2025 surveillance of electroconvulsive therapy (technology appraisal guidanceTA59, NICE guideline NG222, NICE guideline CG178, NICE guideline CG185, NICE guideline CG192)

Consultation

Topic areas

Electroconvulsive therapy (ECT)

Surveillance proposal

1. We propose that TA59 is withdrawn and recommendations for the use of ECT are moved to the relevant condition guidelines as was done for the recommendations on ECT use in depression (NG222).

    - New evidence indicates that the recommendations in TA59 on the use of ECT in schizophrenia could be updated in guideline CG178.

    - New evidence supports the existing recommendations in TA59 for bipolar disease. The recommendations will be incorporated in guideline CG185.

    - New evidence supports the existing recommendations in TA59 for catatonia. The recommendations will be withdrawn.

2. We propose not to update recommendations on the use of ECT in Antenatal and postnatal mental health: Clinical management and service guidance (CG192), as new evidence supports the existing recommendations.

Context

Electroconvulsive therapy has been used to treat depressive illness, mania, catatonia, and, in some cases, schizophrenia. Although it has been in use

since the 1930s, its exact mechanism of action remains unclear. During the procedure, electrodes are placed on the head, and a brief electric current is passed through them to the brain, inducing a seizure. ECT is administered under general anaesthesia, along with a muscle relaxant to prevent body spasms. It is usually given twice a week for 3 to 6 weeks, totalling 6 to 12 sessions per course. In some cases, maintenance ECT is provided once every 2 weeks or monthly to help prevent symptom recurrence. While ECT can affect heart rate and blood pressure, the most commonly reported side effect is memory loss, either short-term or long-term, which many find distressing.

NICE guidance TA59 recommends ECT only for rapid, short-term improvement in severe cases of catatonia or prolonged mania when other treatments have failed, or the condition is life-threatening. The decision to use ECT should be based on a thorough risk-benefit assessment, with special caution in vulnerable populations such as pregnant women, older adults, and children. Informed consent must be obtained without coercion, and cognitive function should be closely monitored throughout treatment. ECT is not recommended for general use in the management of schizophrenia and repeat ECT should only be considered for individuals who previously responded well. Regular assessments are required, and treatment should cease if adverse effects occur (recommendations 1.1 to 1.10).

NICE guideline NG222 on depression recommends considering ECT for severe depression when preferred by the patient, when a rapid response is needed, or other treatments have failed. Informed consent is essential, with discussions about the risks, benefits, and legal considerations. If a person lacks capacity, ECT should align with any advance decisions. Clinics must be accredited by the Electroconvulsive Therapy Accreditation Service (ECTAS) and follow strict standards. Treatment should stop if side effects outweigh the benefits or remission is achieved. After ECT, ongoing care with antidepressants or psychological interventions is recommended (recommendations 1.13.1 to 1.13.9).

NICE guideline on Antenatal and postnatal mental health: Clinical management and service guidance CG192 recommends considering ECT for pregnant women with severe depression, mixed affective states, mania, or catatonia when there is a serious risk to their health or the health of the fetus (recommendation 1.8.22).

This surveillance review focuses on NICE Technology Appraisal TA59 and NICE Guideline NG222 on depression. NICE guideline CG178, CG185 and CG192 are also relevant to this surveillance review.

Triggers for the exceptional review

Concerns have been raised by enquirers that NICE guidance TA59 is outdated and based on weak evidence. They have also criticised the guidance for presenting an unbalanced view of risks and benefits in some populations, such as pregnant women, older adults, and children, without considering the greater dangers of untreated illness. Additionally, they challenged the guidance's recommendations on the continuation and maintenance of ECT, which is not routinely recommended. The enquirers argued that ongoing treatment may have fewer cognitive side effects than acute courses and could help reduce hospital readmissions.

Methods

The exceptional surveillance process consisted of:

- Literature searches to identify relevant evidence.
- Considering the new evidence and intelligence that triggered the exceptional review.
- Considering the economic aspects of the changes in the clinical evidence base.
- Considering the evidence used to develop the guidance/guideline in the update.
- Examining related NICE guidance and quality standards.
- Examining the NICE event tracker for relevant ongoing and published events.

- Assessing the new evidence and information against current recommendations to determine whether or not to update sections of the guidance/guideline or the whole guidance/guideline.

For further details about the process and the possible update decisions that are available, see ensuring that published guidelines are current and accurate in developing NICE guidelines: the manual.

Search and selection strategy

We carried out a literature search to evaluate evidence on the effectiveness and safety of ECT published since the evidence was reviewed to inform NICE guidance.

