ELECTROCONVULSIVE THERAPY

Max Fink, M.D.

SUNY at Stony Brook

Fink M. *ELECTROSHOCK: Restoring the Mind* (Oxford U Press, 1999)

Pre-Lecture Exam Question 1

1. **While many authors agree as to the efficacy of ECT in depressive illnesses, its efficacy has been tested more widely. In which of the following diagnoses is ECT considered effective?**

A. Substance abuse, alcoholism
B. Acute Schizophrenia
C. Borderline Personality Disorder
D. Psychotic Depression
E. Catatonia secondary to a medical condition
F. Bipolar Disorder (Mania)
G. Obsessive Compulsive Disorder
H. Neuroleptic Malignant Syndrome

Question 2

2. Psychotic depression is difficult to treat. Many patients are quickly considered 'therapy-resistant', mainly because the condition is not recognized and effectively treated. The response rates for psychotic depression for TCA (tricyclic antidepressants alone), combined AD and AP (antipsychotic drugs), and ECT are:

A. 50%, 60%, 60%

B. 35%, 75%, 80%

C. 50%, 50%, 50%

D. 75%, 75%, 75%

E. 75%, 90%, 90%

Question 3

3. ECT is increasingly used among elderly patients. Good outcomes for ECT are to be expected in elderly patients with:

A. Delusions of guilt and infedility

B. Prominent anxiety and somatization

C. Melancholia

D. Agitation

E. Pseudodementia

F. Axis 2 pathology

Question 4

4. Modern ECT defines the adequacy of each treatment by monitoring physiologic measures. The characteristics of an adequate treatment are:

A. EEG duration > 30 seconds

B. EEG duration > 180 seconds

C. No change in heart rate

D. Motor seizure duration greater than 100 seconds

E. Motor seizure duration greater than 25 seconds

F. Precise end-point to EEG

G. Imprecise end-point to EEG

Question 5

5. Much effort has gone into determining the placement of electrodes for the most effective course of ECT. Three electrode positions have been studied: bitemporal (BT), bifrontal (BFO) and unilateral (RUL). The relative efficacy of different electrode placements are:

A. RUL > BT; BT = BF

B. BT = BF = RUL

C. BT = BF; BT > RUL

D. BF > BT > RUL

E. RUL = BT = BF

Question 6

6. Risks of ECT. Many patients complain of headaches during the course of ECT. Management requires:

A. Reassurance alone

B. Analgesics pre-ECT

C. Analgesics post-ECT

D. Sumatripan post-ECT

E. Vasodilators before ECT

F. Benzodiazepines pre-ECT

Question 7

7. **Pre-ECT examinations are often complex. Before ECT, most checklists include:**

A. Brain scan or skull x-ray

B. Neurology consult

C. Institutional pre-anesthesia workup (ECG, urinalysis, CBC)

D. Spine x-ray

E. Neuropsychology consult

F. Anesthesia consult

G. Medical examination

Question 8

8. There is much concern about the use of ECT in adolescents and children. The technical features of ECT in adolescents and children:

A. Consent procedures defined by state laws

B. Consent by parents only

C. Energy dosing at adult levels

D. Energy dosing at lowest levels

E. Daily treatments required

F. Conventional rates (3x/week) apply

Question 9

9. A cavalier attitude has developed about the interaction of ECT and psychoactive medications. Some physicians cancel all medications before ECT, many add ECT to complex polypharmacy. Which of the following psychoactive medications should be discontinued before ECT, and which may safely be continued?

A. Lithium Continued
B. Lithium discontinued or reduced
C. Tricyclic and SSRI antidepressants continued
D. Tricyclic and SSRI antidepressants discontinued
E. Antipsychotic agents continued
F. Antipsychotic agents discontinued
G. Anticonvulsants continued
H. Anticonvulsants discontinued

Question 10

10. Catatonia is a syndrome that is defined in most diagnostic (DSM and ICD) systems as a subtype of schizophrenia. Recent re-assessments find catatonia to be common in patients with affective and neurologic disorders. Which of the following disorders are associated with catatonia today?

A. Kahlbaum syndrome

B. Delirious mania

C. Neuroleptic malignant syndrome

D. Malignant catatonia

E. Toxic Serotonin Syndrome

F. Benign stupor

Question 11

11. Effective treatment for catatonia is now well defined. Which of the following treatments are considered effective in catatonia?

A. Electroconvulsive therapy
B. Lorazepam and diazepam
C. Bromocriptine
D. Chlorpromazine
E. Clozapine
F. Haloperidol
G. Barbiturates
H. Rapid transcranial magnetic stimulation
I. Vagus nerve stimulation
J. Carbamazepine

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CLINICAL INDICATIONS

Reference:

Fink M. *ELECTROSHOCK: Restoring the Mind* (Oxford U Press, 1999)

(Reissued 2002 in Paperback)

ECT is Effective: DSM-IV Diagnostic Classes

Major Depression
- Single episode [296.2x]
- Recurrent [296.3x]

Bipolar Major Depression
- Depressed [286.5x]
- Mixed [296.6x]
- Not otherwise specified [296.70]

Mania (Bipolar Disorder)
- Mania [296.4x]
- Mixed type [296.6x]
- Not otherwise specified [296.70]

ECT is Effective: Additional DSM-IV Classes

Atypical Psychosis	**[298.90]**
Schizophrenia	
- **Schizophreniform**	**[295.40]**
- **Schizo-affective**	**[295.70]**
Catatonia	**[295.2x]**
- **Schizophrenia, catatonia subtype**	**[293.89]**
- **Secondary to medical condition**	**[293.89]**
- **Malignant catatonia**	**[293.89]**
- **Neuroleptic malignant syndrome**	**[333.92]**
- **Secondary to MD or mania**	

ECT vs Impramine In Depression DeCarolis Study - 1964

Treatment	Response Rate
Impramine 200-350 mg/day x 25 + days n=437	56%
ECT (8-10 bilateral Rx) n=190	72%

Efficacy of Antidepressants Alone in Psychotic and Non-Psychotic Depressed Patients DeCarolis Study - 1964

	No. Improved/Total			
	Psychotic Patients		Non-Psychotic Patients	
Simpson *et al**	8/15	(53%)	31/36	(86%)
Hordern *et al**	4/27	(15%)	89/110	(81%)
DeCarolis *et al***	72/181	(40%)	174/256	(68%)
Glassman *et al****	3/13	(29%)	14/21	(67%)

