RC PSYCH
ROYAL COLLEGE OF PSYCHIATRISTS

ECTAS
ELECTROCONVULSIVE THERAPY ACCREDITATION SERVICE

ECTAS

Dataset report

01 January 2021 – 31 December 2021

CONTENTS

EXECUTIVE SUMMARY

Responses

85

clinics submitted data

71

healthcare providers

2158

submissions were received

1,989

acute courses

62

continuation courses

107

maintenance courses

Responses were received from **85** out of 93 full member clinics, representing a clinic response rate of **91%**. Eight clinics did not provide data: one clinic does not participate in the review process; one team were not administering ECT at the time of data collection; one clinic joined in 2021 and were beginning the review process; one clinic had issues with the link/access to submit data; and two clinics had low staffing/capacity issues in order to submit data. Some of these clinics were accredited against the previous edition of standards and so were not required under a type 1 standard to submit data. Data were submitted for **1,989** acute courses of ECT, provided to **1,835** individual patients, **62** continuation courses, provided to **60** patients, and **107** maintenance courses, provided to **107** patients.

Results

Most acute courses (at least **84%**) were given to treat depressive episodes. Much smaller numbers of patients were treated for schizophrenia, or manic or mixed affective episodes. Catatonia was part of the presentation in 14% of cases and was invariably caused by one of the aforementioned disorders.

The most common reasons for using ECT were a lack of response to other treatments (**82%** of courses) and a requirement for a rapidly acting treatment (**48%** of courses). Of the patients who lacked the mental capacity to consent to ECT at the beginning of treatment, **32%** had regained capacity by the time of their final ECT treatment.

Following acute treatment, **90%** improved to some degree, with **68%** 'much improved' or 'very much improved' on the Clinical Global Impression Scale. Highly statistically significant reductions in mean scores on all clinician-rated symptom scales were seen, with an average drop of 23.1 points on the most commonly used assessment, the Montgomery-Åsberg Depression Rating Scale. Furthermore, **60%** of patients treated for depressive episode exhibited response (i.e., a 50% reduction in score) to ECT, with **41%** reaching remission. Older people, females and those without mental capacity had higher rates of response and remission.

Objective cognitive scores slightly improved during acute courses of ECT, with a highly statistically significant mean increase of 1.8 points on the Mini-Mental State Examination, the most commonly used assessment. These improvements were negligible (1.0 point) for patients with no or mild cognitive impairment prior to commencing ECT (baseline MMSE over 22), but clinically significant (6.0 points) in those with pre-existing deficits (baseline MMSE under 23). In terms of subjective memory functioning, in **10%** of cases patients felt their memory had worsened after an ECT course, in **14%** it had improved and in the remaining **76%** it remained stable.

Continuation ECT followed about **3%** of acute courses. Maintenance ECT was rarely used, with just over **one** patient per clinic on average receiving it. Findings from this dataset suggest cognitive functioning is not diminished by continuation or maintenance ECT.

Recommendations

For clinics

- Twelve treatments must not be considered a 'standard course'; patients must be reviewed frequently, and treatment plans must be individualised according to response.
- Whilst balancing the needs of individual patients who have shown a steady response to acute ECT, twice-weekly treatments should generally be continued until remission from symptoms has been achieved or there is a clear plateauing of therapeutic effect.
- ECT Lead Clinicians should ensure the education of their referring colleagues on these and other ECT-related matters is continuous.
- Due to the nature of data analysis, it is recommended that the original 17-item version of the Hamilton Depression Rating Scale (HAM-D17, Appendix 4) is adopted universally by clinics for use when treating patients for depressive episode from 1 January 2023.
- Patients assessed at the beginning of an ECT course using an alternative scale should be re-assessed using that same scale at the end of that course of treatment.
- ECTAS recommends use of the Young Mania Rating Scale (YMRS) and the Brief Psychiatric Rating Scale (BPRS) in patients being treated for manic episode and schizophrenia respectively.

For ECTAS

- ECTAS should encourage all clinics to return data. This should include regular communication with individual clinics on the number of responses as well as how to use the system.
- As part of its accreditation process, ECTAS continues to support clinics to have systems in place locally for specific information to be adequately recorded.
- ECTAS should give clinics access to their dashboards (the data collected for each clinic) to ensure complete data collection and avoid duplicate entries.
- The data collection process needs to allow for clinics to state when a particular task has not, in reality, been completed, such that the data used in analysis are accurate and reliable. This should also enable any systemic inability by a specific clinic to provide certain types of data on their patients to be easily identified and raised during that clinic's next accreditation cycle.
- Training and guidance in the use of HAMD-17 should be provided by ECTAS as required.

INTRODUCTION

The Electroconvulsive Therapy Accreditation Service (ECTAS) was established in 2003 to improve standards of practice in electroconvulsive therapy (ECT) services in England, Northern Ireland, Wales, and the Republic of Ireland, and to award accreditation to clinics that perform well against the standards. ECTAS is one of around 30 quality networks, accreditation and audit programmes organised by the Royal College of Psychiatrists' College Centre for Quality Improvement (CCQI).

ECTAS is a voluntary network which uses a system of self- and peer-review to improve the quality of services, using standards agreed by the network. In this way ECTAS seeks, over time, to support members to raise standards.

ECTAS does not provide regulation of ECT in the UK; this is the responsibility of the Care Quality Commission in England, the Healthcare Inspectorate Wales in Wales, Healthcare Improvement Scotland in Scotland and the Regulation and Quality Improvement Authority in Northern Ireland.

ECTAS has member ECT clinics in England, Northern Ireland, Wales, and the Republic of Ireland. ECTAS does not collect data from ECT clinics in Scotland; these data are instead collected through the Scottish ECT Accreditation Network (SEAN). As of October 2022, 93 clinics were full members of ECTAS: 76 in England, five in Northern Ireland, five in Wales and seven in the Republic of Ireland. There is one clinic in Scotland which has joined under the affiliate member scheme; they do not provide data to the ECTAS dataset.

THIS REPORT

Methodology

From February 2021, ECTAS mandated clinics to submit outcome data, making this essential for clinics to achieve accreditation (Standards for the Administration of ECT, 15th Ed., originally published in March 2020). In previous years, the submission of data to the ECTAS dataset had been optional.

The data collected included patients completing an acute, continuation or maintenance course of ECT in the twelve months between 1 January 2021 and 31 December 2021. This calendar year timeframe is new and differs from previous annual dataset reports, for which data collection was for the 12-month period of April to March or, in the case of the 2020 dataset, for a period of just nine months (April to December).

The 2021 data collection period coincided with the ongoing COVID-19 pandemic. Across the UK and the Republic of Ireland, some of the various restrictions to ECT services that had been imposed at the outset of the pandemic in 2020 had been lifted by the beginning of 2021. However, other restrictions remained in place, with some temporary clinic closures having effectively become permanent.

Each ECTAS member clinic received an individual weblink to submit data via an online platform, through which responses could be mapped to the corresponding clinic. This was designed to reduce potential human error with clinic names compared to 2020 where all clinics were provided with the same link and asked to input a unique code.

The completed raw data were reviewed by clinicians at ECTAS. Inconsistencies, duplicate responses and potentially inaccurate information were highlighted and queries sent to the relevant ECT clinic for clarification. Data were then revised, if necessary, before analysis was performed. Acute courses of ECT for which the initial score on a symptom rating scale had been entered as 0, indicating no symptoms at all, were not included in the analysis. Scores of 0 at the end of treatment, or at the beginning of continuation or maintenance courses, were queried with the relevant clinic to ascertain whether the score was indeed accurate or the scale had not been completed. Similarly, courses for which an objective cognitive assessment score of 0 was entered, either before or after treatment, were excluded from the analysis. Further details on data cleaning for each part of the analysis can be found throughout this report.

