The role of the ECT team

Treatment performance

Evaluation

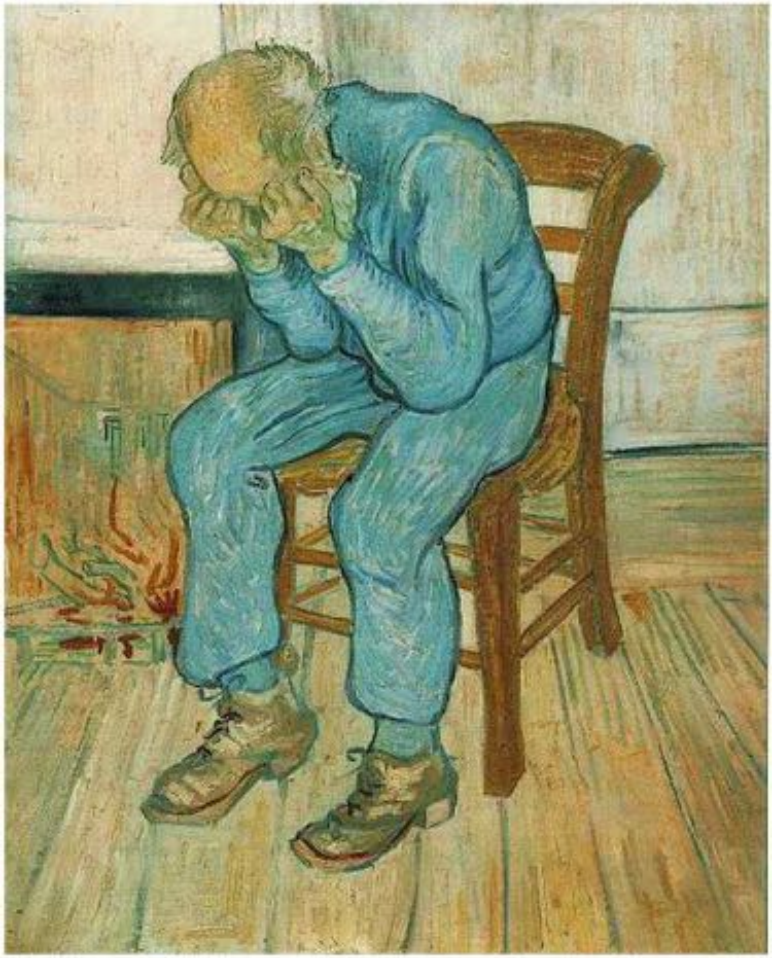
Planning

Index ECT; role of the ECT-team

- Dosage
- Electrode placement
- Anaestesia considerations
- Tempo and length of index series
- Evaluation of treatment
- Diagnostic (re) evaluation
- Maintenance considerations

The easy part of ECT

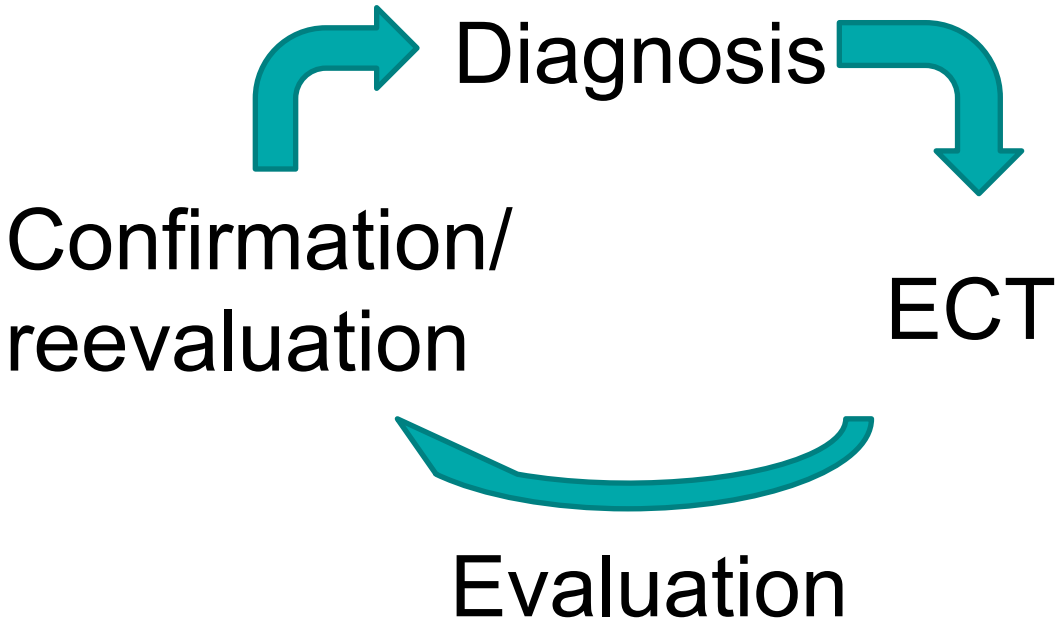
- Giving 6-10 ECT:s in severe depression



The difficult part of ECT

- Preventing relapse

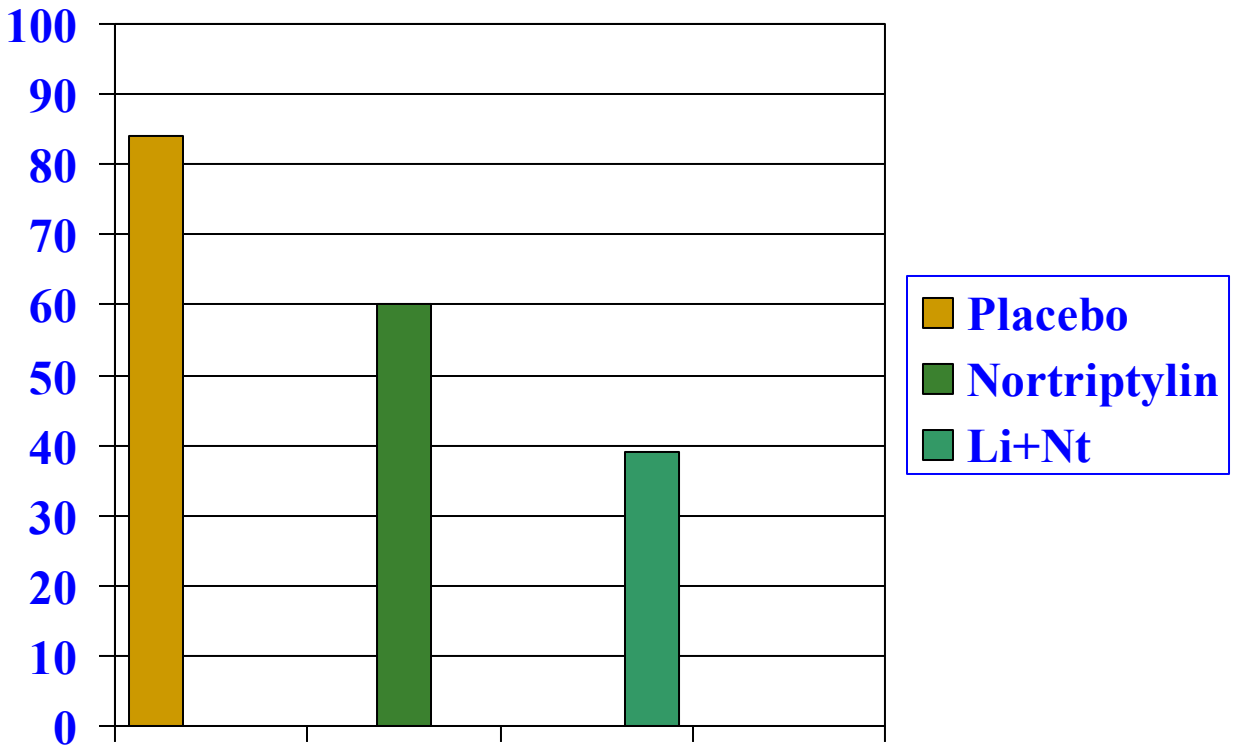
The role of ECT in the diagnostic process



