

ECT in depression Clinical Use and Acute and Long-term Effect and Side-effects

NACT 2026

Stavanger
Jeanette Bjørke

I hope you enjoyed Stavanger



I have nothing to disclose

Psychiatric Clinic, Stavanger University Hospital

Specialist in psychiatry
since 2014

Work in a specialized ward
for adults with mood
disorders here in
Stavanger



Content

Background (PhD project)

Remifentanil in ECT

Patient-Reported Outcome Measures

Long-term cognitive side effects

Conclusions

Future implications



Photo: J. Bjørke

PhD Dec 2019-Dec 2024

Clinically involved in ECT for several years

Our CPR - albeit in slow motion

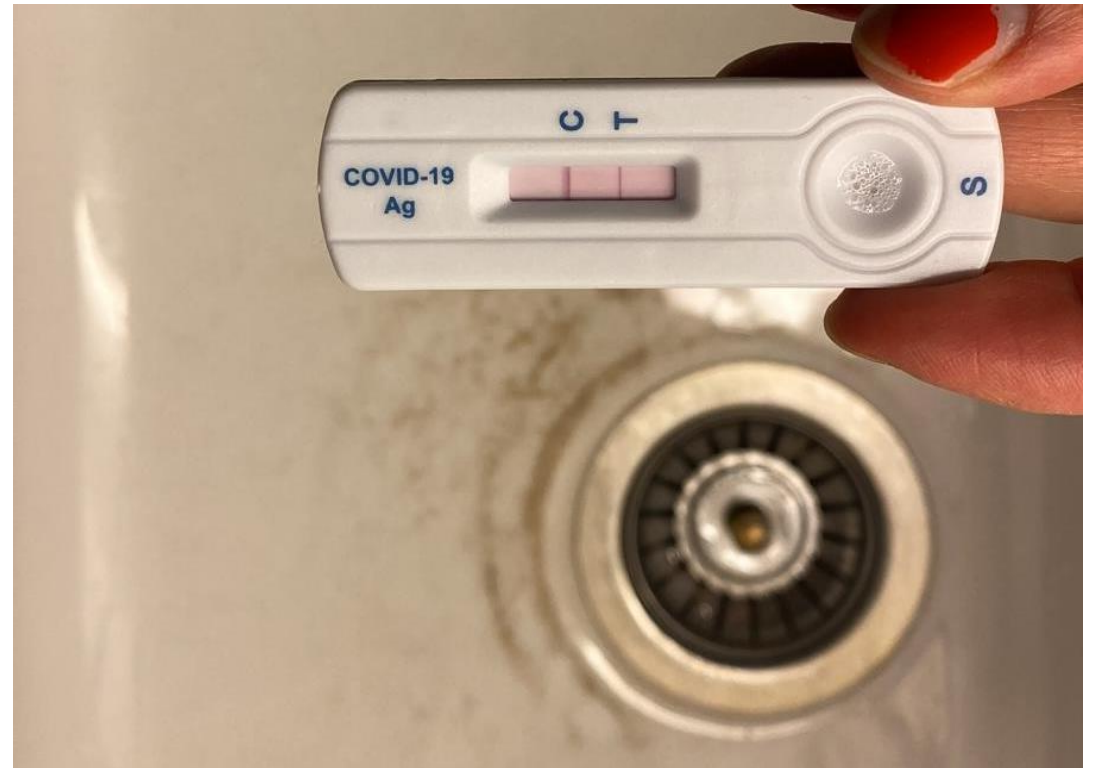
But also noticed some did not have the desired effect,
and some had lasting memory problems

Difference in anaesthetic procedures between Bergen and
Stavanger (remifentanil)

Embarked on my PhD-journey with main supervisor Ute
Kessler, MD



Photo: J. Bjørke



Photos: J. Bjørke

Stigma

Prof. Sartorius during introductory lecture on
Wednesday



Photo: J. Bjørke

Research questions

What are the response- and remission rates in a cohort of inpatients treated with ECT for depression? And is there a clinical benefit of routinely adding remifentanyl to the anaesthesia in ECT?

Are there differences in acute and long-term Patient-Reported Outcome Measures (PROMs) when comparing pharmacological treatment and right unilateral (RUL) ECT in treatment-resistant bipolar depression?

Are there differences in long-term cognitive side-effects when comparing RUL ECT and pharmacological treatment in treatment-resistant bipolar depression?