2021 data collection tool

It was identified that an updated data collection tool was needed to support a more accurate dataset. As a result, the 2021 data collection tool differs significantly from the format used in previous years.

The 2021 dataset saw the inclusion of new questions covering the following topics:

- Electrode placement
- Pulse width
- Stimulus dosing method
- Urgent treatment authorisation
- Subjective memory functioning (using the Comprehensive Psychopathological Rating Scale item 17).

Additionally, for the first time in an ECTAS data collection tool, continuation ECT has been distinguished from maintenance ECT, in keeping with recognised scientific practice (Petrides et al, 2011). These terms are defined in the 'Definitions' section below. Similarly, categories of medical diagnoses were updated to correspond with the International Classification of Diseases (ICD).

The full list of questions contained in the online data collection tool can be found in Appendix 2.

Limitations

As stated above, all clinics are now mandated to submit data, whilst the online collection data tool demands that all questions are completed for each patient. These factors have presented challenges in the submission of data and its interpretation. It is apparent that there are items of information that have not, in practice, been collected or measured, but data submitted nonetheless. As an example, if a rating scale measurement had not been completed for an individual patient, the clinician submitting data may have entered a "0" in the online form. This would present difficulties at the data analysis stage as it is unclear whether the score is genuine, or the test has simply not been completed. For this report, it has been assumed that a score of "0" on a rating scale means that the test was not carried out, unless there was other evidence to support the result, such as direct post-submission clarification by the clinic in question.

Additionally, although member clinics were given prior notice that data submission would become mandatory in 2021, staff will have had little time to get used to routinely using the various scales necessary, and accurately recording these measurements. Furthermore, it is the norm for ECT clinics to rely on referring clinicians and their teams to complete such rating scales and cognitive assessments. Either way, it is recognised that many of these clinicians will have had

little, if any, formal training in their use. There may be a lack of knowledge amongst clinicians of the variations between different versions of tests with very similar titles, rendering some data difficult to interpret.

For these reasons, some of the results of the 2021 dataset should be interpreted with a degree of caution. As a consequence of the preparation of this dataset report, ECTAS intends to disseminate information nationally with the aim of improving future data collection, such that its reports on ECT practice and outcomes in the years to come will contain more reliable data. It should be noted, however, that data collection for what will form the 2022 dataset report is now complete, and that improvements may not be immediate.

Lastly, the ECTAS member clinic response rate was 89%. Whilst this means the data cannot be considered entirely comprehensive, there is no evidence to suggest that the findings are not representative. This was a large increase from 2020, for which 52 clinics submitted data, and for 2016/17, when 71 clinics (74% of ECTAS member clinics) took part. There were various reasons for eight member clinics not providing data. These included only having joined the network in mid-2021, not having treated any patients during 2021, and having last been peer-reviewed using the previous edition of quality standards, such that mandatory submission of data had not yet become applicable to those services.

Definitions

For the purpose of this report, an acute course of ECT is defined as a series of individual ECT treatments, usually given twice weekly, to relieve the symptoms of a diagnosed mental illness, typically depressive episode, manic episode, the syndrome of catatonia or, less frequently, schizoaffective disorder and schizophrenia.

Continuation ECT (cECT) is defined as ECT that begins after an acute course, typically delivered at intervals of one week or more, for a period of up to six months, that is used to prevent a relapse of the episode of illness.

Maintenance ECT (mECT) is defined as ECT that begins after a continuation course, typically delivered at longer intervals, that is used to prevent a recurrence of the illness. mECT can continue for an indefinite period, but for the purpose of data collection, ECT clinics were asked to submit data annually on patients who had been receiving mECT for a continuous period of more than one year.

ACUTE COURSES OF ECT

1,989

submissions

Numbers of courses and patients

Data were submitted for **1,989** acute courses of ECT, provided to **1,835** individual patients. **145** patients had more than one acute course of ECT that ended during the 12-month data collection period. Of these, seven patients had three courses and one had four courses.

Age

The mean age of patients receiving acute courses of ECT was **62.1 years** (standard deviation (SD) = 16.1 years), with a range of **17 – 93** years. This is a slightly younger mean than that for patients receiving maintenance treatment (**66.7 years** (SD = 13.5, range **17 – 93 years**)). Age data were not submitted for 10 patients. Figure 1 plots the distribution of patients by age, whilst Figure 2 shows this distribution has remained constant over the past decade.

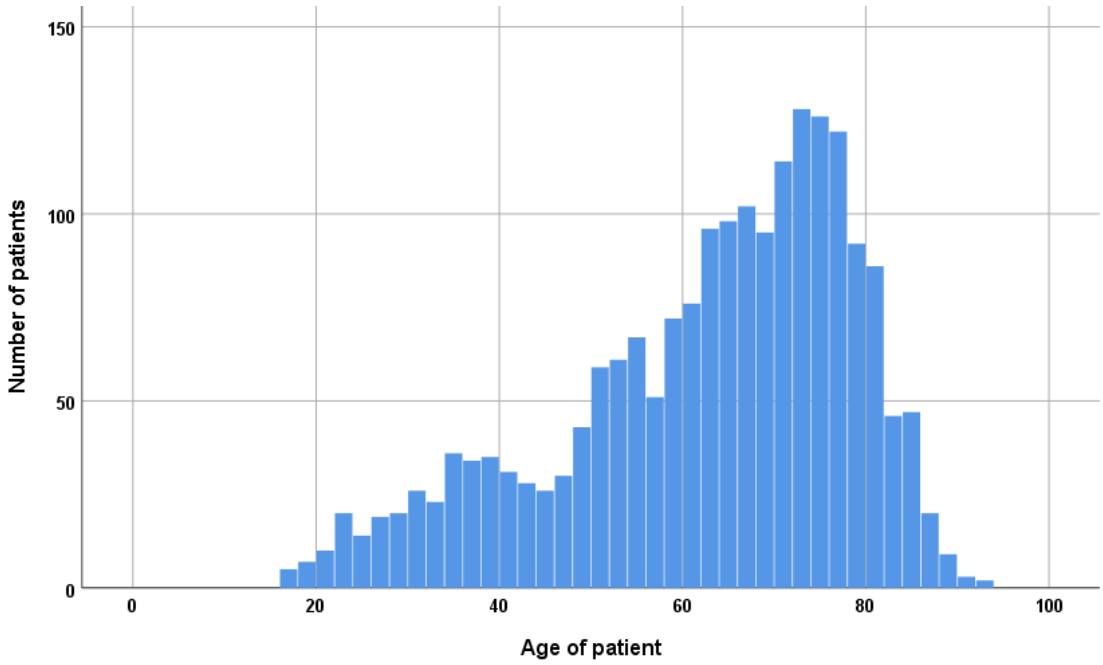

Figure 1: Age distribution for acute courses of ECT. Ages are at the first treatment in the acute ECT course completed by each individual patient during 2021.

Female patients were on average 1.2 years older than male patients, possibly reflecting their higher longevity, although this difference did not reach statistical significance (62.5 vs 61.3 years, 95% confidence interval (CI) = -2.7 – 0.32).