Maintenance treatment

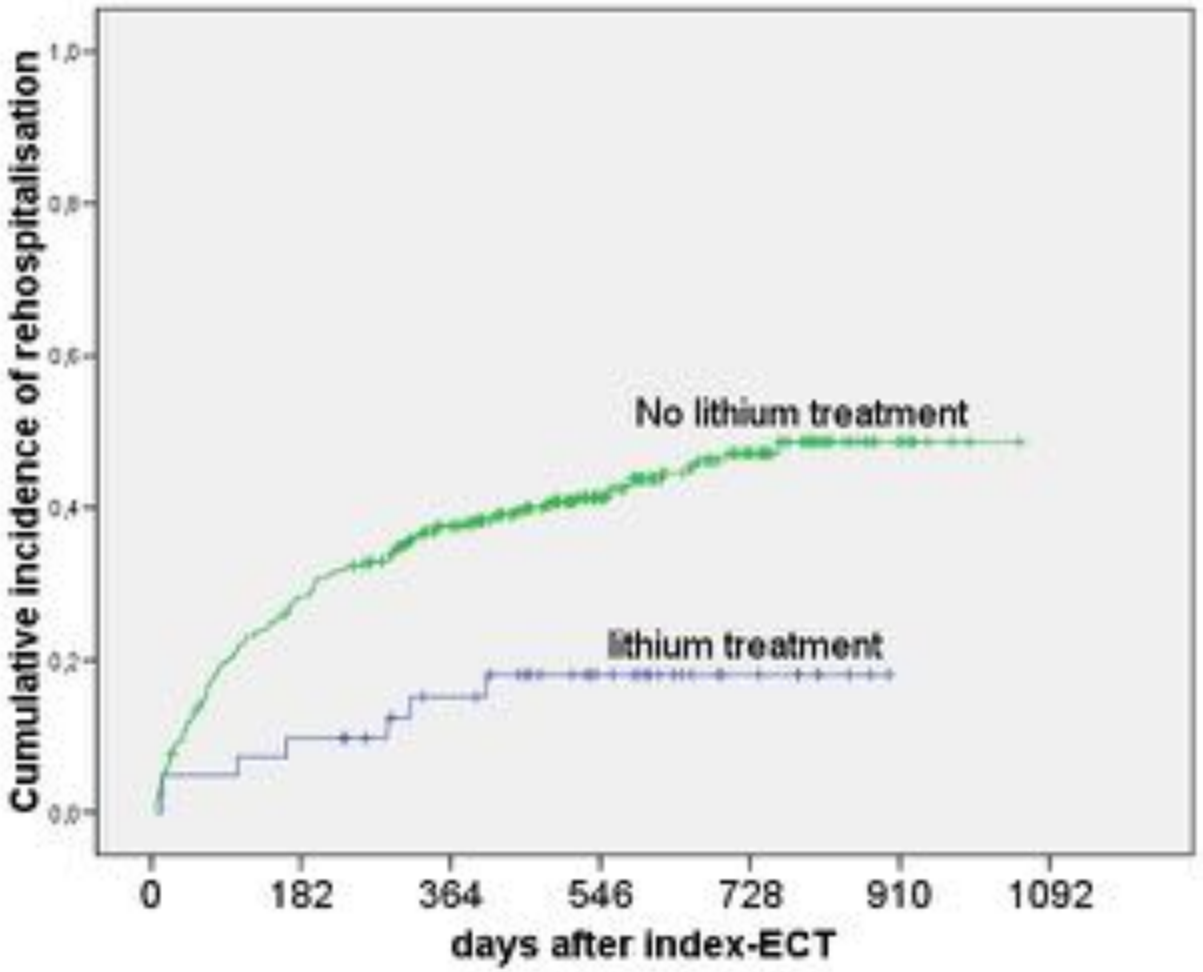
- Pharmacological
  - Lithium
  - Antidepressants
- Maintenance ECT
  - Continuation
  - Maintenance

Relapse 1 year after ECT



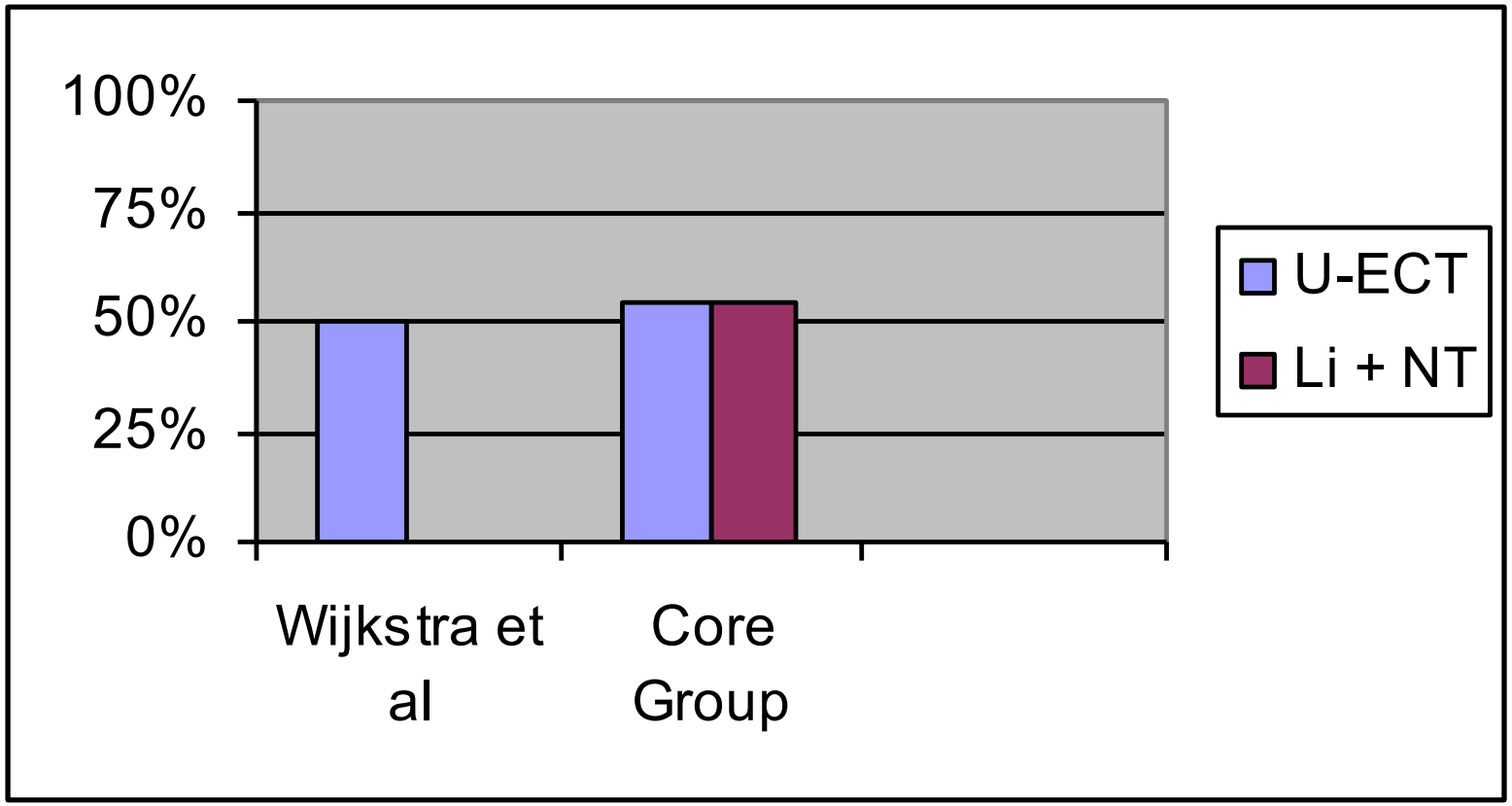
Only early relapses in Li+Nortriptylin-group.