*p<0.01, **p<0.001, ***p<0.05

Psychotic Depression Response Rates

Antidepressants	36%
Antipsychotics	47%
Antidepressants + antipsychotics	77%
ECT	70-85%
(Bilateral ECT in CORE Study	95%)

Relative Efficacy
Antidepressants and ECT

	Number		% Marked Improvement		
	ECT	AD	ECT	AD	P Value
Total	140	93	42	22	0.0005
Insomnia	129	78	44	24	0.01
Anorexia	111	84	44	23	0.005
Agitation	70	40	51	24	0.01
Guilt	72	43	44	23	0.025
Weight gain	65	41	43	32	NS
Retardation	63	37	35	24	NS
Tearing	80	42	45	26	NS

From Avery D & Winokur G. *Biol Psychiatry* 1977; 12:507-23

Mortality in Depressed Patients

	N	1 Yr	Non-cancer	3 Yr	Non-cancer
ECT	135	0.7%	0.0%	2.25	0.75
Adequate AD	71	1.4%	1.4%	2.8%	1.4%
ECT+AD	122	2.2%	2.5%	6.6%	6.6%
Inadequate AD	121	5.8%	5.0%	9.1%*	8.3%
Neither ECT nor AD	70	10.0%**	7.0%	11.4%**	8.3%

*$p \leq 0.05$ **$p \leq 0.025$

From Avery D & Winokur G. ArchGenPsychiatry 1976 33:1029-37

Indications for ECT in Therapy Resistant Depression

- Failure*: Two medication trials of 4 weeks minimum duration at clinically adequate dosages
- Severity: Warrants hospital care

  and/or
- Intolerance: Inability to tolerate medication side effects
- Prognosis: At least two favorable predictors of outcome

*Follows the standard used to administer clozapine in therapy-resistant psychosis

Therapy Resistent Depression
Predictors of Good Outcome With ECT

- Acute onset
- Age over 50 years
- Psychosis (delusions) prominent
- Vegetative signs severe
- Severe starvation and >10% weight loss
- Suicidality requiring 24-hour observation
- Catatonia
- Stupor
- Delirium
- Previous good response to ECT

Therapy Resistent Depression Predictors of Poor Outcome With ECT

- Character pathology prominent (Axis II DSM)
- Indefinite onset; prolonged illness
- “Neurotic signs” prominent
  - Anxiety
  - Somatizations
- Comorbid alcoholism, substance abuse
- Lack of response to tricyclic antidepressants

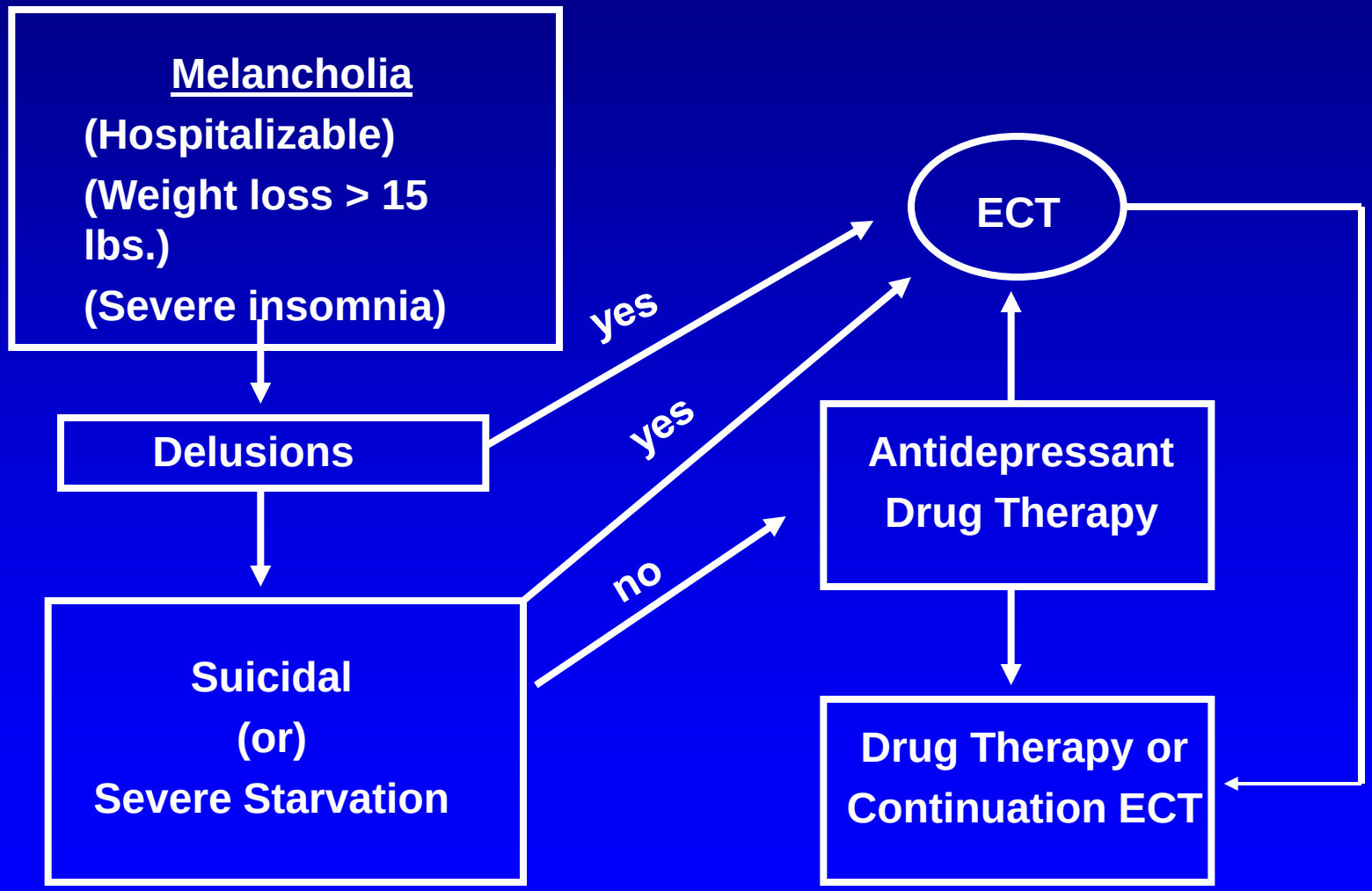
Primary Indications for ECT in the Elderly

