Electroconvulsive therapy for preventing relapse and recurrence in bipolar disorder

Munkholm, Klaus; Jørgensen, Karsten Juhl; Paludan-Müller, Asger Sand

Published in:
Cochrane Database of Systematic Reviews

DOI:
10.1002/14651858.CD015172

Publication date:
2021

Document version:
Final published version

Citation for pulished version (APA):
Munkholm, K., Jørgensen, K. J., & Paludan-Müller, A. S. (2021). Electroconvulsive therapy for preventing relapse and recurrence in bipolar disorder. *Cochrane Database of Systematic Reviews*, *2021*(11), [CD015172]. https://doi.org/10.1002/14651858.CD015172

Cochrane Library

Cochrane Database of Systematic Reviews

Electroconvulsive therapy for preventing relapse and recurrence in bipolar disorder (Protocol)

Munkholm K, Jørgensen KJ, Paludan-Müller AS

Munkholm K, Jørgensen KJ, Paludan-Müller AS.
Electroconvulsive therapy for preventing relapse and recurrence in bipolar disorder (Protocol).
Cochrane Database of Systematic Reviews 2021, Issue 11. Art. No.: CD015172.
DOI: 10.1002/14651858.CD015172.

www.cochranelibrary.com

WILEY

TABLE OF CONTENTS

[Intervention Protocol]

Electroconvulsive therapy for preventing relapse and recurrence in bipolar disorder

Klaus Munkholm[1,2], Karsten Juhl Jørgensen[1,2], Asger Sand Paludan-Müller[1,2]

[1]Centre for Evidence-Based Medicine Odense (CEBMO) and Cochrane Denmark, Department of Clinical Research, University of Southern Denmark, Odense, Denmark. [2]Open Patient data Exploratory Network (OPEN), Odense University Hospital, Odense, Denmark

Contact address: Klaus Munkholm, km@cochrane.dk.

Editorial group: Cochrane Common Mental Disorders Group.
Publication status and date: New, published in Issue 11, 2021.

Citation: Munkholm K, Jørgensen KJ, Paludan-Müller AS. Electroconvulsive therapy for preventing relapse and recurrence in bipolar disorder (Protocol). *Cochrane Database of Systematic Reviews* 2021, Issue 11. Art. No.: CD015172. DOI: 10.1002/14651858.CD015172.

ABSTRACT

Objectives

This is a protocol for a Cochrane Review (intervention). The objectives are as follows:

To assess the benefits and harms of ECT for preventing relapse and recurrence of affective episodes (depression, hypomania, mania or mixed state) in children, adolescents, adults, and older people diagnosed with bipolar disorder.

BACKGROUND

Description of the condition

The definition of the clinical diagnosis of bipolar disorder differs between the main classificatory diagnostic systems, the *International Classification of Diseases* (ICD) (WHO 1992) and the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) (APA 2013)). The tenth revision of the ICD (ICD-10) (WHO 1992) defines bipolar disorder as a condition characterised by the occurrence of two or more episodes of depression and either hypomania or mania that are sufficiently severe to cause a change in functioning. Patients with two or more episodes of hypomania or mania, but not depression, are also classified as having bipolar disorder; while patients with recurring depression, but no hypomanic or manic episodes, are not classified as having bipolar disorder.

The fifth edition of the DSM (DSM-5) (APA 2013) distinguishes between two types of bipolar disorder: bipolar I disorder, defined by the occurrence of at least one manic episode, but not necessarily any depressive episodes; and bipolar II disorder, defined by the occurrence of at least one hypomanic episode and at least one major depressive episode, in the absence of prior manic episodes.

Depending on the diagnostic system, a depressive episode is characterised by a period of almost daily depressed mood, reduced energy or fatigue, or loss of interest or pleasure in activities, accompanied excessive or inappropriate guilt, hopelessness, recurrent thoughts of death or suicide, changes in appetite or sleep and psychomotor agitation or retardation (APA 2013; WHO 1992).

Depending on the diagnostic system, a manic or hypomanic episode is characterised by a period of symptoms of abnormally and persistently elevated, expansive or irritable mood and abnormally and persistently increased goal-directed activity or energy, accompanied by other symptoms such as inflated self-esteem, decreased need for sleep, pressure to keep talking, flight of ideas or racing thoughts and distractibility; with such symptoms occurring daily, for most of the day (APA 2013; WHO 1992). Manic episodes, in contrast to hypomanic episodes, are characterised by disturbances that are sufficiently severe to cause marked impairment in functioning (APA 2013; WHO 1992).

According to ICD-10, a diagnosis of a manic or hypomanic single episode is given to patients fulfilling criteria for a manic or hypomanic episode, respectively, but who do not fulfil criteria for bipolar disorder. ICD-10 additionally specifies a diagnosis of a mixed state characterised by concurring or rapidly shifting manic and depressive symptoms in patients who have previously had at least one other affective episode (hypomania, mania, depression or mixed state) (WHO 1992); in DSM-5, the presence of mixed symptoms is instead acknowledged by assigning a mixed feature specifier to a diagnosis of hypomania, mania or depression (APA 2013). The diagnostic criteria for mixed states thus differ between diagnostic systems, have undergone changes in both diagnostic systems over time, and are surrounded by some controversy (Malhi 2017; Parker 2019).

Depending on the number of criterion symptoms present, their severity and the degree of functional impairment, the severity of the manic, hypomanic and depressive episode can be characterised as mild, moderate or severe (APA 2013; WHO 1992). The presence of specific clinical features, e.g. mixed or psychotic (APA 2013; WHO 1992), as well as anxious, rapid cycling, melancholic, atypical, catatonic or seasonal (APA 2013; WHO 1992), may additionally define the character of the episode.

There is no known pathophysiology underlying bipolar disorder and no objective test to verify the clinical diagnosis of affective episodes or of bipolar disorder.

The lifetime prevalence of bipolar disorder varies among regions and countries. Among eleven middle- to high-income countries, prevalence is estimated at a mean of 0.6% for bipolar I disorder and 0.4% for bipolar II disorder (Merikangas 2011). Bipolar I prevalences range from just above 0% in countries such as Bulgaria and India to 1% in countries such as Mexico and the US (Merikangas 2011). The prevalence of bipolar I and II disorder among older adults specifically, is estimated to be between 0.5% and 1% (Sajatovic 2015). The prevalence of bipolar I disorder in prepubertal children and adolescents has been estimated at a mean of 0.6% across nine middle- to high-income countries, with prevalences ranging from 0% in countries such as Brazil, Ireland and Turkey, to 2% in Mexico and Canada (Van Meter 2019). However, the diagnosis of bipolar disorder and its prevalence in prepubertal children and adolescents has been controversial (Malhi 2020; Parry 2017; Parry 2019; Van Meter 2019a). The prevalence of bipolar disorder appears to be roughly similar between males and females (Diflorio 2010). The World Health Organization (WHO) estimates that 45 million people suffer from bipolar disorder worldwide (WHO 2019). However, as these estimates are based on diagnostic systems with likely low validity in many parts of the world, they should be interpreted with caution (Summerfield 2008).

A study that surveyed patients with bipolar disorder over a period of up to 20 years, using retrospective assessments of the occurrence of affective symptoms in each week, found that the patients had some affective symptoms in approximately half of the weeks (Judd 2003). Patients with bipolar I disorder appeared to meet criteria for major depression in approximately 9% of the weeks, more than three times the frequency of weeks where criteria for a manic episode were met. Patients with bipolar II disorder appeared to meet criteria for major depression in approximately 13% of the weeks (Judd 2003).

Most patients with bipolar depression do not recover with initial or secondary pharmacological treatment (Parikh 2010). In situations where the patient's condition is not sufficiently alleviated by available pharmacological or psychological treatments, or where patients develop a more severe acute affective episode, electroconvulsive therapy (ECT) is considered to be a treatment option (APA 2003; BAP 2016; CANMAT 2018).

A proportion of those with bipolar disorder who achieve remission or recovery may later develop an affective episode. Remission is often described as the absence or near absence or signs and symptoms both mania and depression (Hirschfeld 2007), whereas recovery implies an extended period of remission, e.g. of at least two months (Tohen 2009). Affective episodes that occur before recovery, but after remission is ascertained, are often labelled relapses; episodes occurring after recovery is ascribed are labelled as recurrences (Tohen 2009). The rate of recurrence has been found to be approximately 50% after two years follow-up, despite ongoing treatment (Perlis 2006). In patients with unipolar depression, treated with ECT for an acute depressive episode, approximately 80% appear to relapse within six months after

achieving remission if they do not receive subsequent treatment (Sackeim 2001; van Beusekom 2007). To reduce the risk of relapse and recurrence, treatment with antidepressants, or other drugs or treatments, including ECT, are often given for a period of time after the treatment of the acute depressive episode; treatment given until recovery has been attained is usually labelled continuation treatment, while treatment beyond that point is usually labelled maintenance treatment (RANZCP 2015; WFSBP 2013). Even with continued pharmacological treatment, 40% to 60% of people achieving remission after ECT treatment for an acute unipolar depressive episode have been found to experience a relapse within six months (Sackeim 2001; Tew 2007). ECT is considered a treatment option for continuation or maintenance treatment in cases where pharmacological or other treatments have been inadequate (APA 2002; CINP 2017; RANZCP 2015; WFSBP 2013).

Description of the intervention

ECT involves the application of electricity to the scalp in order to induce a generalised tonic-clonic seizure (Lisanby 2007). Continuation or maintenance ECT usually involves ECT treatment given at intervals ranging from once-weekly to once every three or four weeks, after the end of an acute treatment course for depression (Gill 2019) or other mood episode (RANZCP 2019), Continuation ECT may occasionally be given less frequently. Continuation ECT may also be considered after a non-ECT acute treatment course (RANZCP 2019). ECT may be considered for the first six months after the end of the acute treatment course, while maintenance ECT occurs after that period (RANZCP 2019).