Sackeim, Haskett et al Jama 2001



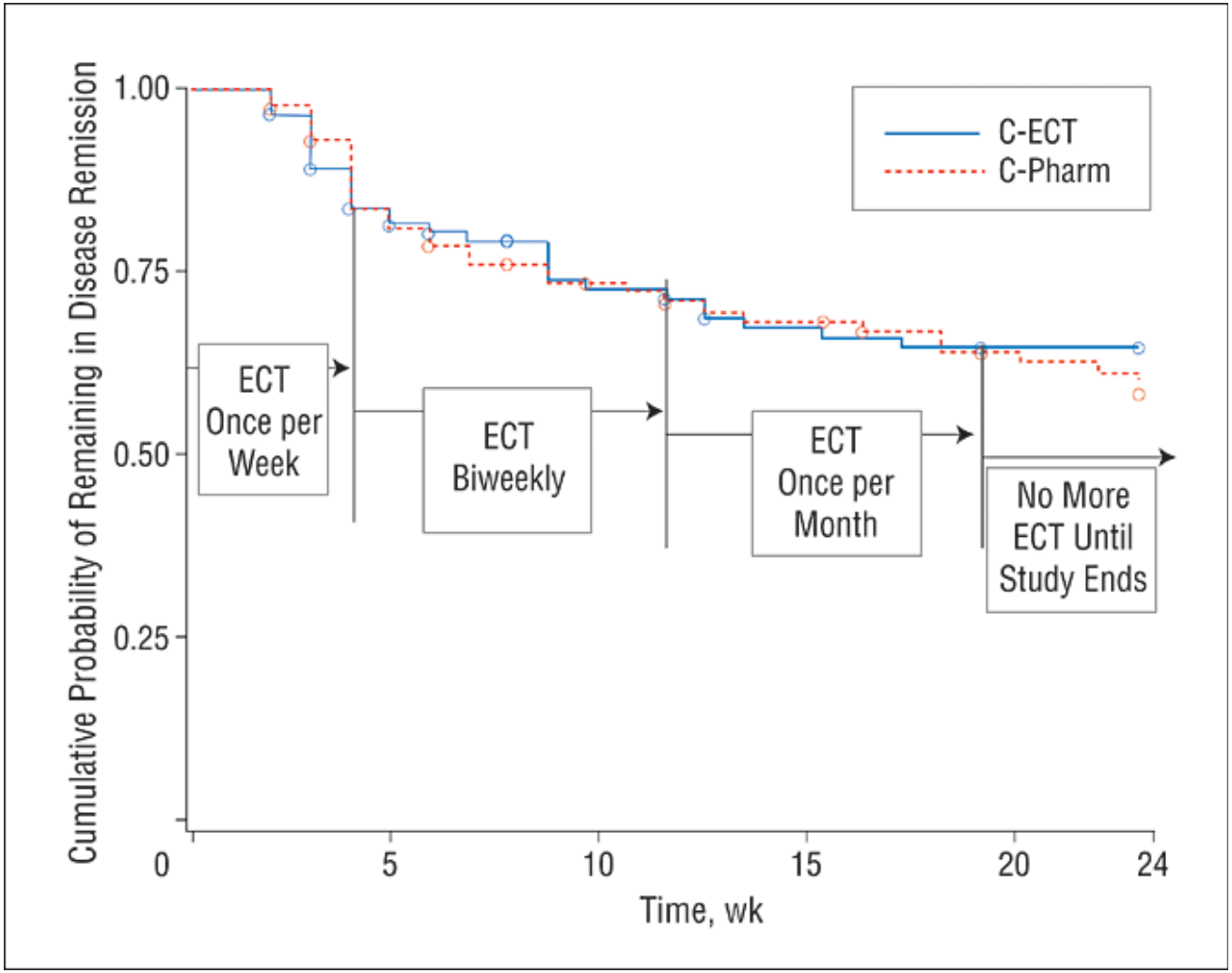
Nordenskjöld et al 2011

Relapse within 6 months after ECT



U-ECT: (M=ECT) Fixed schedule -> 4 weeks interval

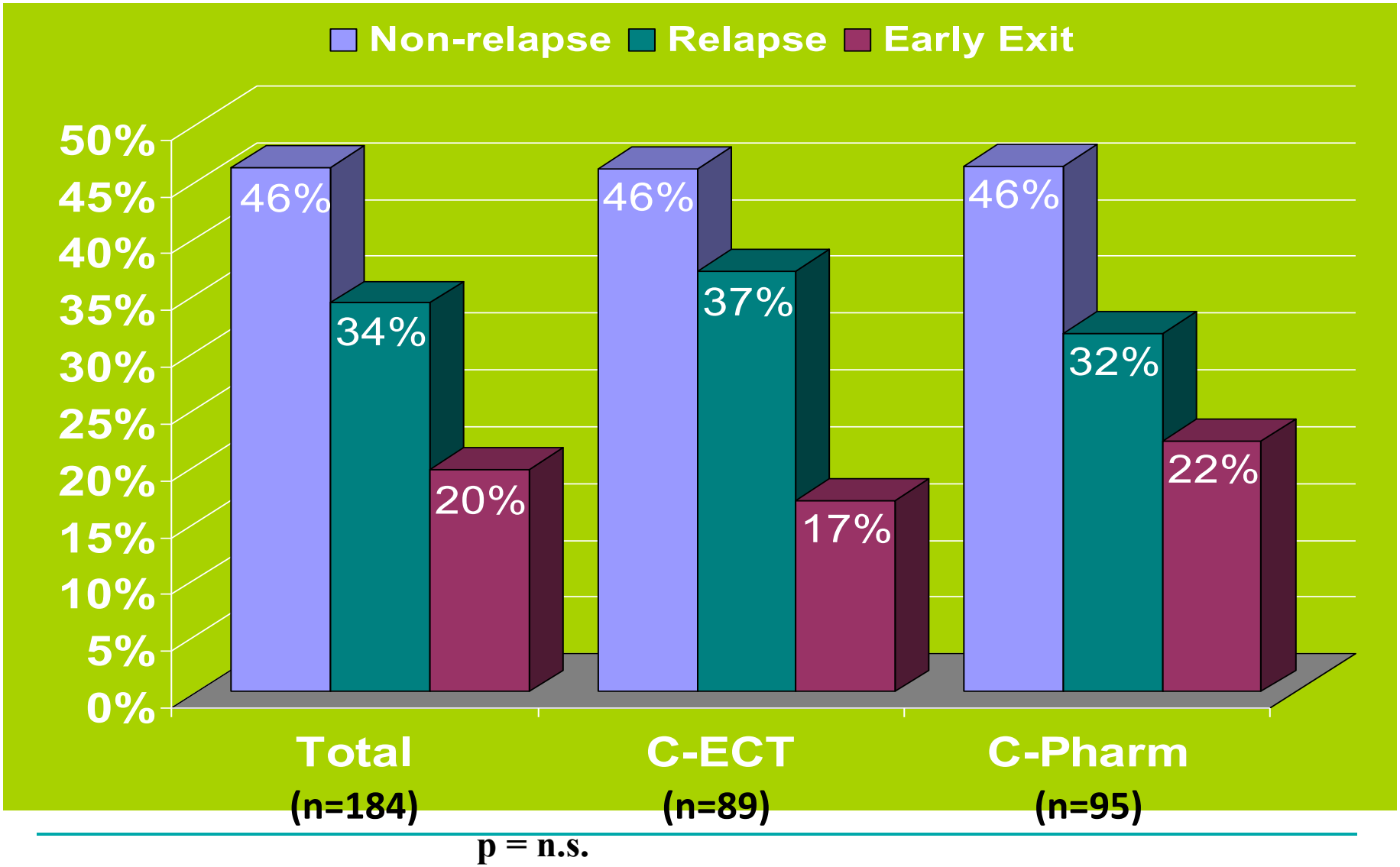
Kaplan-Meier curves showing proportion of patients who remained in disease remission (not disease relapse) during the continuation phase (phase 2)



Kellner, C. H. et al. Arch Gen Psychiatry 2006;63:1337-1344.

ARCHIVES OF GENERAL PSYCHIATRY

Relapse Status at 6 Months



p = n.s.

Kellner CH, et al. *Arch Gen Psychiatry*, Dec 2006; 63: 1337 - 1344

A Randomized Controlled Trial Comparing the Memory Effects of Continuation Electroconvulsive Therapy Versus Continuation Pharmacotherapy: Results From the Consortium for Research in ECT (CORE) Study

Glenn E. Smith, PhD; Keith G. Rasmussen Jr, MD; C. Munro Cullum, PhD; M. Donna Felmlee-Devine, MS; Georgios Petrides, MD; Teresa A. Rummans, MD; Mustafa M. Husain, MD; Martina Mueller, PhD; Hilary J. Bernstein, DHA; Rebecca G. Knapp, PhD; M. Kevin O'Connor, MD; Max Fink, MD; Shirlene Sampson, MD; Samuel H. Bailine, MD; and Charles H. Kellner, MD; for the CORE Investigators

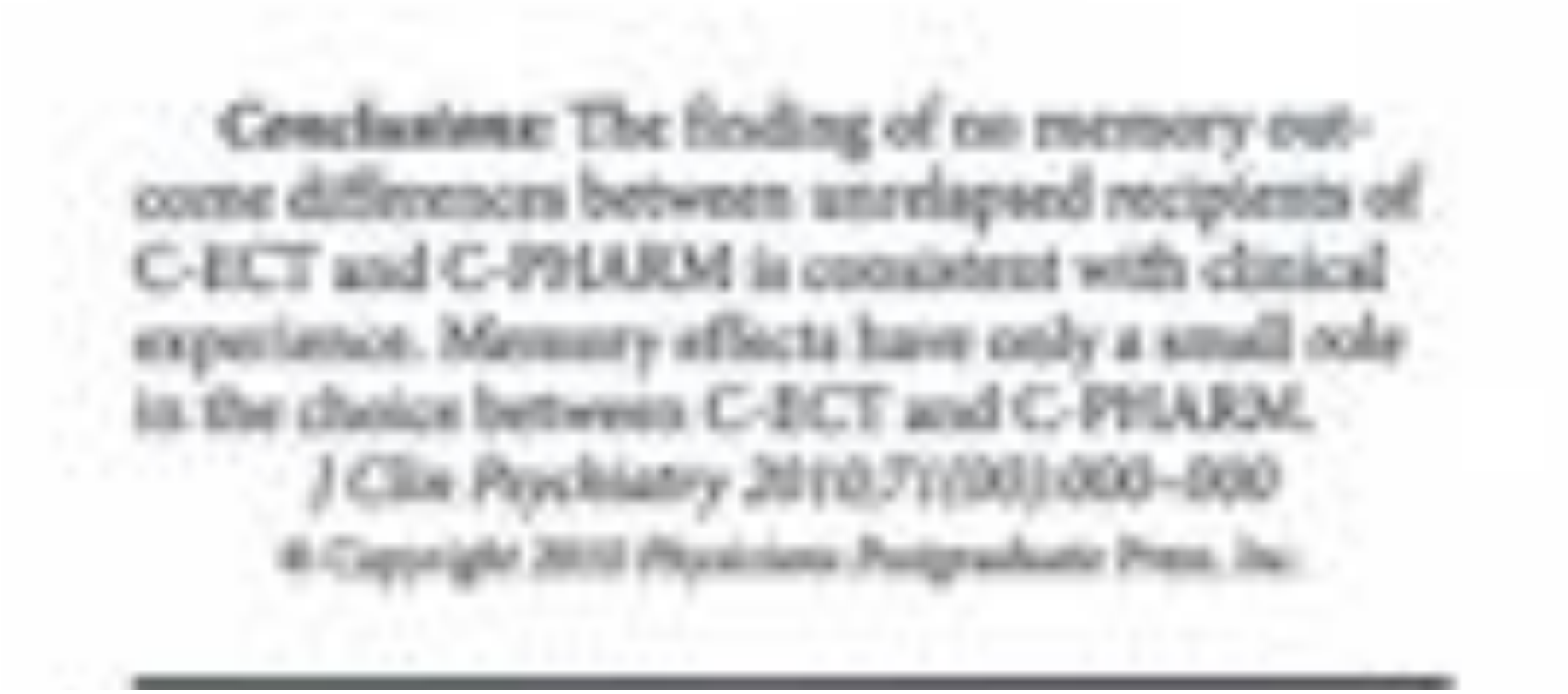
Objective: To compare the memory effects of continuation electroconvulsive therapy (C-ECT) versus continuation pharmacologic intervention (C-PHARM) at 12 and 24 weeks after completion of acute electroconvulsive therapy (ECT).