For NICE guidance TA59, the focus was on schizophrenia, mania, and catatonia in adults, comparing ECT with pharmacological and therapy-based treatments while assessing adverse events, safety, cost-effectiveness, and symptom reduction. The search, limited to systematic reviews and randomised controlled trials (RCTs) published since 2010, identified 692 relevant references. This focus ensured that the evidence considered is of the highest quality, providing reliable and robust findings to inform update proposal.

For NG222, the focus was on ECT for treating depression, including severe, recurring, moderate, and nonpsychotic cases. It assessed effectiveness, safety, relapse prevention, and cost-effectiveness compared to pharmacological and therapy-based treatments. Systematic reviews and RCTs published since 2019 were included, alongside large observational safety studies where available. We identified 446 relevant references.

Searches were carried out across Medline, Embase, Cochrane (CENTRAL), and PsycINFO. The enquirers also provided 14 references, of which 4 were identified through our searches and included in this surveillance review, while the remaining did not meet our inclusion criteria.

Relevant NICE guidelines

Guidance on the use of electroconvulsive therapy. NICE Technology appraisal guidance TA59. Published 26 April 2003. Last updated: 01 October 2009 (the focus of this surveillance review).

Depression in adults: treatment and management. NICE Guideline NG222. Issued: Published: 29 June 2022 (the focus of this surveillance review)

Psychosis and schizophrenia in adults: prevention and management. NICE Guideline CG187. Published: 12 February 2014. This guideline refers to NICE guidance TA59 on the use of ECT for managing schizophrenia.

Psychosis with coexisting substance misuse: Assessment and management in adults and young people. NICE Guideline CG120. Published: March 2011. This guideline does not include recommendations on the use of ECT for managing psychosis with coexisting substance misuse.

Antenatal and postnatal mental health: Clinical management and service guidance. Clinical Guideline CG192. Published: 17 December 2014. Last updated: 11 February 2020. This guideline recommends considering ECT for pregnant women with severe depression, severe mixed affective states, mania, or catatonia when there is a serious risk to their health or that of the fetus. The guideline was developed in 2007 and updated in 2014, the recommendation remained unchanged aside from NICE style modifications. With limited evidence, the 2007 recommendation was generally based on GDG's clinical judgement. Updates in 2014 and 2018 found no new eligible studies on ECT in pregnancy.

Bipolar disorder: assessment and management. NICE Guideline CG185. Published: 24 September 2014 Last updated: 21 December 2023. This guideline refers to NICE guidance TA59 for the use of ECT in treating severe mania that has not responded to other interventions.

Other relevant guidance

The Royal College of Psychiatrists (RCPsych) guideline on electroconvulsive therapy (ECT) states that ECT is most commonly used for severe depression that has not responded to other treatments. It is also used to treat catatonia and, in some cases, mania or mixed episodes in bipolar disorder. The guideline mentions while ECT can help alleviate symptoms of schizophrenia that have not improved with medication in the medium term, its long-term benefits are less clear, and it is not commonly used for this purpose in the UK. The guideline does not recommend ECT for anxiety disorders or most other psychiatric conditions.

This RCPsych guideline aligns with existing NICE guidance, recommending ECT for similar indications while highlighting the importance of informed decision-making and awareness of potential risks.

ECT is recommended by international guidelines, including the 2020 Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for mood disorders and the Canadian Network for Mood and Anxiety Treatments (CANMAT), as a treatment for acute depressive episodes with certain clinical features, such as psychosis.

Evidence considered when developing the guideline recommendations

NICE guidance TA59 was published in 2003 and updated in 2009, 2012 and 2014 (see update information) but the evidence based remained unchanged since its publication in 2003. The evidence in the original guidance was mainly based on the Final Assessment Report: Electroconvulsive therapy (ECT) for depressive illness, schizophrenia, catatonia and mania. The assessment report was based on a review of the available evidence at the time of publication, including two Cochrane reviews. Although the searches were conducted systematically, the quality of the evidence identified was not systematically assessed, and the most recent evidence in the document dates to 2002.

NICE guideline NG222 on depression replaced NICE guideline CG90 (published in October 2009) and underwent a full update in 2022. The update found limited evidence on ECT for both acute treatment and maintenance of depression. The recommendations were based on existing RCTs, observational studies, and clinical expertise. Due to limited evidence on maintenance ECT for relapse prevention, the guideline recommended further research in this area.

Previous surveillance reviews

NICE guidelines NG222 and NICE guidance TA59 have not undergone a previous surveillance review.

New published evidence considered in this surveillance review

Our search identified 32 studies relevant to NICE guidance TA59 and 22 for NICE guideline NG222. Studies with fewer than 60 participants were excluded as such small sample size is unlikely to have a substantial impact on recommendations.