It is considered best practice to administer ECT under anesthesia together with muscle relaxant medication, as what is termed 'modified' ECT (CPA 2010; RCPSYCH 2019; RANZCP 2019). These methods that were introduced to reduce treatment complications such as pain, panic and fractures (APA 1978). However, 'unmodified' ECT, administered without anaesthesia, is still being practised around the world, including in Asia, Africa, South America and Europe (Leiknes 2012). In India, the use of unmodified ECT has been prohibited by law (Duffy 2019; Government of India 2017). In reaction to this, professional societies have advocated for the continued use of unmodified ECT in some circumstances, i.e. where anesthesia is unavailable and ECT is deemed necessary (Andrade 2012).

Different regimens of intravenous sedatives or hypnotics may be used; the evidence is uncertain as to whether different types of anaesthetic agents influence the efficacy of ECT for depression (Lihua 2014).

ECT for use in severe depression in individuals aged 13 years and older who are considered treatment-resistant (commonly defined as an inadequate response to two or more antidepressants (McIntyre 2014)), or who require a rapid response due to the severity of their psychiatric or medical condition, was reclassified by the US Food and Drug Administration (FDA) in 2018 from a class III ('high risk') device to a class II ('moderate risk') device (FDA 2018)

ECT is traditionally administered with a 'brief' pulse width, defined as pulses of 0.5 to 2.0 milliseconds in duration (CPA 2010; RANZCP 2019; RCPSYCH 2019). Brief-pulse wave ECT has been associated with fewer cognitive adverse effects compared with sine-wave ECT (Sackeim 2007), and is the stimulus method recommended by most current guidelines (APA 2001; CPA 2010; RANZCP 2019; RCPSYCH 2019). The sine-wave stimulus employed by the earliest ECT devices delivered an electrical charge in excess of the amount needed to efficiently elicit a seizure, leading to more cognitive adverse effects (CPA 2010); however, sine-wave ECT continues to be practised around the world (Leiknes 2012). Ultrabrief-pulse wave ECT (0.25 to 0.3 milliseconds) has been available for the last decade and may be associated with fewer cognitive adverse effects compared with brief-pulse wave ECT (Loo 2008; Sackeim 2008), although the efficacy may be lower, depending on the electrode placement (Brus 2017; Tor 2015).

Common electrode placements include bitemporal, right unilateral, and bifrontal (Lisanby 2007). Bitemporal ECT is generally considered involving the highest risk of retrograde amnesia; one guideline recommends that it not be used as the initial form of ECT treatment given, unless there are specific reasons to do so (RANZCP 2019). It may be preferable to use the same electrode placement that was used during the acute ECT treatment course (Gill 2019).

The choice of stimulus current dose depends on both electrode placement and pulse-width (CPA 2010; RANZCP 2019). In general, higher doses relative to the seizure threshold may be needed when reducing the pulse width in order to achieve a similar effect in acute treatment (Loo 2008), while similar evidence in maintenance treatment is lacking. Depending on the pulse-width, the recommended dose level is approximately 1.5 times the seizure threshold for bitemporal and bifrontal ECT, and approximately six times the seizure threshold for right unilateral ECT (CPA 2010; RANZCP 2019).

It is generally recommended that the choice of the particular treatment approach be determined by balancing, among other factors, the patient's response to acute ECT treatment, and concern regarding potential cognitive side effects (RANZCP 2019). However, all electrode placements and stimulus forms appear to be associated with cognitive adverse effects, including a risk of retrograde amnesia (Sackeim 2008; Sackeim 2014).

ECT use varies by country and region, with an estimated 1.5 million people being treated annually worldwide for any indication (Leiknes 2012). ECT is used less often in children and adolescents compared with adults (AACAP 2004), but data regarding the use in children and adolescents are scarce. The use of ECT for the prevention of relapses and recurrences, specifically, is unclear.

Given the controversial nature of ECT, special legal restrictions are imposed on its administration in some countries (Leiknes 2012). The administration of ECT under involuntary conditions occurs worldwide, but the extent varies among countries (Leiknes 2012). The United Nations has long called for member states to ban all forced and non-consensual use of ECT (UN 2013; UN 2018), and to reframe and recognise such ECT practices as constituting torture or other cruel, inhuman, or degrading treatment (UN 2018). Several US states have prohibited the use of ECT in children and adolescents (Livingston 2018), and in Australia, the state of Western Australia has prohibited the use of ECT in children under age 14 years (GWA 2018). The WHO has stated that there is no indication for ECT in minors and that it should therefore be prohibited by legislation (WHO 2005). Some psychiatrists and ECT experts advocate for the continued use of ECT in both prepubertal children and adolescents for certain clinical indications, and for the removal of impediments to ECT access in that population (Wachtel 2011).

Multiple clinical guidelines recommend that ECT is considered for the treatment of acute bipolar depressive episodes (CANMAT 2018; WFSBP 2010; CINP 2017; APA 2003; RANZCP 2015; BAP 2016), particularly for treatment-refractory patients (CANMAT 2018; APA 2003; BAP 2016) and patients for whom a rapid response is needed, such as those with severe depressive episodes with acute suicidal risk (CANMAT 2018; APA 2003; BAP 2016), as well as catatonic (CANMAT 2018; APA 2003) or psychotic features (CANMAT 2018; WFSBP 2010; APA 2003; RANZCP 2015; BAP 2016). Guidelines also recommend considering ECT for the treatment of acute manic episodes (CANMAT 2018; CINP 2017; WFSBP 2009; NICE 2014; APA 2003; RANZCP 2015; BAP 2016), especially in treatment-refractory cases (WFSBP 2009; NICE 2014; APA 2003; RANZCP 2015; BAP 2016), when the condition is considered potentially life-threatening in patients with catatonic features (NICE 2014; RANZCP 2015), or in cases with a prolonged or severe episode (NICE 2014). Guidelines also recommend considering ECT for the treatment of refractory acute mixed episodes (WFSBP 2018; APA 2003; RANZCP 2015). Several guidelines specifically recommend that ECT is considered for the treatment of acute affective episodes of bipolar disorder during pregnancy (CINP 2017; WFSBP 2009; APA 2003; RANZCP 2015; BAP 2016).

In children and adolescents, guidelines recommend that ECT is considered for the treatment of acute depressive episodes (Gautam 2019; AACAP 2007) and acute manic episodes (AACAP 2007) not responding to medication therapies. The American Psychiatric Association supports the use of ECT in children and adolescents (APA 2016).

International guidelines recommend that continuation and maintenance treatment with ECT is considered for patients who have responded to ECT for an acute affective episode (APA 2002), or where pharmacological or other maintenance treatment have been considered inadequate (CINP 2017; RANZCP 2015; WFSBP 2013).

In children and adolescents, guidelines recommends that ECT should be available to pre-adolescent children when “clinically indicated” (RANZCP 2019). The American Psychiatric Association supports the use of ECT in children and adolescents (APA 2016).

Beyond guidelines, some ECT experts consider maintenance ECT a valuable and underused treatment for preventing relapse and recurrence for patients with bipolar disorder (Petrides 2011).

There are important known harms of ECT (Andrade 2016), which include nausea, headache and muscle pain, prolonged seizures, status epilepticus, and cardiac events such as cardiac flatline and heart attack (Andrade 2016; CPA 2010). Unmodified ECT may also be associated with a risk of loosened or broken teeth, joint dislocation, bone fracture, spinal fracture, and muscle or ligament injuries (Andrade 2012). Cognitive impairment has long been recognised as a prominent adverse effect of ECT (APA 1978). Cognitive effects commonly include postictal confusion states and anterograde amnesia; ECT is also associated with retrograde amnesia, including impairment of autobiographical memory (APA 2010; CPA 2010; RANZCP 2019), which can be persistent (APA 2001; Sackeim 2007). Amnesia for autobiographical information is considered to be the most critical adverse cognitive effect of ECT (Sackeim 2014); its intensity depending on the electrode placement and the pulse width (Fraser 2008), although the clinical methods used to assess retrograde amnesia has been a subject of discussion (Sackeim 2014; Semkovska 2014).

Some aspects of the current practice of ECT, whilst varying between countries and regions, are not in alignment with international guidelines. Despite recommendations by several international guidelines to use unilateral ECT, evidence shows that use of bilateral ECT is still a common practice (Bjornshauge 2019; Leiknes 2012). Similarly, although discouraged by the WHO and all international guidelines, there is continued use of unmodified ECT (Leiknes 2012).

How the intervention might work

Although there are many theories on the mechanism of action of ECT across the conditions for which it is used, it is unknown (Michael 2009). Amongst the current hypotheses, the more prominent relate to effects of the generalised seizure, actions on the neuroendocrine system through engagement of structures in the central core of the brain stem, and neurotrophic effects induced by seizure activity in the limbic system (Bolwig 2014).

Why it is important to do this review

The one extant systematic review of maintenance ECT in bipolar disorder included both participants with unipolar and bipolar disorder but did not report results for bipolar disorder separately; this review considered only adults and did not assess the certainty of the evidence (Elias 2018).

Given the limitations of extant systematic reviews, a high-quality synthesis of the evidence is needed of the benefits and harms of ECT, with a careful assessment of the certainty of the evidence, for the prevention of relapse and recurrence of affective episodes in children and adults with bipolar disorder.

OBJECTIVES

To assess the benefits and harms of ECT for preventing relapse and recurrence of affective episodes (depression, hypomania, mania or mixed state) in children, adolescents, adults, and older people diagnosed with bipolar disorder.

METHODS

Criteria for considering studies for this review

Types of studies

We will include randomised trials, including cross-over and cluster-randomised trials. We will only include the results from the first randomised period of cross-over trials, as affective symptoms may be fluctuating, affective episodes can be episodic, and carry-over effects of ECT are likely.

We will not include trials that use inappropriate strategies of allocating interventions, often labelled 'quasi-randomised' trials.

We will include trials using a so-called enriched design, in which all randomised participants have received ECT for the treatment of the index acute affective episode, as well as studies using a non-enriched design, in which the participants did not receive any specific treatment for the index acute affective episode. As enriched designs may create a selection bias because those participants entering the study may be more likely to tolerate or experience fewer adverse effects of ECT and because they increase the risk of unblinding of participants assigned to non-ECT treatment, we will explore the effect of including such a design in sensitivity analysis.

Types of participants

Participant characteristics

We will include participants of both sexes, and of all ages.