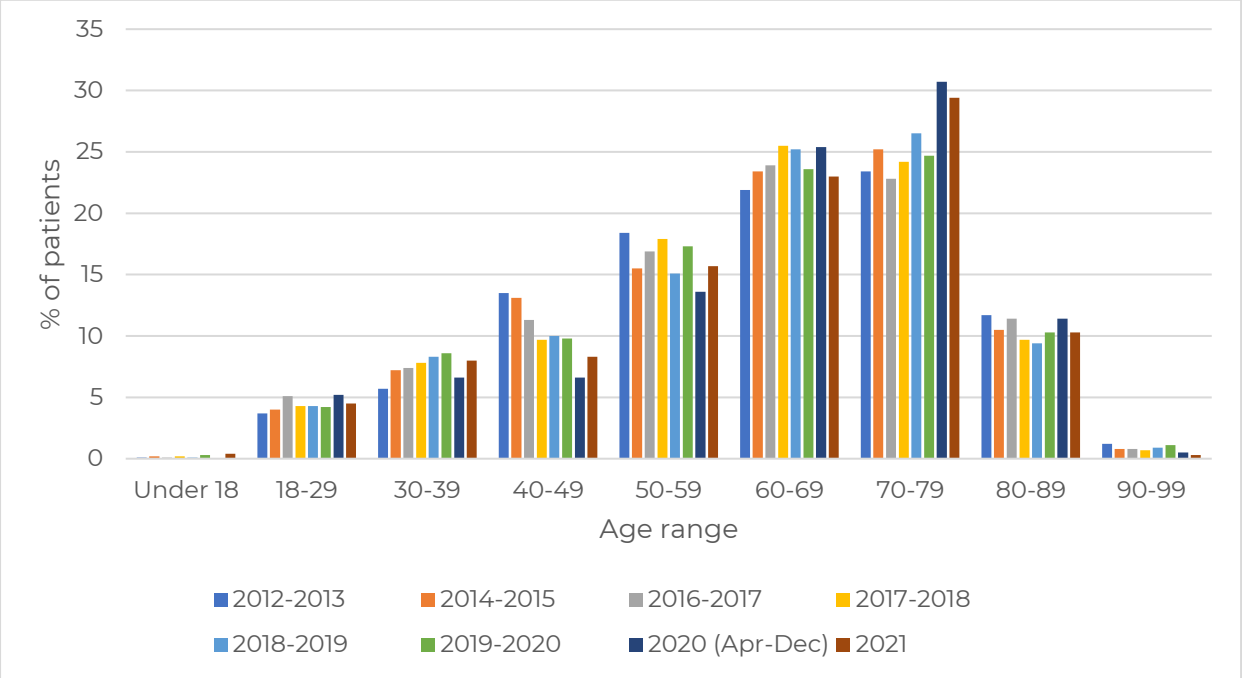

Figure 2: Age range distribution compared to previous years for an acute course of ECT.

Gender

Of the people who received an acute course of ECT, 1230 (**67.0%**) were reported as female, 603 (**32.9%**) as male and one (**0.1%**) as transgender male. One patient's gender was not recorded. Patients receiving more than one acute course have been counted only once for this analysis. Table 1 shows this 2:1 ratio has remained stable over the past decade. The ratio reflects the well-documented near 2:1 ratio in the prevalence of depressive disorder in females and males across the world (Salk et al, 2017), whilst the proportion of females is very similar to that reported in other countries where ECT is used primarily to treat depressive disorder: e.g., 64.3% in Canada (Kaster et al, 2021) and 73.1% in Norway (Borza et al, 2015).

Year	Proportion female (%)
2012/13	66
2014/15	65
2016/17	66
2017/18	66
2020	65
2021	67

Table 1: Proportion of patients having one or more acute course of ECT who are female.

Diagnostic indication

For the vast majority of acute courses, **83.9%**, the patient was treated for depressive episode. Less common indications included mixed affective episode, manic episode, and schizophrenia. Additionally, although the syndrome of catatonia is usually caused by one of the aforementioned illnesses, a small number of patients were treated for catatonia of another or unknown cause. Presenting diagnostic indications are listed in Table 2. Further analysis of specific diagnostic and syndromic categories (affective disorder, catatonia, and psychosis) is presented in Table 3.

Within the "other" category, 14 courses were given for “schizoaffective disorder” (in addition to the 76 courses given for this indication listed under one of the three types of affective episode), 12 for "psychotic depression", four for "postnatal depression", two for “treatment resistant depression”, two for "bipolar disorder", two for obsessive compulsive disorder, one for "agitated depression", one for “post-traumatic stress disorder”, and several cases with depressive presentations secondary to other conditions. Clearly, most of these cases should have been categorised under one of the diagnostic indications listed in Table 2. For subsequent analysis of this dataset, the cases in the "other” category have been re-categorised accordingly, where possible, leaving only 13 cases in the “other” category. As a result, the numbers given in the analyses below, such as the age analysis in Table 4, differ from those shown in Tables 2 and 3.

Diagnostic indication for ECT	No. of courses	% of courses
Depressive episode:	1668	83.9%
First affective episode	288	17.3%
Recurrent depressive disorder	1255	75.2%
Bipolar affective disorder	92	5.5%
Schizoaffective disorder	33	2.0%
With catatonic symptoms	188	11.3%
Without catatonic symptoms	1480	88.7%
With psychotic symptoms	549	32.9%
Without psychotic symptoms	1119	67.1%
Mixed affective episode:	93	4.7%
First affective episode	21	22.6%
Bipolar affective disorder	36	38.7%
Schizoaffective disorder	36	38.7%
With catatonic symptoms	15	16.1%
Without catatonic symptoms	78	83.9%
With psychotic symptoms	54	58.1%
Without psychotic symptoms	39	41.9%
Manic episode:	32	1.6%
First affective episode	2	6.2%
Bipolar affective disorder	23	71.9%
Schizoaffective disorder	7	21.9%
With catatonic symptoms	1	3.1%
Without catatonic symptoms	31	96.9%
With psychotic symptoms	25	78.1%
Without psychotic symptoms	7	21.9%
Schizophrenia:	84	4.2%
First episode	14	16.7%
Recurrent or chronic	70	83.3%
With catatonic symptoms	20	23.8%
Without catatonic symptoms	64	76.2%
With psychotic symptoms	66	78.6%
Without psychotic symptoms	18	21.4%
Catatonia of another or unknown cause	51	2.6%
Other	60	3.0%

Table 2: Diagnostic indications for all acute courses of ECT. n=1988, due to missing data in one case.

Clinical feature	No. of courses	% of courses
Affective disorder:	1793	90.2%
First episode	311	17.3%
Recurrent depressive disorder	1255	70.0%
Bipolar affective disorder	151	8.4%
Schizoaffective disorder	76	4.2%
Catatonia, caused by:	275	13.8%
Depressive episode	188	68.4%
Mixed affective episode	15	5.5%
Manic episode	1	0.4%
Schizophrenia	20	7.3%
Other / unknown cause	51	18.5%
Psychosis, caused by:	712	35.8%
Depressive episode	549	77.1%
Mixed affective episode	54	7.6%
Manic episode	25	3.5%
Schizophrenia	84	11.8%

Table 3: Further analysis of diagnostic and syndromic data for acute courses of ECT. n=1988 due to missing data in one case. Main category headings are not mutually exclusive.

Patients presenting with depressive episodes were, on average, around 13 to 18 years older than those with other diagnoses, as shown in Table 4. The differences in mean age between those treated for depressive episode and each of the other diagnoses were highly statistically significant.

Diagnostic indication	n	Mean age	SD	p value
Depressive episode	1700	63.9	15.0	–
Mixed affective episode	93	56.9	16.8	1.8×10^{-5}
Manic episode	33	47.9	18.3	2×10^{-9}
Schizophrenia	97	48.1	16.9	6×10^{-23}
Catatonia of another or unknown cause	38	46.5	21.7	3×10^{-12}
Other	13	44.5	19.3	3×10^{-6}

Table 4: Mean age of patients for all acute courses of ECT stratified by diagnostic indication. n=1961, due to courses having missing diagnostic or age data. p values relate to the mean age for each diagnostic indication, compared to the mean age for depressive episode. SD, standard deviation.