Evidence on ECT across conditions in NICE guidance TA59

The 32 studies assessed ECT's efficacy, cognitive side effects, and long-term effectiveness across various conditions. The evidence is summarised below by condition, including schizophrenia, mania, bipolar disorder, psychotic depression and catatonia.

Schizophrenia

Studies on ECT in people with schizophrenia present mixed findings on its effectiveness, long-term benefits, and associated risks.

The Cochrane review by Sinclair et al. (2019) (15 RCTs, n=1,285) assessed the efficacy and safety of ECT for treatment-resistant schizophrenia (TRS). The review found that adding ECT to standard care improved clinical response in the medium term. However, the superiority of ECT over sham ECT or antipsychotics remained unclear. Evidence on cognitive side effects,

particularly memory deterioration, raised safety concerns of the procedure, highlighting the need for higher-quality evidence to establish its benefits and harms. Similarly, Zheng et al. (2016) (11 RCTs, n=818) confirmed that adjunctive ECT improved symptoms compared to antipsychotics alone, but cognitive impairments, such as memory loss, were common in the ECT group, suggesting that while ECT effectively manages symptoms, its cognitive side effects remain a concern.

In the context of clozapine-resistant schizophrenia (CRS), Yeh et al. (2022) (35 RCTs, n=1,472) conducted a systematic review and network meta-analysis, ranking ECT as one of the most effective treatments for improving positive symptoms and overall symptom reduction, although they emphasised the need for further large-scale RCTs to assess cognitive function and quality of life. Similarly, Porcelli et al. (2021) (62 studies, n=1,556) reviewed augmentation strategies for CRS and found that ECT showed promise but noted the need for more consistent evidence.

Wang et al. (2018) in their systematic review of 18 RCTs (n=1,769) on clozapine augmentation in CRS, suggested that adjunctive ECT significantly improved symptoms compared to clozapine alone. However memory impairment and headaches were more common with ECT, but no significant differences in other adverse effects or discontinuation rates were observed. Zheng et al. (2017) reviewed 11 RCTs (n=1,018) on memory impairment from ECT combined with antipsychotics in people with schizophrenia. The study found greater memory impairment during the ECT course, but no lasting effects were seen after 1-2 weeks.

Broader applications and population-specific findings

Broader studies have also examined ECT's effectiveness in different patient populations. Rosson et al. (2022) conducted an umbrella review of 102 meta-analyses on non-pharmacological biological interventions, including ECT. Their findings suggested moderate evidence supporting ECT's effectiveness for schizophrenia, however, the overall quality of the studies was mixed, and they called for further high-quality research. Kumagaya and Halliday (2019) examined in a systematic review the effects of acute ECT in elderly patients

with schizophrenia and people with schizoaffective disorder. Their review found that ECT improved psychotic symptoms in nearly all cases, including those with treatment-resistant conditions. Importantly, no fatalities or severe medical complications were reported, suggesting that ECT can be a viable option for this demographic.

Maintenance ECT and long-term efficacy

The long-term efficacy of ECT remains uncertain, with several studies highlighting relapse and maintenance strategies. Aoki et al. (2024) carried out a systematic review of post-acute ECT relapse and re-hospitalisation for schizophrenia and related disorders (29 studies including 4 RCTs, n=3,876) and found that relapse rates were high within the first 6 months post-treatment. However, combining maintenance ECT with antipsychotics appeared to reduce these rates, underscoring the need for long-term treatment strategies. Ward et al. (2018) reviewed studies (including RCTs, open-label trials, retrospective chart reviews, case reports, and case series) on maintenance ECT (M-ECT) in people with schizophrenia and found it to be effective in preventing relapse with minimal persistent cognitive side effects. Mishra et al. (2022) carried out an RCT with 60 treatment-resistant schizophrenia patients, comparing maintenance M-ECT to clozapine. M-ECT showed significantly greater reductions in symptoms, and illness severity, and improved global functioning over 24 weeks. Maintenance ECT also led to better cerebral perfusion in prefrontal and temporal cortices, suggesting superior efficacy over clozapine.

Mania, bipolar disorder psychotic depression

Mania

Loo et al. (2011) reviewed studies on ECT and other brain stimulation techniques for bipolar disorder, concluding that ECT is highly effective in managing both mania and treatment-resistant cases. However, they noted that limited evidence exists on the use of ECT for mixed affective states, where both mania and depression occur simultaneously. Supporting this, Zhang et al. (2021), in their meta-analysis of 12 RCTs (n=863), found that

ECT combined with medication (ECT-combo) was effective for treating acute mania. They also noted memory impairment as a common side effect of the treatment.