Diagnosis

We will include participants considered to be in remission from bipolar disorder, diagnosed using standardized diagnostic criteria, including the Feighner criteria (Feighner 1972) the ICD-10 (WHO 1992) and the ICD's 11th revision (ICD-11) (WHO 2018), as well as DSM criteria from its third edition (DSM-III) (APA 1980), fourth edition (DSM-IV) (APA 1994) and DSM-5 (APA 2013). We will also include studies using the ICD's ninth revision (ICD-9) (WHO 1978), but as this revision did not employ specific diagnostic criteria, we will make individual judgements for each study, as to whether the description of the inclusion criteria is similar to later standardized criteria.

We will similarly consider studies using earlier versions of the ICD and the DSM, exploring the influence of including such studies in sensitivity analyses. We will not include studies that use cut-offs on a symptom severity scale or studies that use self-rating scales to establish the diagnosis, such as the participant-rated Beck Depression Inventory (BDI) (Beck 1961) and the Patient Health Questionnaire (PHQ) (Spitzer 1999). We will include participants with a diagnosis of bipolar I- or bipolar II disorder as well as participants with a diagnosis of a single manic episode.

We will include patients that are considered to be in remission, which we will define based on the criteria outlined by Rush et al. for depression (Rush 2006), and similar criteria outlined for bipolar disorder (Hirschfeld 2007), implying that the signs and symptoms of the episode must be absent, or close to absent. In the context of the current review, we specifically understand remission as the absence of an affective episode according to diagnostic criteria for three consecutive weeks or more, during which the patient does not meet diagnostic criteria for depression, hypomania, mania, or a mixed state. Although commonly employed, definitions of remission based on cut-offs on symptom severity scales, such as the Hamilton depression rating scale (Hamilton 1967), have been shown to have poor correlation with patients' experience of being free from depression (Zimmerman 2006), and potentially also from mania and mixed states. We will also include studies using such, and other, definitions to establish the presence of remission, as well any duration of remission, and will explore the effect of including such studies in sensitivity analyses.

Comorbidities

Trials involving participants with a comorbid psychiatric or physical disorder are eligible for inclusion.

Setting

We will include studies in all settings.

Where studies include subsets of eligible participants, we will only include the study provided separate data are available, either in the study report of through contact with the authors, from the eligible section of the study population.

Types of interventions

Experimental intervention

ECT, meaning the application of electricity to the scalp in order to induce a generalised tonic-clonic seizure.

We will consider both modified ECT (i.e. ECT applied under general anesthesia and with administration of a muscle relaxant drug) and unmodified ECT (i.e. ECT applied without anesthesia). For modified ECT, we will include studies using any anaesthetic and muscle relaxant.

We will consider ECT delivered with any pulse-width (e.g. sine-wave, brief-pulse, or ultrabrief-pulse), electrode placement (e.g. bitemporal, bifrontal, right unilateral), and stimulus dose (e.g. measured as millicoulombs of charge or the dose relative to the dose corresponding to the seizure threshold).

We will consider any treatment schedule (e.g. once weekly or once monthly) or duration of the treatment course (i.e. the total number of times ECT was administered).

Comparator intervention

We will include studies using the following comparators.

- Sham ECT (i.e. a procedure similar to ECT, involving anesthesia, with or without muscle relaxant, but without delivery of electricity to the scalp);
- Pharmacological treatment, including, but not limited to, antidepressants, antipsychotics, and lithium;
- Non-pharmacological treatment, including, but not limited to, interventions such as repetitive transcranial magnetic stimulation, psychotherapy and social interventions;
- No intervention.

Co-interventions

We will include studies regardless of whether ECT was administered as monotherapy or in combination with non-pharmaceutical or pharmaceutical intervention, or as augmentation to another non-pharmaceutical or pharmaceutical intervention, as long as the combination or augmentation treatment is delivered equally in the comparator arm.

Types of outcome measures

Primary outcomes

- Relapse or recurrence, measured as the total number of participants who experience a full affective episode of either depression, hypomania, mania or mixed state according to standardized diagnostic criteria, as defined in the Types of participants section above
- Serious adverse events, defined as the number of participants with at least one medical event that is life-threatening, results in death, disability, or significant loss of function, or causes hospital admission or prolonged hospitalisation (EMA 2002)

Secondary outcomes

- Self-harm and suicide-related events, measured as the number of participants experiencing self-harm and suicide-related events (suicidal ideation, suicide attempts, and completed suicide)

- Global functioning assessed using the Sheehan Disability Scale (SDS) (Sheehan 1996), the Social Adjustment Scale - Self-report (SAS-SR) (Weissman 1976), or the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) (Endicott 1993), which are amongst the most commonly used scales for assessing functioning in depression (Sheehan 2017). As the scales measure different constructs (Endicott 2009), we will not combine scores across scales, but will present them separately.
- Retrograde amnesia, including for autobiographical information, measured using any relevant instrument (e.g. the Columbia University Autobiographical Memory Interview (CUAMI) (McElhiney 1995), the CUAMI short form (CUAMI-SF) (McElhiney 2001), an altered version of the CUAMI (Semkovska 2012), or the Kopelman Autobiographical Memory Interview (Kopelman AMI) (Kopelman 1989)
- Number of participants with at least one adverse event (e.g. nausea, headache, muscle pain or prolonged seizures). We will categorise adverse events according to System Organ Class and Preferred Term per the Medical Dictionary for Regulatory Activities terminology (MedDRA).
- Relapse or recurrence of hypomanic or manic episodes, measured as the total number of participants who experience a full hypomanic or manic episode according to standardized diagnostic criteria, as defined in the Types of participants section above
- Relapse or recurrence of depressive episodes, measured as the total number of participants who experience a full depressive episode according to standardized diagnostic criteria, as defined in the Types of participants section above

Reporting one or more of the outcomes listed here in the trial is not an inclusion criterion for the review. Where a published report does not report one of these outcomes, we will access the trial protocol and contact the trial authors to ascertain whether the outcomes were measured but not reported. Relevant trials which did not measure these outcomes or did not report the data at all, or did not report data in a usable format, will be included in the review, as part of the narrative analysis.

Timing of outcome assessment

We will extract post-intervention outcomes (i.e. assessed after the treatment period) at the time points reported in the studies. We will group them into short-term (one to three months), medium-term (three to six months) and long-term (six months or longer) outcomes. Where a study reports more than one time point within one of the prespecified time periods, we will select the latest time point.

Affective episodes occurring early during the continuation or maintenance treatment are more likely to constitute relapses into the acute index affective episode rather than representing recurrences of a new affective episode (Goodwin 2011). It has therefore been suggested that only episodes occurring later than 4 months (Rush 2006) or even as long as 6 or 12 months (Ghaemi 2017; Goodwin 2011) after achieving remission should be considered new episodes, rather than relapses, although such as distinction is arbitrary. We will consider the time period of 6 months or longer for our primary analysis, which will then be more likely to inform on the prevention of new affective episodes rather than the prevention of relapse into the index acute affective episode.

Hierarchy of outcome measures

If studies report multiple measures of an eligible outcome, we will include the data based on several considerations. If several measures of an outcome are available on the same hierarchy level used in a study, we will prioritise the outcome measures according to the order specified for each of the outcomes above. If several outcome measures on the same scale are available (e.g. multiple subscales of the CUAMI-SF), we will give priority to the outcome measure that is most frequently used across all the included studies. If several analyses are available, we will give priority to an adjusted model (e.g. by baseline measures of an outcome), if appropriately conducted, and use the effect estimates directly.

Search methods for identification of studies

Electronic searches

We will search the following databases using relevant subject headings (controlled vocabularies) and search syntax, appropriate to each resource:

- Cochrane Common Mental Disorders Controlled Trials Register (CCMDCTR) (all available years);
- Cochrane Central Register of Controlled Trials (CENTRAL; current issue) in the Cochrane Library;
- Ovid MEDLINE (1946 onwards) (Appendix 1);
- Ovid Embase (1974 onwards);
- Ovid PsycINFO (1806 onwards);
- ClinicalTrials.gov, the US National Institutes of Health ongoing trials register (www.clinicaltrials.gov/; all available years);
- World Health Organization International Clinical Trials Registry Platform (apps.who.int/trialsearch/; all available years).

Additionally, we will search regulatory data from the US Food and Drug Administration (FDA) (www.fda.gov).

We will not perform a separate search for adverse effects of ECT used for preventing relapse and recurrence in bipolar disorder. For the current review, we will consider adverse effects described in the included studies only. We plan to conduct a separate review of the adverse effects of ECT, in which we will include evidence across all potential indications.

Searching other resources

We will check reference lists of all included studies, relevant books and any relevant systematic reviews identified for additional references to trials. We will also examine any relevant retraction statements and errata for the included studies. We will also conduct internet searches for relevant grey literature sources such as reports, dissertations, theses, databases and databases of conference abstracts.

We will contact all study authors to obtain the study protocol, if it is not otherwise available, and to obtain any data or information needed in order to assess eligibility, calculate effect sizes, assess unreported outcomes and perform 'Risk of bias' assessments.

Data collection and analysis

Selection of studies

Two review authors (KM and ASP-M) will independently screen the titles and abstracts of all the studies identified as a result of the search for potential eligibility, coding them as 'retrieve' (eligible or potentially eligible/unclear) or 'do not retrieve'. Any disagreements will be resolved through discussion or by asking the third review author (KJJ) to arbitrate if necessary. We will retrieve the full-text study reports of potentially eligible studies, and two review authors (KM and ASP-M) will independently screen the full texts and identify studies for inclusion, and identify and record reasons for exclusion of the ineligible studies. Any disagreements will be resolved through discussion or by consulting a third person (KJJ) if necessary. We will identify and exclude duplicates and collate multiple reports of the same study so that each study, rather than each report, is the unit of interest in the review. We will record the selection process in sufficient detail to complete a PRISMA flow diagram (Liberati 2009) and 'Characteristics of excluded studies' table.

Data extraction and management

We will use an electronic data collection form for study characteristics and outcome data that has been piloted on at least one included study. Two review authors (KM and ASP-M) will independently extract data from the included studies. Any disagreements will be resolved by consensus or by involving a third person (KJJ). We will extract the following study characteristics and outcome data.