Method: Eighty-five patients with Structured

Conclusions: The finding of no memory outcome differences between unrelapsed recipients of C-ECT and C-PHARM is consistent with clinical experience. Memory effects have only a small role in the choice between C-ECT and C-PHARM.

J Clin Psychiatry 2010;71(10):000–000

Smith et al , J Clin Psychiatry 2010, in press



Conclusions: The finding of no memory outcome differences between unrelapsed recipients of C-ECT and C-PHARM is consistent with clinical experience. Memory effects have only a small role in the choice between C-ECT and C-PHARM.

J Clin Psychiatry 2010;71(10):000–000

Continuation Electroconvulsive Therapy With Pharmacotherapy Versus Pharmacotherapy Alone for Prevention of Relapse of Depression

A Randomized Controlled Trial

Axel Nordenskjöld, MD,† Lars von Knorring, MD, PhD,*‡ Tomas Ljung, MD,§ Andreas Carlborg, MD, PhD,∥¶ Ole Brus, Msc,*# and Ingemar Engström, MD, PhD*†*

Objective: The primary aim of the study was to test the hypothesis that relapse prevention with continuation electroconvulsive therapy (ECT) plus pharmacotherapy is more effective than pharmacotherapy alone after a course of ECT for depression.

Methods: A multicenter, nonblinded, randomized controlled trial with 2 parallel groups was performed from 2008 to 2012 in 4 hospitals in Sweden. Patients eligible had unipolar or bipolar depression and had responded to a course of ECT. The patients (n = 56) were randomly assigned (1:1) to receiving either 29 treatments of continuation ECT with pharmacotherapy or pharmacotherapy alone for 1 year. The pharmacotherapy consisted of antidepressants (98%), lithium (56%), and antipsychotics (30%). The main outcome was relapse of depression within 1 year. Relapse was defined as 20 or more points on the Montgomery Åsberg Depression Rating Scale or inpatient psychiatric care or suicide or suspected suicide. All 56 patients randomized were analyzed according to an intention to treat analysis.

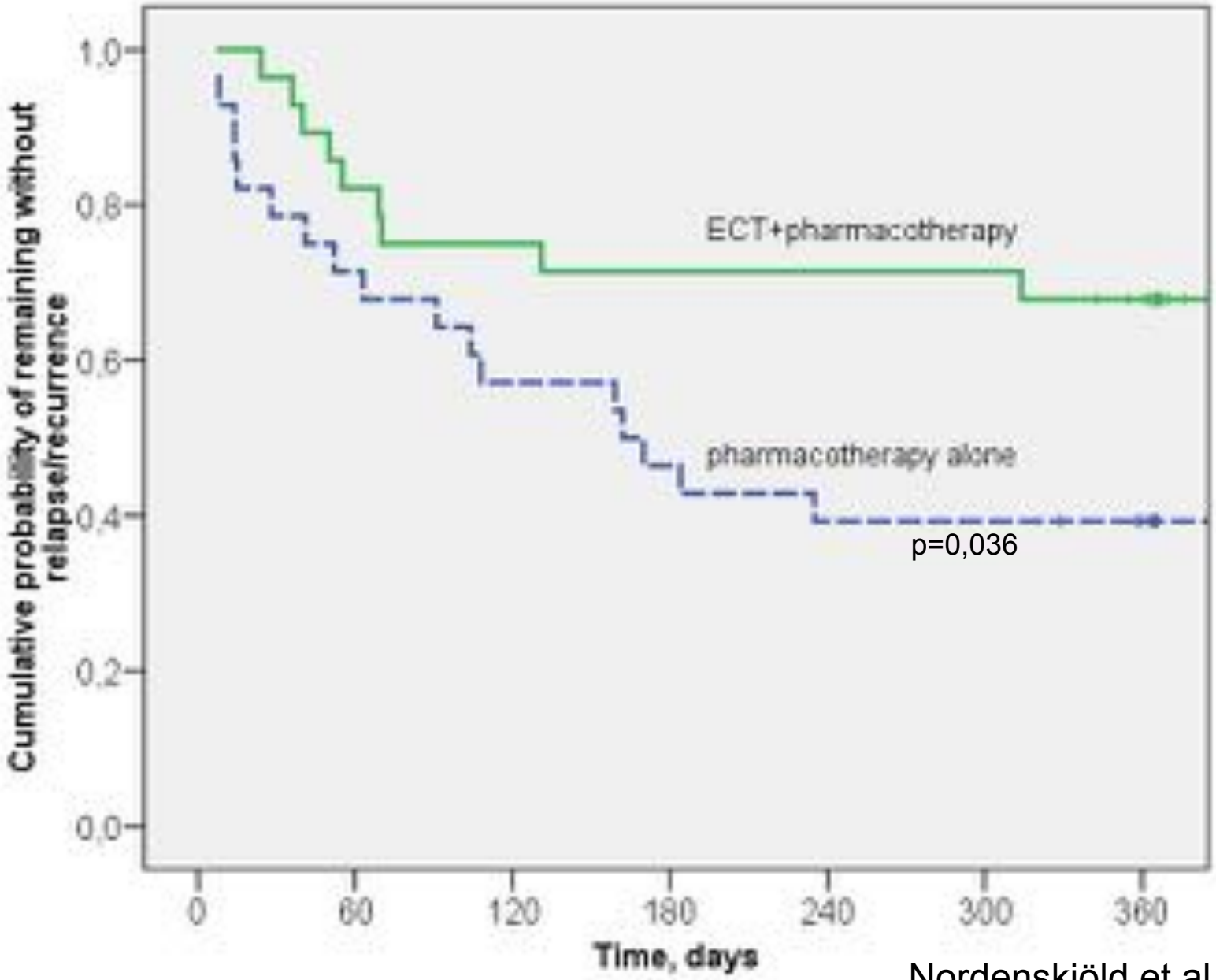
Results: Sixty-one percent of the patients treated with pharmacotherapy versus 32% of the patients treated with ECT plus pharmacotherapy relapsed within 1 year ($P = 0.036$). The Cox proportional hazard ratio was 2.32 (1.03–5.22).

Cognitive function and memory measures were stable for patients

Depression is a major public health concern.[1] In severe depression, more than 70% of the patients experience repeated relapses/recurrences, and chronicity or commit suicide.[2,3] Among patients treated as inpatients, the risk for rehospitalization in the first year exceeds 30%.[4,5]

Electroconvulsive therapy (ECT) is an effective acute treatment in severe forms of depression. Electroconvulsive therapy has also been recommended in less severe forms of depression after pharmacotherapy has been tried.[6]

It is a great challenge to reduce the risk of relapse. In Sweden, antidepressant medication is the standard treatment to reduce the post-ECT relapse rate.[7] In a randomized trial, a lithium/antidepressant combination was found to be more effective than antidepressants alone for the prevention of post-ECT relapses/recurrences.[8] Moreover, continuation ECT is becoming increasingly used to reduce the relapse/recurrence rate and is supported by a randomized trial in which continuation ECT alone and an antidepressant-lithium combination resulted in similar relapse/recurrence rates.[9] Despite these treatments, relapse/recurrence rates of 40% to 50% within 6 to 12 months after index ECT have been reported.[7–10] Thus, more effective treatments are needed.



Nordenskjöld et al 2013

Cognitive tests

- No significant differences between groups

Nordenskjöld et al 2013

Combined M-ECT and medication (incl. litium)

Chance of remaining well		
	C-ECT + antidepressants	**Antidepressants**
After 2 yrs	**93%**	**52%**
After 5 yrs	**73%**	**18%**
Time to relapse	**6,9 yrs**	**2,7 yrs**

C-ECT = Continuation ECT AD = Antidepressiva

Gagné, Gerard et al Am J Psych vol 157, dec 2000 p 1960-65

Individualized Continuation Electroconvulsive Therapy and Medication as a Bridge to Relapse Prevention After an Index Course of Electroconvulsive Therapy in Severe Mood Disorders: A Naturalistic 3-Year Cohort Study

Håkan Odeberg, MD,† Bruce Rodriguez-Silva, MD,† Pirjo Salander, MD,† and Björn Mårtensson, MD, PhD‡*