- Depression with psychosis
  - Delusions of guilt
  - Delusions of infidelity
  - Delusions of hopeless disease
  - Delusions of poverty
- Melancholia with agitation
- Depression with dementia
  - “Pseudodementia”

Additional Indications for ECT in the Elderly

- Antidepressant resistant depression
- Antidepressant toxicity
  - Delirium
  - Hypotension
- Secondary depression
  - Antihypertensive drugs
- “Secondary Mania”

Treatment Algorithm for Severe Depression in the Elderly

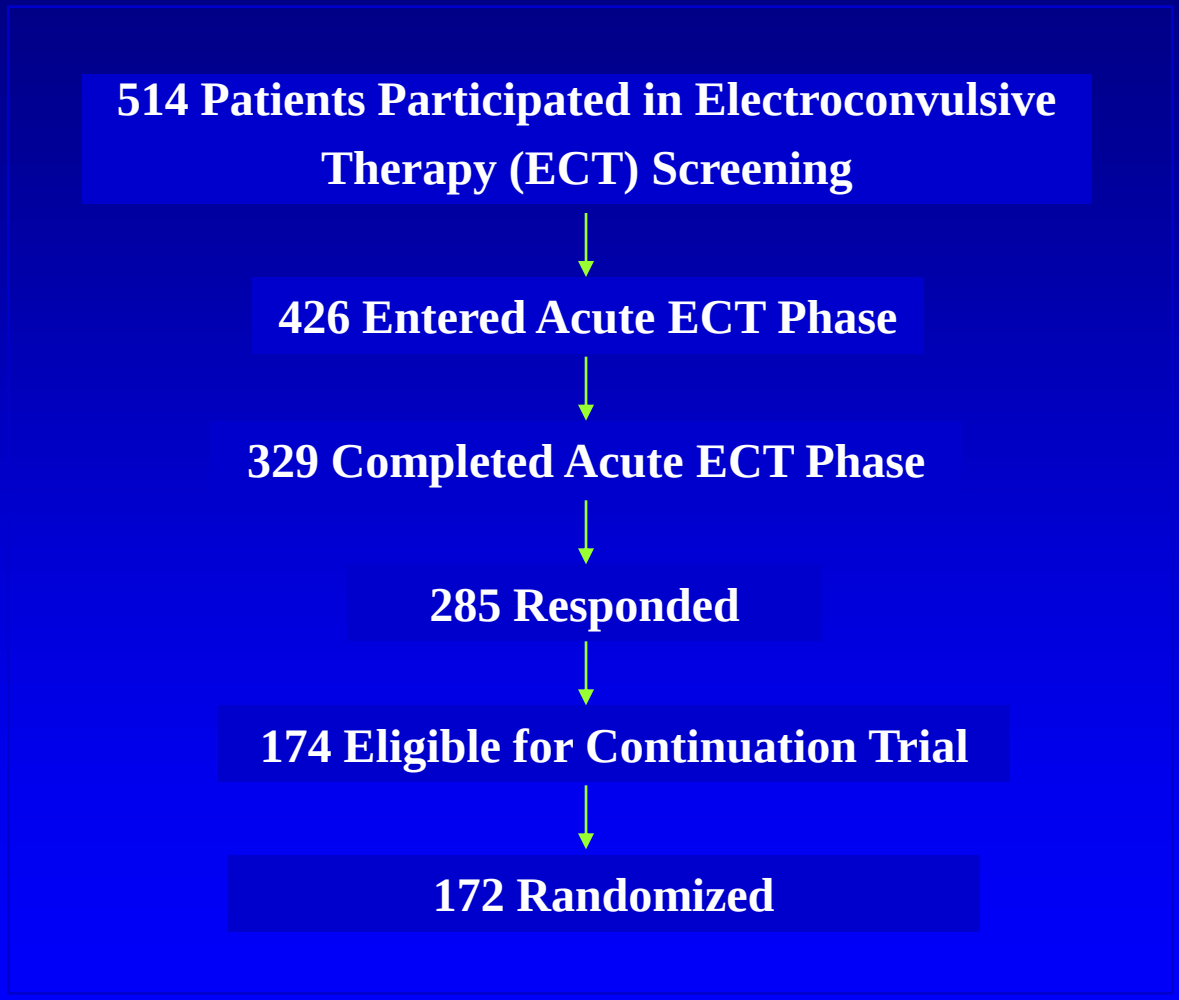


CORE ECT Study

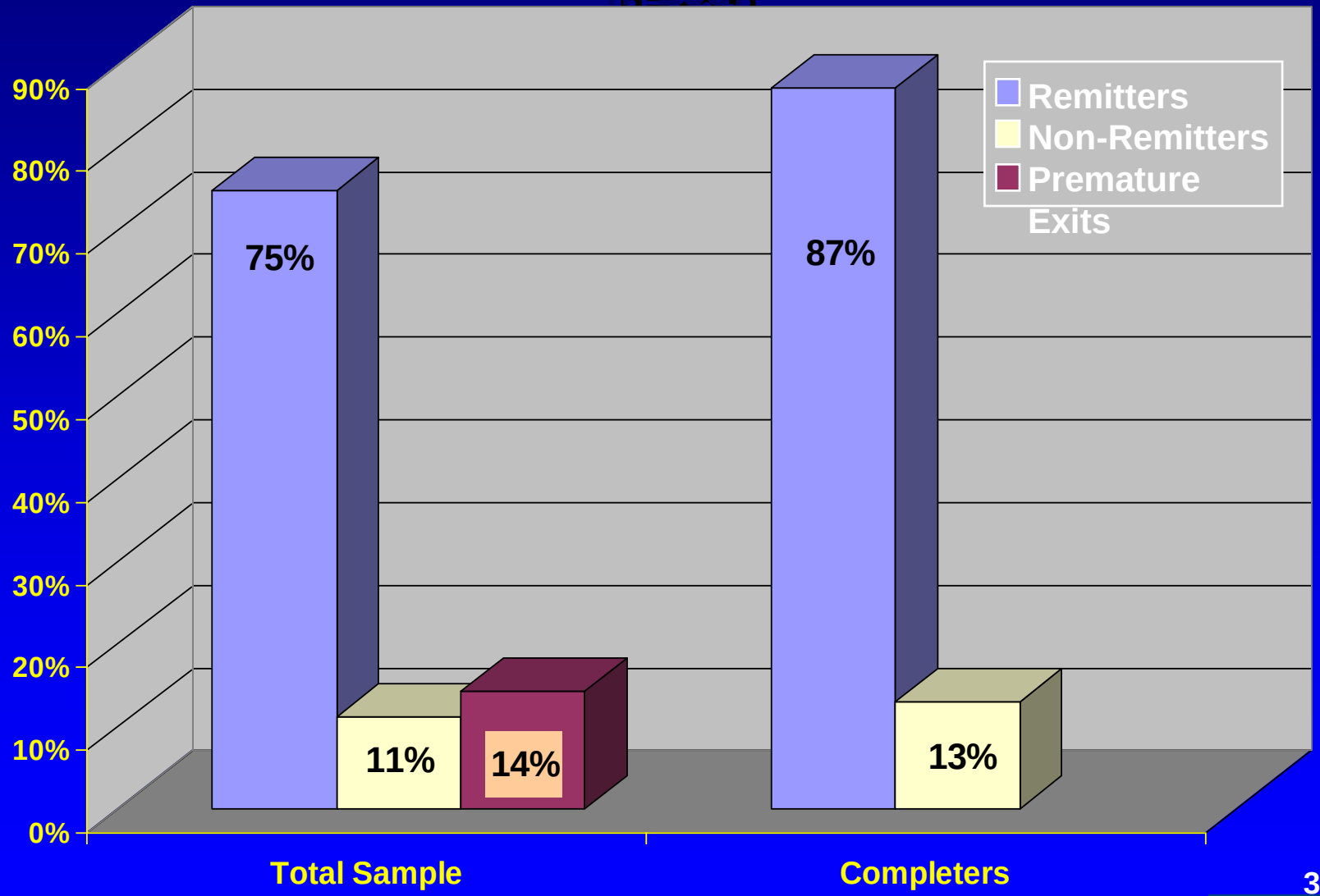
4-Hospital NIMH Support

UMDNJ- Charles Kellner, M.D.
LIJ-Hillside – Georgios Petrides M.D.
Mayo Clinic- Teri Rummans, M.D.
UT Southwestern- Mustafa Husain, M.D.

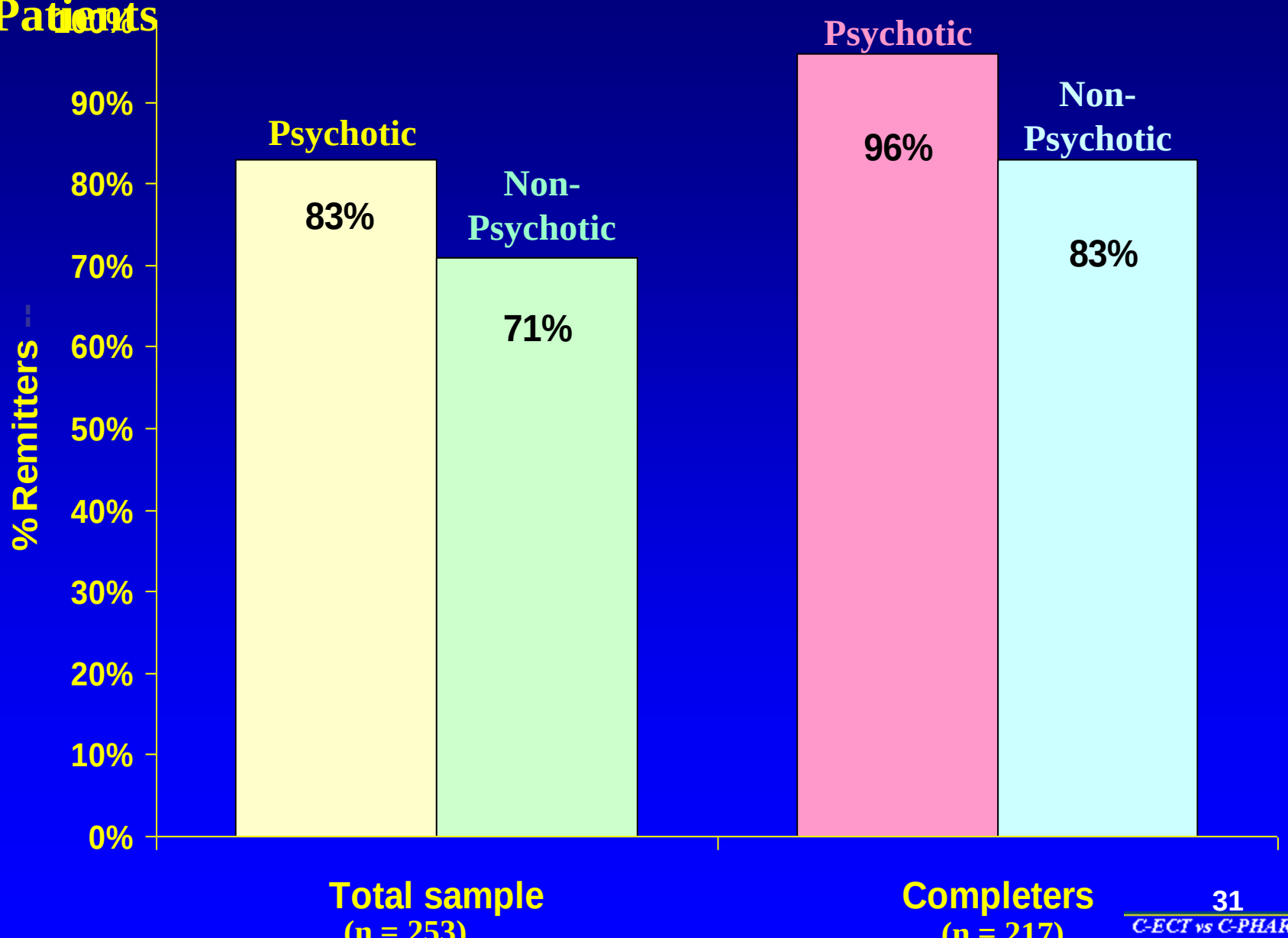
Enrollment Phase I / Phase II as of March 2002



