr., kvalitetssikringsstudie*”. Co-workers: **Morten I. Lossius, Annette H. Skogan, Kari M. Aaberg.**
- **Halvor Torgersen:** “*EpiTrack, kvalitetssikringsstudie* “. Co-worker: **Annette H. Skogan.**
- **Guro Minken:** «*Protokoll og prosedyre for monitorering av kognitive funksjoner under våkenkirugi, barn*». Co-workers: **Annette H. Skogan, Fridny Heimisdottir**, Jugo Ivanovic, Ane E. Konglund, Arild Egge.
- **Guro Minken:** «*Protokoll for språkmonitorering under våkenkirugi, barn*». Co-workers: **Annette H. Skogan, Fridny Heimisdottir**, Ingeborg Ribu, Silje Systad, Christiane Sørensen, DuLIP gruppen.
- **Annette H. Skogan:** «*Protokoll for språkmonitorering under våkenkirugi, voksne*» Co-workers:

### PhD-candidates not yet in the PhD program, University of Oslo:

- **Kathrine C. Haavardsholm:** *“Long term effect of ketogenic diet in children with epilepsy”*  
Supervisor: Anette Ramm- Pettersen, Co-supervisor: **Kaja K. Selmer**

### PhD-candidates in the PhD program at University of Oslo, associated to the group:

- Ine Cockerell: *“Treatment and follow-up in patients with tuberous sclerosis”*  
Supervisor: Terje Nærland. Co-supervisors: **Cecilie J. Landmark**, Caroline Lund and Ketil Heimdal

### National network

- EpilepsiNett: National Network for Evidence-based Epilepsy Care.  
Chairperson: Marte Syversen. Management team: **Morten I. Lossius**, Nils Erik Gilhus, Marte Bjørk, **Kristin Å. Alfstad**, Jørn Mandla Sibeko.

### International networks

- *“EpiCARE” European Reference Network (ERN) on rare and complex epilepsies. Lead of working group 18 and executive committee member: **Morten I. Lossius***

### International projects:

- *“EURAP study”. An International Antiepileptic Drugs and Pregnancy Registry”* (International concerted Action on the Teratogenesis of Anti-epileptic Drugs) (<http://www.eurapinternational.org/>).  
**Silje Alvestad** and **Siri Myklebust**, national coordinators
- *“Computer based identification of morphometric abnormalities in MRI images in patients before and after operation in the temporal lobe.”* **Kristin Å. Alfstad**, **Morten I. Lossius**, Jugoslav Ivanovic, Pål Bache Marthinsen, Oslo University Hospital and Lars Pinborg, Copenhagen University Hospital, Denmark
- *“Detection and classification of seizures with wearable sensors-new technology in the diagnosis of epilepsy”.* **Kristin Å. Alfstad**, **Antonia Villagran**, **Rune Markhus** and Kristina Malmgren, University of Gothenburg and Sahlgrenska University Hospital, Sweden

- *“Ultra-long subcutaneous EEG monitoring: reliability, safety and impact on clinical management in uncontrolled epilepsies.”* **Kristin Å. Alfstad, Oliver Henning, Margrete Halvorsen Bø**, Arild Egge, Oslo University hospital, Guido Rubboli, University of Copenhagen, Danish Epilepsy Centre, Dianalund, Denmark and Sándor Benizky, Aarhus University Hospital and Danish Epilepsy Centre, Dianalund, Denmark.
- *“Nordic prospective observational study of outcomes after rare epilepsy surgery procedures”.*  
**Fridny Heimisdottir, Kristin Å. Alfstad** and Tove Hallbook, University of Gothenburg and Sahlgrenska Hospital, Sweden
- *“Children with refractory epilepsy and use of the newest antiepileptic drugs”.*  
Scandinavian project between the National Centre for Epilepsy in Norway and Danish Epilepsy Centre, Dianalund, Denmark; **Margrete Larsen Burns**, Marina Nikoronova, Danish Epilepsy Centre, Dianalund; responsible in Denmark, **Cecilie Johannessen Landmark**, project leader.
- *“Nordic Delphi Consensus on VNS guidelines”*  
An international multicenter project. The aim of the project is to find Consensus for mutual clinical VNS guidelines in the Nordics for drug resistant epilepsy patients.  
**Oliver Henning**, project leader, **Hrisimir Kostov**, Thorsten Gerstner, Stein-Helge Tingvoll, Susanne Ingebrigtsen, Atle Lillebø, Omar Hikmat (Norway), Dragan Marsanovic, Kern Olofsson, Anne Sabbers, Ioannis Tsiropoulos, Noemi Becser Andersen (Denmark).  
Liisa Metsähonkala, Reina Roivainen, Salla Lamouso, Jukka Peltola (Finland), Sintia Kolbjør, Lisa Gordon, Helena Gauffin, Johan Lundgren, Elinor Ben-Menachem, Fredrik Asztely, (Sweden).
- *“EEG in Nodding Syndrome (Onchocerca volvulus associated epilepsy).”* **Oliver Henning**, Richard Idro, Makerere University, Kampala, Uganda