Reason for using ECT

Respondents were asked to list the reason for using ECT. They were presented with a drop-down menu with nine options, with multiple responses possible, including an "other" option, for which further information was requested. The results from all 1989 acute courses are detailed in Table 5.

Other free-text responses included “family keen [they] would get well quickly and go home”, “severe psychomotor agitation”, “fear of becoming catatonic”, “good response to previous ECT” and “required ventilation on intensive care”.

Reason for using ECT	No. of courses	% of courses
Rapid response required, due to:	944	47.5
Severe self-neglect	579	29.1
Poor oral intake	627	31.5
Risk of suicide	216	10.9
Protection of others	54	2.7
Distressing symptoms	526	26.4
Drug and/or psychotherapeutic treatment resistance	1622	81.5
Poor concordance with drug treatment	311	15.6
Co-morbidities make drug treatment less desirable	39	2.0
Pregnancy makes drug treatment less desirable	3	0.2
Breastfeeding makes drug treatment less desirable	1	0.1
Patient choice	332	16.7
Carer choice	110	5.5

Table 5: Reason for referral for an acute course of ECT. n = 1989. Patients receiving two or more acute courses represented more than once. Multiple responses were allowed for each course of treatment.

Legal status

For each acute course of ECT, clinics were asked to specify the patient's legal status at the commencement and end of treatment. Firstly, respondents were asked to specify whether the patient was informal or detained in hospital under formal legislation (namely, the Mental Health Act 1983 in England and Wales, the Mental Health (Northern Ireland) Order 1986 in Northern Ireland and the Mental Health Act 2001 in the Republic of Ireland) and, secondly, whether the patient had the mental capacity to consent to treatment with ECT. If the patient was detained, respondents were asked whether an urgent treatment authorisation (such as Section 62 in England and Wales) was used to initiate treatment. The results are shown in Table 6 and Figure 3 below and include all 1,989 acute courses, rather than individual patients, some of whom had differing situations during multiple courses in the calendar year.

Legal Status	Start of ECT course n	Start of ECT course %	End of ECT course n	End of ECT course %
Informal	843	42.4	953	47.9
With mental capacity	811	40.8	934	47.0
Without mental capacity	32	1.6	19	1.0
Detained	1133	57.0	1021	51.3
With mental capacity	115	5.8	309	15.5
Without mental capacity	1018	51.2	712	35.8
ECT started under urgent authorisation	463	23.3	-	-
ECT not started under urgent authorisation	670	33.7	-	-
Not specified	13	0.7	15	0.8

Table 6: **Detention status and mental capacity of patients at the beginning and end of acute courses of ECT.** n=1989. Patients receiving two or more acute courses are represented more than once.

It should be noted that 'end of treatment' relates to the detention status and mental capacity at the time of delivery of the last ECT treatment, rather than following it. Of the 1,050 patients who lacked mental capacity at the beginning of treatment (32 informal and 1,018 detained), 334 (**31.8%**) had regained capacity by the time of their final ECT. Of the 926 patients who were judged to have capacity at the start of treatment, only 15 (**1.6%**) had lost capacity by the end of the course.

It is assumed that the 32 patients who were informal but lacking in mental capacity were treated under mental capacity legislation in the relevant jurisdiction (e.g., the

Mental Capacity Act 2005 in England and Wales), although this information was not specifically collected. The data in Table 6 confirm that, when a person might require ECT but lacks the mental capacity to consent to it, it is invariably mental health legislation (e.g., the Mental Health Act 1983 in England and Wales) that is used to seek legal authorisation of the treatment, even if he or she is not objecting to it. This is presumably because that legislation contains provisions that relate specifically to ECT, including important safeguards for the patient and conditions that must be met before treatment can be given. There are, however, unusual situations in which such a person, who is lacking capacity but not objecting to the treatment, might instead be treated, in their best interests, under more generalised mental capacity legislation. In England and Wales, these might include:

- objection by the Nearest Relative to formal detention in hospital, despite their agreement with the treatment itself
- reluctance of an Approved Mental Health Professional to apply for detention in hospital when the patient has the mental capacity to make the less complex decision to be admitted to hospital and has opted to accept this
- treatment being given as an outpatient with no requirement for an overnight stay in hospital.

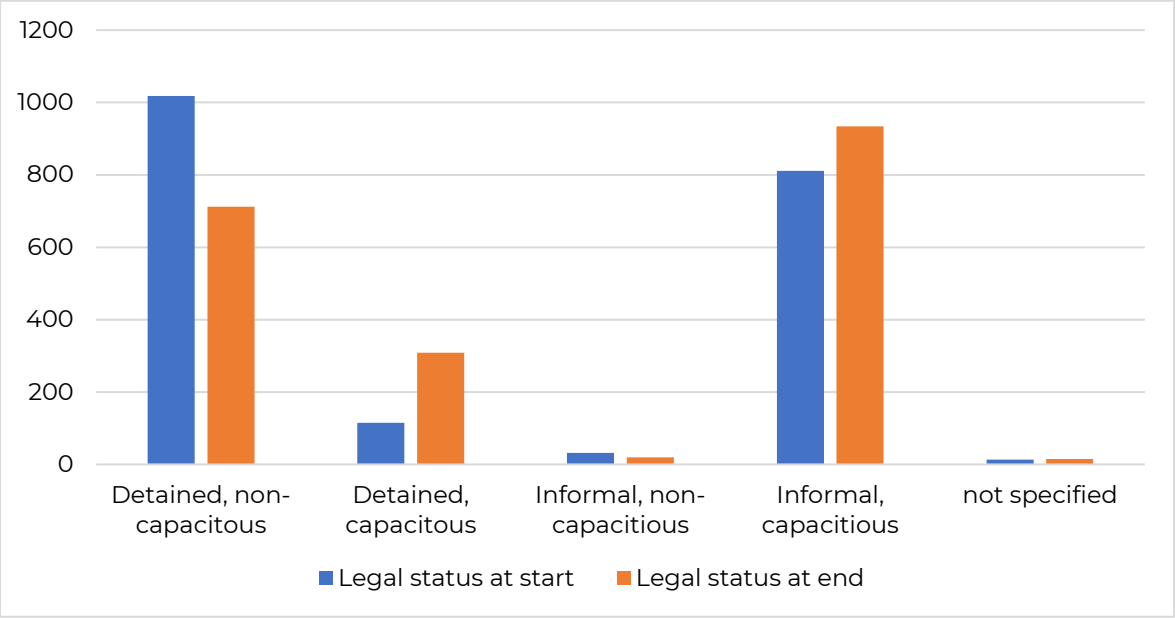

Figure 3: **Detention status and mental capacity of patients at the beginning and end of acute courses of ECT.** n=1989.

Figure 4 shows that the proportion of patients detained at the initiation of treatment (**57%**) remains higher than in most previous years, although is a little lower than for 2020, during which emergency treatments for more severely unwell patients were prioritised during the early stages of the COVID-19 pandemic (Braithwaite et al, 2022). Disregarding these 2020 data as a temporary effect of the

pandemic, the residual steady increase in the proportion of patients that are formally detained may reflect increasingly better practice around assessing mental capacity, with a greater tendency to correctly invoke formal powers (which bring with them important safeguards for the patient) when a patient is *assenting* to treatment but, in fact, lacks the mental capacity to give informed *consent* to it.

