# Complex epilepsy

#### Group Leader

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

**Group Members**

**Senior researchers:**

* Marit Bjørnvold, MD/PhD, NCE
* Cecilie Johannessen Landmark, MSc/PhD, NCE 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 UoO
* Antonia Villagran, MD, NCE and UoO
* Eli B. Kyte, Clin.neuro.Psych, NCE and UoO
* Sigrid Pedersen, MSc, NCE
* Rune Markhus, MD, NCE
* Ellen Molteberg, MD, NCE and UoO
* Konstantin H. Kostov, MD, NCE and UoO
* Gernot Hlauschek, MD, NCE and UoO
* Merete Tschamper, MSc, NCE and UoO
* Truls Vikin, MD, NCE
* Kathrine C. Haavardsholm, MSc, NCE
* Fridny Heimisdottir, MD, NCE

**Associated group members**

* Anette Huuse Farmen, MD/PhD, Innlandet Hospital Trust and UoO
* Marte Syvertsen, MD/PhD, Vestre Viken Hospital Trust and UoO
* Kaja Kristine Selmer, MD/PhD, OUH and UoO
* Ine Cockerell, MSc, OUH and UoO

**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 antiepileptic drugs
		- Diagnostic and treatment options; EEG, pharmacotherapy, surgery, VNS, ketogenic diets
		- Psychosocial, psychiatric and neurocognitive aspects
		- Psychogenic non-epileptic seizures

Dissertations 2020:

* **Magnhild Kverneland**: *Modified ketogenic (Atkin’s) diet as a treatment option for adults with drug-resistant epilepsy. A randomized controlled study*. Supervisor: **Karl Otto Nakken**. Co-supervisors: Erik Taubølland Per Ole Iversen**.** UoO, 28th February 2020
* **Anette Huuse Farmen**: “*Effect of epilepsy and antiepileptic drugs in pregnancy: cognition, neurodevelopmental symptoms and obstetric outcome in offspring ‒ a prospective cohort study”* Supervisor: **Morten I. Lossius**. Co-supervisor: Merethe Øien. UoO, 5 thMarch 2020
* **Oliver Henning**: “*Sexuality, depression and side effects in refractory epilepsy patients*”. Senior researcher: **Morten I Lossius**, UoO, 19 thNovember 2020

### 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.
* **Torleiv Svendsen:** *Tolerability and efficacy of new antiepileptic drugs*. Supervisor: **Cecilie Johannessen Landmark**. Co-supervisors: Ole Morten Rønning and **Morten I. Lossius.**
* **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: ErikTaubøll. 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-supervisor**: Morten I. Lossius and Annette H. Skogan.**
* **Merete Tschamper:** *“Childhood epilepsy and parental health literacy***”** Supervisor:Marie Hamilton Larsen**,** Co-supervisor**:** Astrid K. Wahl, Rita Jakobsen.

Post doc:

* **Silje Alvestad**: *“Scandinavian multi-registry study of antiepileptic drug teratogenicity:*

*The SCAN-A study”.* Co-workers: Marte Bjørk, Torbjørn Tomsen, Jacob Christensen.

* **Kristin Å. Alfstad**: *“Risk factors for psychiatric symptoms and executive problems in youth with epilepsy”.* Co-workers: Morten I. Lossius, Betty van Roy, Berit Hjelde Hansen, Erik Hessen,
* **Kari M. Aaberg**: *«Development in childhood epilepsy».* Co-workers: Pål Surén, Morten I. Lossius
* **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*

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

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-supervisor**: 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.* Head of Scientific Advisory Board:**Morten I. Lossius**
* *“NESREC” Nordic Epilepsy Surgery Research Consortium.*

International projects:

* “*EURAP study”. An International Antiepileptic Drugs and Pregnancy Registry”* (International concerted Action on the Teratogenesis of Anti-epileptic Drugs) [(http:](http://www.eurapinternational.org/%29%3B)/[/www.eurapinternational.org/).](http://www.eurapinternational.org/%29%3B)
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
* *“ Pharmacokinetic variability, efficacy and tolerability of a new antiepileptic drug, brivaracetam”.* Scandinavian project between the National Centre for Epilepsy in Norway and Danish Epilepsy Centre, Dianalund, Denmark; **Torleiv Svendsen**, medical leader, **Cecilie Johannessen Landmark**, project leader
* *“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.
* “*ERAS-Trial (Effect Related to Auto Stimulation): Does additional ECG-triggered stimulation increase the efficacy of Vagus Nerve Stimulation?”* **Oliver Henning, Hrisimir Kostov and Tatiana Evsikova**, Eylert Brodtkorb, St.Olavs Hospital, NTNU, Lieven Lagae,UZ Leuven University Hospital, Anne Sabers, University of Copenhagen and Jukka Petola, Tampere University Hospital.