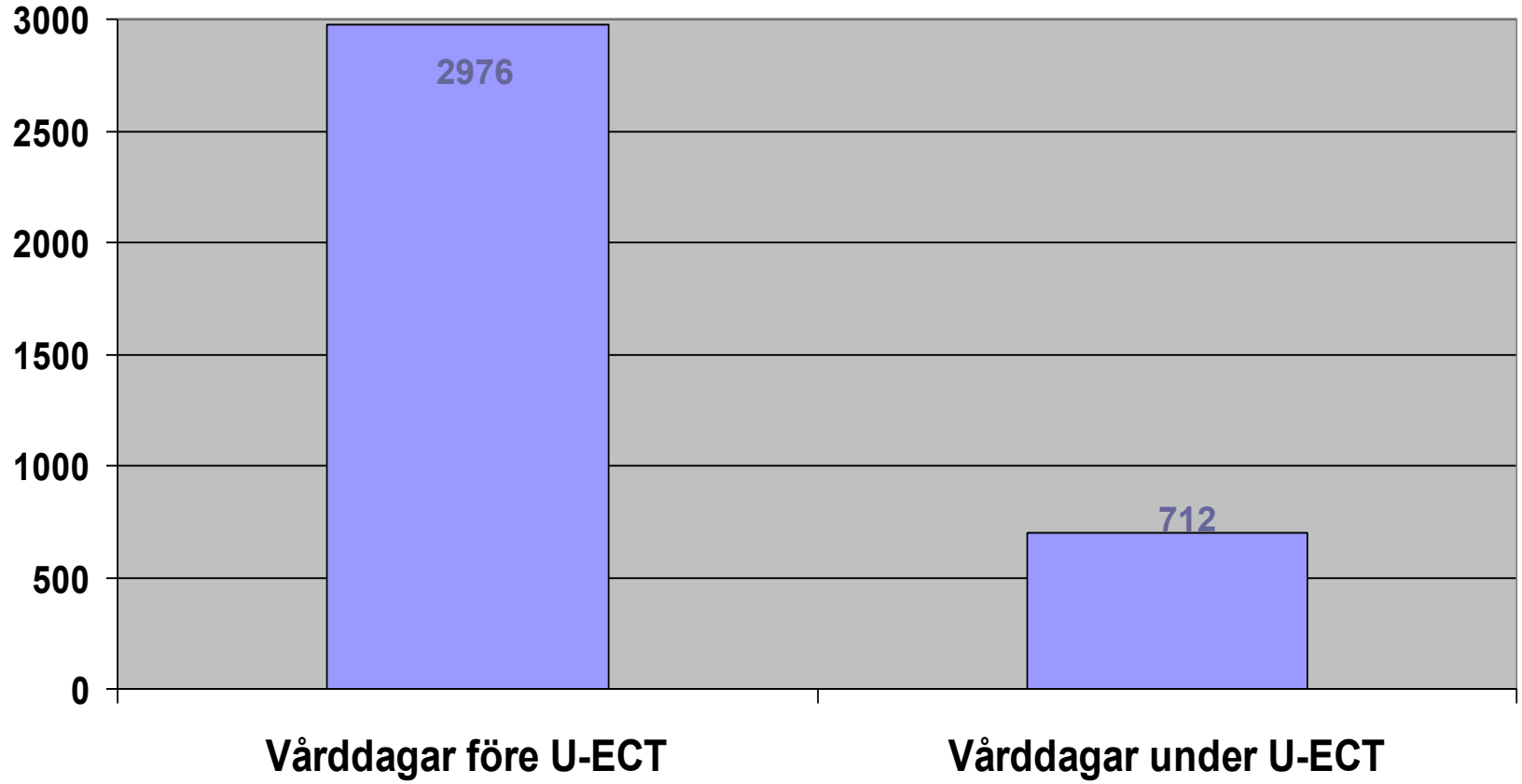
Abstract: Electroconvulsive therapy (ECT) is recognized as an effective acute treatment for mood disorders but is associated with high risk of relapse. To minimize this risk, we introduced as a routine individually tapered continuation ECT with concomitant medication (C-ECT + Med) after an index series in January 2000. In August 2002, a chart review of all patients (n = 41) who had received C-ECT + Med for more than 4 months was carried out. Sixteen patients also participated in an extensive interview. Mean duration of administered C-ECT at follow-up was 1 year, but for most patients (63%), C-ECT had been terminated. For 49% of patients, adjustments between ECT sessions had been made due to early signs of relapse. Two weeks was the most common interval between sessions for patients with ongoing C-ECT. The frequency of lithium-treated patients had increased from 12% before index to 41% during C-ECT. However, the rated response to the drug varied.

Need for hospital care 3 years before and after the initiation of C-ECT + Med was compared in a second evaluation of the cohort. The number of patients hospitalized, number of admissions, and total days in hospital were all significantly reduced. Hospital days were reduced by 76% ($P < 0.001$). Three patients with previously cumulative years

stopped immediately after remission is achieved. This distinguishes practice of ECT from pharmacological treatment, which is normally continued for stabilization or used eventually for long-term relapse prevention once the patient has responded. To avoid relapse after ECT, psychotropic medication can be introduced during or immediately after the acute treatment series. In early studies with tricyclics alone, this strategy seemed to be rather successful, preventing relapse in approximately 80% of cases.[1,2] However, in modern studies, relapse rates of approximately 50% within 6 to 12 months—despite intensive pharmacological treatment—have repeatedly been reported, with pre-ECT medication resistance indicating even more unfavorable outcome.[3–7] In a study by Sackeim et al,[4] relapse within 1 year after index ECT was 84% on placebo, 60% on nortriptyline alone, and 39% on a combination of nortriptyline and lithium, thus establishing the latter combination as the to-date best proven pharmacological strategy for relapse prevention after acute ECT for major depression.

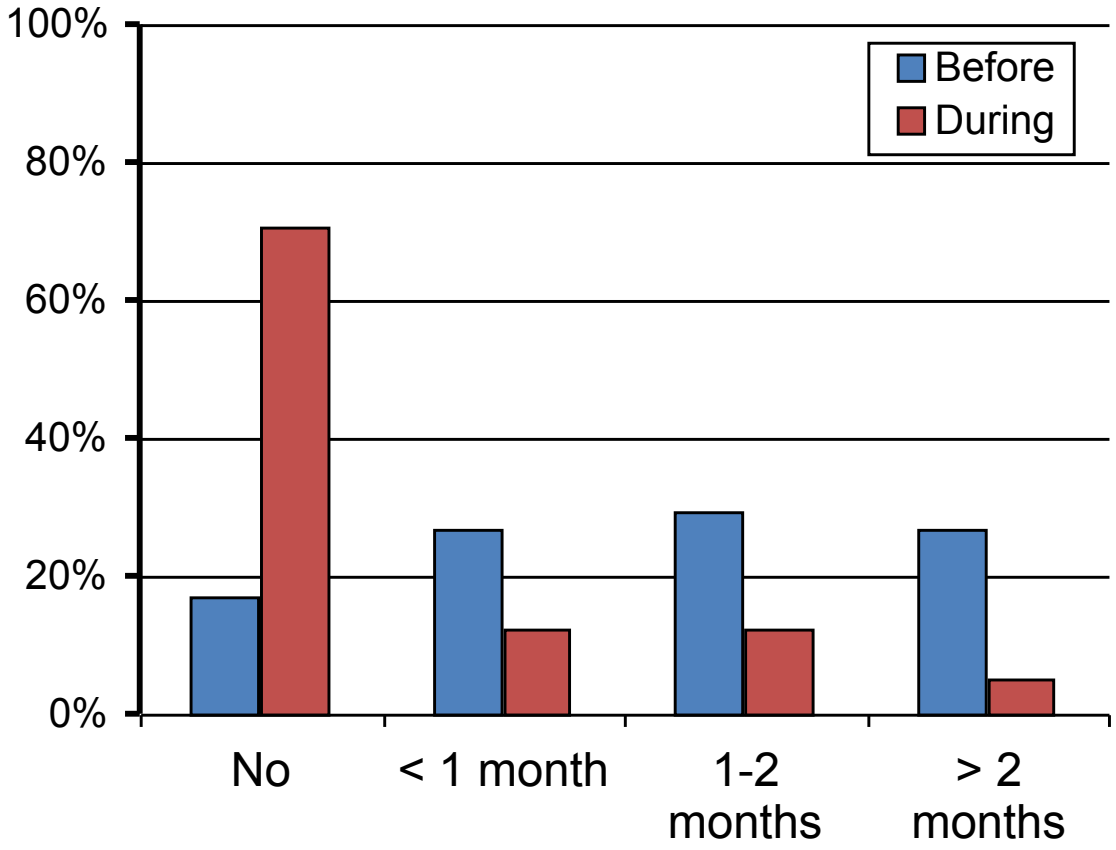
Continuation ECT (C-ECT) and maintenance ECT are other strategies for relapse prevention after the index series

Hospital days 3 yrs before and during M-ECT+Med (N=41)



Håkan Odeberg och medarbetare 2005

Percentage of patients with no hospital days, short term, intermediate or long-term hospitalization, three years before and during three years of integrated C-ECT and medication.