Materials

Data from two projects:

The Regional Register for
Neurostimulation Treatment in Western
Norway
(paper I)

The Norwegian multi-centre randomized
controlled trial comparing RUL ECT with
algorithm-based pharmacologic treatment
(APT)
(paper II and III)

Trondheim, St. Olavs Hospital

Førde

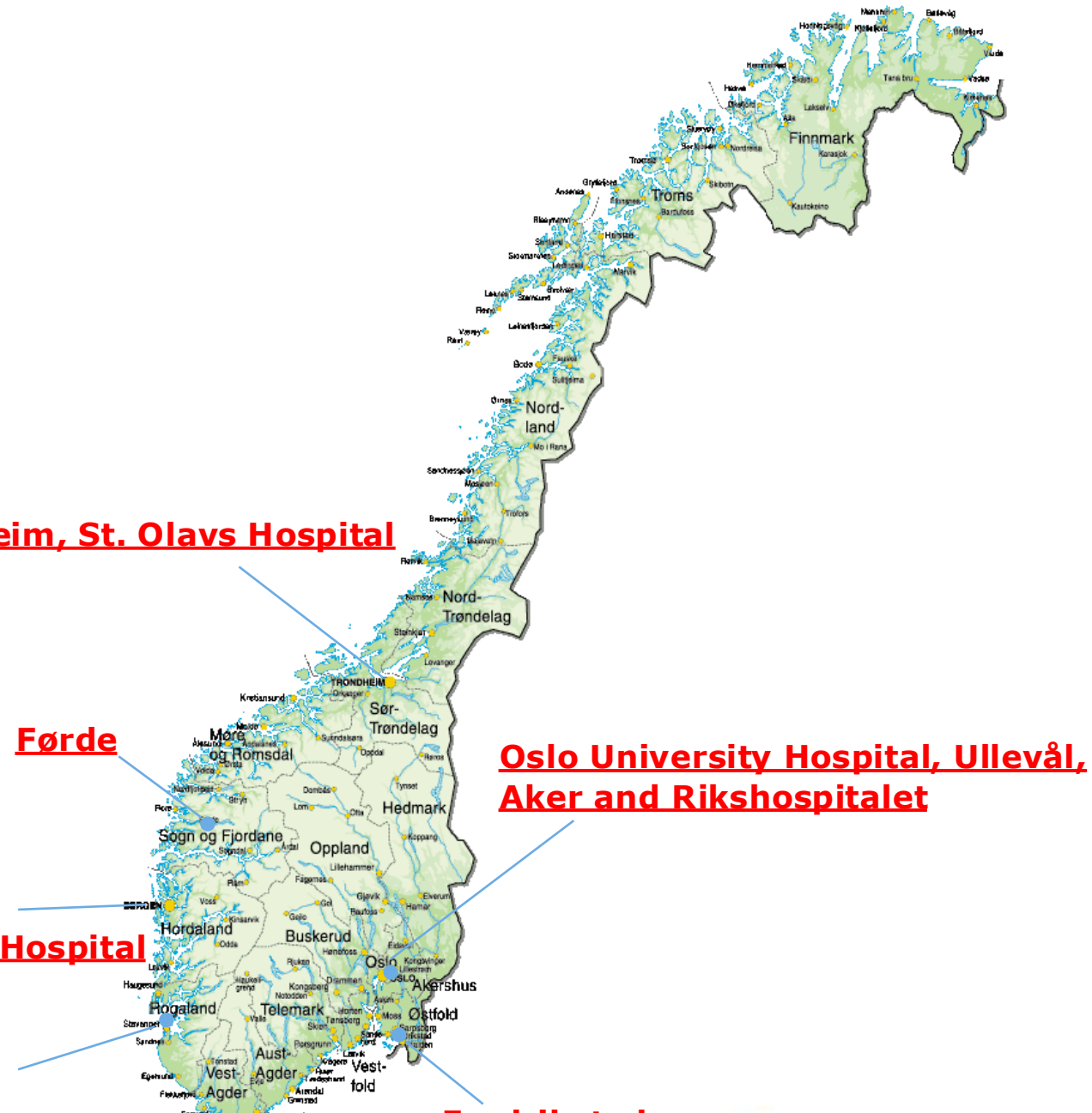
**Oslo University Hospital, Ullevål,
Aker and Rikshospitalet**

**Bergen,
Haukeland
University Hospital**

**Stavanger, Stavanger
University Hospital**

Fredrikstad

Photo: Kartverket



	Clinical question	Study design	Material
Paper I	Clinical outcomes after ECT in a cohort of in-patients. Effect of routinely adding remifentanyl.	Retrospective register study	The Regional Register for Neurostimulation Treatment in Western Norway
Paper II	Acute- and long-term outcomes including Patient-Reported Outcome Measures after right unilateral ECT	Randomized controlled trial (RCT)	The Norwegian Multi-centre Randomized Controlled Trial
Paper III	Long-term neurocognitive outcomes after right unilateral ECT	RCT	The Norwegian Multi-centre Randomized Controlled Trial