Versiani et al. (2011) conducted a systematic review of 51 studies on the effectiveness of ECT in treating acute mania in bipolar disorder (only 3 RCTs assessed ECT for mania). The review confirmed that ECT is highly effective for managing acute manic episodes, particularly when pharmacological treatments fail. However, the role of ECT in treating bipolar disorder was found to be less clear, underscoring the need for further research in this area.

Additionally, Perez Garcia et al. (2022) performed a systematic review of 28 studies (including n=19 RCTs), focusing on the treatment of mania with mixed features in bipolar disorder. Their findings emphasised that second-generation antipsychotics are considered the first-line treatment, with ECT serving as a secondary option for treatment-resistant cases. While ECT was shown to be effective for acute manic episodes, the study highlighted the need for further exploration regarding its role in managing mixed features of the disorder.

Bipolar disorder

Elsayed et al. (2022), in their systematic review of RCTs on therapeutic trends and challenges in treatment-resistant bipolar disorder, found that ECT was effective in improving symptoms, particularly in pharmacotherapy resistant patients. However, full remission was not achieved in most cases. Similarly, Fornaro et al. (2020), in a systematic review and meta-analysis of 17 RCTs (n=928), found that ECT was as effective for treatment-resistant bipolar disorder as it is for treatment-resistant unipolar depression. While ECT led to significant symptom improvement, it did not result in full remission.

Further studies explored the cognitive effects of ECT in bipolar disorder. Bjoerke-Bertheussen et al. (2018) conducted an RCT (n=73) to investigate the long-term neurocognitive effects of right unilateral ECT (RUL-ECT) compared to pharmacological treatment for bipolar depression. Their findings showed no greater cognitive impairment with ECT, although autobiographical memory was mildly affected. Similarly, Kessler et al. (2014)) and Schoeyen et al.

(2015) (RCT, n=73) examined the neurocognitive and therapeutic effects of RUL-ECT in treatment-resistant bipolar depression. Studies reported that RUL-ECT improved cognitive function and reduced depressive symptoms more effectively than pharmacological treatment, with a slight reduction in autobiographical memory consistency in the ECT group. Schoeyen et al. (2015) also noted that ECT had a significantly higher response rate (73.9%) compared to pharmacological treatments (35%), underlining its importance for patients with treatment-resistant depression.

Additionally, Wilkinson et al. (2022) conducted a systematic review of 57 studies to evaluate the effectiveness of lithium in reducing suicide risk in bipolar disorder. While the review did not focus directly on ECT for suicide prevention, it noted that ECT is effective in managing acute mood episodes, especially when pharmacological treatments fail. Takamiya et al. (2022), in their systematic review of 41 studies (n=1,299), they examined the effectiveness of ECT for severe episodes of bipolar disorder in patients who lacked decision-making capacity. The study found that ECT was effective in treating acute episodes, with a favorable safety profile.,.

Psychotic depression

Al-Wandi et al. (2022) reviewed 5 RCTs on maintenance ECT for people with psychotic depression, including a comparison of antidepressant plus ECT versus antidepressant monotherapy. The analysis found no significant difference between the two treatments, emphasising the need for further research to better understand the role of ECT in maintenance therapy for people with psychotic depression. Similarly, Smith et al. (2010) carried out an RCT (n=85) comparing memory effects of continuation ECT and pharmacotherapy in people with psychotic depression. The study found no significant differences in memory outcomes between the two treatments.

Catatonia

Catatonia, often observed in severe psychotic conditions, has also been a focus of ECT research. Leroy et al. (2018) reviewed 28 studies (n=564) on the efficacy of ECT for catatonia. The findings indicated that ECT is effective in improving catatonic symptoms, but the authors highlighted the need for

higher-quality RCTs to establish standardised treatment protocols. Pelzer et al. (2018) reviewed 31 studies (RCTs and observational studies) on catatonia treatment and found lorazepam and ECT to be effective, with ECT showing a more consistent response. However, the authors concluded that the evidence was insufficient to establish a standardised treatment protocol, highlighting the need for more rigorous studies.

ECT in pregnant women and older adults

Arnison et al. (2023), analysing Swedish nationwide registry data on 97 pregnancies where women received ECT for severe psychiatric disorders, found that the response rate was similar to non-pregnant women, with no direct complications linked to ECT. However, there was a higher risk of premature birth and lower Apgar scores, highlighting the need for careful monitoring during treatment. Similarly, Leiknes et al. (2014), in their systematic review (n=169) on ECT during pregnancy, it reported that ECT was primarily used during the second trimester for depression or bipolar disorder. While ECT was generally safe, there were adverse effects such as foetal heart rate reduction, uterine contractions, and premature labour in about 29% of cases. They indicated that these findings underline the need for ECT to be considered a last-resort treatment during pregnancy.