N=41

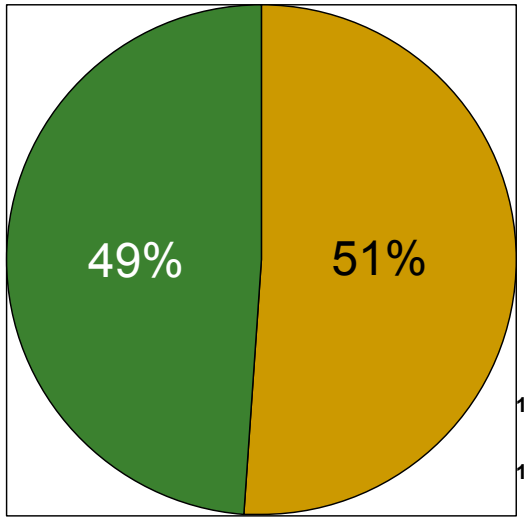
Odeberg et al, 2008

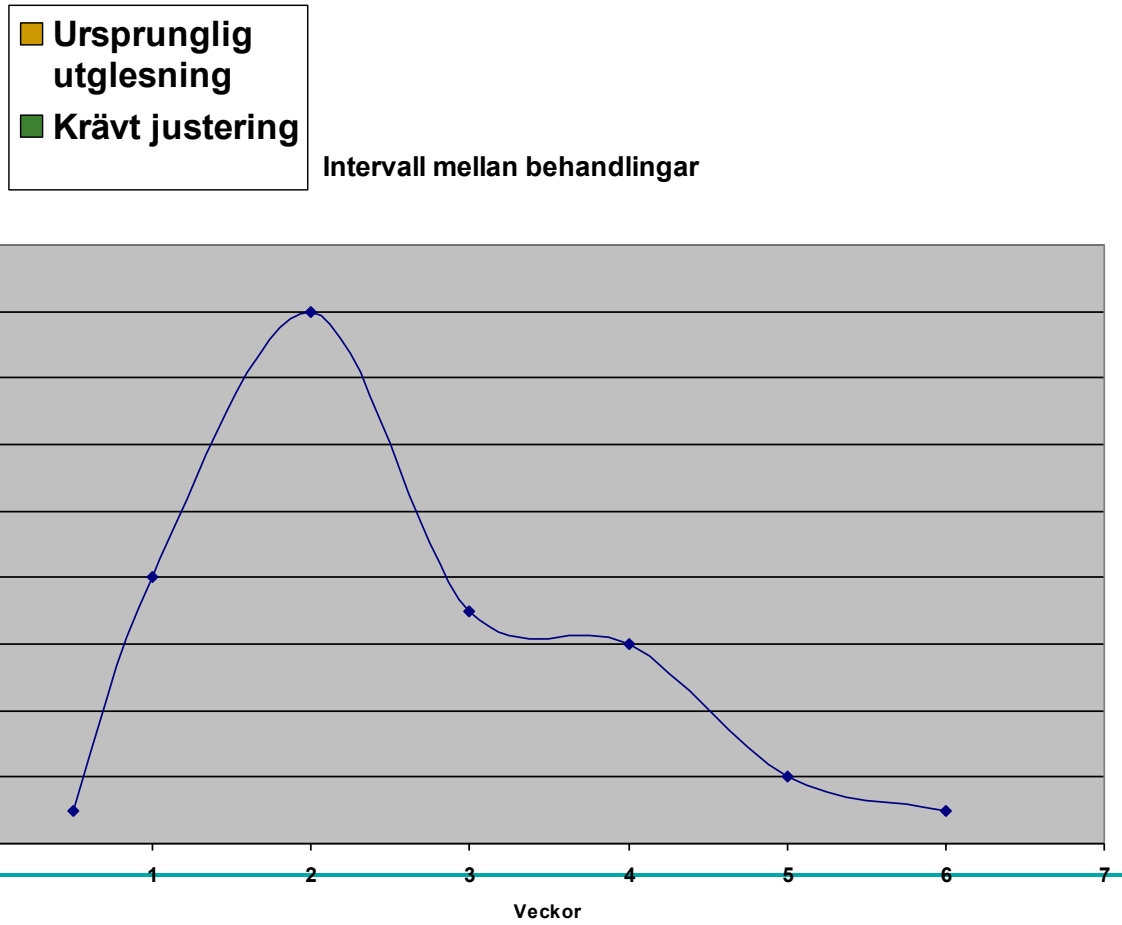
Experience during follow-up period(n=15)

	Number of patients			
	Negative		Neutral	Positive
	-2	-1	0	+1	+2
Overall satisfaction with treatment		2	3	3	7
Comparison to previous treatments		1	3	2	7
Satisfaction with care	1		1	1	**12**
Development of memory	5	3	5	1	1
Development of close relationships			8	3	4
Life situation as a whole		1	5	6	3

Odeberg et al 2008

Individualized treatment frequency



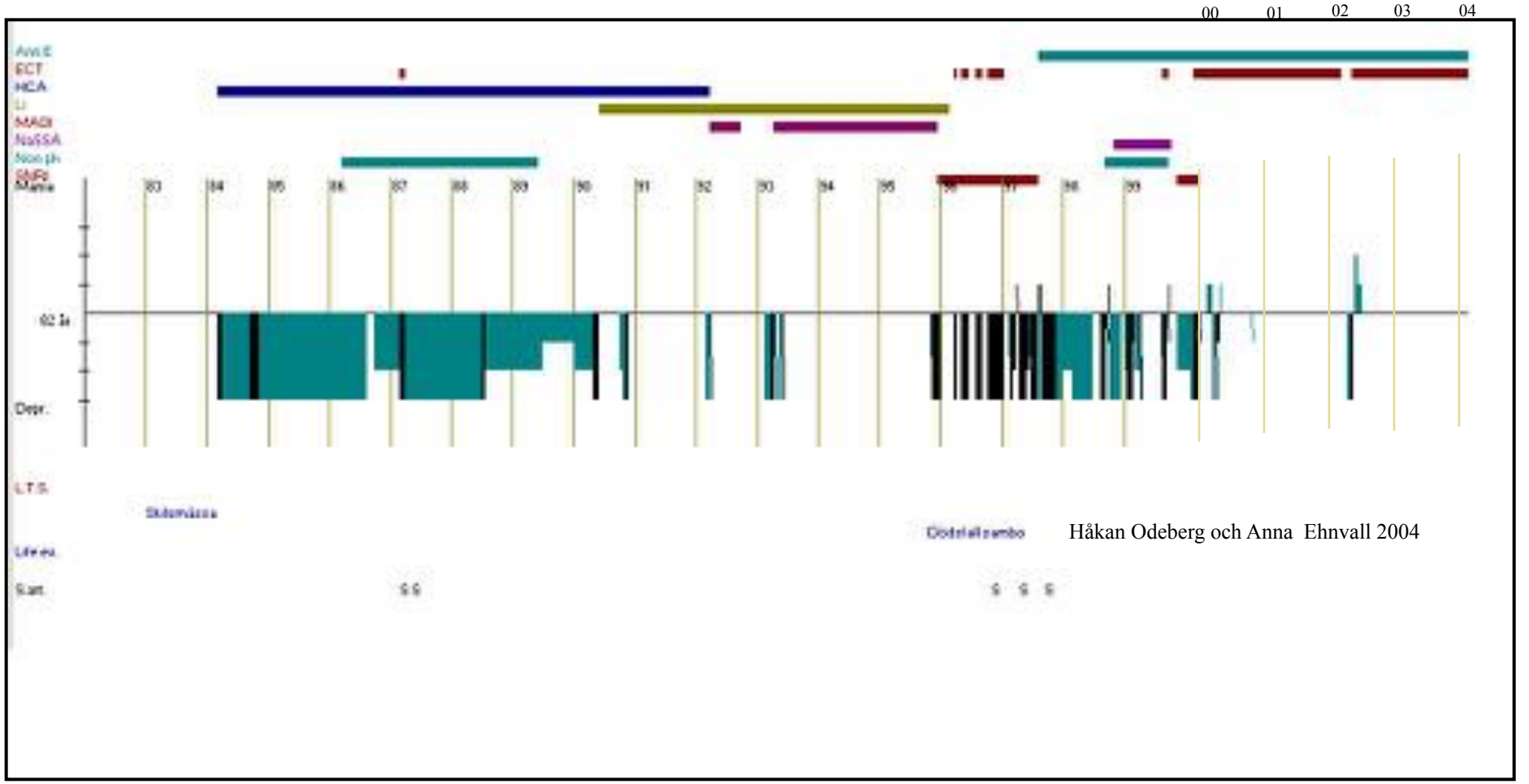


Two weeks most common interval

Acute ECT can cure an episode

- ***Maintenance can change a life***

Patient 1 Woman 80 yrs



Håkan Odeberg and Anna Ehnvall 2004

Patient 2

- Woman born 1940
- Massive family history of psychiatric illness
- Diagnosis of schizofrenia 20 yrs
- Married, stable social situation
- 18 hospitalizations 1988-2000.
- Cycloid psykos -> ECT, neuroleptics
- No hospitalization 2000 - 2008 with M-ECT
- Cares for children and grandchildren
- Intensified at signs of relapse (3 times)

The answer to the question, how long should we continue with maintenance-ECT..

Journal of ECT:
December 2012 - Volume 28 - Issue 4 - p 225–228
doi: 10.1097/YCT.0b013e3182548f93
Original Studies

One-Year Follow-Up After Discontinuing Maintenance Electroconvulsive Therapy

Huuhka, Kaija MD, PhD*; Viikki, Merja MD, PhD†‡; Tammentie, Tarja RN, PhD*; Tuohimaa, Kati RN*; Björkqvist, Minna RN*; Alanen, Hanna-Mari MD, PhD*; Leinonen, Esa MD, PhD*†; Kampman, Olli MD, PhD

Abstract

Objectives: Electroconvulsive therapy (ECT) has been established as an effective method in the treatment of severe depressive or psychotic disorders. Its efficacy is greatest in severe major depressive disorder (MDD) with or without psychotic symptoms. However, maintaining remission after a successful course of short-term ECT is often difficult owing to resistance to medication in these patients. Therefore, the relapse rate after short-term ECT is high; 40% to 60% of patients relapse even with adequate antidepressant continuation therapy. The risk of relapse is greatest during the first months after discontinuation of short-term ECT. Continuation/maintenance (c/m) ECT is an option in maintaining remission, but systematic data and clinical guidelines are lacking. The point at which to discontinue this treatment has not been adequately established.

Methods: Altogether 45 consecutive patients treated with c/mECT after short-term ECT to prevent relapse were followed up 1 year after discontinuation of this treatment.

Results: Twenty (44%) of 45 patients relapsed during follow-up, all within the first 8 months. Patients having a diagnosis other than MDD (bipolar disorder, depressive episode type I, schizophrenia, and schizoaffective disorder) were more likely to relapse than MDD patients.