Saara Huoponen

Drug	Plusses / main effects	Minuses	Practices at TYKS Neuromodulation unit
Methohexital (GABA-A-agonist barbiturate)	Fast recovery (4-7 minutes), less bradycardia and extrasystole than with sodium pentothal	Availability is occasionally limited, requires dilution. Limited familiarity among anaesthesiologists.	Primary choice
Propofol (likely complex GABA-A-mediated effects)	Familiar to all anaesthetists, decreases post-ECT hypertension, prevents and treats agitation, fast and short acting → fast cognitive recovery. Fast to prepare for use.	Shortens EEG-seizures, more energy is needed to achieve quality seizures which may increase memory side effects. Injection pain.	If more seizure suppression is needed or the patient is very restless and/or aggressive after ECT or if they present with intense PENV despite prophylaxis
Propofol & esketamine (NMDA-receptor antagonist) aka "ketofol"	Smaller doses of propofol → less depression of breathing and less hypotension plus less suppression of seizures. Relaxation of smooth muscle in airways. Increased antidepressive effect?	esketamine: hallucinations, increased salivation, can increase QT interval pre-disposing to arrhythmias?, increases cardiac oxygen consumption, more PENV, vertigo.	Selected patients with depression, currently a rare choice at TYKS
Ethomidate (nonbarbiturate GABA-A-agonist)	Suppresses seizures the least — good when struggling to achieve sufficient seizures.	Myoclonus, slower recovery and more tachycardia, hypertensions and PENV than with methohexital. Suppression of cortical adrenal hormone production, though likely not an issue with ECT. Injection pain.	For patients in whom methohexital suppresses seizures too much
Thiopental (complex GABA-A-agonist barbiturate)	Recovery as fast as with propofol, suppresses seizures less than propofol (but more than methohexital)	Requires dilution. Releases histamine. Onion taste in mouth.	Used to be the primary choice, now used only if methohexital is temporarily unavailable on the market

Photo: J. Bjørke

Remifentanyl as an adjunct to anaesthesia for electroconvulsive therapy fails to confer long-term benefits

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Paper I: Methods

Retrospective register study from The Regional Register for Neurostimulation Treatment in Western Norway

Remifentanil, an opioid agonist, allows for a smaller dose of induction agent

One hospital routinely administered Remifentanil R+ (Stavanger University Hospital)

One hospital did not administer Remifentanil R- (Haukeland University Hospital)

Clinical assessment including response- and remission rates, symptom grading scales, side effects interview