* “*EEG in Nodding Syndrome (Onchocerca volvulus associated epilepsy).*” **Oliver Henning,**  Richard Idro, Makarere 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 (EpiPed.) **Cecilie Johannessen Landmark**

* Epilepsy Education Task Force of the International League Against Epilepsy (EpiED) **Cecilie Johannessen Landmark**
* Nordic Expert Group on Epilepsy and Dementia**. Erik Sætre**

**Clinical studies (sponsored by the pharmaceutical industry)**

* A Study to Test the Efficacy and Safety of Padsevonil as Treatment of Focal-onset Seizures in Adult Subjects With Drug-resistant Epilepsy (DUET) (EP0092)
* P.I. **Torleiv Svendsen,** Investigator: **Morten I. Lossius,** Study coordinator**: Stein Atle Roestad.**
* UCB, Experience study (EPO0093).  P.I: **Torleiv Svendsen,** Investigator: **Morten I. Lossius,** Study coordinator**: Stein Atle Roestad**

### Most important national and international collaborators

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| National |  |  | International |  |
| - | Prof. Eylert Brodtkorb, St. Olavs Hospital and NTNU, Trondheim |  | - | Prof. Torbjörn Tomson, Karolinska Institute Stockholm, Sweden |
| - | Prof. Erik Taubøll, OUH and UoO |  | - | Jacob Christensen,PhD, University of Aarhus, Denmark |
| - | Prof. Jeanette Koht, Viken Hospital Trust and UoOProf. Nils Erik Gilhus, Haukeland University Hospital and UoBAss. prof. Marte Bjørk, Haukeland University Hospital and UoB |  | - | Prof. Marina Nikoronova, Danish Epilepsy Centre, Dianalund, DenmarkProf. Anne Sabers, University of Copenhagen, DenmarkLars Pinborg, Copenhagen University Hospital, Denmark Prof. Richard Chin, Muir Maxwell Epilepsy Centre and University of EdinburghMD Roderick Duncan,MD, DB Medical Research Centre, Christchurch, New Zealand |
| - | Marte Syvertsen, MD,PhD Viken Hospital Trust and UoO |  | - | Prof. Christoph Helmstaedter, Bonn University Hospital, GermanyProf. Lieven Lagae, UZ Leuven University Hospital, BelgiumPhD, MD. Richard Idro, Mulago National Referral Hospital, Kampala, Uganda |
| - |  |  | - | Prof. Kristina Malmgren, Sahlgrenska University Hospital, Sweden |
|  |  |  | - | 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 2020

#####  Peer reviewed

##### Original research articles: 13

##### Other publications: 13

3 Selected publications:

**Lossius K**, de Saint Martin A, Myren-Svelstad S, **Bjørnvold M**, **Minken G**, Seegmuller C, Valenti Hirsch MP, Chelly J, Steinlein O, Picard F, Brodtkorb E (2020)
Remarkable effect of transdermal nicotine in children with CHRNA4-related autosomal dominant sleep-related hypermotor epilepsy
**Epilepsy Behav, 105, 106944**

**Svendsen T**, Brodtkorb E, Baftiu A, **Lossius MI**, **Nakken KO**, **Johannessen SI**, **Johannessen Landmark C**

(2020)
Clinical experience combined with therapeutic drug monitoring of lacosamide
Acta Neurol Scand, 141 (4), 279-286

**Molteberg E**, Thorsby PM, **Kverneland M**, Iversen PO, **Selmer KK**, **Nakken KO**, Taubøll E (2020)
Effects of modified Atkins diet on thyroid function in adult patients with pharmacoresistant epilepsy
Epilepsy Behav, 111, 107285

**On-going funding**

* South-Eastern Norway Regional Health Authority : 1 PhD funding , 1 post doc 6 yrs
* Stiftelsen Dam (Norwegian Foundation for Health and Rehabilitation): 3 PhD fundings,

 other financial support

* Norwegian chapter of ILAE
* Norwegian Epilepsy society
* National Centre of Competence for Rare Diseases