- Methods: study design, total duration of study, duration of follow-up, details of any 'run in' period, details of any preceding open-label phase, diagnostic criteria for establishing the acute index affective episode and for determining remission, number of study centres and location, study setting, and date of study start and completion.
- Participants: N randomised, N lost to follow-up/withdrawn with reasons, N analysed for each outcome, mean age, age range, sex, mean severity of affective symptoms, type of affective index episode (depression, hypomania, mania, mixed state), mean number of previous affective episodes, clinical specifiers of the index affective episode (e.g. psychotic, catatonic, or melancholic), N having previously received ECT, inclusion criteria, and exclusion criteria, details on pharmacological and ECT treatment prior to randomisation, method of tapering off potential active treatment with drugs or ECT after randomisation to comparator arm.
- Interventions: intervention, comparison, concomitant medications or non-pharmaceutical treatment, ECT device manufacturer, type and dosage of anaesthetic administered, muscle relaxant administered, pulse width, electrode placement, stimulus current dose, frequency of ECT administration (N times per month), N total ECT delivered during treatment course, whether rescue medication (i.e. medication allowed to be administered in the trial to treat exacerbation of symptoms or adverse effects) was allowed in study and if so, number of participants using rescue medication.
- Outcomes: outcomes specified and collected, and time points reported; any frequency threshold for reporting of adverse events used; whether adverse events were actively monitored (prespecified) or spontaneously reported.
- Notes: funding for the trial, and conflicts of interest of authors.

One review author (KM) will import the data into R (R Core Team 2019). We will double-check that data have been entered correctly by comparing the data presented in the systematic review with the data extraction form.

Assessment of risk of bias in included studies

Two review authors (KM and ASP-M) will independently assess the risk of bias for each study using version 2 of the Cochrane 'Risk of bias' tool (RoB 2) (Sterne 2019), outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2019a). We plan to use the RoB 2 Microsoft Excel tool to manage the 'Risk of bias' assessment (Microsoft Excel 2019; RoB 2 Microsoft Excel tool 2019). Any disagreements will be resolved by discussion or by involving the third review author (KJJ). We will assess the risk of bias of a specific result of randomised trials according to the following domains:

- bias arising from the randomisation process;
- bias due to deviations from intended interventions;
- bias due to missing outcome data;
- bias in measurement of the outcome;
- bias in selection of the reported result.

We will assess the risk of bias of a specific result of cluster-randomised trials using the Cochrane RoB 2 tool for cluster-randomised trials, as outlined in the *Cochrane Handbook* (Higgins 2019a).

We will assess the risk of bias for the outcomes of the included trials presented in the 'Summary of findings' table. For the purposes of this review, we are interested in quantifying the effect of assignment to the interventions at baseline, regardless of whether the interventions are received as intended (the intention-to-treat effect).

We will use the signalling questions in the RoB 2 tool and rate each domain as 'low risk of bias', 'some concerns', or 'high risk of bias'. We will summarise the 'Risk of bias' judgements across different studies for each of the domains listed for each outcome. The overall risk of bias within the trial for the result is the least favourable assessment across the domains; however, where a trial is judged to have some concerns for multiple domains, we will judge the overall risk of bias as high, based on the approach outlined in Table 8.2.b of the *Cochrane Handbook* (Higgins 2019a).

We will make our consensus decisions for the signalling questions available as supplemental data stored on the Open Science Framework. Supplemental files will be assigned a digital object identifier (DOI).

Measures of treatment effect

We will analyse dichotomous data as odds ratios (OR) with 95% confidence intervals (CIs) and continuous data as mean difference (MD) or standardized mean difference (SMD) with 95% CIs. We will enter data presented as a scale with a consistent direction of effect. If different scales are used to measure the same outcome, we will pool the data by calculating the SMD. If studies report the outcome as both an endpoint score and a baseline-to-endpoint change score, we will prioritise endpoint scores, as they may be easier to interpret clinically; if these are not available, we will use

the change score from baseline to endpoint. If both the mean and standard deviation (SD) for baseline and change from baseline are available, but not endpoint scores, we will transform these data into endpoint means and estimate the endpoint SD using the formulae in the *Cochrane Handbook* (Higgins 2019b). We will not pool data using endpoint scores and baseline-to-endpoint change scores when calculating SMDs for the reasons outlined in the *Cochrane Handbook* (Deeks 2019). Results calculated as SMD will be presented by re-expressing the data in units of one or more of the instruments used in the included studies, employing an SD calculated as a weighted average across all intervention groups of all studies that used the instrument.

We will describe skewed data using medians and interquartile ranges narratively.

Unit of analysis issues

Cross-over trials

For cross-over studies, we will only consider results for the calculation of summary statistics when data for the first randomised period can be extracted.

Cluster-randomised trials

For cluster-randomised trials, we will analyse results using the generic inverse-variance approach and the effect estimates and standard errors reported in the study provided the analyses appropriately accounted for the cluster design. If these data are not available, we will multiply the standard error of the effect estimate by the square root of the design effect and analyse results using the generic inverse-variance method (Higgins 2019c).

Studies with multiple treatment groups

For studies with multiple arms, we will combine the treatment arms using the methods outlined in the *Cochrane Handbook* (Higgins 2019b), if they can be regarded as providing subtypes of the same treatment and their effect can therefore be considered similar (e.g. different doses within the range of approved dosages). When this is not the case, we will treat each arm as a separate group and will divide the sample size of the placebo arm between the treatment arms whilst leaving the mean and SD unchanged for continuous outcomes, and split the events evenly amongst intervention groups for dichotomous variables.

Dealing with missing data

We will contact investigators or study sponsors to verify key study characteristics and to obtain missing numerical outcome data when relevant (e.g. when a study is identified as abstract only) and will document details regarding the correspondence. Where possible, we will calculate missing SDs using other data from the trial, such as CIs, based on methods outlined in the *Cochrane Handbook* (Higgins 2019b). Where this is not possible, we will report the study narratively and discuss its impact in the overall assessment of results.

Dichotomous outcomes

For participants for whom data are available but were excluded from the analyses because of protocol non-adherence, we will attempt to obtain the data from the original trial report or by directly contacting trial investigators. Where data can be obtained for non-adherent participants, we will apply an intention-to-treat analysis, in which the total of the excluded participants is added to the denominator and the number with events is added to the numerator of the arm to which they were randomised. We will consider the exclusion of ineligible participants who are mistakenly randomised to be appropriate only if information about ineligibility was available at randomisation and those making the decision regarding exclusion were blind to allocation; otherwise, we will treat those participants similarly to non-adherent participants.

For participants with missing dichotomous outcome data, we will follow the methods proposed by Higgins and colleagues to assess the potential impact of missing data on the results (Higgins 2008). We will conduct an available-case analysis (ACA) as a reference. For our primary analysis, we will conduct an imputed-case analysis (ICA), in which we will impute missing data according to reasons for missingness (ICA-r). We will specify the categorisation of reasons based on a pilot assessment of the study methods in a few included studies, in advance of seeing the data. We will consider the uncertainty of the imputed data when calculating standard errors so that these are not inappropriately reduced, and weight the studies accordingly, using the methods outlined by Higgins and colleagues (Higgins 2008). When the primary meta-analysis suggests an important effect, we will conduct several sensitivity analyses to assess the risk of bias associated with missing participant data. We will first calculate best-case and worst-case scenarios, to provide the most extreme limits on the effect estimates compatible with the data. Next, we will conduct several analyses by selecting informative missing odds ratios for the two groups that cover more realistic situations (Higgins 2008), based on, amongst other factors, information about the reasons for missing data. Lastly, we will evaluate the effects of missing participants on the weights awarded to the studies using the method by Gamble and Hollis (Gamble 2005).

Continuous outcomes

For participants with missing continuous outcome data, we will follow the methods proposed by Ebrahim and colleagues to assess the potential impact of missing data on the results (Ebrahim 2013). This will involve conducting an initial ACA as our primary analysis and subsequent sensitivity analyses in which we will make progressively more stringent assumptions about results for participants with missing data. This will permit an assessment of the extent that results change with the sensitivity analyses, and, in turn, how risk of bias as a result of missing data may increase. We will assume in these analyses that the reasons for missing data, and the participants with missing data, were similar across studies. We will use five sources of data reflecting observed mean scores in the participants followed up (i.e. the best and worse mean score of the intervention group and control group across included trials, respectively, and the mean score of the control arm of the same trial). We will then use these data in four progressively more stringent imputation strategies (Ebrahim 2013). For trials in which authors do not report missing participant data rates, we will use the median missing participant data rate from the remaining trials and perform a sensitivity analysis employing a missing participant data rate of zero in both arms. If only the total missing participant data are reported, we will assume that missing data were equally distributed in both arms. If the individual trial handled missing participant data and reported imputed analyses only, we will use the imputed results for the meta-analysis (Ebrahim 2013). If the authors reported both the imputed analysis and the complete-case analysis, we will apply our approach to the trial's ACA. When

different measures were used across trials for assessing the same outcome, we will choose a reference measurement instrument and convert the scores from different instruments to the units of the reference instrument (Ebrahim 2014).

Assessment of heterogeneity

We will use the I^2 statistic to quantify inconsistency among the trials in each analysis. We will also consider the P value from the Chi^2 test. We will consider an I^2 estimate equal to or greater than 50% accompanied by a statistically significant Chi^2 test ($P < 0.1$) as indication of substantial heterogeneity (Deeks 2019). In the case of substantial heterogeneity, we will report it and explore possible causes by prespecified subgroup analysis.

We will, additionally, inspect forest plots visually to consider the direction and magnitude of effects and the degree of overlap between CIs.

Assessment of reporting biases

We will attempt to retrieve the protocols of the included trials and compare the outcomes in the protocol with those in the published report. If we cannot retrieve the protocol we will compare the outcomes in the methods section of the report with the reported results.

Two review authors (KM and ASP-M) will independently assess the risk of reporting biases using the preliminary Risk Of Bias due to Missing Evidence (ROB-ME) tool (Page 2020). Disagreements will be resolved through discussion or, if necessary, by involving a third review author (KJJ)

Following the ROB-ME guidance, we will construct an outcome matrix and will then assess the within-study and across-studies non-reporting bias using the signalling questions and algorithm outlined in the ROB-ME tool.