Stavanger University Hospital
R+



47 patients
541 ECT sessions

Haukeland University Hospital
R-

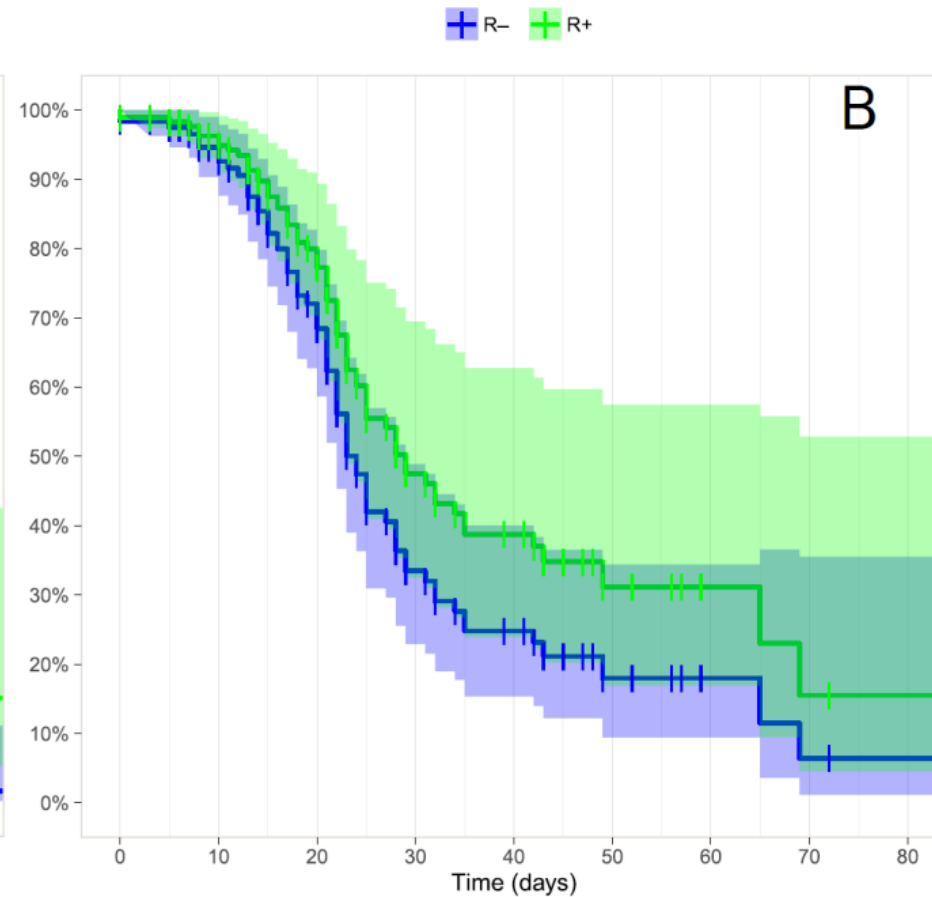
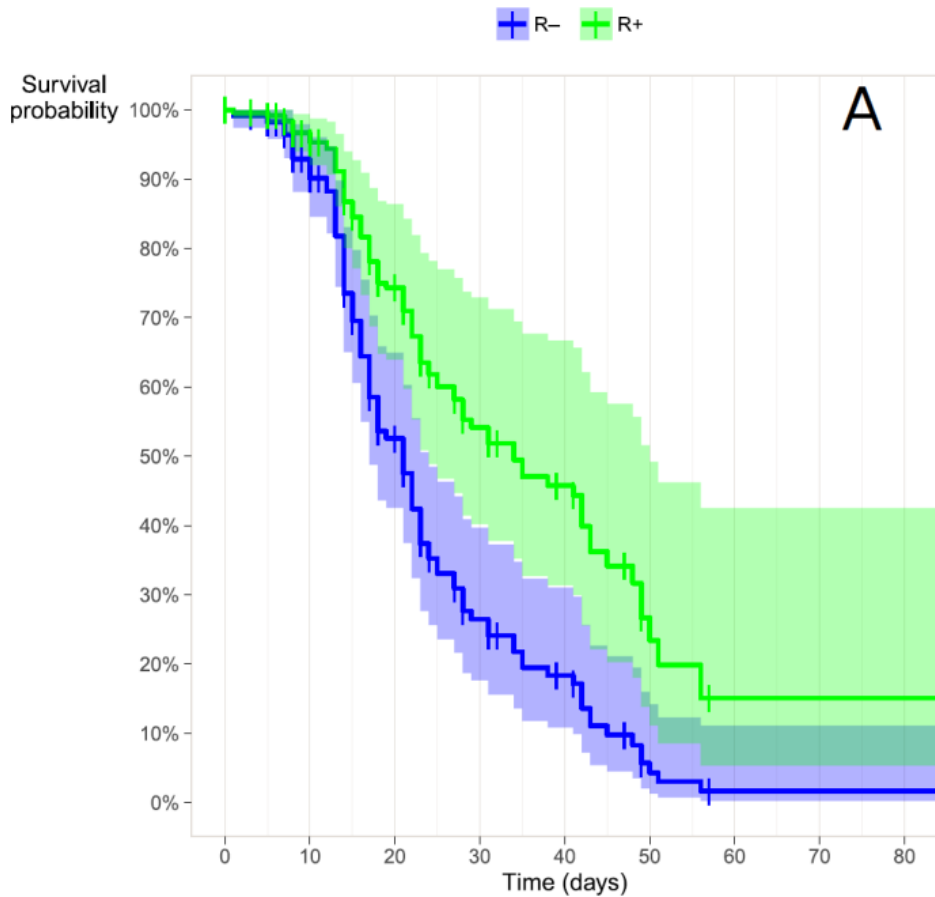


119 patients
1166 ECT sessions

Assessments:
Interview of side-effects
MADRS
CGI-S
MMSE

ECT – Electroconvulsive Therapy, MADRS – Montgomery and Åsberg Depression Rating Scale, CGI-S – Clinical Global Impression – Severity, MMSE – Mini Mental State Exam

Paper I: Results





Time to response (A) and to remission (B) during electroconvulsive therapy for patients treated with (R+, at Stavanger University Hospital) or without (R-, at Bergen University Hospital) remifentanyl.

Number of patients:

R-	114	77	39	17	11	3	0	0	0
R+	46	42	26	14	10	3	2	2	2

Number of patients:

R-	114	79	51	20	15	5	1	1	0
R+	46	41	30	15	10	5	4	2	2


		R+ Stavanger University Hospital	R- Haukeland University Hospital
Symptom improvement:			
Response rate		76% Longer time to respond	76%
Remission rate		63% Longer time to remit 10.8 treatments	65% 8.5 treatments
Side-effects after ECT		30.4% subjective cognitive complaints. More nausea, dizziness, headache	30.8% subjective cognitive complaints
Cognitive complaints:			
MMSE mean score		27.2 pretreatment 28.1 after ECT	27.7 pretreatment 28.0 after ECT

Paper II



ORIGINAL ARTICLE

Patient-Reported Outcomes From a Randomized Controlled Trial Comparing Right Unilateral Electroconvulsive Therapy With Algorithm-Based Pharmacological Treatment in Bipolar Depression, With Long-Term Follow-Up on Pharmacological Treatment

[Jeanette Bjørke](#) , [Helle Schøyen](#), [Arne Vaaler](#), [Bjørn Auestad](#), [Ulrik Malt](#), [Gunnar Morken](#), [Ketil Joachim Oedegaard](#), [Ole Andreas Andreassen](#), [Per Bergsholm](#), [Ute Kessler](#)

