

The Multidisciplinary Management of
Acute Disturbance
Peterhouse College, Cambridge University
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ECT for Challenging Behaviour!

Is there any evidence?

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Applying electroconvulsive therapy (ECT).

Maudsley Debate

Should we stop using electroconvulsive therapy?

BMJ 2019; 364: k5233 doi: 10.1136/bmj.k5233 (Published 30 January 2019)

Debate on 19 September 2018, London: 'This house believes ECT has no place in modern medicine.'

Yes

John Read, professor of clinical psychology

- lack of efficacy
- memory loss and brain damage

Sue Cunliffe, electroshock survivor

- Incapacitated by ECT

No

Sameer Jauhar, senior research fellow

Declan McLoughlin, professor of psychiatry

- effectiveness established over 80 years - 1938
- underpowered, flawed studies excluded
- ideological and emotive objections

ECT for depression

abundant evidence of a safe and effective treatment

several meta-analyses

- Han Kho 2003. A meta-analysis of electroconvulsive therapy efficacy in depression. *Journal of ECT* 19: 139-147.
- UK ECT Review Group 2003. Efficacy and safety of electroconvulsive therapy in depressive disorders: a systematic review and meta-analysis. *Lancet* 361: 799-808.
- Heijnen et al 2010. Antidepressant pharmacotherapy failure and response to subsequent electroconvulsive therapy. *Journal Clinical Psychopharmacology* 30: 616-619.
- Conclusion: ECT is a safe and effective short-term treatment for depression, and is probably more effective than drug therapy.

ECT: robust evidence of safety

Mortality

Tørring et al 2017. The mortality rate of electroconvulsive therapy: a systematic review and pooled analysis. *Acta Psychiatr Scand* 135: 388-397.

- PRISMA Review of 15 studies, 32 countries, 766 180 ECT treatments
- 16 ECT-related deaths
- ECT-related mortality rate=2.1/100 000 (95% CI: 1.2-3.4). Compared with mortality of general anaesthesia in relation to surgical procedures = 3.4/100 000
- In the nine studies published after 2001 (414 747 treatments), there was *only one* ECT-related death.
- Death caused by ECT is an extremely rare event: the safest procedure conducted under general anaesthesia.

ECT: robust evidence of safety

Cognitive effects

Semkosvska M and McLoughlin D 2010. Objective cognitive performance associated with electroconvulsive therapy for depression: a systematic review and meta-analysis. *Biological Psychiatry* 68: 568-577.

- MEDLINE, EMBASE, PsychArticles, PsychINFO, reference lists
- Main outcome: change in performance after ECT relative to pre-treatment scores with respect to delay between finishing ECT and cognitive testing.
- Meta-analysis of 24 cognitive variables, 84 studies (2981 patients). Conclusions:
 - cognitive abnormalities associated with ECT are limited to first 3 days post-treatment
 - pre-treatment functioning levels are subsequently recovered
 - after 15 days, processing speed, working memory, anterograde memory and some aspects of executive function improve beyond baseline levels.

Advanced ECT with Anesthesia Depth Monitoring



Thymatron™ System IV

- Automatically monitors EEG-EEG, plus ECG and EMG and determines EEG and motor seizure lengths. Prints heart rate each second on edge of strip.
- Computer-measured seizure quality, including postictal EEG suppression and seizure energy index.
- Ultrabrief 0.25 ms pulsewidth included; duration to 8 s
- Single dial sets stimulus charge by age; high-dose version available
- Integral FlexDial™ sets all parameters without altering dose



New EctoBrain II Training Device

Simulated response allows training without patients

World-wide: www.thymatron.com

UK: www.dantecdynamics.co.uk

ECT for challenging behaviour?

RCPsych 2013 Prevention and Management of Violence – Guidance for Mental Healthcare Professionals. College Report CR 177

- ECT is not a practicable or desirable measure to treat violence or the risk of violence in emerging situations
- Fourth line option
- Emergency situations (consent and S62 MHA). ECT may be given for two of the four situations:
 - treatment which is immediately necessary to alleviate serious suffering by the patient;
 - or which is immediately necessary and represents the minimum interference necessary to prevent the patient from behaving violently or being a danger to himself or others

NICE Guidance [ta 59] Guidance on the use of ECT Published 2003, updated 2009, reviewed April 2014.