We will present the assessment of risk of reporting biases in a table along with a brief justification for each judgment. We will display studies with missing results in forest plots as proposed in the ROB-ME guidance.

If we are able to pool data from 10 or more trials, we will create and examine a funnel plot to explore possible small study biases for the primary outcomes. We will also use Egger's test for funnel plot asymmetry provided we can include 10 or more studies in the meta-analysis and studies are not similar in size (Egger 1997).

Data synthesis

We will assess heterogeneity by comparing participants, interventions, and outcomes between the included studies. In the case of considerable methodological and clinical heterogeneity, we will not pool the data but will describe them separately and report the clinical diversity of the studies.

If the treatments, participants, and the underlying clinical question are similar enough for a meta-analysis to be considered meaningful, we will undertake meta-analyses. Since we expect that there will be heterogeneity between studies, we will use the random-effects model for pooling studies, regardless of the degree of statistical heterogeneity. We will use the Hartung-Knapp-Sidik-Jonkman method for estimating the between-study variance, as it results in more adequate type I error rates than the often-used DerSimonian and Laird approach, especially in situations when the number of studies is small (IntHout 2014; Langan 2018), which we expect to be the case. In the case of dichotomous outcomes where a high proportion of the studies in the meta-analysis observe no events in one or more study arms, we will consider other methods (Deeks 2019; Efthimiou 2018). When event rates are below 1%, the groups are balanced, and the effects are small, we will thus employ Peto's method; if these conditions are not met, we will employ the Mantel-Haenszel odds ratio method without continuity correction (Deeks 2019). We will conduct sensitivity analyses employing a range of alternative models to assess the robustness of the results, using Peto's method, the Mantel-Haenszel odds ratio with and without continuity correction, inverse-variance odds ratio with continuity correction, and arcsine difference (Rucker 2009).

We will furthermore calculate the prediction interval to provide a better appreciation of the uncertainty around the effect estimate (Borenstein 2017), which may be particularly relevant when between-study heterogeneity is high (IntHout 2014). As prediction intervals are strongly based on the assumption of a normal distribution for the effects across studies, and can therefore be problematic when the number of studies is small, we will only calculate them provided there are 10 or more studies and no clear funnel plot asymmetry.

We will include all eligible studies regardless of their risk of bias for the primary analysis. We will explore the influence of including studies judged as having a high risk of bias or as some concerns in sensitivity analyses.

We will perform all analyses using the freely available software R (R Core Team 2019).

Main comparison

We will make the following main comparisons.

- ECT versus sham-ECT
- ECT versus pharmacological treatment
- ECT versus non-pharmacological treatment
- ECT versus no treatment

Subgroup analysis and investigation of heterogeneity

We plan to carry out the following subgroup analyses for any outcomes with substantial heterogeneity.

- Psychotic features of the index acute affective episode. Observational evidence indicates that ECT may be more effective in patients with acute depressive episodes with psychotic features compared with patients without psychotic features (Heijnen 2019; Kellner 2020; van Diermen 2018); the effect of ECT for the prevention of relapse or recurrence may therefore differ depending on the presence of psychotic features during the index depressive episode, as well as of index episodes of different polarity. We will categorise studies according to whether they included any or only participants with an index acute affective episode with psychotic features or not at all.
- Age of participants. Observational evidence indicates the ECT may be more effective in elderly patients with acute depressive episodes, compared with younger patients (Kellner 2020; van Diermen 2018). Due to differences in brain development between children and adolescents, and adults, the effects of

ECT, including adverse effects, may be different for children and adolescents compared with adult and elderly patients. We will categorise the studies according to whether the mean age of the participants was below 18 years, older than 18 years and below 65 years, and 65 years and older.

- Method of ECT delivery. Unmodified, compared with unmodified ECT, may be associated with increased risk of adverse events such as broken teeth, joint dislocation and bone fracture (Andrade 2012). Also, using an anaesthetic as is the case with modified ECT may moderate the effect of the treatment, although the effect of the specific anaesthetic regimen is uncertain (Lihua 2014). We will categorise the studies according to whether they used modified or unmodified ECT.
- Electrode placement and pulse width. Observational evidence indicates that electrode placement and pulse width moderate the effect of ECT and the risk of adverse events (Lisanby 2007). We will categorise studies according to the stimulation method (e.g. brief-pulse bilateral, ultrabrief-pulse right unilateral).
- Treatment schedule. Observational evidence indicates that the effect of ECT and cognitive adverse effects are moderated by the frequency with which the treatment is administered (Gangadhar 2010). We will assess the impact of the mean number of administrations of ECT per month in meta-regression.

Any additional analysis will be reported as post hoc. We will compare subgroups using a formal statistical test for subgroup differences. We will undertake subgroup analysis provided 10 or more studies are available for each characteristic modelled and covariates are reasonably evenly distributed across studies. Given the risk of type I errors due to multiple testing issues, we will interpret findings from subgroup analysis conservatively.

Sensitivity analysis

We plan to carry out the following sensitivity analyses to test whether key methodological factors or decisions have affected the main result.

- Imputation of missing data using any method. We will analyse the impact of imputing data as described in Dealing with missing data.
- Diagnostic criteria. We will remove studies that used non-operationalised criteria to diagnose participants.
- Statistical methods for summarising rare dichotomous outcomes. We will perform meta-analysis using different methods for pooling studies when assessing rare outcomes as described in Data synthesis.
- The influence of imputing SDs. We will remove studies for which we have imputed missing SDs based on the SD of similar studies.
- Risk of bias. We will remove studies for which we have judged the overall risk of bias as some concerns or high risk.
- Enriched design. We will remove studies that used an enriched design.
- Cluster-randomised trials. We will remove cluster-randomised trials.

Reaching conclusions

We will base our conclusions only on findings from the quantitative or narrative synthesis of included studies for this review. We will avoid making recommendations for practice, and our implications for research will suggest priorities for future research and outline the remaining uncertainties in the area.

Summary of findings and assessment of the certainty of the evidence

We will create a 'Summary of findings' table using the following outcomes:

- Relapse or recurrence of any affective episode
- Serious adverse events
- Global functioning
- Retrograde amnesia
- Number of participants with at least one adverse event
- Relapse or recurrence of depressive episodes
- Relapse or recurrence of hypomanic or manic episodes

We will prioritise the presentation of outcomes assessed at six months or longer. We will use the five GRADE considerations (study limitations, consistency of effect, imprecision, indirectness, and publication bias) to assess the certainty of a body of evidence as it relates to the studies which contribute data to the meta-analyses for the prespecified outcomes. We will use the methods and recommendations described in Chapter 14 of the *Cochrane Handbook* (Schünemann 2019), employing GRADEpro GDT software (GRADEpro GDT). We will use the ROB-ME assessment to inform the assessment of publication bias, downgrading one level for all syntheses rated as 'some concerns' or 'high risk of bias'. We will use overall risk of bias to inform GRADE. We will create a separate 'Summary of findings' table for each comparison (ECT versus sham-ECT; ECT versus pharmacological treatment; ECT versus non-pharmacological treatment; ECT versus no treatment). We will justify all decisions to downgrade the certainty of the evidence using footnotes and where necessary, will make comments to aid the reader's understanding of the review.

Two review authors (KM and ASP-M) will independently make judgements about the certainty of the evidence, with any disagreements resolved by discussion or by involving a third review author (KJJ). Judgements will be justified, documented, and incorporated into the reporting of results for each outcome.

ACKNOWLEDGEMENTS

Cochrane Denmark is funded by the Danish Government.

The authors and the CCMD Editorial Team are also grateful to the following peer reviewers for their time and comments: Jiangling Jiang, S Rees and Lindsay Robertson. They would also like to thank Cochrane Copy Edit Support for the team's help.

The UK National Institute for Health Research (NIHR) is the largest single funder of the CCMD Group.

The views expressed are those of the authors and not necessarily those of the UK National Health Service (NHS), the NIHR or the UK Department of Health and Social Care.

REFERENCES

Additional references

AACAP 2004

Ghaziuddin N, Kutcher SP, Knapp P, Bernet W, Arnold V, Beitchman J, et al. Practice parameter for use of electroconvulsive therapy with adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry* 2004;**43**(12):1521-39.

AACAP 2007

Birmaher B, Brent D, The AACAP Work Group on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with depressive disorders. *Journal of the American Academy of Child & Adolescent Psychiatry* 2007;**46**(11):1503-26.

Andrade 2012

Andrade C, Shah N, Tharyan P, Reddy MS, Thirunavukarasu M, Kallivayalil R A, et al. Position statement and guidelines on unmodified electroconvulsive therapy. *Indian Journal of Psychiatry* 2012;**54**(2):119-33.

Andrade 2016

Andrade C, Arumugham SS, Thirthalli J. Adverse effects of electroconvulsive therapy. *Psychiatric Clinics of North America* 2016;**39**(3):513-30.

APA 1978

American Psychiatric Association. Report of the Task Force on Electroconvulsive Therapy of the American Psychiatric Association. 1st edition. Washington, DC: American Psychiatric Association, 1978.

APA 1980

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-III). 3rd edition. Washington, DC: American Psychiatric Association, 1980.

APA 1994

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). 4th edition. Washington, DC: American Psychiatric Association, 1994.

APA 2001

American Psychiatric Association. The Practice of Electroconvulsive Therapy: Recommendations for Treatment, Training, and Privileging (A Task Force Report of the American Psychiatric Association). 2nd edition. Washington, DC: American Psychiatric Association, 2001.

APA 2002

Hirschfeld RMA, Bowden C, Gitlin M, Keck PE, Suppes T, Thase ME, et al. Practice Guideline for the Treatment of Patients With Bipolar Disorder. psychiatryonline.org/pb/assets/raw/sitewide/practice_guidelines/guidelines/bipolar.pdf 2002.

APA 2003

Hirschfeld RMA, Bowden CL, Gitlin MJ, Keck PE, Perlis RH, Suppes T, Thase ME, Wagner K. Practice Guideline for the Treatment of Patients With Bipolar Disorder (Revision). Focus 2003;**1**(1):64-110.