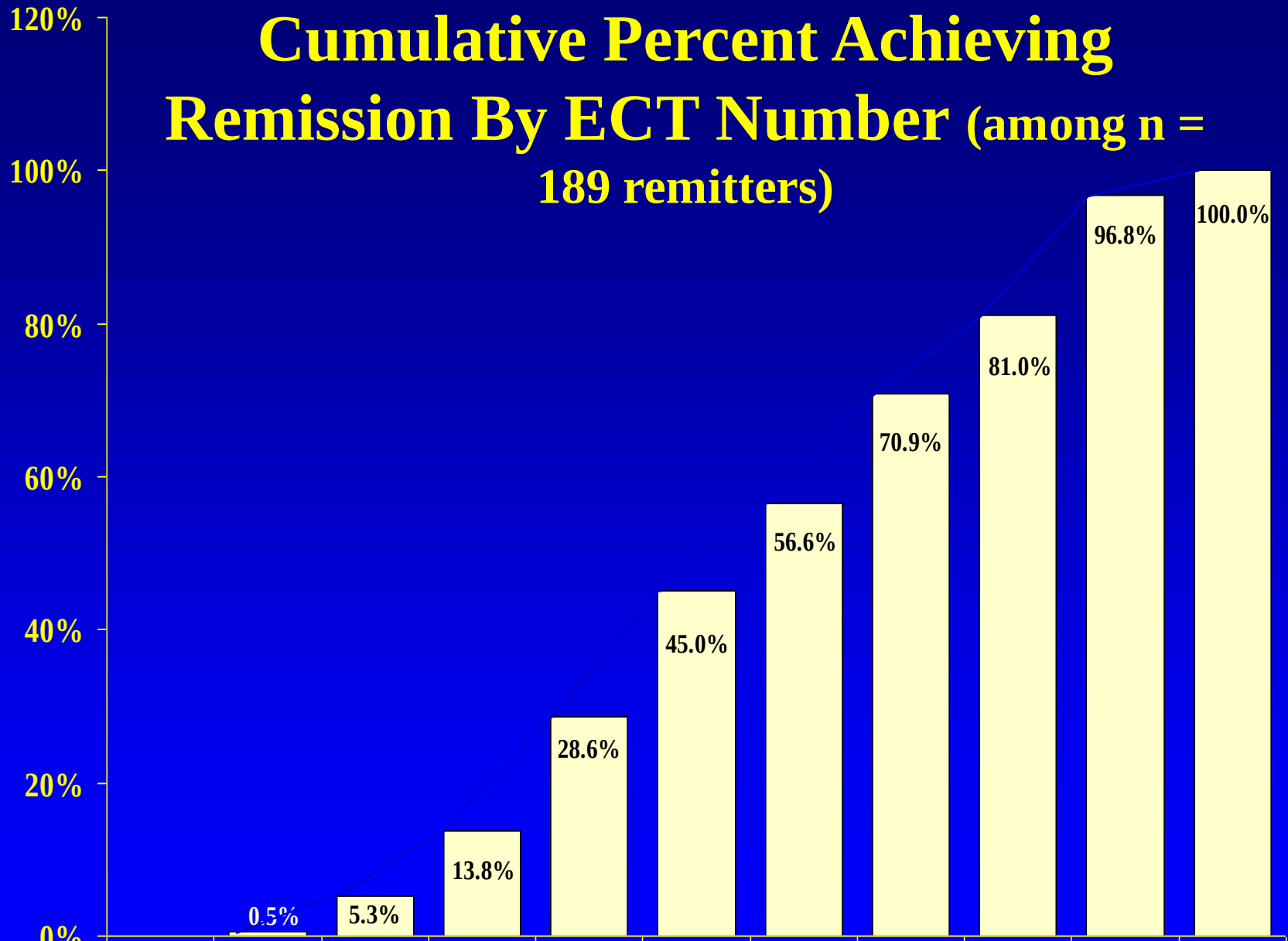
Response Status for Patients Entering Acute Phase and for Patients Completing Acute Phase (N=253)



Comparison of Remission Rates for Psychotic and Non-Psychotic Patients



Cumulative Percent Achieving Remission By ECT Number (among n = 189 remitters)