Rose et al. (2020) reviewed 4 meta-analyses on ECT safety during pregnancy, concluding that it is both effective and safe when managed by a multidisciplinary team. Despite underuse due to stigma and access barriers, they noted that serious adverse outcomes from ECT are rare. Special consideration should, however, be given to risks like aspiration and foetal heart rate changes.

In older adults, Lisanby et al. (2021) examined the neurocognitive effects of right unilateral ultra-brief pulse ECT (RUL-UB ECT) combined with pharmacotherapy in patients aged 60 and older with major depression in an RCT. Over 6 months, they found similar neurocognitive outcomes for both ECT plus pharmacotherapy and pharmacotherapy alone, with improvements in most cognitive areas except processing speed. This suggests that RUL-UB ECT can safely maintain remission in late-life depression.

Hedna et al. (2024) conducted a Swedish register-based study comparing suicidal behaviour and all-cause mortality in adults aged 75+ who received ECT (n=1,802) versus other depression treatments (n=4,457). The study found no increased risk of suicidal behaviour in the ECT group and observed lower all-cause mortality among ECT recipients. While this suggests a potential survival benefit, the authors caution against assuming causality due to possible confounding factors.

Lastly, Su et al. (2023), in a secondary analysis of an RCT (n=239), identified predictors of ECT outcomes in major depressive disorder (MDD). The study found that patients with severe depression at baseline had a quicker response to ECT, while older patients and those with severe symptoms showed a slower response. These findings offer valuable insights for guiding treatment decisions in MDD patients undergoing ECT.

Impact on NICE guidance TA59 recommendations

- NICE guidance TA59 currently recommends against the general use of ECT in schizophrenia due to insufficient evidence supporting its widespread use (recommendation 1.9). However, emerging research suggests ECT may be beneficial in specific cases, particularly treatment-resistant schizophrenia (TRS) and clozapine-resistant schizophrenia (CRS). Systematic reviews and meta-analyses, including Sinclair et al. (2019) and Zheng et al. (2016), indicate that adjunctive ECT improves symptoms in TRS, though cognitive side effects remain a concern. In CRS, Yeh et al. (2022) and Porcelli et al. (2021) highlight ECT's effectiveness in symptom reduction but call for more consistent evidence. Wang et al. (2018) further support symptom improvement with ECT in CRS despite some cognitive side effects, while Zheng et al. (2017) suggest memory impairment is temporary. Broader studies, including Rosson et al. (2022), provide moderate evidence for supporting ECT's role in schizophrenia, and Kumagaya and Halliday (2019) report benefits in elderly patients without severe complications.

Based on new evidence, we propose updating the recommendations on the use of ECT in people with schizophrenia in NICE guidance TA59, particularly people with TRS and CRS. Given the move of the recommendations on the use of ECT in depression from TA59 to the guideline we propose that in this population should be in CG178 rather than TA59.

- **Maintenance ECT:** The evidence supports the recommendation that repeat and maintenance ECT could be considered primarily for individuals who previously responded well, particularly in cases of catatonia and mania (recommendation 1.7). Studies on maintenance ECT (Aoki et al., 2024; Ward et al., 2018) suggest that it can help prevent relapse, especially when combined with medication. However, the long-term benefits remain uncertain, reinforcing the guidance's emphasis on careful assessment before proceeding with repeat ECT.

- **Bipolar disorder and psychotic Depression:** Findings reinforce TA59's selective use of ECT for severe cases. While ECT is shown to be effective in severe bipolar disorder and psychotic depression, the evidence is mixed regarding its long-term benefits and cognitive effects (Fornaro et al., 2020; Al-Wandi et al., 2022). This aligns with current recommendations on cautious use, as the studies do not support broadening its use beyond severe and life-threatening cases. Therefore, the new evidence reinforces rather than challenges TA59's recommendations, confirming that ECT should remain a selective treatment reserved for urgent and treatment-resistant conditions.
- **Catatonia and mania:** Studies confirm ECT's effectiveness for rapid symptom relief in severe cases. The reviewed evidence supports TA59 recommendation 1.1 that ECT should be used for rapid and short-term symptom relief in severe and treatment-resistant cases of mania and catatonia. Studies consistently demonstrate ECT's effectiveness in acute mania, particularly when pharmacological treatments fail (Loo et al., 2011; Versiani et al., 2011; Zhang et al., 2021), reinforcing its role as the last option in treatment-resistant cases. Similarly, for catatonia, the evidence

(Leroy et al., 2018; Pelzer et al., 2018) confirms ECT's efficacy, indicating that further rigorous studies are needed.