APA 2010

American Psychiatric Association. American Psychiatric Association Practice Guideline for the Treatment of Major Depressive Disorder. 3rd edition. Washington, DC: American Psychiatric Association, 2010.

APA 2013

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-5). 5th edition. Washington, DC: American Psychiatric Association, 2013.

APA 2016

American Psychiatric Association. American Psychiatric Association letter to the FDA. Available from psychiatry.org/File%20Library/Psychiatrists/Advocacy/Federal/APA-FDA-ECT-reclassification-comments-03102016.pdf (accessed 22 May 2020).

BAP 2016

Goodwin GM, Haddad PM, Ferrier IN, Aronson JK, Barnes T, Cipriani A, et al. Evidence-based guidelines for treating bipolar disorder: Revised third edition recommendations from the British Association for Psychopharmacology. *Journal of Psychopharmacology* 2016;**30**(6):495-553.

Beck 1961

Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Archives Of General Psychiatry* 1961;**4**:561-71.

Bjornshauge 2019

Bjørnshauge D, Hjerrild S, Videbech P. Electroconvulsive therapy practice in the Kingdom of Denmark. *Journal of ECT* 2019;**35**(4):258-63.

Bolwig 2014

Bolwig TG. Electroconvulsive therapy reappraised. *Acta Psychiatrica Scandinavica* 2014;**129**(6):415-6.

Borenstein 2017

Borenstein M, Higgins JP, Hedges LV, Rothstein HR. Basics of meta-analysis: I^2 is not an absolute measure of heterogeneity. *Research Synthesis Methods* 2017;**8**(1):5-18.

Brus 2017

Brus O, Cao Y, Gustafsson E, Hulten M, Landen M, Lundberg J, et al. Self-assessed remission rates after electroconvulsive therapy of depressive disorders. *European Psychiatry* 2017;**45**:154-60.

CANMAT 2018

Yatham LN, Kennedy SH, Parikh SV, Schaffer A, Bond DJ, Frey BN, et al. Canadian Network for Mood and Anxiety Treatments (CANMAT) and International Society for Bipolar Disorders (ISBD) 2018 guidelines for the management of patients with bipolar disorder. *Bipolar Disorders* 2018;**20**:97-110.

CINP 2017

Fountoulakis KN, Grunze H, Vieta E, Young A, Yatham L, Blier P, et al. The International College of Neuro-Psychopharmacology (CINP) treatment guidelines for bipolar disorder in adults (CINP-BD-2017), part 3: the clinical guidelines. *International Journal of Neuropsychopharmacology* 2017;**20**(2):180-95.

CPA 2010

Enns MW, Reiss JP, Chan PK. Canadian Psychiatric Association Position Paper - Electroconvulsive Therapy; 2010. Available from cpa-apc.org/wp-content/uploads/ECT-CPA_position_paper_27-revision_1-web-EN.pdf (accessed 15 December 2020).

Deeks 2019

Deeks JJ, Higgins JP, Altman DG, editor(s). Chapter 10: Analysing data and undertaking meta-analyses. In: Higgins JP, Thomas J, Chandler J, Cumpson M, Li T, Page MJ, Welch VA, editor(s). Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated October 2019). The Cochrane Collaboration, 2019. Available from www.training.cochrane.org/handbook.

Diflorio 2010

Diflorio A, Jones I. Is sex important? Gender differences in bipolar disorder. *International Review of Psychiatry* 2010;**22**(5):437-52.

Duffy 2019

Duffy RM, Kelly BD. India's Mental Healthcare Act, 2017: Content, context, controversy. *International Journal of Law and Psychiatry* 2019;**62**:169-78.

Ebrahim 2013

Ebrahim S, Akl EA, Mustafa RA, Sun X, Walter SD, Heels-Ansdell D, et al. Addressing continuous data for participants excluded from trial analysis: a guide for systematic reviewers. *Journal of Clinical Epidemiology* 2013;**66**(9):1014-21.e1.

Ebrahim 2014

Ebrahim S, Johnston BC, Akl EA, Mustafa RA, Sun X, Walter SD, et al. Addressing continuous data measured with different instruments for participants excluded from trial analysis: a guide for systematic reviewers. *Journal of Clinical Epidemiology* 2014;**67**(5):560-70.

Efthimiou 2018

Efthimiou O. Practical guide to the meta-analysis of rare events. *Evidence-Based Mental Health* 2018;**21**(2):72-6.

Egger 1997

Egger M, Smith GD, Schneider M, Christoph M. Bias in meta-analysis detected by a simple, graphical test. *BMJ* 1997;**315**:629.

Elias 2018

Elias A, Phutane V H, Clarke S, Prudic J. Electroconvulsive therapy in the continuation and maintenance treatment of depression: systematic review and meta-analyses. *Australian and New Zealand Journal of Psychiatry* 2018;**52**(5):415-24.

EMA 2002

European Medicines Agency. ICH Topic E 6 (R1) Guideline for Good Clinical Practice. Available from www.ema.europa.eu/en/documents/scientific-guideline/ich-e6-r1-guideline-good-clinical-practice_en.pdf (accessed 13 January 2021).

Endicott 1993

Endicott J, Nee J, Harrison W, Blumenthal R. Quality of life enjoyment and satisfaction questionnaire: a new measure. *Psychopharmacology Bulletin* 1993;**29**(2):321-6.

Endicott 2009

Endicott J, Dorries KM. Functional outcomes in MDD: established and emerging assessment tools. *American Journal of Managed Care* 2009;**15**(11 Suppl):S328-34.

FDA 2018

Food and Drug Administration. Neurological devices; reclassification of electroconvulsive therapy devices; effective date of requirement for premarket approval for electroconvulsive therapy devices for certain specified intended uses. Final order. *Federal Register* 2018;**83**(246):66103-24.

Feighner 1972

Feighner JP, Robins E, Guze SB, Woodruff RA Jr, Winokur G, Munoz R. Diagnostic criteria for use in psychiatric research. *Archives of General Psychiatry* 1972;**26**(1):57-63.

Fraser 2008

Fraser LM, O'Carroll RE, Ebmeier KP. The effect of electroconvulsive therapy on autobiographical memory: a systematic review. *Journal of Electroconvulsive Therapy* 2008;**24**(1):10-7.

Gamble 2005

Gamble C, Hollis S. Uncertainty method improved on best-worst case analysis in a binary meta-analysis. *Journal of Clinical Epidemiology* 2005;**58**(6):579-88.

Gangadhar 2010

Gangadhar BN, Thirthalli J. Frequency of electroconvulsive therapy sessions in a course. *Journal of Electroconvulsive Therapy* 2010;**26**(3):181-5.

Gautam 2019

Gautam S, Jain A, Gautam M, Gautam A, Jagawat T. Clinical Practice Guidelines for Bipolar Affective Disorder (BPAD) in Children and Adolescents. *Indian Journal of Psychiatry* 2019;**61**(Suppl 2):294-305.

Ghaemi 2017

Ghaemi SN, Selker HP. Maintenance efficacy designs in psychiatry: randomized discontinuation trials - enriched but not better. *Journal of Clinical and Translational Science* 2017;**1**(3):198-204.

Gill 2019

Gill SP, Kellner CH. Clinical practice recommendations for continuation and maintenance electroconvulsive therapy for depression: Outcomes from a review of the evidence and a

consensus workshop held in Australia in May 2017. *Journal of Electroconvulsive Therapy* 2019;**35**(1):14-20.

Goodwin 2011

Goodwin FK, Whitham EA, Ghaemi SN. Maintenance treatment study designs in bipolar disorder: do they demonstrate that atypical neuroleptics (antipsychotics) are mood stabilizers? *CNS Drugs* 2011;**25**(10):819-27.

Government of India 2017

Government of India. The Mental Healthcare Act 2017. Available from www.prsindia.org/uploads/media/Mental%20Health/Mental%20Healthcare%20Act,%202017.pdf (accessed 22 May 2020).

GRADEpro GDT [Computer program]

McMaster University (developed by Evidence Prime) GRADEpro GDT. Version accessed 15 December 2020. Hamilton (ON): McMaster University (developed by Evidence Prime), 2015. Available at gradepro.org.

GWA 2018

Government of Western Australia. Mental Health Act 2014. Available from www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_40843.pdf/$FILE/Mental%20Health%20Act%202014%20-%20%5B01-f0-03%5D.pdf?OpenElement (accessed 22 May 2020).

Hamilton 1967

Hamilton M. Development of a rating scale for primary depressive illness. *British Journal of Clinical Psychology* 1967;**6**(4):278-96.

Heijnen 2019

Heijnen Wtcj, Kamperman AM, Tjokrodipo LD, Hoogendijk WJG, van den Broek WW, Birkenhager TK. Influence of age on ECT efficacy in depression and the mediating role of psychomotor retardation and psychotic features. *Journal of Psychiatric Research* 2019;**109**:41-47.

Higgins 2008

Higgins JP, White IR, Wood AM. Imputation methods for missing outcome data in meta-analysis of clinical trials. *Clinical Trials* 2008;**5**(3):225-39.

Higgins 2019a

Higgins JP, Savović J, Page MJ, Elbers RG, Sterne JA, editor(s). Chapter 8: Assessing risk of bias in a randomized trial. In: Higgins JP, Thomas J, Chandler J, Cumpson M, Li T, Page MJ, Welch VA, editor(s). Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated October 2019). The Cochrane Collaboration, 2019. Available from www.training.cochrane.org/handbook.

Higgins 2019b

Higgins JP, Li T, Deeks JJ, editor(s). Chapter 6: Choosing effect measures and computing estimates of effect. In: Higgins JP, Thomas J, Chandler J, Cumpson M, Li T, Page MJ, Welch VA, editor(s). Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated October 2019). The Cochrane Collaboration, 2019. Available from www.training.cochrane.org/handbook.

Higgins 2019c

Higgins JP, Eldridge S, Li T, editor(s). Chapter 23: Including variants on randomized trials. In: Higgins JP, Thomas J, Chandler J, Cumpson M, Li T, Page MJ, Welch VA, editor(s). Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated October 2019). The Cochrane Collaboration, 2019. Available from www.training.cochrane.org/handbook.