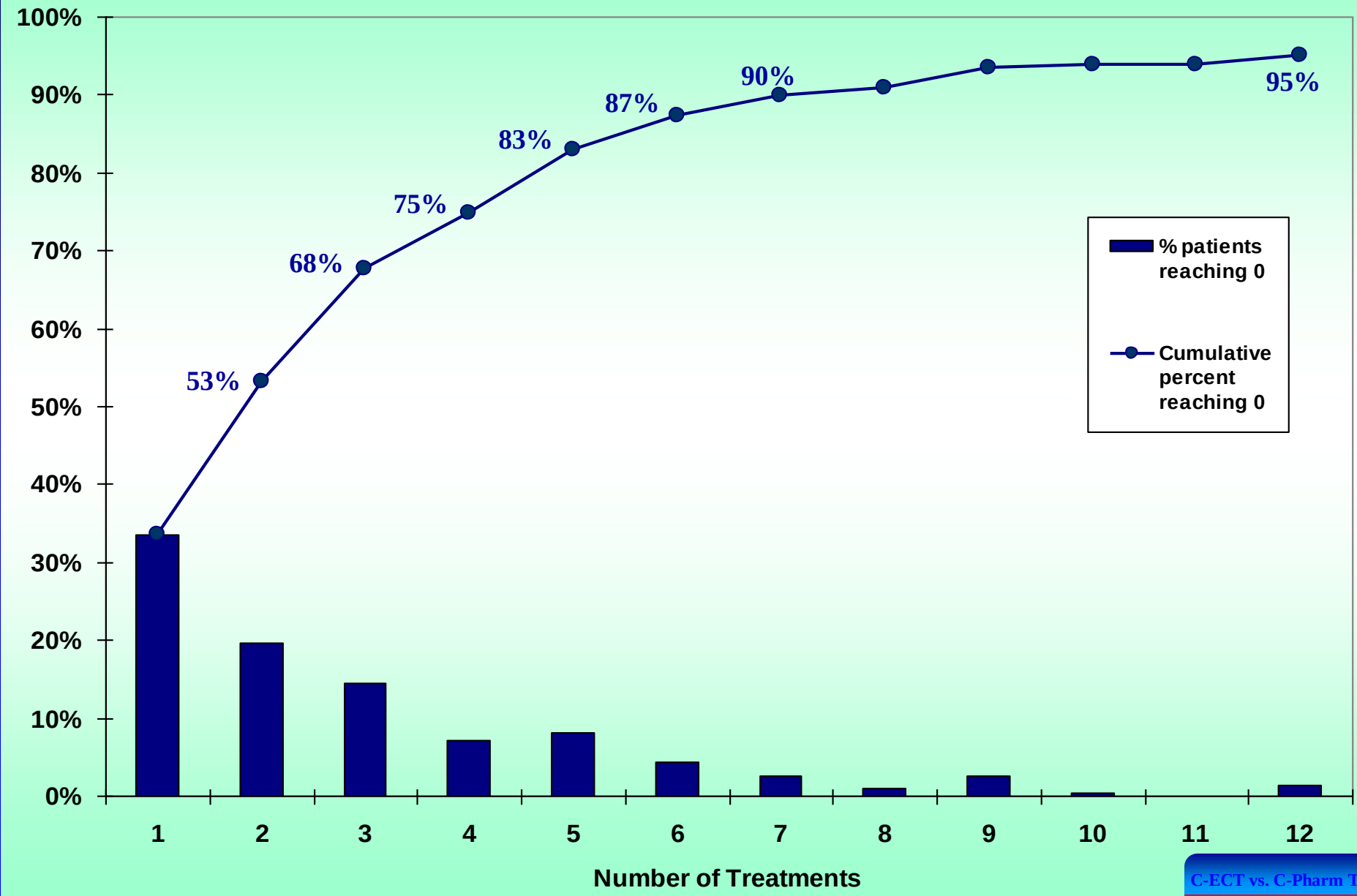
Suicidality Evaluation

- ***Hamilton Depression Scale Score***
- 0- Absent
- 1- Life is empty or not worth living
- 2- Recurrent thoughts or wishes of death
- 3- Active suicidal thoughts, threats, gestures
- 4- Serious suicide attempt

Percent Exhibiting Suicidality (HAM-D Item 3 ≥ 2)

	% ≥ 2 at Baseline	% Reaching Rating = 0
Total Sample	58.7% (237/404)	93.2% (221/237)
Gender		
Male	67.4% (91/135)	97.8% (89/91)
Female	54.3% (146/269)	97.3% (142/146)
Psychosis		
Psychotic	53.9% (70/130)	90.0% (63/70)
Non-psychotic	59.9% (160/267)	94.3% (151/160)

Number of ECT Needed to Resolve Suicidality Among All Patients with Baseline Suicide Rating ≥ 2



Non-Conventional Uses of Electroconvulsive Therapy

- In Adolescents
- Bipolar Disorder
- Catatonia
- Delirium
- Psychosis
  - Schizophrenia
  - Manic Psychosis
  - Delirious mania
- Neurology

ECT in Adolescents

- Inhibitors to its use
  - Fear of ‘brain damage’
  - Psychological etiology of disorders
  - Legislative proscription
  - Lack of training

ECT in Adolescents

- Indications and Efficacy
  - Identical to Adults
- Technical Features of ECT
  - Identical to Adults
  - Consent procedures defined by state laws
  - Prolonged seizures possible;use diazepam

ECT in Bipolar Disorder

- **Indications**
  - **Therapy-resistant mania**
  - **Rapid cycling mania**
  - **Manic excitement (delirious mania)**

Reference: Mukherjee *et al*. ECT of acute manic episodes:A review of 50 years' experience. *Am J Psychiatry* 1994; 151:169-76.

ECT in Bipolar Disorder

- **Special Considerations**
  - **Consent- difficult to obtain**
  - **Anesthesia- use of ketamine**
  - **Bitemporal electrode placement**
  - **Treatment en bloc**
  - **Concurrent lithium- risks**
  - **Concurrent anticonvulsants- risks**

CATATONIA

- Max Fink, M.D.

Fink M. Taylor MA: *CATATONIA: A Clinician's Guide to Diagnosis & Treatment.* Cambridge UK: Cambridge U Press, 2003

Catatonia

"The patient remains entirely motionless, without speaking, and with a rigid, masklike facies, the eyes focused at a distance; he seems devoid of any will to move or react to any stimuli; there may be fully developed 'waxen' flexibility, as in cataleptic states. The general impression conveyed by such patients is one of profound mental anguish."

Kahlbaum. K. Die Katatonie oder das Spannungs-Irresein, 1874.

Catatonia

A motor syndrome in psychiatric patients

Akin to delusions, delirium, hallucinations

Catatonia

Primary Signs

- Mutism
- Immobility/ Stupor
- Staring
- Posturing
- Negativism
- Grimacing

Catatonia

Associated Signs

- Rigidity
- Mannerisms
- Stereotypy
- Echophenomena
- Waxy flexibility
- Perseveration

Catatonia

- 1874: Kahlbaum defines catatonia
- 1919: Kraepelin includes catatonia in dementia praecox
- 1921:August Hoch describes Benign Stupors
- 1952: DSM-II: Schizophrenic reaction, catatonic type (22.2)

Catatonia

- 1980: DSM-III : Schizophrenia, catatonic type (295.20)
- 1994: DSM-IV
  - 295.20 Schizophrenia, catatonic type
  - 293.89 Catatonic disorder due to [general medical condition]

  Modifier in Affective disorders

Catatonia

- Found in
  - Mania (Bipolar disorder)
  - Depression
  - Systemic diseases
  - Toxic syndromes
  - Schizophrenia
  - Neurologic disorders

Catatonia

Varieties

- Catatonia, a syndrome
- Malignant Catatonia
- Excited catatonia
- Delirious mania (manic delirium)
- Benign Stupor
- Neuroleptic malignant syndrome
- ? Toxic Serotonin Syndrome

Catatonia

Symptomatic Treatment

- Barbiturates: Amobarbital iv, 500mg/10ml;
  - 1 ml/40 seconds to relief or sleep
- Benzodiazepines: Lorazepam
  - iv, 1mg/2 min to relief or sleep
  - oral, 4-16 mg/day

Catatonia

Electroconvulsive Therapy

- ECT is the definitive treatment
- Bilateral electrode placement most effective
- Initial daily treatment x 3 ("*en bloc*")
- Sustained by standard ECT regimen
- Catatonia relieved within 2-4 ECT
- May need ketamine anesthesia initially

Catatonia

Treatment

- Neuroleptics riskful- May precipitate NMS
- Alternate treatment: Carbamazepine

DELIRIUM

Max Fink, M.D.
SUNY at Stony Brook

Fink M. Interaction of delirium and seizures. *Sem Clin Neuropsychiatry*. 2000; 5:31-35.