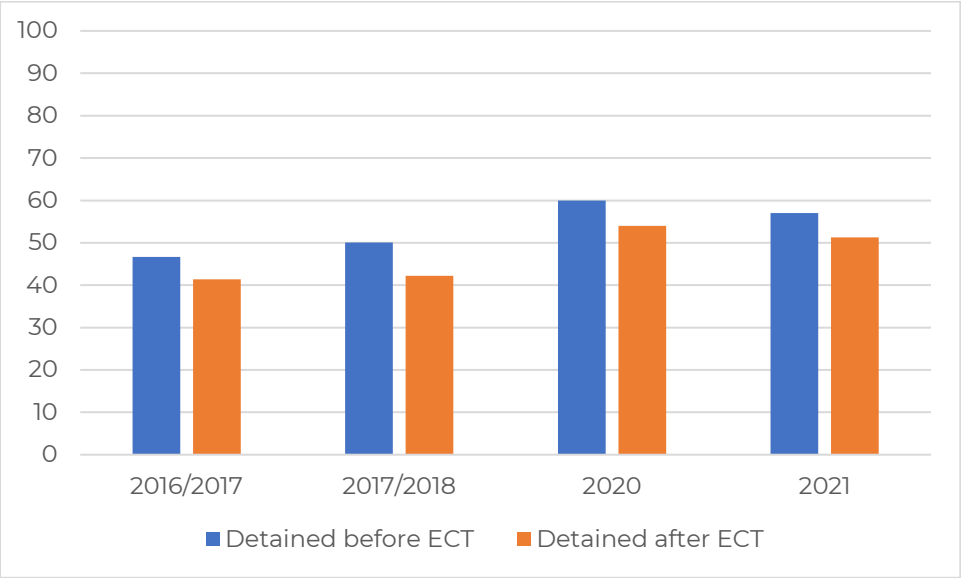

Figure 4: Percentage of patients formally detained, at the beginning and end of an acute course of ECT, by year.

Number of treatments

Respondents were asked to record the number of treatments the patient received during each acute course. The mean was **10.1** (SD = 4.5) and the mode **12,** with a range of **1 to 35**. One hundred and twenty-two (**6.3%**) courses were of three treatments or fewer; 115 (**6.0%**) courses were of 18 treatments or more. Forty-seven courses (**2.4%**) had data missing for the number of treatments.

The perennial finding that the most frequently occurring duration (mode) of an acute course is 12 sessions, as shown in Figure 5, is not reflective of any specific therapeutic effect of that number of treatments. More likely it relates to cultural and legal arrangements around referring for, consenting to, and authorising ECT in the British Isles. ECTAS standards include that referring doctors review patients frequently and encourages referring teams bring acute courses to an end as soon as symptoms have resolved, without undue regard to the number of treatments given by that point.

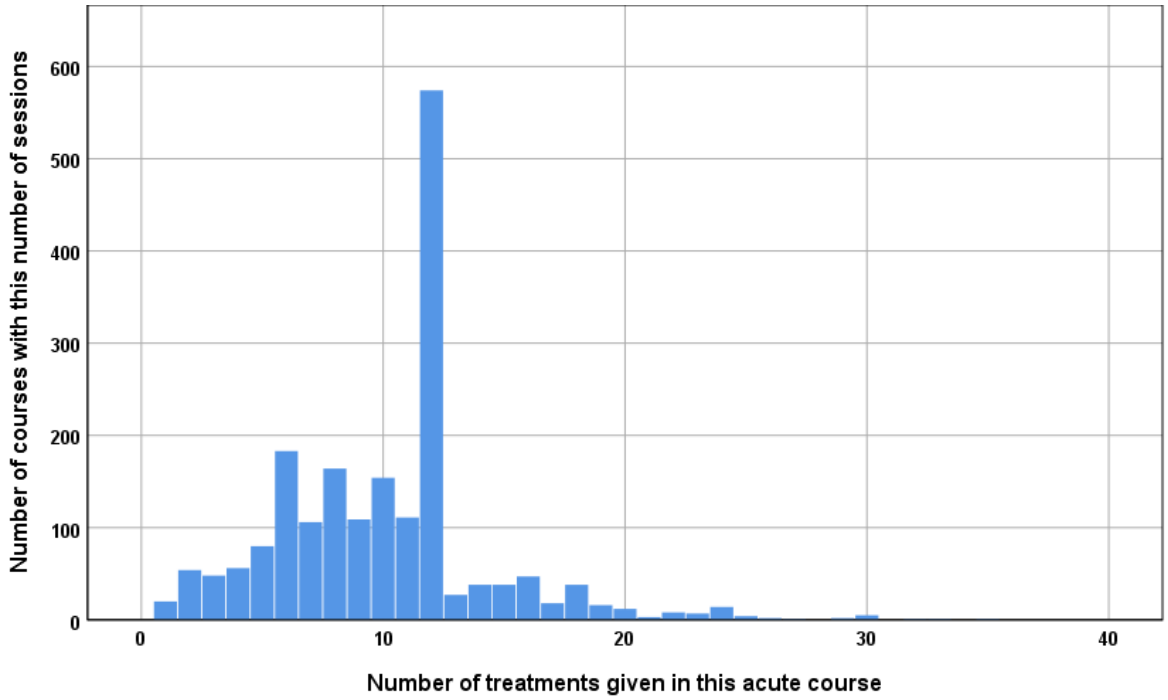

Figure 5: Number of treatments in each acute ECT. n=1942 due to missing data for 47 courses.

Patient outcomes

Clinical Global Impression

In order to assess patients' response to treatment, clinics were asked to use the Clinical Global Impression Scale - Severity (CGI-S) to rate each patient's clinical status prior to the start of treatment, and the Clinical Global Impression Scale - Improvement (CGI-I) at the end of the course.

As shown in Table 7, **79.3%** of patients in the recorded courses were rated as 'markedly ill' or worse at the start of treatment. The proportion showing improvement was **90.1%**, with **68.4%** 'much improved' or 'very much improved' by the end of treatment.

CGI-S score before treatment	n	%	CGI-I score after treatment	n	%
7 - Amongst the most severely ill	236	11.9%	7 - Very much worse	1	0.1%
6 - Severely ill	715	35.9%	6 - Much worse	4	0.2%
5 - Markedly ill	627	31.5%	5 - Minimally worse	12	0.6%
4 - Moderately ill	328	16.5%	4 - No change	164	8.2%
3 - Mildly ill	53	2.7%	3 - Minimally improved	431	21.7%
2 - Borderline mentally ill	12	0.6%	2 - Much improved	865	43.5%
1 - Normal, not at all ill	2	0.1%	1 - Very much improved	496	24.9%
Not recorded	16	0.8%	Not recorded	16	0.8%

Table 7: Distribution of CGI-S scores before starting ECT and CGI-I scores at the end of the acute course of ECT. Data include all diagnostic indications and all 1989 acute courses. CGI-S, Clinical Global Impression (Severity) scale; CGI-I, Clinical Global Impression (Improvement) scale.

Patients having treatment for conditions other than depressive episode tended to have more severe illnesses than those with depressive episode. There were very slightly lower rates of improvement in patients with schizophrenia and "other" diagnoses, although for all indications, **68.4%** of patients were 'much improved' or 'very much improved'. These data are shown in Table 8.

Diagnostic indication	n	% of patients rated 'markedly ill' or worse on CGI-S before ECT	% of patients rated 'much improved' or better on CGI-I after ECT
Depressive episode	1699	78.4	69.6
Mixed affective episode	94	88.3	68.1
Manic episode	32	90.6	71.9
Schizophrenia	97	89.7	61.9
Catatonia of other/unknown cause	38	89.5	63.2
Other	13	100%	61.5

Table 8: Summary of CGI-S and CGI-I findings before and after acute courses of ECT according to diagnostic indication. n=1973, due to 16 patients having missing data. CGI-S, Clinical Global Impression (Severity) scale; CGI-I, Clinical Global Impression (Improvement) scale.