Conclusions: Almost half of the patients relapsed in 1 year after discontinuation of c/mECT, most of these within the first 3 months and all within the first 8 months. The risk of relapse is greater in the patients with diagnoses other than MDD. When discontinuing c/mECT, patients should be carefully followed up; and for those at risk of relapse, even permanent mECT should be considered. To the best of our knowledge, the present study is the first to report

One-Year Follow-Up After Discontinuing Maintenance Electroconvulsive Therapy.
J ECT. 2012

A register-based study: 45 consecutive patients who received maintenance-ECT (and medication) based on clinical judgement after acute ECT.

Patients suffered from MDD (n=34,) bipolar (n=6), schizophrenia (n=3) and schizoaffective(n=2).

The maintenance ECT was discontinued when

- patient had been in remission for several months/years and wanted to (n=37)
- because of somatic illness (n=3)
- drop out (n=5)

One-Year Follow-Up After Discontinuing Maintenance Electroconvulsive Therapy.
J ECT. 2012

Patients were followed-up one year after discontinuing maintenance-ECT

20 patients (44%) relapsed during this period

Majority of these patients relapsed in 3,5 months after discontinuation of maintenance-ECT and all patients who relapsed did it in 8 months

The relapse rate (44%) is quite the same compared to that after acute ECT

Likewise after acute ECT, the first 3 months after discontinuation of maintenance-ECT is the period of highest relapse risk

Role of ECT-team in Maintenance ECT

- Continuous evaluation and adjustment
  - Adjusting interval
  - Medication (collaboration)
  - Lenght of treatment (acute, maintenance)
- Building relations and providing security
- Handling of side-effects

”Piteå model”

Treatment session = Evaluation

Staffing

- ECT doctor responsible for treatment
  - Indications
  - Termination of index
  - Maintenance considerations
- Nurse for MODE interview, information, planning in collaboration with doctor
- Treatment: Doctor, nurse or nurse assistant with special education and delegation

Evaluation in three dimensions

Observation

Reported

Activity

MODE – based on MADRS and GGI

CGI

- Clinical experience

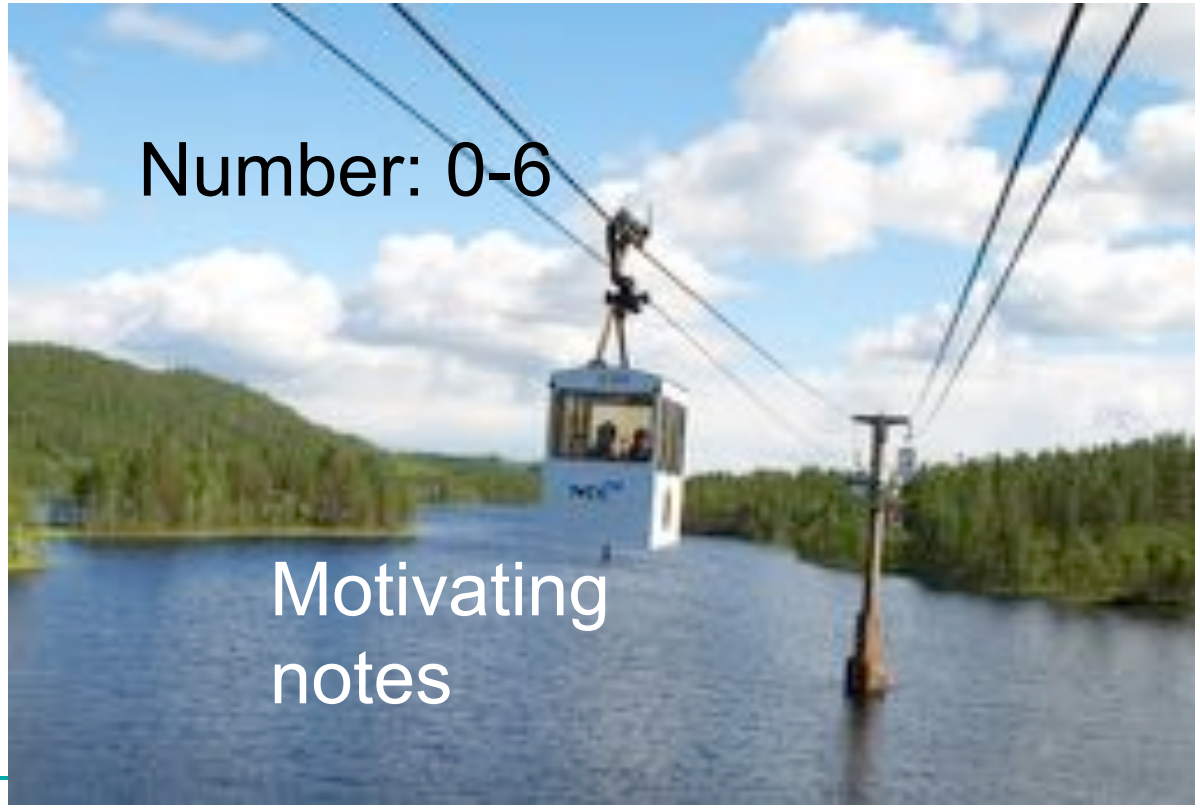
- MADRS
- Structured interview (10 items mandatory)

MODE – Mårtensson Odeberg Dimensionell Evaluering

- Semistructured interview, based on CPRS (MADRS)
- Global evaluation (like CGI)
- Explaining notes

Principles for MODE

- Natural clinical interview
- Three dimensions:
  - Reported
  - Observed
  - Aktivity



CGI, MADRS och MODE

Degree of depression:

- CGI
- 0. Not evaluated
- 1. Normal
- 2. Borderline
- 3. Mild
- 4. Moderate
- 5. Marked
- 6. Severe
- 7. Extremely

- MADRS
- 0 No symtoms
- 10
- 20 Moderate
- 30
- 40 Severe (35)
- 50
- 60 Maximal

- MODE
- 0 No symtoms
- 1
- 2 Moderate
- 3
- 4 Severe
- 5
- 60 Maximal

Depressionsdjup

(använd även mellanlägen)

0: Frisk 2: Lindrigt sjuk 4: Påtagligt sjuk 6: Extremt sjuk

1. OBSERVERAD mimik, latens, röstläge, rörelsemönster, och förmåga att medverka	**2. RAPPORTERAD nedstämdhet, nedsatt intresse eller uttryck för pessimistiska tankar**	**3. Påverkan på FUNKTION - förmåga till initiativ och aktivitet; vardagliga exempel på aktivitetsförmåga**
0: Helt normalt rörelsemönster, normal mimik, spontant och adekvat interaktion. Ingen latens, varierat röstläge.	0. Neutral grundstämning med förmåga till adekvat ledsenhet eller glädje / Normalt intresse för omgivningen och andra människor / Inga pessimistiska tankar	0: Inga igångsättningssvårigheter. Vardagliga göromål, arbete och nöjen utan svårighet.
2: Ser genomgående nedstämd ut, men kan tillfälligt växla till lättare sinnesstämning. Deltar i vardaglig konversation men med viss ansträngning. Viss nedsättning av vitalitet i röst, mimik och rörelsemönster.	2: Övervägande nedstämd men ljusare stunder förekommer / Svårighet att intressera sig för sådant som vanligen väcker intresse / Tilltagande självförebråelser	2: Lätta igångsättningssvårigheter, men vardagliga göromål blir gjorda. Minskad spontanitet.
4: Ser nedstämd och olycklig ut oavsett samtalsämne eller försök till vardaglig kommunikation. Nedsatt vitalitet i mimik, röstläge och rörelsemönster, ovanstående. Svårt att uppfatta skämt.	4. Genomgående nedstämdhet som påverkas mycket lite av yttre omständigheter / ointresse för omgivningen / ständiga självanklagelser och klara, men inte orimliga, tankar om skuld, uttalat pessimistisk framtidssyn.	4: Även enkla göromål kräver stor ansträngning. Svårt med hygien, vardagsgöromål. Inga eller ytterst begränsade sociala aktiviteter
6: Maximal nedstämdhet, uttalad hämning. Avskärmad, extremt plågad. Reagerar ej på avledande kommentarer.	6. Maximal nedstämdhet / Total oförmåga känna intresse / Absurda försyndelse- eller katastroftankar	6: Oförmögen ta itu med de enklaste aktiviteter. Tar inga egna initiativ, sköter ej personlig hygien

Intervjun inriktas först på hur patienten upplever sitt tillstånd, och fokuserar på det av stämningsläge, förmåga till intresse eller pessimism som framträder tydligast. Därefter efterfrågas exempel på vardagsgöromål som blir eller inte blir gjorda. Patientens rörelsemönster, förmåga till interaktion, röstläge och mimik observeras. Den typ av symtom som är mest framträdande styr bedömningen.