Delirium

- Definition
  - Acute onset
  - Altered, fluctuating consciousness
  - Excitement, overactivity, aggressivity
  - Disorientation, confusion
  - Rambling, incoherent speech
  - Altered sleep-wake cycle

Delirium

- Causes
  - Brain dysfunction
    - Trauma, infection, stroke
  - Systemic disease (metabolic, infectious)
  - Drug toxicity
    - Anticholinergics, lithium
    - Alcoholism
  - Mania

Delirium

- Laboratory Findings
  - Fever, hypertension, tachycardia . . .
  - Hypoglycemia, uremia . . .
  - Elevated drug serum and urine levels
  - EEG
    - Increased slowing, varying frequencies
    - Slow wave burst activity
    - Increased beta activity

Delirium

- Treatment
  - Prevent self injury
  - Determine and treat systemic cause
    - Withdraw psychotropic medications
    - Establish metabolic integrity
  - Alter brain dysfunction
    - Stimulants
    - ECT

Delirium

- Role of ECT
  - Rapidly changes brain function
  - Sedates
  - Controls agitation, excitement
- Procedures
  - Bitemporal electrode placement
  - Daily treatments (en bloc)
  - Monitor adequacy of seizures

ECT in Psychosis: History

- 1917 Fever Therapy for neurosyphilis
- 1930 Barbiturate for catatonia
- 1933 Insulin coma for dementia praecox
- 1934 Pharmaco-convulsive Therapy for DP
- 1935 Lobotomy for obsessions
- 1938 Pharmaco-Convulsive becomes ECT
- 1953 Chlorpromazine for psychosis
- 1960's CPZ replaces ICT, ECT, Lobotomy
- 1975 ECT for psychotic depression
- 1987 ECT in clozapine-resistant psychosis

ECT in Psychosis

Medications are defined as "antipsychotic" when their actions reduce thought disorders.

ECT modifies thought disorders with the same facility as drugs.

ECT is an antipsychotic treatment.

ECT and antipsychotic drugs act synergistically.

ECT in Psychosis: Known Augmentations

- Chlorpromazine
- Thiothixene
- Fluphenazine
- Clozapine

ECT in Psychosis: Many Faces

- Psychotic Depression
- Psychotic mania
- Delirious mania
- Toxic and delirious psychosis
- Schizophrenia
- Schizo-affective disorder
- Catatonic subtype
- Paranoid subtype
- Delusional Disorder

ECT in Psychosis: Technical

- Continue antipsychotic medication
- Bitemporal electrodes
- Half-age dosing
- Three times per week
- Minimum 20 ECT
- Continuation ECT

ECT in Schizophrenia

Indications

- Positive-symptom psychosis
- Less than 2 years duration

Subtypes in which ECT is effective

- catatonic subtype (295.2)
- paranoid type (295.3)
- schizo-affective disorder (295.7)

ECT in Schizophrenia

Action

Augments antipsychotic agents

Known effective agents

chlorpromazine

thiothixene

fluphenazine

clozapine

Ref:

Fink M, Sackeim HA: ECT for schizophrenia? Schiz Bull 1996; 22:27-39.

ECT in Manic Psychosis

Indications

- Therapy resistant mania
- Rapid cycling mania
- Delirious mania (Manic excitement)

Ref:

Mukherjee et al. ECT of acute manic episodes: A review of 50 years experience. Am J Psychiatry 1994; 151:169-176

ECT in Manic Psychosis
Special Considerations

Consent: Difficult to obtain

Anesthesia: Use of ketamine

Bitemporal electrode placement

Treatment en bloc

Concurrent medications:

- *lithium*
- *anticonvulsants*
- *antipsychotics*

Delirious Mania
History of the Concept

1849 Bell 40/1700 patients/13 years

1973 Taylor & Abrams 19% manic patients "confused"

1980 Bond 3 patients (Li and haloperidol)

1981 Klerman "excited mania"

1981 Kramp and Bolwig 3 patients (ECT)

1997 Strömgren 8 patients (ECT)

1999 Fink 5 patients (ECT)

Delirious Mania
Definition

A syndrome of:

excitement,
delirium,
psychosis,
of acute onset,
high mortality if untreated.

Ref:

Fink M. Delirious mania. *Bipolar Disorders* 1999;1:54-60.

Delirious Mania
Signs and Symptoms

Excited, restless
Delusions: fearful, paranoid
Incoherent, rambling speech
Disoriented, poor recall
Insomnia
Fever, tachycardia, hypertension
Mutism, negativism, stereotypy, posturing

Delirious Mania
Treatment

Sedation

- *Benzodiazepines, barbiturates*
- *High doses of BZD (~8-16 mg lorazepam)*

Avoid antipsychotic agents

- *Especially high potency neuroleptic agents (e.g., haloperidol)*

ECT (en bloc)

ECT in Neurology: Uses

Status Epilepticus and NCSE

Parkinsonism

Malignant catatonia- NMS

Delirium- Stupor

Pseudodementia

Mental Retardation

ECT in Neurology: Physiology

Increases brain dopamine

Raises seizure threshold

Releases neuroendocrine hormones

Prolactin, TRH, ACTH

Lowers brain, CSF calcium

ECT in Neurology: *Problems-1*

- Increased CSF pressure
  - Brain lesion
- Recent 'stroke'- bleeding
- Paralysis or burn
  - Succinylcholine to atracurium
- High doses of BZD -- flumazenil

ECT in Neurology: *Problems-2*
Conditions that are Not a Bar

- CSF shunt
- Skull metal - plate or shrapnel
- Ventilator
- Intravenous feeding
- Normal CSF pressure in meningioma

ECT in Neurology
SE and NCSE

Customary Treatments

- Phenytoin, carbamazepine
- Benzodiazepines
- Barbiturates, Propofol
  - Induced anesthesia
- ECT

ECT in Neurology

Parkinsonism- 1

Efficacy in rigidity and 'on-off' phenomenon

ECT releases brain dopamine

Risk of dopaminergic psychosis

Manifests as delirium, excitement

ECT in Neurology
Parkinsonism -2

Half age dosing, bitemporal electrodes

Frequency of treatments reduced

Continue dopamine agonists but reduce dosage 24-36 hours prior to ECT

Continuation ECT

ECT in Neurology
Pseudodementia

No effective method to separate a structural from a functional form of dementia

A feature of affective disorders

Treatment: When medications fail, ECT

No special technical features in ECT

ECT in Neurology

Mental Retardation

Indications: same as non-MR patients

Efficacy: same as non-MR patients

Safety: no special risks are associated with MR state

Ref: Thuppal M, Fink M. ECT and mental retardation. JECT 1999; 15:175-177.