Table 9 shows the degree of improvement according to the most common reasons for referral for ECT. The outcomes in each group are very similar.

Reason for referral	Patients, n	Mean CGI-I score after ECT
Rapid response required	940	2.1
Treatment resistance	1616	2.2
Poor concordance with drug treatment	310	2.2
Patient choice	330	2.0

Table 9: **Mean CGI-I scores after an acute course of ECT, according to the reason for referral.** Only the most common reasons for referral are shown. Many patients had more than one reason for referral stated. CGI-I, Clinical Global Impression (Improvement) scale.

The degree of improvement seen in patients who lacked the mental capacity to consent to ECT at the outset of their course (n = 1050, mean CGI-I score 2.1, standard deviation (SD) = 0.92) was similar to that seen in patients who had capacity (n = 923, mean CGI-I score 2.2, SD = 0.96, difference not significant).

Table 10 and Figure 6 show the improvement rate on the CGI-I, stratified by the number of treatments given. These data show that clinical improvement tends to be more pronounced with longer acute courses of ECT. Very short courses (of four or fewer treatments) tended to bring about less improvement than those lasting five sessions or more. Beyond five sessions, outcomes remain about the same with increasing duration of treatment. This suggests that many patients need far more

than five sessions to reach desired outcomes, with many patients requiring more than 12 treatments. However, it should be noted that these observational data do not provide information on the number of ECT treatments required to reach remission.

Treatments in acute course, n	Courses, n	Mean CGI-I score after ECT	SD
1	20	3.4	1.0
2	53	3.3	1.2
3	47	2.8	1.0
4	55	2.5	1.2
5	80	2.0	1.0
6	181	2.1	0.8
7	106	2.1	1.1
8	163	2.1	0.9
9	108	2.0	0.9
10	153	1.9	0.9
11	110	2.2	0.8
12	570	2.1	0.8
13-18	201	2.1	0.9
>18	81	2.3	0.9

Table 10: Mean CGI-I score after an acute course of ECT, according to treatment duration. n=1928, due to missing data for 61 courses. Smaller scores indicate greater improvement (1 = 'very much improved', 2 = 'much improved', 3 = 'minimally improved'). CGI-I, Clinical Global Impression (Improvement) scale; SD, standard deviation.

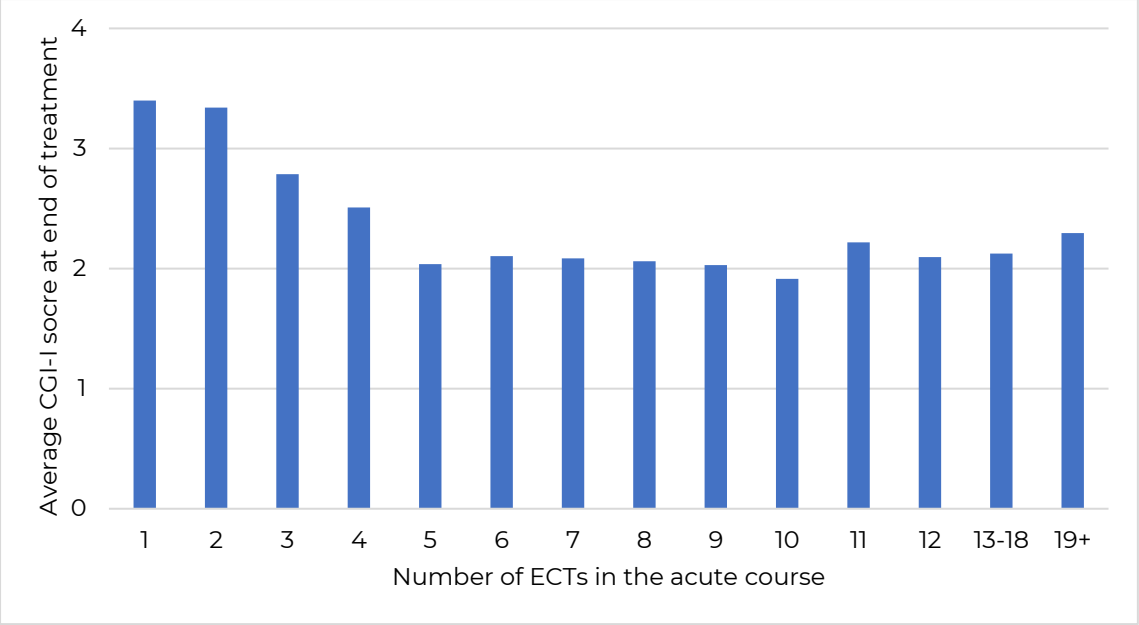

Figure 6: Mean CGI-I score after an acute course of ECT, according to number of treatment sessions. Smaller scores indicate greater improvement (1 = 'very much improved', 2 = 'much improved', 3 = 'minimally improved'). CGI-I, Clinical Global Impression (Improvement) scale.

Symptom rating scales

As well as using CGI ratings, clinics were asked to employ standardised symptom rating scales to obtain a more objective measure of clinical improvements. Clinics were able to use any appropriate scale, according to whether depressive, manic, psychotic, or catatonic symptoms were the primary target of treatment.

For the vast majority of courses, during which the patient was being treated for depressive episode, the most commonly used rating scales were the Montgomery-Åsberg Depression Rating Scale (MADRS) and the various versions of the Hamilton Depression Rating Scale (HAM-D). Additionally, several scales were used only by a very small number of clinics each, namely the Hospital Anxiety and Depression Scale (HADS), the Major Depression Inventory (MDI), the Beck Depression Inventory (BDI) and a Likert mood scale.

Courses for which the initial score on the scale had been entered as 0 were not included in the analysis. It is highly improbable that a patient with a diagnosis of depressive episode, starting a course of ECT, would genuinely score 0 (denoting a complete lack of symptoms) on a depressive symptom rating scale. As data submission in all respects was mandatory for 2021, there was no option for clinics to state that a test had not been done and a score of 0 had been entered almost exclusively in such cases. A score of 0 at the end of an acute treatment course was more difficult to interpret, as such a rating could plausibly denote a complete lack

of symptoms. Nevertheless, such scores were removed from the analysis, unless they were either explicitly confirmed by correspondence with the clinic in question, or implicitly supported by a CGI-I score of 1 (very much improved) or 2 (much improved).

To reiterate, amendments will be made to the 2022 data collection tool to allow for clinics to state when a particular task has not been completed.

Table 11 shows the mean scores on these scales before and after acute courses of ECT, for those treated for depressive episode. The mean improvements on all rating scales were over **50%** from baseline and are highly statistically significant.

Symptom rating scale used	Patients, n	Mean score		p-value
		before ECT	after ECT	
Clinician-rated scales:				
MADRS	374	40.9	17.8	1.3×10^{-99}
HAM-D 6-item	30	15.4	6.7	7.2×10^{-9}
HAM-D 17-item	226	23.3	10.2	4.1×10^{-55}
HAM-D 21-item	124	28.2	13.8	1.9×10^{-31}
HAM-D 24-item	26	32.2	14.8	1.9×10^{-7}
Patient-rated scales:				
HADS	47	29.5	15.7	2.5×10^{-8}
MDI	42	37.9	19.0	2.6×10^{-11}
BDI	18	36.4	16.1	6.1×10^{-8}
Likert mood scale	15	1.5	7.5	1.3×10^{-7}

Table 11: Mean symptom rating scale score before and after an acute course of ECT for depressive episode. Only courses of ECT for which there were scores before and after ECT are included. n=902. p-values are based on paired-samples t-tests and are highly significant for all scales. Lower scores indicate fewer and/or less severe symptoms on all scales except the Likert mood scale, for which the reverse holds. MADRS, Montgomery-Åsberg Depression Rating Scale; HAM-D, Hamilton Depression Rating Scale; HADS, Hospital Anxiety and Depression Scale; MDI, Major Depression Inventory; BDI, Beck Depression Inventory.