MODE

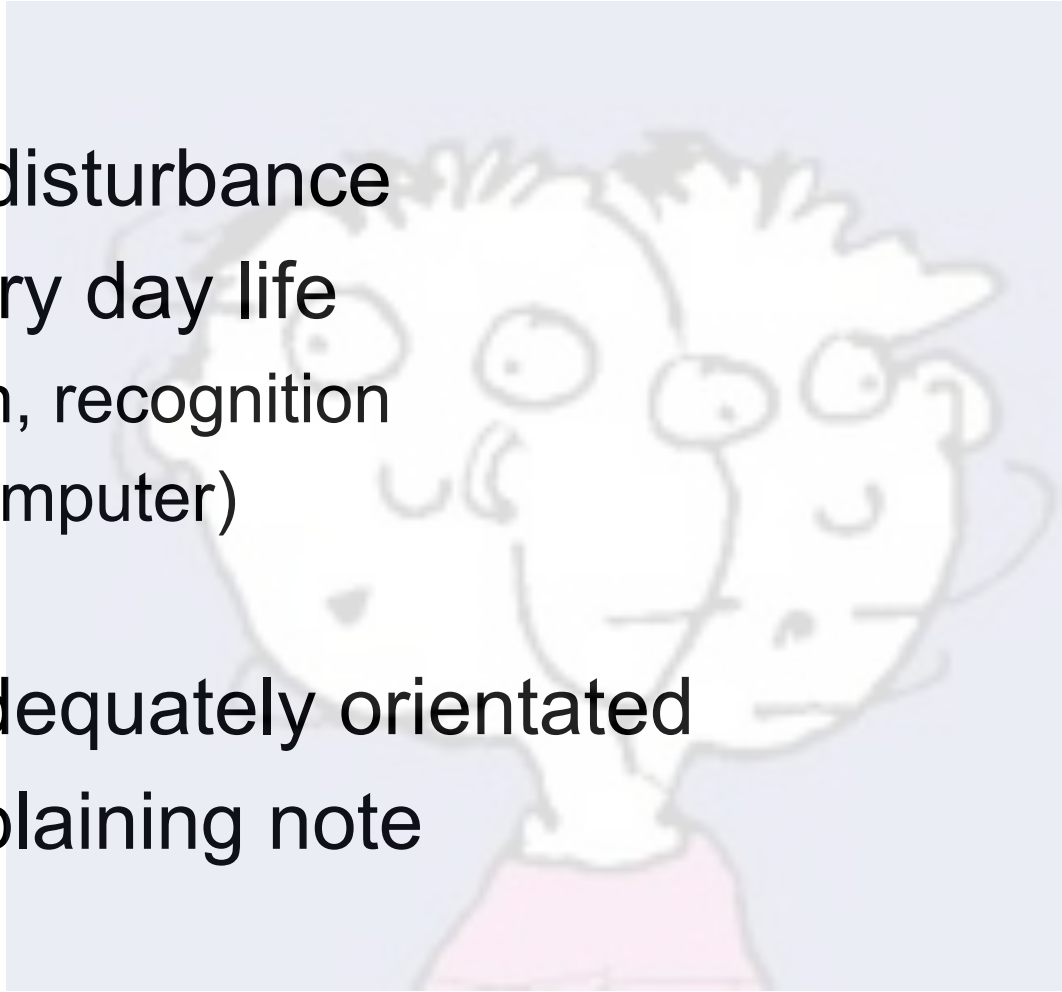
Mårtensson Odeberg Dimensional Evaluation

	Degree of illnes	Memory disturbance	Seizure intensity
0	Not ill	No	No
2	Moderately	Moderate*	Unsatisfactory
4	Severely	Severe**	Satisfactory
6	Maximal	Maximal	Maximal

*Temporary, not affecting function

**Embarrassing, affecting function

MODE-interview: Memory



- Ask for subjective disturbance
- Ask if it affects every day life
  - Visually: Orientation, recognition
  - Procedures (i. e. computer)
  - Facts: Codes
- Note if patient is adequately orientated
- Rate 0 – 6 with explaining note

Minnesstörning

(används även mellanlägen)

0: Ingen **2: Måttlig** **4: Påtaglig** **6: Extrem**

OBSERVERAD (Orientering)	**RAPPORTERAD upplevelse**	**Påverkan av FUNKTION i vardagen**
0: Fullt orienterad	**0: Ingen subjektiv minnesstörning**	**0: Ingen påverkan av funktion**
2. Viss osäkerhet om dag eller datum, orienterad i övrigt	**2: Tillfälliga minnesstörningar.**	**2: Tillfälligt och lindrigt påverkad funktion.** T ex övergående svårighet att hitta vägen eller komma ihåg att ärenden
4: Påfallande osäkert orienterad i tiden	**4. Besvärande till generande minnesstörning.** Exempelvis upplevd svårighet att känna igen människor och komma på namn, få information att fastna. Påverkan av omgivningens påpekanden om försämrat minne.	**4: Påtagligt påverkad funktion:** T. ex upprepade svårighet att hitta i bekanta områden, känna igen personer som borde vara välbekanta, komma ihåg koder, telefonnummer och ärenden. Tar fel på t ex handlingar
6: Klart desorienterad till tid och rum	**6: Upplevelse av total oförmåga att minnas**	**6: Konfusion.** Desorienterad till tid, plats och person, kan inte klara sig på egen hand

Intervjun inriktas först på patientens upplevelse av minnesstörning, och störningens naturliga del i behandlingen betonas. Därefter efterfrågas exempel på påverkad funktion. Orienteringsgrad prövas genom i första hand dag och datum, vid osäkerhet även andra tidsaspekter samt rumsorientering. Den typ av påverkan som är mest framträdande styr skattningen.

MODE: Seizure intensity

- Motor seizure
  - Duration
  - Tonic-clonisk, successive termination
- EEG- aktivity
  - Duration
  - Development of amplitudes, postictal suppression
- Hemodynamic response
  - Maximum heart rate
  - Blood pressure before and immediately after
- (Wakening pattern)
  - Time to orientation

Anfallsintensitet / generalisering

(använd även mellanlägen)

0: Ingen | **2: Måttlig** | **4: Påtaglig** | **6: Maximal**

Motorisk aktivitet	**EEG-aktivitet**	**Hemodynamik**	**Postiktal påverkan** (tilläggsinformation)
0: Konvulsiv aktivitet endast under stimuleringen	**0**: Ingen iakttagbar epileptisk aktivitet	**0**: Ingen stegring av puls under anfallet eller blodtryck efteråt.	**0**: Pat vaknar direkt och helt opåverkad redan i behandlingsrummet
2: Upp till cirka 20 sekunders klonisk kramp men svag/kortvarig tonisk fas eller ej symmetriskt. Påtagligt och [illegible] avslut	**2**: Epileptisk aktivitet under upp till 20–25 sekunder men inga tecken till inledningsvis ökande amplituder och otydligt avslut	**2**: Måttlig pulsstegring under anfallet och/eller svag blodtrycksstegring direkt efteråt	**2**: Kortvarig postiktal sömn, patienten orienterad nästan direkt vid uppvaknandet
3 = Godkänt			
4: Minst cirka 20 sekunder kramp med tydlig men ev. kortvarig tonisk fas, eller ej helt symmetriskt. Gradvis men relativt hastigt upphörande	**4**: Tydlig sp.-aktivitet överstigande 20-25 sekunder men ej helt optimal utveckling av amplituder eller postiktal suppression	**4**: Tydlig pulsstegring och/eller stegring av blodtryck efter anfallet	**4**: Postiktal sömn och gradvis återvänd orientering, patienten helt orienterad inom cirka en halvtimme efter uppvaknande
6: Minst 20-25 sekunders tonisk klonisk kramp med god symmetri och successivt upphörande distalt-proximalt	**6**: Tydlig, initialt högfrekvent sp.-aktivitet med stigande, därefter successivt avtagande amplituder, övergång i spike-wave och tydligt avslut med postiktal suppression	**6**: Uttalad stegring av både puls under anfallet och blodtryck efteråt	**6**: Postiktal sömn och gradvis återvänd orientering, kvarstående påverkan av orienteringsgrad mer än cirka en halvtimme efter uppvaknande

Bedömningen görs genom en sammanvägning av ovanstående. Beaktande av dynamik i förloppet väsentligt, och gäller alla parametrar. Vid bedömning av duration tas hänsyn till tidigare behandlingar i serien, och behandlingar som bedömts lyckade gäller som referens. Inverkan av narkosmedel och eventuell blodtrycksmedicinering måste tas med i bedömningen.

Advantages of MODE

Mode: Mårtensson Odeberg Dimensionell Evaluering

- Continuous observations – necessary!
  - Evaluation of index series
  - Titration of maintenance
- Care of patients, relatives and family
  - Motivation
- Problems can be handled
  - Concern about side effects

Case vignettes

”Piteå model”

Treatment session = Evaluation

Woman 50 yrs – ”OCD”

- Repeatedly hospitalized the last 15 yrs
- Temporary effect of ECT
- Regularly stops maintenance – relapses
- Refuses ECT when ill
- 280 days in hospital jan – nov 2014
- M – ECT once a week since
- No hospitalization Nov 2015 – May 2016
- ”Should have gotten my life back earlier”

Woman 60 yrs – Bipolar disorder

- Manic-depressive illness since her youth
- Ultra-rapid cycling (days!)
- Almost continuous hospitalization last 5 yrs
- One year of hospital-based M-ECT 1/week
- Discharged 2012
- Mostly at home with her husband.
- M-ECT once a week

Man 70 yrs – recurrent depression

- Severe depression 2010
- Somatization – no insight
- When stopping ECT – rapid relapse
- Rehospitalization 2012
- Continuous motivation
- No further hospitalization
- Married, travel and concerts with wife, visits children and grandchildren
- M-ECT every two weeks
- His wife threatens with divorce if he stops!

Woman 70 yrs – Bipolar disorder

- Bipolar illness since youth
- Partial effect of medication (Li incl.)
- Responsive to ECT
- ECT + M-ECT May 2013 – March 2014
- ”No further effect”. Dementia + PD
- Restart april 2014
- Summer of 2015 sees grandchildren first time
- No further hospitalization
- M-ECT once a week/biweekly

Thank you!