ECT to be used only:

- to achieve rapid and short-term improvement of severe symptoms
- after and adequate trial of other treatment options has proven ineffective
- and/or when the condition is considered to be potentially life-threatening
- in individuals with:
 - catatonia
 - prolonged or severe manic episode

NICE Guidance, challenging behaviour and ECT

NICE Guidelines [CG 185] Bipolar disorder: assessment and management. Pub Sep 2014, updated Feb 2016.

- no mention of ECT for mania

NICE Guidelines [NG 10] Violence and aggression: short-term management in mental health, health and community settings. May 2015.

- no mention of ECT at all

International guidelines, challenging behaviour and ECT: mania

American Psychiatric Association

Clinical Manual of Electroconvulsive Therapy (Beyer, 2010)

- When ECT first introduced for treatment of mania
 - ↓↓ the high mortality rates from exhaustion and suicide
 - ECT: the primary treatment of the illness
- Following lithium, anti-manic agents and antipsychotics: underutilisation
 - ECT relegated to patients intolerant or refractory to medication

International guidelines, challenging behaviour and ECT: mania

American Psychiatric Association

Clinical Manual of Electroconvulsive Therapy (Beyer, 2010)

- Primary use of ECT:
 - urgent need (medical or psychiatric) for rapid response
 - ECT poses less risk than other treatments
 - history of better response to ECT than to other treatments
 - patient has a strong preference
- ECT should be considered in mania that is acutely treatment refractory
- ECT may play a role in delirious mania or rapid-cycling manic states

International guidelines, challenging behaviour and ECT: mania

- World Federation of Societies of Biological Psychiatry (WFSBP) Guidelines for the biological treatment of bipolar disorders: update on the treatment of acute bipolar depression. Grunze et al (2010) World Journal of Biological Psychiatry 11: 81-109.
 - recommend ECT in acute manic episodes which are resistant to treatment with antipsychotic and mood-stabilising medication.
- BAP Evidence based guidelines for treating bipolar disorder. Revised 3rd edition of the BAP recommendations. Goodwin et al 2016, J Psychopharmacology 30 (6): 495-553.
 - ECT may be considered for manic patients who are severely ill, whose mania is treatment resistant (including mixed states), who express a preference for ECT and patients with severe mania during pregnancy.
 - should be considered in cases of delirious mania, since this is a medical emergency.
 - caution because of polypharmacy
- Harvard South Shore Algorithm for Mania (Mohammad and Osser, 2014)
 - ECT may be considered at any point for acute mania if history of:
 - positive response
 - intolerance to medication

Mania and ECT: evidence old...

Mukherjee et al 1994. Electroconvulsive therapy of acute manic episodes: a review of 50 years' experience. *Am J Psychiatry* 15: 169-76.

- Review of all published papers in English until 1994 on the use of ECT in acute mania
- Results:
 - ECT associated with remission or marked improvement in 80% of manic patients(N= 589)
 - 6 retrospective (n=150) and 2 prospective (n=39) studies
 - Full remission/marked improvement in 85% and 77%, respectively
 - effective for manic episodes responding poorly to pharmacotherapy
 - no need for high frequency or prolonged course of treatment
 - lower threshold in manic than in depressed patients
- Conclusion: ECT is an effective and safe treatment for acute mania.

Mania and ECT: evidence old...

Sikdar et al 1994. Combined chlorpromazine and electroconvulsive therapy in mania. Br J Psychiatry 164: 806-10.

- double-blind (N=30) manic patients bilateral ECT vs simulated ECT
- 8 treatments, + chlorpromazine 600mg/day (dose or antipsychotic could be changed after 6 ECTs).
- ECT group (n=12) completely recovered vs 1 control
- significant improvement after 2nd treatment; ECT group needed less medication
- Conclusion: “combination of ECT and a moderate dose of neuroleptic is extremely effective in rapidly absorbing an acute episode of mania. ECT can be recommended for any manic patient, irrespective of the severity or the duration of the illness”.

Mania and ECT: ... and new

Jahangard et al. 2012 Comparing efficacy of ECT with and without concurrent sodium valproate therapy in manic patients. *Journal of ECT* 28: 118-123.

- N=42 (37 men) bipolar I mania, at least 6 bifrontal ECT (6-10), randomly assigned with and without sodium valproate
- YMRS and CGI pre- and post -ECT: both groups significantly improved, but no difference between groups.
- Conclusion: sodium valproate does not affect efficacy of ECT in the treatment of manic episodes in bipolar I patients

Mania and ECT: ... and new

Perugi et al 2017. The role of electroconvulsive therapy in bipolar disorder: effectiveness in 522 patients with bipolar depression, mixed-state, mania and catatonic features. *Current Neuropharmacology* 15: 359-371.