- **Pregnant people & Older Adults:** The findings support the recommendation that clinicians should exercise caution when considering ECT in pregnant women, older adults, and young people (recommendation 1.3). While studies (Arnison et al., 2023; Rose et al., 2020) suggest that ECT can be safe and effective during pregnancy, risks such as preterm labour and fetal distress require careful clinical supervision. Similarly, research on older adults (Lisanby et al., 2021; Su et al., 2023) indicates that while ECT can be well-tolerated, response rates may be slower, which requires personalised treatment planning.

Depression in adults: treatment and management NICE guideline NG222

Several studies have assessed the efficacy of ECT for treatment-resistant depression (TRD), with mixed results when compared to other therapies. 22 relevant studies were identified from our searches on electroconvulsive therapy, monitoring, and relapse prevention in depression.

Electroconvulsive therapy in the treatment of depression

Guo et al. (2024) conducted a network meta-analysis of 72 RCTs (n=12,105) assessing treatments for TRD, confirming that ECT offers lasting benefits for individuals with long-standing depression. However, the study cautioned that its effects may diminish without continued treatment, highlighting the need for ongoing monitoring. Yang et al. (2024) conducted a network meta-analysis (17 RCTs, n=1,370) comparing ketamine and ECT, concluding that ECT was superior in reducing depressive symptoms but carried a higher risk of memory impairment, which may limit its appeal for some patients.

Graeff Saldanha et al. (2024) conducted a systematic review and meta-analysis of 7 RCTs (n=1,250), the findings suggest that both ECT and ketamine were effective, but ECT was superior in achieving remission, while ketamine had a faster onset of action. Saelens et al. (2024) conducted systematic review and network metanalyses of 69 RCTs (n=10,285) on

antidepressant treatments for TRD, confirmed that ECT had the highest response rates and fastest symptom improvement compared to other therapies, reinforcing its position as a top treatment. Menon et al. (2023) conducted a meta-analysis (5 RCTs, n=278), reporting that ECT was more effective than ketamine, with better post-treatment ratings, response, and remission rates, although both treatments required a similar number of sessions with no significant differences in cognitive outcomes. Moreira et al. (2023) analysed 8 studies (n=2,875) comparing ketamine and ECT for TRD, finding no significant difference in reducing depressive symptoms or therapy response between the two treatments. However, ketamine had a lower risk of muscle pain, while other side effects like dissociation and nausea were similar for both treatments. Read et al. (2020) reviewed the validity of 11 studies (n=1,430) across 5 meta-analyses comparing ECT to sham ETC, concluding that while ECT reduced depression severity, the overall quality of the studies was low, raising uncertainty about whether ECT is truly superior to sham ECT.

Anand et al. (2023) compared ketamine and ECT (RCT, n=403) and found ketamine to be similarly effective, with 55.4% of patients responding versus 41.2% for ECT. Ketamine caused fewer memory issues, while ECT led to memory decline. Both improved quality of life, though ECT caused musculoskeletal side effects, and ketamine caused dissociation. Rhee et al. (2022) reviewed 6 clinical trials (n=340) comparing ketamine and ECT for major depressive episodes, finding ECT more effective in reducing depression severity. Side effect profiles differed: ketamine caused fewer headaches and muscle pains, while ECT caused fewer vision issues and dissociative symptoms. Jha et al. (2024) conducted a secondary analysis of an RCT (n=365) examining clinical features influencing treatment response to ketamine versus ECT in nonpsychotic TRD, finding that ECT was more effective for moderate to severe depression, though its benefits were less significant for milder forms of depression.

Other studies have explored ECT's broader applications. Bai et al. (2021) studied modified ECT for refractory obsessive-compulsive disorder (OCD) (RCT, n=76), finding it more effective than medication alone, though with

increased near-memory impairment. Liu et al. (2024) compared dexmedetomidine (DEX) and ECT (RCT, n=76), finding DEX comparable to ECT in rapid antidepressant effects but with fewer cognitive side effects. Mutz et al. (2019) in a network metanalysis of 113 RCTs (n=6,750) on non-surgical brain stimulation therapies, it suggests ECT as one of the most effective treatments for major depressive episodes, although transcranial magnetic stimulation (repetitive rTMS) had fewer cognitive-related side effects. Pluijms et al. (2021) reviewed 9 studies (RCTs and cohort studies n=550) on adjuvant antidepressants with ECT, showing that combining antidepressants enhanced ECT's effectiveness for major depression.

Long-term efficacy and relapse prevention

The question of long-term efficacy in treating treatment-resistant depression (TRD) with ECT remains debated, particularly regarding relapse prevention in depression and sustained benefits.