2003 ECT Technique - 1

- Electrode Placement
- Seizure Threshold Estimation
- Energy Dosing
- EEG Monitoring for Effective Seizure
- Continuation ECT

2003 ECT Technique - 2

- Electrode Placement
  - **Types**
    - **Bitemporal (BT)**
    - **Right Unilateral (RUL)**
    - **Bifrontal (BF)**
  - **BT and BF – Greater Efficacy**
  - **Disadvantages of RUL is Low Efficacy**
  - **Side-effects of RUL, BT, BF**

2003 ECT Technique -3

- Seizure Threshold Estimation by Titration is Necessary for RUL
  - Titration Schedules
  - Formula Methods
    - Half-age
    - 75% energy
    - Full age
- Energy Dosing by Formula

2003 ECT Technique -4

- EEG and EMG Monitoring Advised
- Defining “An effective seizure”
  - EEG Pattern
  - EEG measures
- Aborted seizure
- Prolonged seizure
- Why EMG?

2003 ECT Technique - 5

- Need for Continuation Treatments
  - Relapse rates in ECT
- Medication continuation
  - Efficacy
  - How to optimize
- Continuation ECT
  - Efficacy and safety

Technical Responses That Reduced Risks - 1

Risks	Response
Death	Anesthesia; Recovery Room monitoring
Panic and Fear	Anesthesia
Tardive Seizures	Barbiturate anesthesia

Technical Responses That Reduced Risks - 2

Risks	Response
Amnesia	Oxygenation; airway management Electrode placement Brief-pulse currents Frequency of treatments
Post-ECT delirium	Methohexital, diazepam, droperidol, midazolam
Post-ECT headache	Analgesics pre- or post-ECT, sumatriptan
Prolonged seizures	Diazepam

Drugs and ECT Combined

Psychoactive Drugs	Use in ECT
Antipsychotics (Neuroleptics)	Synergism demonstrated and use recommended. Preferably low sedation, low anticholinergic agents
Antidepressant drugs (TCA, MAOI, SSRI)	No synergism demonstrated Use not recommended
Anticonvulsants & anxiolytics (Benzodiazepines, phenytoin, carbamazepine)	Block efficacy of ECT Use interdicted
Lithium	Increase confusion Use not recommended
Caffeine, theophylline	Enhance seizure duration Use to increase seizure adequacy

Pre-ECT Checklist

- Patient and family are fully informed
  - ideally they can see an ECT video
- Written valid informed consent is signed by patient
- and “significant family member”
- Physical exam and detailed neurological exam
- Assess for medical or medication contraindications
- Basic tests - CBC, UA, ECG, HR, BP, Temp
- Additional tests warranted by examination

Post Lecture Exam
Question 1

1. **While many authors agree as to the efficacy of ECT in depressive illnesses, its efficacy has been tested more widely. In which of the following diagnoses is ECT considered effective?**

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B. BT = BF = RUL

C. BT = BF; BT > RUL

D. BF > BT > RUL

E. RUL = BT = BF

Question 6

6. Risks of ECT. Many patients complain of headaches during the course of ECT. Management requires:

A. Reassurance alone

B. Analgesics pre-ECT

C. Analgesics post-ECT

D. Sumatripan post-ECT

E. Vasodilators before ECT

F. Benzodiazepines pre-ECT

Question 7

7. **Pre-ECT examinations are often complex. Before ECT, most checklists include:**

A. Brain scan or skull x-ray

B. Neurology consult

C. Institutional pre-anesthesia workup (ECG, urinalysis, CBC)

D. Spine x-ray

E. Neuropsychology consult

F. Anesthesia consult

G. Medical examination

Question 8

8. There is much concern about the use of ECT in adolescents and children. The technical features of ECT in adolescents and children:

A. Consent procedures defined by state laws

B. Consent by parents only

C. Energy dosing at adult levels

D. Energy dosing at lowest levels

E. Daily treatments required

F. Conventional rates (3x/week) apply

Question 9

9. A cavalier attitude has developed about the interaction of ECT and psychoactive medications. Some physicians cancel all medications before ECT, many add ECT to complex polypharmacy. Which of the following psychoactive medications should be discontinued before ECT, and which may safely be continued?

A. Lithium Continued
B. Lithium discontinued or reduced
C. Tricyclic and SSRI antidepressants continued
D. Tricyclic and SSRI antidepressants discontinued
E. Antipsychotic agents continued
F. Antipsychotic agents discontinued
G. Anticonvulsants continued
H. Anticonvulsants discontinued

Question 10

10. Catatonia is a syndrome that is defined in most diagnostic (DSM and ICD) systems as a subtype of schizophrenia. Recent re-assessments find catatonia to be common in patients with affective and neurologic disorders. Which of the following disorders are associated with catatonia today?

A. Kahlbaum syndrome

B. Delirious mania

C. Neuroleptic malignant syndrome

D. Malignant catatonia

E. Toxic Serotonin Syndrome

F. Benign stupor

Question 11

11. Effective treatment for catatonia is now well defined. Which of the following treatments are considered effective in catatonia?

A. Electroconvulsive therapy
B. Lorazepam and diazepam
C. Bromocriptine
D. Chlorpromazine
E. Clozapine
F. Haloperidol
G. Barbiturates
H. Rapid transcranial magnetic stimulation
I. Vagus nerve stimulation
J. Carbamazepine

Answers to Pre & Post Competency Exams

1. B, D, E, F, H (Slides 4, 5)
2. B (Slide 8)
3. A, C, D, E (Slides 15-16)
4. A, E, F (Slides 18, 21)
5. C (Slide 19)
6. B, C, D (Slides 23, 24)
7. C, F, G (Slide 26)
8. A, D, F (Slide 29)
9. B, D, E, H (Slide 25)
10. All (Slides 37-43)
11. A, B, G, J (Slides 44-46)