- Naturalistic observational study
- 522 consecutive BD patients assessed pre- and post-ECT (22 excluded side effects /consent withdrawal):
 - 344 (68.8%) responders (CGI score ≤ 2).
 - depression 68.1%
 - mixed state 72.9%
 - mania 75%
 - 80.8% catatonic features
 - predictors of non-response: length of current episode and severity of illness
- Conclusion:
 - ECT effective and safe treatment for all phases of severe and drug-resistant BD
 - Positive response in 2/3 of cases
 - Major predictor of non-response: duration of current episode
 - ECT should not be considered as 'last resort'

Bipolar disorder mixed affective states

Valentí et al 2008. Electroconvulsive therapy in the treatment of mixed states in bipolar disorder. *European Psychiatry* 23: 53-56.

- Systematic Medline search “mixed bipolar” and “ECT” 1992-2007 (15 years)
- Three trials achieved threshold for inclusion: N=68 mixed patients
- Responders 56-100%.
- Conclusion: ECT is an effective, safe and probably underutilised treatment of mixed states. Recent technical advances have made ECT more friendly, tolerable and safe.

Palma et al 2016. Efficacy of electroconvulsive therapy in bipolar with mixed features. *Depression Research and Treatment* 2016. Published online 2016 Jan 5. Doi: [10.1155/2016/8306071](https://doi.org/10.1155/2016/8306071)

- Retrospective study of 50 ECT course treatments in 41 drug-resistant bipolar patients, mixed 36.6% (n=15), depressed 53.7% (n=22) and manic 9.8% (n=4).
- Good therapeutic response in the 3 groups.

Postpartum psychosis

Focht and Kellner 2012. Electroconvulsive therapy in the treatment of postpartum psychosis. *Journal of ECT* 28 (1):31-33. [Review]

- ECT has been safely and successfully used for more than 50 years
- no RCTs but many cohort and retrospective studies since 1956
Protheroe 1969. Puerperal psychoses: a long term study. *Br J Psychiatry* 115: 9-30.
- postpartum psychosis
 - up to 0.1% women (1-2/1000 childbirths)
 - onset 72hs-3weeks after deliver: agitation, sleep disturbance, paranoia, delusions, thought disorder, impulsivity
 - up to 5%: suicide
 - up to 5%: infanticide
- antipsychotics: paucity of data on effects of medication visa breast milk
- the safety and efficacy of ECT in the treatment of women in all 3 trimesters of pregnancy is well established as is its use in postpartum psychosis.
- Conclusion: ECT should be considered a first-line treatment for women with postpartum psychosis.

Schizophrenia: augmenting antipsychotic treatment

Petrides et al 2015. Electroconvulsive therapy augmentation in clozapine-resistant schizophrenia: a prospective, randomized study. *Am J Psychiatry* 172: 52-58.

- **Methods:**
8-week RCT clozapine-resistant schizophrenia patients (N=39)
clozapine (n=19) vs clozapine + ECT (n=20)
response: $\geq 40\%$ BPRS reduction, CGI-severity rating < 3 , CGI-improvement ≤ 2
- **Results:**
responders: clozapine + ECT = 50%; clozapine = 0.
- **Conclusion:** augmentation of clozapine with ECT is a safe and effective treatment option.

Schizophrenia: ECT for disturbed behaviour

Naturalistic studies, case reviews and reports:

- ↓ aggressive behaviours (Hirose et al, 2001)
 - n = 10, ECT five times a week with risperidone
- ↓ acute symptoms: catatonia, aggression or suicidal behaviour (Pompili et al 2013)
 - review 31 articles on ECT in schizophrenia
- ↓ aggression in schizophrenia/schizoaffective disorders receiving in-patient care (Iancu et al 2015)
 - n = 20, chart review previous 3 years, Staff Observation Aggression Scale
- ↓ symptoms and behavioural disturbance in forensic in-patients with serious assaultive behaviour (Kristensen et al 2012)
 - n = 8, psychotic symptoms unresponsive to medication
- ↓ disturbed behaviour in drug induced psychoses
 - phencyclidine-associated psychosis (Grover et al 1986)
 - metamphetamine-induced psychosis (Zarabi et al 2016)