## Expert groups, etc.

- Cannabidiol International Expert group (CBD). **Cecilie Johannessen Landmark**
- Treatment strategies on pediatric epilepsies annual educational course  
[https:// www.epiped-course.com](https://www.epiped-course.com) (EpiPed.) **Cecilie Johannessen Landmark**
- Epilepsy Education Task Force, Botanical Medicines Task Force and Pediatric treatment task force, all initiated by the International League Against Epilepsy (EpiED) **Cecilie Johannessen Landmark**
- Faculty member, Eilat Educational course: Pharmacological treatment of epilepsy **Cecilie Johannessen Landmark**  
<https://www.ilae.org/congresses/10th-eilat-educational-course-pharmacological-treatment-of-epilepsy>

- Faculty member, annual course Baltic sea summer school for epilepsy: **Oliver Henning** and **Cecilie Johannessen Landmark**  
<https://www.ilae.org/congresses/ilae-sponsored-meetings-and-courses/baltic-sea-summer-school-on-epilepsy-bssse>
- Nordic Expert Group on Epilepsy and Dementia. **Erik Sætre**
- Nor-EpiNet Nordic network for precision medicine, steering group members **Kaja Selmer** and **Cecilie Johannessen Landmark**
- Commission on Epidemiology, International League Against Epilepsy. **Kari Modalsli Aaberg**

## Most important national and international collaborators

### National

- Prof. Eylert Brodtkorb, St. Olavs Hospital and NTNU, Trondheim
- Prof. Erik Taubøll, OUH and UiO
- Prof. Jeanette Koht, Viken Hospital Trust and UiO
- Prof. Nils Erik Gilhus, Haukeland University Hospital and UiB
- -Ass. prof. Marte Bjørk, Haukeland University Hospital and UiB
- Marte Syvertsen, MD, PhD Viken Hospital Trust and UiO

### International

- Prof. Torbjörn Tomson, Karolinska Institute Stockholm, Sweden
- Jacob Christensen, PhD, University of Aarhus, Denmark
- Prof. Marina Nikoronova, Danish Epilepsy Centre, Dianalund, Denmark
- Prof. Anne Sabers, University of Copenhagen, Denmark
- Lars Pinborg, Copenhagen University Hospital, Denmark
- Prof. Richard Chin, Muir Maxwell Epilepsy Centre and University of Edinburgh
- MD Roderick Duncan, MD, DB Medical Research Centre, Christchurch, New Zealand
- Prof. Christoph Helmstaedter, Bonn University Hospital, Germany
- Prof. Lieven Lagae, UZ Leuven University Hospital, Belgium
- PhD, MD. Richard Idro, Mulago National Referral Hospital, Kampala, Uganda

- Prof. Sándor Beniczky, Danish Epilepsy Centre, Dianalund , Aarhus University, Denmark
- Prof. Guido Rubboli, Danish Epilepsy Centre, Dianalund, University of Copenhagen, Denmark
- Ass. Prof. Rikke Steensbjerre Møller, University of Southern Denmark, Denmark
- Prof. Jukka Peltola, Tampere University Hospital, Finland

## Scientific production of the research group in 2022

Peer reviewed original research articles: 22

Other publications: 7

### 3 Selected publications:

1. Molteberg E, Taubøll E, Kverneland M, Iversen PO, Selmer KK, Nakken KO, Hofoss D, Thorsby PM (2022)  
Substantial early changes in bone and calcium metabolism among adult pharmaco-resistant epilepsy patients on a modified Atkins diet  
Epilepsia, 63 (4), 880-891  
DOI [10.1111/epi.17169](https://doi.org/10.1111/epi.17169), PubMed [35092022](https://pubmed.ncbi.nlm.nih.gov/35092022/)
2. Alvestad S, Husebye ESN, Christensen J, Dreier JW, Sun Y, Igland J, Leinonen MK, Gissler M, Gilhus NE, Tomson T, Bjørk M (2022)  
Folic Acid and Risk of Preterm Birth, Preeclampsia, and Fetal Growth Restriction Among Women With Epilepsy: A Prospective Cohort Study  
Neurology, 99 (6), e605-e615  
DOI [10.1212/WNL.0000000000200669](https://doi.org/10.1212/WNL.0000000000200669), PubMed [35577577](https://pubmed.ncbi.nlm.nih.gov/35577577/)
3. Pedersen S, Kverneland M, Nakken KO, Rudi K, Iversen PO, Gervin K, Selmer KK (2022)  
Genome-wide decrease in DNA methylation in adults with epilepsy treated with modified ketogenic diet: A prospective study  
Epilepsia, 63 (9), 2413-2426  
DOI [10.1111/epi.17351](https://doi.org/10.1111/epi.17351), PubMed [35762681](https://pubmed.ncbi.nlm.nih.gov/35762681/)

### On-going funding

- South-Eastern Norway Regional Health Authority : 1 PhD , 1 post doc 6 yrs
- Stiftelsen Dam (Norwegian Foundation for Health and Rehabilitation): 4PhD
- NordForsk: post doc. 1

#### Other financial support:

Norwegian chapter of ILAE

- Norwegian Epilepsy society
- Norwegian National Advisory Unit on Rare Disorders
- Novo Nordisk Foundation