Hirschfeld 2007

Hirschfeld RM, Calabrese JR, Frye MA, Lavori PW, Sachs G, Thase ME, Wagner KD. Defining the clinical course of bipolar disorder: response, remission, relapse, recurrence, and roughening. *Psychopharmacological Bulletin* 2007;**40**(3):7-14.

IntHout 2014

IntHout J, Ioannidis JP, Borm GF. The Hartung-Knapp-Sidik-Jonkman method for random effects meta-analysis is straightforward and considerably outperforms the standard DerSimonian-Laird method. *BMC Medical Research Methodology* 2014;**14**:25.

Judd 2003

Judd LL, Schettler PJ, Akiskal HS, Maser J, Coryell W, Solomon D, Endicott J, Keller M. Long-term symptomatic status of bipolar I vs. bipolar II disorders. *International Journal of Neuropsychopharmacology* 2003;**6**(2):127-37.

Kellner 2020

Kellner CH, Obbels J, Sienaert P. When to consider electroconvulsive therapy (ECT). *Acta Psychiatrica Scandinavica* 2020;**141**(4):304-15.

Kopelman 1989

Kopelman MD, Wilson BA, Baddeley AD. The autobiographical memory interview: a new assessment of autobiographical and personal semantic memory in amnesic patients. *Journal of Clinical and Experimental Neuropsychology* 1989;**11**(5):724-44.

Langan 2018

Langan D, Higgins JPT, Jackson D, Bowden J, Veroniki AA, Kontopantelis E, et al. A comparison of heterogeneity variance estimators in simulated random-effects meta-analyses. *Research Syntheis Methods* 2018;**10**(1):83-98.

Leiknes 2012

Leiknes KA, Jarosh-von Schweder L, Hoie B. Contemporary use and practice of electroconvulsive therapy worldwide. *Brain and Behavior* 2012;**2**(3):283-344.

Liberati 2009

Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gotzsche PC, Ioannidis JP, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *PLoS Medicine* 2009;**6**(7):e1000100.

Lihua 2014

Lihua P, Su M, Ke W, Ziemann-Gimmel P. Different regimens of intravenous sedatives or hypnotics for electroconvulsive therapy (ECT) in adult patients with depression. *Cochrane Database of Systematic Reviews* 2014, Issue 4. Art. No: CD009763. [DOI: 10.1002/14651858.CD009763.pub2]

Lisanby 2007

Lisanby SH. Electroconvulsive therapy for depression. *New England Journal of Medicine* 2007;**357**(19):1939-45.

Livingston 2018

Livingston R, Wu C, Mu K, Coffey MJ. Regulation of electroconvulsive therapy: a systematic review of US state laws. *Journal of Electroconvulsive Therapy* 2018;**34**(1):60-8.

Loo 2008

Loo CK, Sainsbury K, Sheehan P, Lyndon B. A comparison of RUL ultrabrief pulse (0.3 ms) ECT and standard RUL ECT. *International Journal of Neuropsychopharmacology* 2008;**11**(7):883-90.

Malhi 2017

Malhi GS, Berk M, Morris G, Hamilton A, Outhred T, Das P, et al. Mixed mood: The not so united states? *Bipolar Disorders* 2017;**19**(4):242-5.

Malhi 2020

Malhi GS, Bell E, Hamilton A, Morris G. Paediatric bipolar disorder: prepubertal or premature? *Australian and New Zealand Journal of Psychiatry* 2020;**54**(5):547-50.

McElhiney 1995

McElhiney MC, Moody BJ, Steif BL, Prudic J, Devanand DP, Nobler MS, et al. Autobiographical memory and mood: effects of electroconvulsive therapy. *Neuropsychology* 1995;**9**(4):501-17.

McElhiney 2001

McElhiney MC, Moody BJ, Sackeim HA. Manual for Administration and Scoring the Columbia University Autobiographical Memory Interview - Short Form, Version 3. New York, NY: New York State Psychiatric Institute, 2001.

McIntyre 2014

McIntyre RS, Filteau M-J, Martin L, Patry S, Carvalho A, Cha DS, et al. Treatment-resistant depression: definitions, review of the evidence, and algorithmic approach. *Journal of Affective Disorders* 2014;**156**:1-7.

MedDRA

International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH). Medical Dictionary for Regulatory Activites. Available at www.meddra.org.

Merikangas 2011

Merikangas KR, Jin R, He JP, Kessler RC, Lee S, Sampson NA, et al. Prevalence and correlates of bipolar spectrum disorder in the world mental health survey initiative. *Archives of General Psychiatry* 2011;**68**(3):241-51.

Michael 2009

Michael K. Chapter 4: Hypothesized mechanisms and sites of action of electroconvulsive therapy. In: Swartz CM, editors(s). Electroconvulsive and Neuromodulation Therapies. New York, NY: Cambridge University Press, 2009.

Microsoft Excel 2019 [Computer program]

Microsoft Excel. Microsoft, 2019.

NICE 2014

National Institute for Health and Care Excellence. Bipolar disorder: assessment and management Clinical guideline [CG185]; 24 September 2014. Available from www.nice.org.uk/guidance/cg185/resources/bipolar-disorder-assessment-and-management-pdf-35109814379461 (accessed 17 December 2020).

Page 2020

Page MJ, Sterne JAC, Boutron I, Hrobjartsson A, Kirkham JJ, Li T, et al. Risk Of Bias due to Missing Evidence (ROB-ME): a new tool for assessing risk of non-reporting biases in evidence syntheses. Detailed guidance. Available from drive.google.com/file/d/1BaF3lZ6j1ZIx208gsoYab8uGzk6zlqvw/view (accessed 23 June 2021).

Parikh 2010

Parikh SV, LeBlanc SR, Ovanessian MM. Advancing bipolar disorder: key lessons from the Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD). *Canadian Journal of Psychiatry* 2010;**55**(3):136-43.

Parker 2019

Parker G, Ricciardi T. Mixed states in bipolar disorder: modelling, measuring and managing. *Australasian Psychiatry* 2019;**27**(1):69-71.

Parry 2017

Parry P, Allison S, Bastiampillai T. 'Paediatric bipolar disorder' rates are lower than claimed – a reexamination of the epidemiological surveys used by a meta-analysis. *Child and Adolescent Mental Health* 2017;**23**(1):14-22.

Parry 2019

Parry P, Allison S, Bastiampillai T. Debate: Bipolar disorder: extremely rare before puberty and antipsychotics cause serious harms - a commentary on Van Meter et al. (2019). *Child and Adolescent Mental Health* 2019;**24**(1):92-4.

Perlis 2006

Perlis RH, Ostacher MJ, Patel JK, Marangell LB, Zhang H, Wisniewski SR, et al. Predictors of recurrence in bipolar disorder: primary outcomes from the Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD). *American Journal of Psychiatry* 2006;**163**(2):217-24.

Petrides 2011

Petrides G, Tobias KG, Kellner CH, Rudorfer MV. Continuation and maintenance electroconvulsive therapy for mood disorders: review of the literature. *Neuropsychobiology* 2011;**64**(3):129-40.

RANZCP 2015

Malhi GS, Bassett D, Boyce P, Bryant R, Fitzgerald PB, Fritz K, et al. Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for mood disorders. *Australian and New Zealand Journal of Psychiatry* 2015;**49**(12):1087-206.

RANZCP 2019

Weiss A, Hussain S, Ng B, Sarma S, Tiller J, Waite S, et al. Royal Australian and New Zealand College of Psychiatrists professional practice guidelines for the administration of electroconvulsive therapy. *Australian and New Zealand Journal of Psychiatry* 2019;**53**(7):609-23.

R Core Team 2019 [Computer program]

R Foundation for Statistical Computing R: A language and environment for statistical computing. R Core Team. Vienna, Austria: R Foundation for Statistical Computing, 2019. Available at www.R-project.org.

RCPSYCH 2019

Royal College of Psychiatrists. ECT Accreditation Service (ECTAS) Standards for the administration of ECT. Available from www.rcpsych.ac.uk/docs/default-source/improving-care/ccqi/quality-networks/electro-convulsive-therapy-clinics-(ectas)/ectas-14th-edition-standards.pdf?sfvrsn=932fa3b4_2 (accessed 22 May 2020).

RoB 2 Microsoft Excel tool 2019

RoB 2 Development Group. Excel tool to implement RoB 2. Available from sites.google.com/site/riskofbiastool/welcome/rob-2-0-tool/current-version-of-rob-2 (accessed 17 December 2020).

Rucker 2009

Rucker G, Schwarzer G, Carpenter J, Olkin I. Why add anything to nothing? The arcsine difference as a measure of treatment effect in meta-analysis with zero cells. *Statistics in Medicine* 2009;**28**(5):721-38.

Rush 2006

Rush JA, Kraemer HC, Sackeim HA, Fava M, Trivedi MH, Frank E, et al. Report by the ACNP Task Force on Response and Remission in Major Depressive Disorder. *Neuropsychopharmacology* 2006;**31**:1841-53.

Sackeim 2001

Sackeim HA, Haskett RF, Mulsant BH, Thase ME, Mann JJ, Pettinati HM, et al. Continuation pharmacotherapy in the prevention of relapse following electroconvulsive therapy: a randomized controlled trial. *JAMA* 2001;**285**(10):1299-307.

Sackeim 2007

Sackeim HA, Prudic J, Fuller R, Keilp J, Lavori PW, Olfson M. The cognitive effects of electroconvulsive therapy in community settings. *Neuropsychopharmacology* 2007;**32**(1):244-54.

Sackeim 2008

Sackeim HA, Prudic J, Nobler MS, Fitzsimons L, Lisanby SH, Payne N, et al. Effects of pulse width and electrode placement on the efficacy and cognitive effects of electroconvulsive therapy. *Brain Stimulation* 2008;**1**(2):71-83.

Sackeim 2014

Sackeim HA. Autobiographical memory and electroconvulsive therapy: do not throw out the baby. *Journal of Electroconvulsive Therapy* 2014;**30**(3):177-86.