Dementia: ECT for disturbed behaviour

- Pharmacotherapy-resistant agitation and aggression (cohorts): therapeutic response
 - Ujkak et al 2012 (n=16)
 - Acharya et al 2015 (n=23)
 - Isserles, 2017 (n=25)
- Reviews
 - 33 RCTs: 15/33 targeted ECT for agitation/aggression in Alzheimer's disease: significant reduction in symptom severity (McClam et al 2015)
 - Systematic review of 11 papers – case reports and series (n=216): a promising option for treating aggression in severe dementia (Glass et al 2017)
 - Systematic PRISMA review on ECT for agitation and aggression in dementia (n=122): significant improvement in 88% (van der Berg 2018)
 - Aziz 2017. The use of ECT for agitation and aggression in dementia. *Old Age Psychiatrist (RCPsych Newsletter)*, 69: 26-28

Learning disability and developmental disorders: ECT for aggressive behaviour

Hurley 2006. Mood disorders in intellectual disability. *Curr Opin Psychiatry* 19: 465-469.

Consoli et al 2013. Electroconvulsive therapy in adolescents with intellectual disability and severe self-injurious behavior and aggression: a retrospective study. *Eur Child Adolesc Psychiatry* 22: 55-62.

Haq and Ghaziuddin 2014. *J Neuropsychiatry Clin Neurosci* 26: 64-72.

Sajith et al 2017. Response to electroconvulsive therapy in patients with autism spectrum disorder and intractable challenging behaviors with symptoms of catatonia. *J ECT* 33: 63-67.

ECT: robust evidence of safety

Stroke and ECT

Rozing et al 2019. Electroconvulsive therapy and later stroke in patients with affective disorders. Br J Psychiatry 214: 168-170.

Danish National Patient Registry 2005-2016: stroke in 174 534 affective disorder patients

162 595 patients without previous stroke

- stroke during follow-up: 3665
- treated with ECT: 5781 (3.6%)
- stroke following ECT: 165 (0.03%)
- patients < 50 years: ECT not associated with stroke
- patients \geq 50 years: ECT associated with lower risk of stroke

11939 with history of stroke

- 228 treated with ECT (1.9%)
- ECT not associated with risk of a new event

Conclusion: ECT is not associated with an elevated risk of incident or recurrent stroke

ECT: robust evidence of safety

ECT and brain changes

Gryglewski et al 2019. Structural changes in amygdala nuclei, hippocampal subfields and cortical thickness following electroconvulsive therapy in treatment resistant depression: longitudinal study. Br J Psychiatry 214: 159-167.

14 patients with treatment resistant depression (11 women, 46.9 years \pm 8.1)

- Brain MRI before and after series right unilateral ECT (≥ 8)
- ECT treatment associated with \uparrow volume (< 0.05):
 - R hippocampus
 - R amygdala
 - R putamen
 - R hemisphere: cortical thickness temporal, parietal insular cortices



ECT: acceptability

Guruvaiah et al 2017. Patients' experiences of and attitudes towards ECT. *Progress in Neurology and Psychiatry* 21 (2): 16-21.

30 patients who received ECTAS standards ECT: 2013-2014

face-to-face 20-30 minutes questionnaire-based interviews : Jan-Apr 2015

93% females, aged 20-81 years (average 62)

93 % for depression, $\frac{3}{4}$ voluntarily

Results:

ECT is a useful procedure: 80%

ECT gets you better quicker than drugs: 70%

If necessary I would readily have it again: 80%

ECT is a frightening treatment to have: 37%

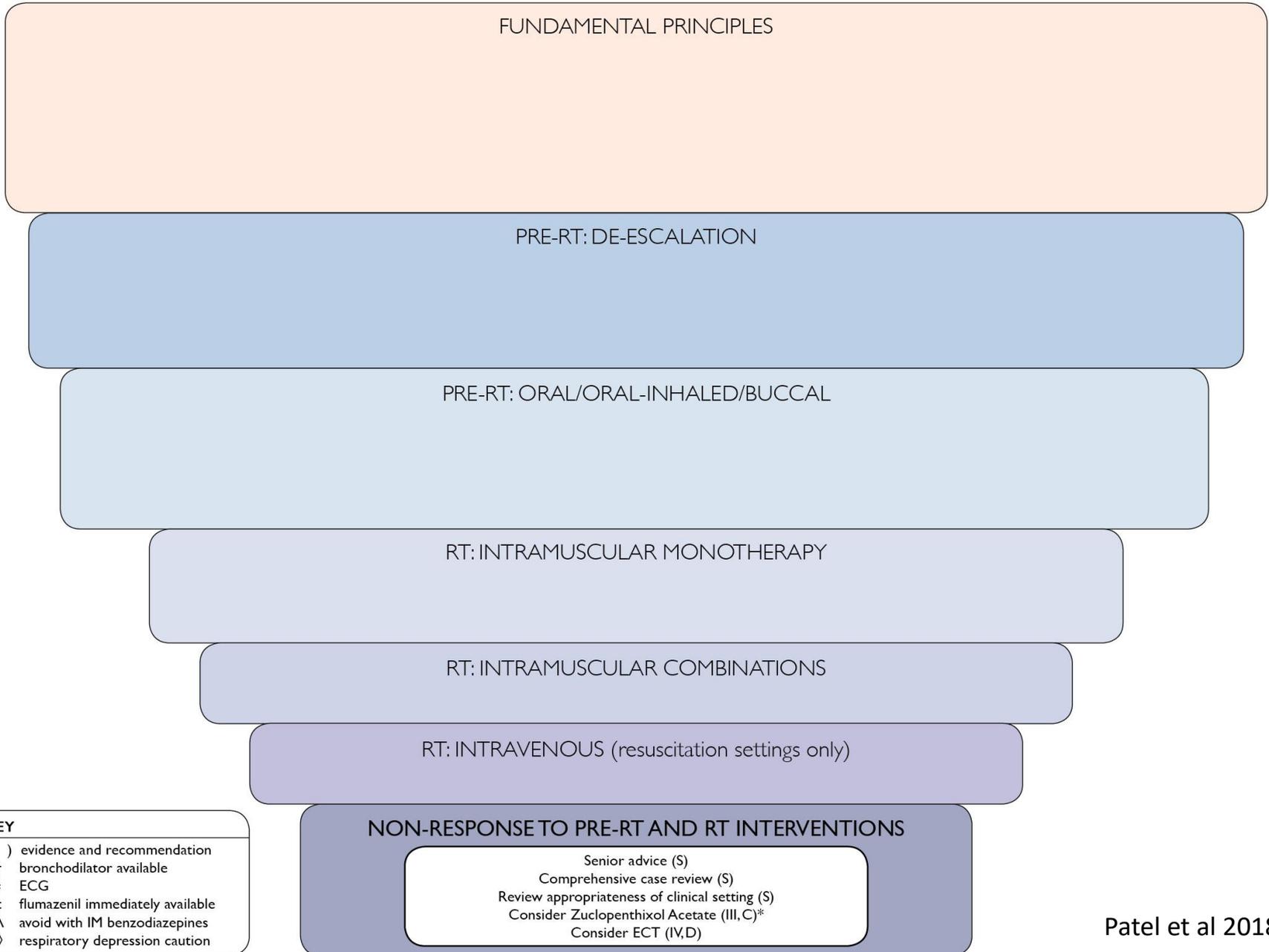
Carers (n=27): majority felt that ECT was beneficial and would support the family member to have it again.



Conclusions

- ECT is a well-established, safe and effective treatment option in psychiatry which is underutilised generally.
- ECT is not primarily a method for RT. ECT should be considered when RT is repeatedly required to manage prolonged or severe challenging behaviour associated with certain psychiatric disorders.
- When properly indicated, ECT can reduce the need for RT and the duration of behavioural disturbance, it is acceptable to patients and it may expedite patient recovery.
- ECT should be considered when challenging behaviour is poorly responsive to pharmacological treatment in mania, mixed affective states, postpartum psychosis and schizophrenia, and also in dementia.
- Guidelines on the use of ECT should take into account technological advances in ECT, current approaches to best practice and the evidence of its efficacy and increasing safety.

Joint BAP NAPICU Evidence Based Guidelines for the Clinical Management of Acute Disturbance (De-escalation and RT)



NON-RESPONSE TO PRE-RT AND RT INTERVENTIONS

Senior advice (S)

Comprehensive case review (S)

Review appropriateness of clinical setting (S)

Consider Zuclopenthixol Acetate (III,C)*

Consider ECT (IV,D)

- Electroconvulsive therapy may also be considered when other strategies have failed to achieve a required response, and particularly if the underlying disorder has an evidence base for the use of ECT (e.g. mania) or if there is a past history of good response for the individual patient (IV; D).

Electroconvulsive therapy - ECT (IV, D)

To be considered in prolonged and severe behavioural disturbance associated with certain psychiatric disorders, **when RT has been repeatedly required**, particularly if:

- patient's previous response to ECT
- evidence base of response of underlying disorder to ECT
- patient's preference for ECT