Response and remission rates

The use of clinician-rated standardised symptom rating scales has provided the opportunity to estimate the rates of response and remission achieved by patients receiving ECT. Given the relatively small number of patients being given ECT for other indications, this analysis was restricted to patients being treated for depressive episode.

For the Hamilton Depression Rating Scale (HAM-D), we used the following validated cut-offs for defining remission, depending upon the version used:

- 6-item scale (HAM-D6) ≤ 4 points (Frank et al, 1991)
- 17-item scale (HAM-D17) ≤ 7 points (Kyle et al, 2016)
- 21-item scale (HAM-D21) ≤ 8 points (Degenhardt et al, 2012)
- 24-item scale (HAM-D24) ≤ 10 points (Fenton & McLoughlin, 2021).

For the Montgomery-Åsberg Depression Rating Scale (MADRS), remission is defined as ≤ 10 points (Hawley et al, 2002).

Using these definitions, remission was achieved in 329 of the 809 acute courses for which MADRS or HAM-D scores were recorded at the end of the course. This gives a remission rate of **40.7%**. It should be noted that some researchers have suggested two consecutive ratings should be required to confirm remission (Hawley et al, 2002), but that only one rating has been used here.

For all scales used, response is defined as a 50% reduction from baseline (Koesters et al, 2017). Response was achieved in 530 of the 881 acute courses for which there were valid pre- and post-treatment scores. This gives a response rate of **60.2%**.

Percentage improvements on MADRS or HAM-D are shown on Figure 7. Mean improvement was **54.4%**. It is evident that very few patients experienced a deterioration in their clinical status during the course of treatment, as depicted by the bars to the left of the 0 point.

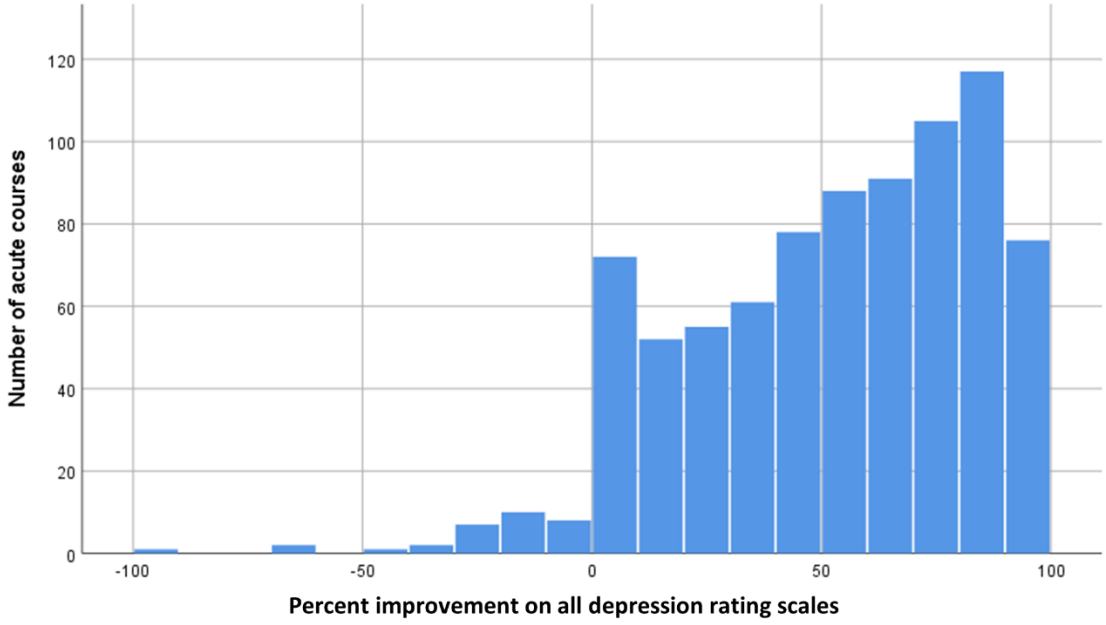

Figure 7: **Percentage improvement on MADRS or HAM-D over an acute course of ECT for the treatment of depressive episode.** Only courses of ECT with valid scores before and after treatment are included.

Remission and response data for depressive episode were further analysed according to gender, age, and illness variables. These analyses are set out in Table 12. Females appeared to be associated with higher rates of remission and response, compared with males, whilst there was also an association between improved outcome and age over 50 years.

Demographic factor	Remission, %	Response, %
Gender		
Male	34.4	56.3
Female	43.5	61.9
Age range		
<30	21.4	46.7
30-39	30.8	50.7
40-49	30.3	53.5
50-59	41.3	58.7
60-69	44.4	68.7
70-79	43.1	60.6
≥80	43.2	58.2
All courses	40.7	60.2

Table 12: Remission and response rates following an acute course of ECT for depressive episode, stratified by demographic factors.

Outcomes for treatment of depressive episode were further analysed according to illness and treatment variables, as outlined in Table 13. Patients who had psychotic or catatonic symptoms showed a greater likelihood of remission, but for those who had both syndromes, the remission rate was similar to those with neither, whilst the response rate was higher. It is, however, not possible to draw any firm conclusions from these latter findings, which have been calculated using a very small group of patients.

When interpreting the data on outcomes according to electrode placement, it must be noted that only the placement used at the first treatment is recorded; in some cases, placements may have been subsequently changed. Unilateral placement resulted in a higher remission rate than bitemporal ECT, but the difference did not reach statistical significance; the response rates were similar. We cannot exclude bias in the choice of electrode placement that could have affected these outcomes. For example, unilateral ECT was used much more frequently in first affective episodes (**15.0%** of courses) compared to episodes of recurrent depressive disorder (**7.4%**) or bipolar affective disorder (**4.3%**) and, as shown elsewhere in Table 13, the mean outcomes for first episodes are better than those for recurrent illness. The small number of courses using bifrontal placements precludes meaningful analysis of outcomes.

Lastly, a lack of mental capacity to consent to ECT at the onset of treatment was associated with a slightly higher proportion achieving remission and response compared with those who had capacity and this difference reached statistical significance for response ($p = 0.005$).

Variable	Cases analysed for remission, n	Cases analysed for response, n	Remission, %	Response, %
Presence of catatonia or psychosis				
Neither	472	524	38.1	56.9
Psychosis without catatonia	229	242	46.3	65.3
Catatonia without psychosis	42	44	42.9	61.4
Both catatonia and psychosis	39	44	35.9	70.5
Long-term diagnosis				
First affective episode	102	103	51.0	71.8
Recurrent depressive	624	686	39.9	58.7
Bipolar affective disorder	41	47	29.3	55.3
Schizoaffective disorder	16	19	31.2	57.9
Electrode placement at first				
Right Unilateral	35	41	51.4	61.0
Bitemporal	755	817	40.0	60.3
Bifrontal	17	21	47.1	47.6
Mental capacity at start of				
Had capacity	428	481	40.0	55.9
Lacked capacity	381	400	41.5	65.2
All courses	809	881	40.7	60.2

Table 13: Remission and response rates following an acute course of ECT for depressive episode, stratified by illness and treatment variables. The numbers of cases analysed for remission are lower for each variable than those for response, because remission calculations were restricted to cases using the Montgomery-Åsberg Depression Rating Scale and versions of the Hamilton Depression Rating Scale (see text).