First published 14 March 2026 | <https://doi.org/10.1111/bdi.70105> |


 VIEW METRICS

Paper III



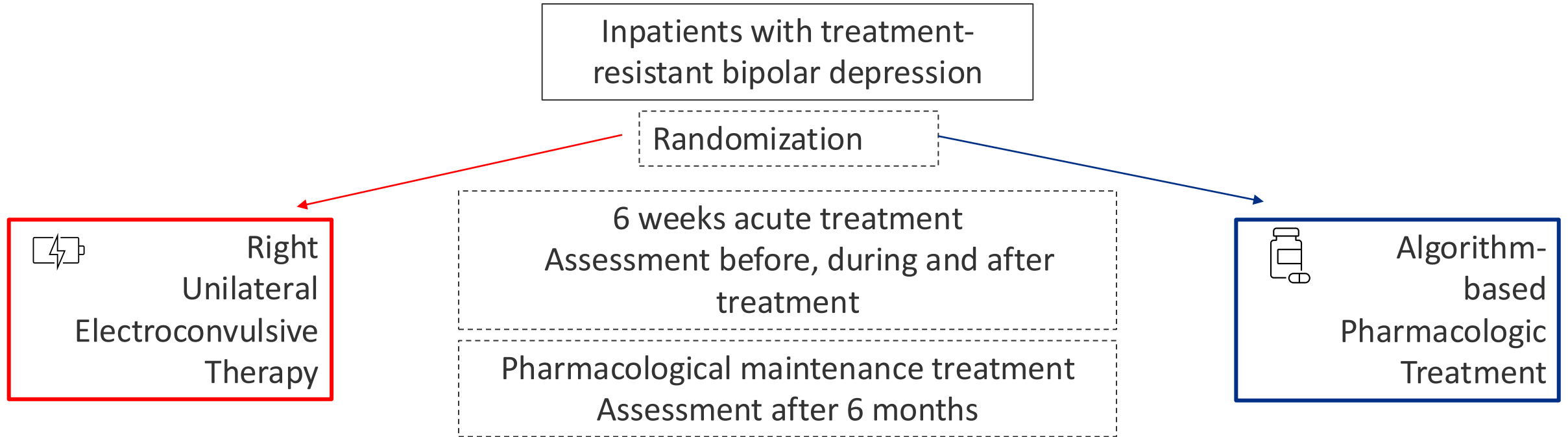
ORIGINAL ARTICLE |  Full Access


Right unilateral electroconvulsive therapy does not cause more cognitive impairment than pharmacologic treatment in treatment-resistant bipolar depression: A 6-month randomized controlled trial follow-up study



Jeanette Bjoerke-Bertheussen  Helle Schoeyen, Ole A Andreassen, Ulrik F Malt, Ketil J Oedegaard, Gunnar Morken, Kjetil Sundet, Arne E Vaaler, Bjoern Auestad, Ute Kessler

First published: 21 December 2017 | <https://doi.org/10.1111/bdi.12594> | Citations: 9

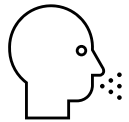
Paper II and Paper III: Methods



Assessment of  Health-related quality of life and function
 Neurocognition

Using  Patient-Reported Outcome measures (PROMs)
 Clinician-rated measurements

Assessments



Patient-Reported Outcome Measures

Everyday Memory
Questionnaire – 28 (EMQ-28)

Short-Form Health Survey
(RAND-36)

Patient Global Impression –
Improvement (PGI-I)