Zhou et al. (2021) reviewed 36 RCTs (n=2,100) on non-pharmacological interventions for relapse prevention in treatment resistant depression, highlighting ECT as particularly effective, although psychotherapy was a viable alternative. Brus et al. (2024) conducted a long-term follow-up of a trial comparing maintenance electroconvulsive therapy (M-ECT) with medication alone in depression. They found that M-ECT's benefits were largely maintained over several years, though there is uncertainty due to small sample (n=56), and relapse patterns were similar after M-ECT ended.

Veraart et al. (2021) systematically reviewed 6 studies comparing ketamine and ECT for TRD, concluding that while ketamine produced faster antidepressant effects, ECT showed greater durability. Ketamine also had fewer cognitive side effects, but study quality varied due to risks of bias and small sample sizes. Blanken et al. (2024) conducted a network meta-analysis predicting ECT remission in major depressive disorder based on baseline symptoms. Their analysis across 2 RCTs (n=161) suggests that patients with suicidal ideation may have a worse treatment outcome, while those with psychomotor retardation and hypochondriasis may experience better outcomes with ECT.

Yoldi-Negrete et al. (2022) reviewed 9 studies on maintenance ECT, confirming its effectiveness in preventing relapse, though benefits were marginal compared to ongoing pharmacological treatments. Rowland et al. (2023) analysed 20 studies (RCTs and observational studies n=1,800) on continuation and maintenance ECT, supporting its role in reducing relapse rates without notable cognitive side effects. Further evidence comes from Dar et al. (2023), who reviewed 6 RCTs on ECT for relapse prevention in treatment resistant depression, showing that combining ECT with antidepressants significantly reduced recurrence risk compared to antidepressants alone, though ECT alone showed no significant advantage.

Jelovac et al. (2025) conducted a systematic review and meta-analysis of continuation electroconvulsive therapy combined with pharmacotherapy for depression relapse prevention. The meta-analysis included 4 RCTs (n=254) on adults diagnosed with a unipolar or bipolar major depressive episode, who met remission or response criteria after an acute course of ECT. No information was provided whether the patients in the RCTs were TRD or not. Patients were randomized to ECT with pharmacotherapy versus pharmacotherapy alone. The meta-analysis suggests ECT combined with pharmacotherapy significantly reduced relapse compared to pharmacotherapy alone. The quality of the included studies is mixed, with 2 studies rated as having some concerns and 2 studies rated as having a high risk of bias based on the Cochrane risk of bias tool 2.0. The authors highlight the need for larger multicenter trials to further optimize post-ECT prophylaxis.

Impact of new evidence on NICE guideline NG222 recommendations

- **Electroconvulsive therapy in the treatment of depression:** Recent studies reinforce the effectiveness of ECT in treating treatment-resistant depression (TRD), particularly for relapse prevention in treatment resistant depression and long-term benefits. Guo et al. (2024) and Yoldi-Negrete et al. (2022) confirm that ECT plays a key role in preventing relapse, aligning with NICE guideline NG222 recommendation to consider ECT when other treatments fail or a rapid response is required (Recommendation 1.13.1).

However, studies like Yang et al. (2024) highlight ECT's higher risk of memory impairment despite its effectiveness over ketamine, reinforcing NICE guideline NG222 (recommendation 1.13.2**)**. This stresses the need to fully inform patients about ECT's risks and benefits, including cognitive side effects, anaesthesia risks, medical conditions, and increased risks for older adults.

Further research, such as Graeff Saldanha et al. (2024) and Saelens et al. (2024), highlights ECT's high response rates, supporting its role as an effective last treatment option.

- **Long-term efficacy and relapse prevention:** Jha et al. (2024)'s study also supports NG222's guidance on considering the adequacy of previous ECT courses before deciding on a repeat trial, while Dar et al. (2023) and Jelovac et al. (2025) demonstrate that combining ECT with antidepressants significantly reduces relapse risk, aligning with NG222's recommendation to repeat treatment post-ECT (recommendation 1.13.5) if people have responded well to ECT previously.

Ongoing studies

No major ongoing UK-based studies were identified. However, a protocol for a Cochrane review of electroconvulsive therapy for depression was found, along with several small RCT protocols.

Budget impact/Economic considerations

There is a health economic model in TA59 for schizophrenia based on a review of published evidence. They were not able to construct robust models for mania and catatonia because of the low volume of data in these areas. The results of the schizophrenia model suggest that ECT is dominated by clozapine – that is, ECT is associated with fewer QALYs (0.842 versus 0.863) at a higher cost (£55,267 versus £34,787). For individuals who do not respond to clozapine, ECT dominates chlorpromazine/haloperidol, resulting in more QALYs (0.842 versus 0.820) at a lower cost (£55,267 versus £58,265). However, these results do not take into account the degree of uncertainty in the estimates of both cost and effectiveness.