Sajatovic 2015

Sajatovic M, Strejilevich SA, Gildengers AG, Dols A, Al Jurdi RK, Forester BP, et al. A report on older-age bipolar disorder from the International Society for Bipolar Disorders Task Force. *Bipolar Disorders* 2015;**17**(7):689-704.

Schünemann 2019

Schünemann HJ, Higgins JP, Vist GE, Glasziou P, Akl EA, Skoetz N, et al. Chapter 14: Completing 'Summary of findings' tables and grading the certainty of the evidence. In: Higgins JP, Thomas J, Chandler J, Cumpson M, Li T, Page MJ, Welch VA, editor(s). Cochrane Handbook for Systematic Reviews of Interventions version 6.0 (updated October 2019). The Cochrane Collaboration, 2019. Available from www.training.cochrane.org/handbook.

Semkovska 2012

Semkovska M, Noone M, Carton M, McLoughlin DM. Measuring consistency of autobiographical memory recall in depression. *Psychiatry Research* 2012;**197**(1-2):41-8.

Semkovska 2014

Semkovska M, McLoughlin DM. Retrograde autobiographical amnesia after electroconvulsive therapy: on the difficulty of finding the baby and clearing murky bathwater. *Journal of Electroconvulsive Therapy* 2014;**30**(3):187-8; discussion 189-90.

Sheehan 1996

Sheehan DV, Harnett-Sheehan K, Raj BA. The measurement of disability. *International Clinical Psychopharmacology* 1996;**11 Suppl 3**:89-95.

Sheehan 2017

Sheehan DV, Nakagome K, Asami Y, Pappadopulos EA, Boucher M. Restoring function in major depressive disorder: a systematic review. *Journal of Affective Disorders* 2017;**215**:299-313.

Spitzer 1999

Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary care evaluation of mental disorders. Patient Health Questionnaire. *JAMA* 1999;**282**(18):1737-44.

Sterne 2019

Sterne JAC, Savović J, Page MJ, Elbers RG, Blencowe NS, Boutron I, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ* 2019;**366**:l4898.

Summerfield 2008

Summerfield D. How scientifically valid is the knowledge base of global mental health? *BMJ* 2008;**336**(7651):992-4.

Tew 2007

Tew JD Jr, Mulsant BH, Haskett RF, Joan P, Begley AE, Sackeim HA. Relapse during continuation pharmacotherapy

after acute response to ECT: a comparison of usual care versus protocolized treatment. *Annals of Clinical Psychiatry* 2007;**19**(1):1-4.

Tohen 2009

Tohen M, Frank E, Bowden L, Colom F, Ghaemi SN, Yatham LN, et al. The International Society for Bipolar Disorders (ISBD) Task Force report on the nomenclature of course and outcome in bipolar disorders. *Bipolar Disorders* 2009;**11**(5):453-73.

Tor 2015

Tor PC, Bautovich A, Wang MJ, Martin D, Harvey SB, Loo C. A systematic review and meta-analysis of brief versus ultrabrief right unilateral electroconvulsive therapy for depression. *Journal of Clinical Psychiatry* 2015;**76**(9):e1092-8.

UN 2013

United Nations Human Rights Council. Report of the Special Rapporteur on torture and other cruel, inhuman or degrading treatment or punishment, Juan E Méndez. www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session22/A.HRC.22.53_English.pdf (accessed 22 May 2020).

UN 2018

United Nations Human Rights Council. Annual report of the United Nations High Commissioner. www.ohchr.org/Documents/Issues/MentalHealth/A_HRC_39_36_EN.pdf (accessed 5 June 2020).

van Beusekom 2007

van Beusekom BS, van den Broek WW, Birkenhager TK. Long-term follow-up after successful electroconvulsive therapy for depression: a 4- to 8-year naturalistic follow-up study. *Journal of Electroconvulsive Therapy* 2007;**23**(1):17-20.

van Diermen 2018

van Diermen L, van den Ameele S, Kamperman AM, Sabbe BCG, Vermeulen T, Schrijvers D, et al. Prediction of electroconvulsive therapy response and remission in major depression: meta-analysis. *British Journal of Psychiatry* 2018;**212**(2):71-80.

Van Meter 2019

Van Meter A, Moreira ALR, Youngstrom E. Updated meta-analysis of epidemiologic studies of pediatric bipolar disorder. *Journal of Clinical Psychiatry* 2019;**80**(3):18r12180. [DOI: 10.4088/JCP.18r12180]

Van Meter 2019a

Van Meter Anna R, Moreira Ana Lúcia R, Youngstrom Eric A. Debate: Looking forward: choose data over opinions to best serve youth with bipolar spectrum disorders - commentary on Parry et al. (2018). *Child and Adolescent Mental Health* 2019;**24**(1):88-91.

Wachtel 2011

Wachtel LE, Dhossche DM, Kellner CH. When is electroconvulsive therapy appropriate for children and adolescents? *Medical Hypotheses* 2011;**76**(3):395-9.

Weissman 1976

Weissman MM, Bothwell S. Assessment of social adjustment by patient self-report. *Archives of General Psychiatry* 1976;**33**(9):1111-5.

WFSBP 2009

Grunze H, Vieta E, Goodwin GM, Bowden C, Licht RW, Moller HJ, et al. The World Federation of Societies of Biological Psychiatry (WFSBP) guidelines for the biological treatment of bipolar disorders: update 2009 on the treatment of acute mania. *World Journal Biological of Psychiatry* 2009;**10**(2):85-116.

WFSBP 2010

Grunze H, Vieta E, Goodwin GM, Bowden C, Licht RW, et al. The World Federation of Societies of Biological Psychiatry (WFSBP) guidelines for the biological treatment of bipolar disorders: update 2010 on the treatment of acute bipolar depression. *World Journal of Biological Psychiatry* 2010;**11**(2):81-109.

WFSBP 2013

Bauer M, Pfennig A, Severus E, Whybrow PC, Angst J, Moller HJ, et al. World Federation of Societies of Biological Psychiatry (WFSBP) guidelines for biological treatment of unipolar depressive disorders, part 1: update 2013 on the acute and continuation treatment of unipolar depressive disorders. *World Journal of Biological Psychiatry* 2013;**14**(5):334-85.

WFSBP 2018

Grunze H, Vieta E, Goodwin GM, Bowden C, Licht RW, Azorin JM, et al. The World Federation of Societies of Biological Psychiatry (WFSBP) guidelines for the biological treatment of bipolar disorders: acute and long-term treatment of mixed states in bipolar disorder. *World Journal of Biological Psychiatry* 2018;**19**(1):2-58.

WHO 1978

World Health Organization. The ICD-9 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines. International Classification of Diseases 9th Revision. Geneva: World Health Organization, 1978.

WHO 1992

World Health Organization. The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines. International Classification of Diseases 10th Revision. Geneva: World Health Organization, 1992.

WHO 2005

World Health Organization. WHO Resource Book on Mental Health, Human Rights and Legislation. Geneva: World Health Organization, 2005.

WHO 2018

World Health Organization. The ICD-11 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines. International Classification of Diseases 11th Revision. Geneva: World Health Organization, 2018.

WHO 2019

World Health Organization. Mental Disorders - Key Facts. Available from www.who.int/news-room/fact-sheets/detail/mental-disorders (accessed 23 June 2021).

Zimmerman 2006

Zimmerman M, McGlinchey JB, Posternak MA, Friedman M, Attiullah N, Boerescu D. How should remission from depression be defined? The depressed patient's perspective. *American Journal of Psychiatry* 2006;**163**(1):148-50.

APPENDICES

Appendix 1. MEDLINE Search

Ovid MEDLINE(R) ALL <1946 to September 30, 2021>

1 Electroconvulsive Therapy/ 13539
2 (ECT or ((electroconvuls* or electr* convuls*) adj2 (intervention? or treatment? or therap*)) or ((electroshock* or electr* shock*) adj2 (intervention? or treatment? or therap*))).mp. 19339
3 (1 or 2) 19339
4 "bipolar and related disorders"/ or bipolar disorder/ 42434
5 Mania/ 144
6 ((bipolar adj5 (acute* or affective or disorder* or depress* or episode? or mixed)) or BD-NOS or BDNOS or mania* or manic* or hypomani*).ti,ab,kf. 51242
7 ((mixed adj (episode? or state?)) or rapid cycling).ti,ab,kf. 3285
8 or/4-7 63439
9 (3 and 8) 1893
10 randomized controlled trial.pt. 545248
11 controlled clinical trial.pt. 94436
12 double-blind method/ or random allocation/ or single-blind method/ 292903
13 (randomized or randomised or randomly).mp. 1179867
14 (RCT or "at random" or (random* adj3 (administ* or allocat* or assign* or class* or cluster or crossover or cross-over or control* or determine* or divide* or division or distribut* or expose* or fashion or number* or place* or pragmatic or quasi or recruit* or split or subsitut* or treat*))).ti,ab,kf. 627515
15 (placebo or sham or simulat*).mp. 1042477
16 trial.ti,ab,kf. 672071
17 (control* adj3 group*).ab. 588335
18 (control* and (trial or study or group*) and (waitlist* or wait* list* or ((treatment or care) adj2 usual))).ti,ab,kf,hw. 28940
19 ((single or double or triple or treble) adj2 (blind* or mask* or dummy)).ti,ab,kf. 184456
20 or/10-19 2813668
21 exp animals/ not humans.sh. 4892740
22 (20 not 21) 2429317
23 (9 and 22) 256

CONTRIBUTIONS OF AUTHORS

Klaus Munkholm: conceptualisation, methodology, writing; original draft, writing; review and editing, supervision.

Karsten Juhl Jørgensen: methodology, writing; review and editing.

Asger Sand Paludan-Müller: methodology, writing; review and editing.

DECLARATIONS OF INTEREST

Klaus Munkholm: no conflicts of interest.

Karsten Juhl Jørgensen: no conflicts of interest.

Asger Sand Paludan-Müller: no conflicts of interest.

SOURCES OF SUPPORT

Internal sources

- Cochrane Denmark, Denmark

  This project was supported by Cochrane Denmark.

External sources

- National Institute for Health Research (NIHR), UK

  This project was supported by the NIHR, via Cochrane Infrastructure funding to the Common Mental Disorders Group.