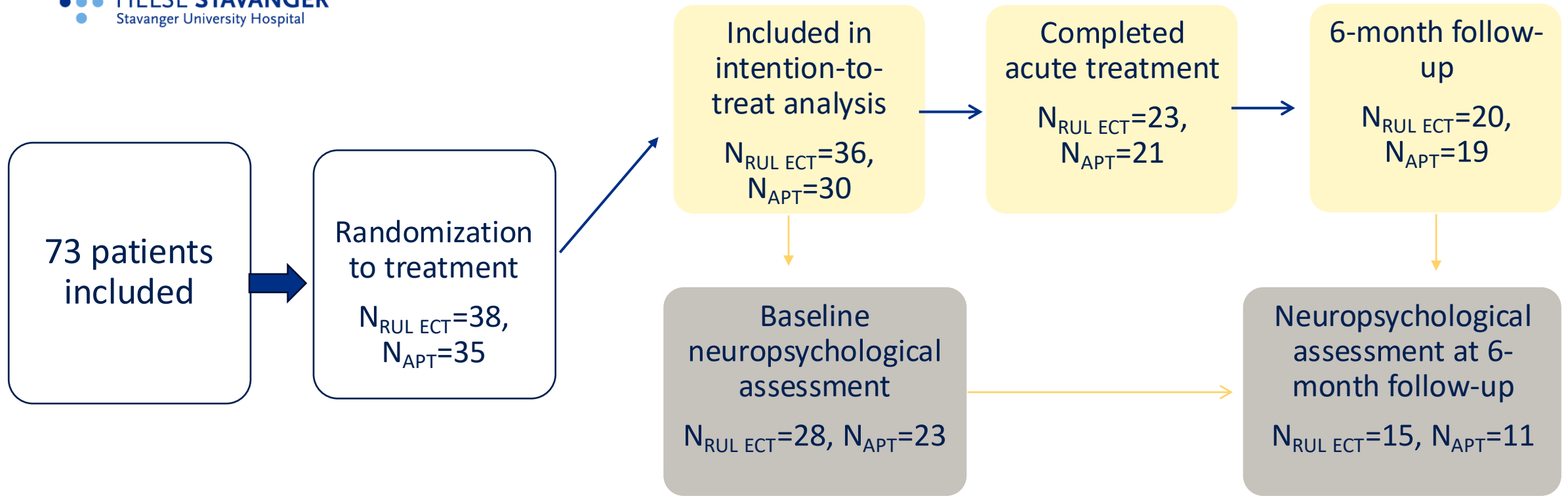
Clinician-rated measurements

MMSE

Measurement And Treatment
Research to Improve Cognition in
Schizophrenia Consensus
Cognitive Battery (MCCB)

Autobiographical Memory
Interview – Short Form (AMI-SF)