In NICE guideline NG222, 2 economic studies were reviewed. One study found that ECT combined with SSRIs (selective serotonin reuptake inhibitors) and lithium augmentation was the most cost-effective treatment for major depressive disorder. The other assessed ECT for treatment-resistant depression but lacked comparative data and evidence synthesis, limiting its relevance for decision-making.

System impact

In the UK, ECT is delivered in hospital settings and requires specialised equipment along with a multidisciplinary team, including psychiatrists, anaesthetists, and nursing staff. However, significant workforce challenges are threatening service delivery. The Royal College of Psychiatrists, in its 2023 call for urgent publication of the NHS Workforce Plan, highlighted a 15% shortfall in consultant psychiatrists across England, with only a 5.8% increase in numbers over the past decade. Similarly, the State of the Nation 2024 report points to a severe shortage of anaesthetists, which is limiting the NHS's capacity to reduce patient waiting lists, with the UK lagging behind other European countries in anaesthetic staffing levels. These shortages may directly impact the provision of ECT services, while broader funding constraints within the publicly funded healthcare system further restrict access and equity. ECT is a resource-intensive intervention, but it remains a crucial treatment option for certain severe mental health conditions, offering rapid relief when other options fail.

Public Health Scotland's audit of SEAN data (June to December 2023) reported that 60% of ECT episodes were completed as planned. Among patients, 53% were able to consent, with most being women aged 60+. Severe depression was the most common diagnosis (68%).

Population impact

According to a press release from the Royal College of Psychiatrists in December 2023, 1,835 adults received electroconvulsive therapy in 2021 across England, Wales, and Ireland. The report indicated that these patients received acute ECT across 85 mental health clinics during that period. This

data came from the ECTAS dataset report (from 1st January to 31st December 2021), one of the most comprehensive ECT datasets globally.

According to the Office for National Statistics (ONS) report for mental health, around 21% of adults in Great Britain reported experiencing depression in autumn 2022. Schizophrenia has a lifetime prevalence of approximately 0.3% to 0.7% in the UK, while bipolar disorder affects around 1% to 2% of the population, equating to roughly 1.3 million people. Prevalence data for catatonia is limited, as it typically occurs alongside other mental health conditions.

Health inequalities

No specific relevant data on ECT was found, but health inequalities in accessing mental health treatments remain a concern in the UK. Factors such as geographical variations, socioeconomic status, and stigma can limit access. The workforce shortage reported by the Royal College of Psychiatrists (see the 'System Impact' heading above) may affect ECT delivery while funding limitations could restrict access and equity.

Overall impact of new evidence and intelligence

The new evidence identified supports and aligns with current recommendations on the use of ECT in people with depression and prolonged mania. The evidence confirms ECT's effectiveness especially in treatment-resistant populations. However, concerns about cognitive side effects, such as memory impairment, highlight the importance of careful patient information and risk-benefit assessment before proceeding with treatment, especially for repeat ECT. Overall, new evidence identified support the use of ECT in people with treatment resistant depression and people with prolonged mania as the last treatment option where other treatments have failed.

For schizophrenia, more new evidence have been identified to allow more specific positive or negative recommendations to be made for specific subgroups, for example, for severe treatment-resistant cases.

For catatonia, studies confirm ECT's effectiveness for rapid symptom relief in treatment-resistant cases, aligning with TA59 recommendations. Maintenance ECT remains uncertain in terms of long-term benefits, supporting the guideline's cautious approach.

Systemic challenges, including workforce shortages and funding limitations, could impact the delivery and equitable access to ECT. Public Health Scotland's audit (2023) shows that while ECT is effective for many, access remains limited.

Overall proposal

We propose that TA59 is withdrawn and recommendations for the use of ECT are moved to the relevant condition guidelines as was done for the recommendations on ECT use in depression (NG222).

- New evidence indicates that the recommendations in TA59 on the use of ECT in schizophrenia could be updated in guideline CG178.
- New evidence supports the existing recommendations in TA59 for bipolar disease. The recommendations will be incorporated in guideline CG185.
- New evidence supports the existing recommendations in TA59 for catatonia. The recommendations will be withdrawn. We are aware of ongoing work at Royal College of Physiatrists and will work with the College to ensure that advice on the use of ECT for catatonia is provided to the system.

We propose not to update recommendations on the use of ECT in Antenatal and postnatal mental health: Clinical management and service guidance (CG192), as new evidence supports the existing recommendations.