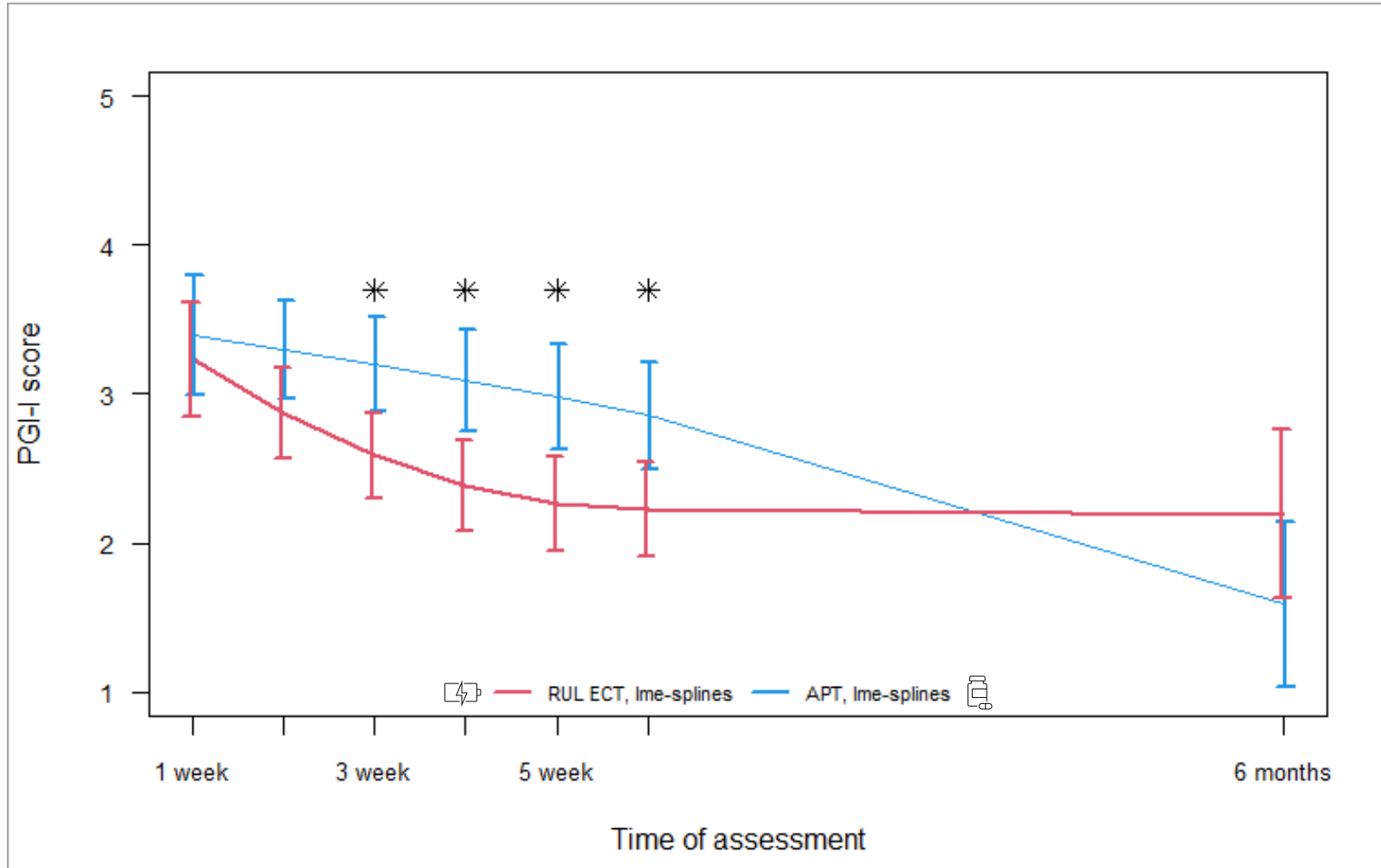
MADRS



Paper II

Paper III

Results: Paper II

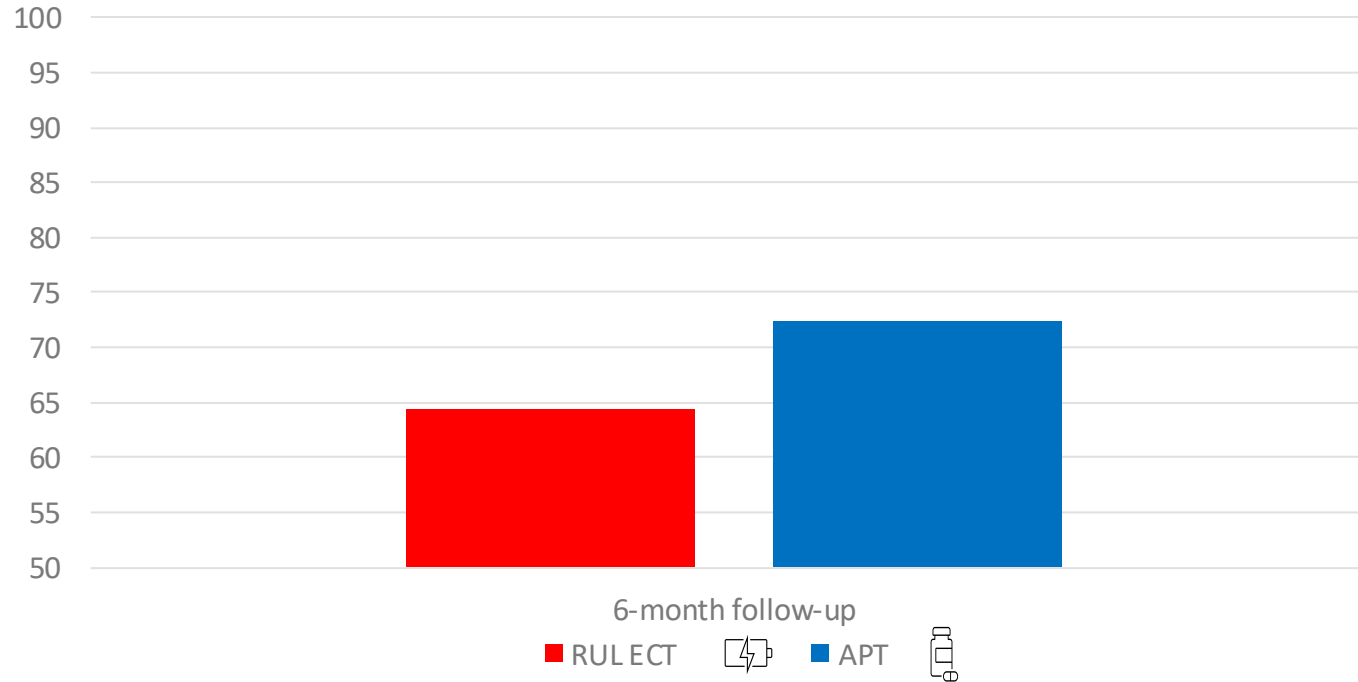



Change in PGI-I score, linear mixed-elements analysis of group comparison.


* $p < 0.05$

Results: Paper III

AMI-SF consistency score

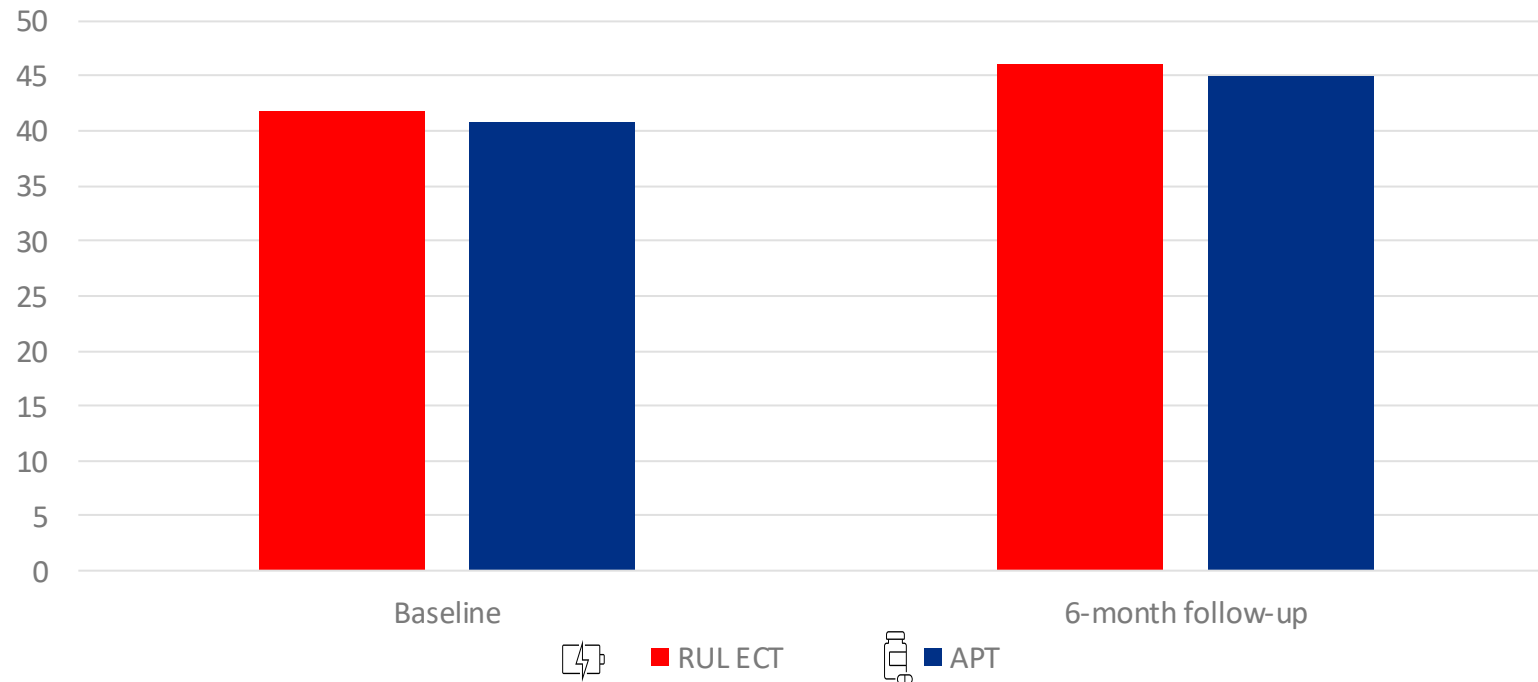



 $N_{\text{RUL ECT}} = 15$ (SD 8.7)

 $N_{\text{APT}} = 10$ (SD 15.4)

Results: Paper III

MCCB composite score



 $N_{\text{RUL ECT}} = 15$
(Baseline SD 8.1)
(6-month SD 7.4)



$N_{\text{APT}} = 11$
(Baseline SD 8.7)
(6-month SD 6.9)

	PROMs	Clinician rated assessment	Results
Depressive symptoms and health-related quality of life	PGI-I RAND-36	MADRS	<p>Greater improvements on PROMs acutely with RUL ECT compared with APT</p> <p>No group difference on any measure at 6 months</p>
Cognitive function	EMQ-28	MCCB AMI-SF	<p>Less subjective memory problems after 6 months in the RUL ECT group</p> <p>Improved general neurocognitive functioning and reduced autobiographical consistency at 6 months in both groups</p> <p>No statistically significant group difference at any time point on any of the cognitive measures</p>

Conclusion

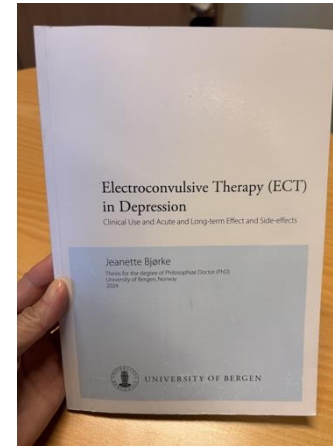
Actually quite fun and totally worth doing a PhD!

Thank you to the great:

Kaija Järventausta, MD, PhD, Associate Professor,
Tampere University

and

Pouya Movahedrad, MD, PhD, Lund University



Photos: J. Bjørke

Take-home messages

Please come back to Stavanger soon!

ECT remains a viable acute treatment option in major depression

The routine administration of remifentanyl in the general anaesthesia for ECT should be reconsidered

No evidence of impaired general neurocognitive function after ECT

The long-term impact of RUL ECT on autobiographical memory is unclear



Photo: J. Bjørke

Limitations

Retrospective register design

Dropout in the RCT

Treatment-resistant depression – problematic concept ref. prof. Movahed

Difficulties assessing autobiographical memory

Generalizability



Photo: J. Bjørke

Future aspects

Autobiographical memory in a larger study

Further studies into maintaining the acute effect of ECT

Remifentanil in an RCT



Photo: J. Bjørke

Thank you



Photo: J. Bjørke

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and St. Olavs Hospital



Thank you

Ute Kessler, MD, PhD
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Arne Vaaler, MD, PhD, emeritus Professor
Bjørn Auestad, PhD
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Chief of the Psychiatric Division Sølve Braut

All patients who participated in this work



Photo: J. Bjørke



Thank you for
your attention

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