Objective cognitive assessments

For each acute course, clinics were asked which objective cognitive assessment tool had been used and to submit the scores at baseline and after the patient's final treatment. From 2021 onwards, submission of cognitive assessment data has been mandatory for ECTAS member clinics.

Table 14 shows the results for the most frequently used tools, for patients who had both pre- and post-ECT ratings. ECT courses for which a score of 0 was entered, either before or after treatment, were excluded from the analysis. This score is typically entered when a patient is too impaired by illness to complete a test or to co-operate in completing a test or, perhaps, when the test has simply not been carried out. This was confirmed by communication with clinics. Excluding these 0 scores should protect against artificial inflation of any positive effect of ECT upon cognition. The analysis is based on all acute courses for all diagnostic indications.

Cognitive assessment tool	Maximum score	Acute courses, n	Mean score		p-value
			Before ECT	After ECT	
MMSE	30	596	24.9	26.7	6.2×10^{-20}
MoCA	30	306	23.3	24.8	1.0×10^{-8}
Mini-ACE	30	130	22.7	25.2	4.4×10^{-7}
ACE-III	100	19	66.8	65.5	n.s.
Hodges & ECT Recall	21	22	18.0	20.0	0.052
Hodges	6	20	5.6	4.9	0.024
6CIT	28	47	17.6	11.0	1.4×10^{-5}

Table 14: Mean scores on cognitive assessment tools for patients who had both pre- and post-ECT tests. Lower scores indicate a greater degree of cognitive impairment except the 6CIT (6-item Cognitive Impairment Test), where low scores indicate better performance. Scores of zero were not included in the analysis. p-values are based on paired samples t-tests. MoCA, Montreal Cognitive Assessment; MMSE, Mini-Mental State Examination; mini-ACE, mini-Addenbrooke's Cognitive Examination; ACE-III, Addenbrooke's Cognitive Examination version 3; n.s., not significant.

The objective cognitive tests used are outlined in turn below:

- The Mini Mental State Examination (MMSE), scored between 0 and 30, was used in the highest number of courses. Even after excluding scores of 0 (160 instances at the start and 80 instances at the end of the courses), the results improved by 1.8 points, which, although of questionable clinical significance, is highly statistically significant.
- The Montreal Cognitive Assessment (MoCA), scored between 0 and 30, showed a similar, highly statistically significant, improvement of 1.5 points,

even after excluding the 145 cases scoring 0 prior to treatment and 117 scoring 0 after treatment. Notably, in only five cases was a score of between 1 and 5 recorded, suggesting that a genuine score of 0 would only have been reached in a negligible number of further cases, and confirming the rationale for disregarding all 0 scores.

- The Mini-Addenbrooke's Cognitive Examination (Mini-ACE), scored between 0 and 30, is a much shorter version of the ACE-III (below). After excluding cases scoring 0 before or after ECT, mean scores improved by 2.5 points, a highly statistically significant change.
- The Addenbrooke's Cognitive Examination Version 3 (ACE-III), scored between 0 and 100, is a fairly lengthy assessment that was completed on relatively few patients. After excluding cases with a score of 0, there was a small, 1.3-point drop in mean score after ECT, neither a clinically nor statistically significant change.
- Hodges and ECT Recall test, scored between 0 and 21, was used in just one clinic, and comprises the six items of the Hodges scale and 15 items for the 'ECT Recall' component, with a maximum score of 21. Given that it is not widely available, it is included in Appendix 3, but it is not specifically recommended by ECTAS over other cognitive tests. The mean cognitive improvement of 2 points using this test just fails to reach statistical significance. Another clinic assessed their patients using the 6-item Hodges scale alone and demonstrated a net mean deterioration in scores of 0.7 points, which is the only scale showing deterioration that reaches statistical significance.
- The 6-item Cognitive Impairment Test (6CIT) uses an inverse score on a scale between 0 (perfect cognition) to 28 (very poor cognition). After excluding cases with a score of 0, there was still a significant improvement (a reduction in mean score of 6.6 points).

These data show significant improvements in cognitive functioning on most assessment tools. This contrasts with the findings of a large meta-analysis (Semkovska & McLoughlin, 2010) which found an overall deterioration in cognitive functioning when tests were performed up to three days after the last ECT, but an improvement when tests were performed two or more weeks later. Notably, precise data regarding the exact timing of such assessments were not collected here.

In explanation of this unexpected finding, it was reasoned that a significant minority of patients who score very poorly prior to treatment, due to difficulties in engagement with the testing process, rather than due to truly impaired cognition per se, might go on to display greatly improved scores after ECT once their psychiatric symptoms resolve. Even when combined with the results of the majority of patients, who scored relatively well at the outset, and whose scores

might typically remain stable or even deteriorate slightly as a result of the well documented adverse effects of ECT, the marked improvements of a minority might result in a small mean improvement in cognition over the whole sample.

Consequently, as shown in Table 15, the data have been further analysed by stratifying patients according to their baseline cognitive scores on the Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA); there were insufficient numbers of patients assessed using other tools to allow for meaningful stratification of their results. As expected, those patients who registered cognitive scores of more than 22 out of 30 prior to ECT showed a mean improvement after treatment of only 1 point on MMSE, which although statistically significant, is unlikely to be clinically significant, and a negligible improvement of 0.1 points on the MoCA. In contrast, the patients scoring under 23 points improved cognitively on both rating scales by 4 to 6 points, which are highly statistically significant differences.

Cognitive assessment tool	Acute courses, n	Mean score		p-value
		Before ECT	After ECT	
MMSE 1-22 at start	153	16.4	22.4	$2x10^{-23}$
MMSE 23-30 at start	443	27.0	26.0	0.005
MoCA 1-22 at start	115	17.8	21.8	$1.6x10^{-14}$
MoCA 23-30 at start	191	26.7	26.6	n.s.

Table 15: Mean scores on the two most frequently used cognitive assessment tools for patients who had both pre- and post-ECT tests, stratified by initial score. MoCA, Montreal Cognitive Assessment; MMSE, Mini-Mental State Examination; n.s., not significant.

This analysis suggests that the objective cognitive performance of patients, who are highly impaired by the symptoms of their psychiatric disorder, improves markedly with ECT, whilst those with normal or mildly impaired functioning do not significantly improve or deteriorate.

Subjective memory ratings

For the first time in 2021, clinics were expected to collect data using a subjective rating of memory functioning. Clinics were directed to ask item No. 17 of the Comprehensive Psychopathological Rating Scale (CPRS) immediately before every ECT treatment and following completion of the course. This item has been used recently in ECT-related research (Sigström et al 2020). The outcomes are shown in Table 15 and suggest that severe problems with memory are slightly more frequent before than after ECT, a finding likely to reflect the severity of the psychiatric

illnesses being treated. The only categories showing increases after ECT were 2 ("occasional increased lapses of memory") and the yet milder category of 1, lying between the aforementioned category and normality.

Score on CPRS item-17	Cases before ECT		Cases after ECT	
	n	%	n	%
0 - Memory as usual	679	34.1	733	36.9
1 -	89	4.5	118	5.9
2 - Occasional increased lapses of memory	243	12.2	345	17.3
3 -	60	3.0	39	2.0
4 - Reports of socially inconvenient or disturbing loss of memory	90	4.5	60	3.0
5 -	19	1.0	12	.6
6 - Complaints of complete inability to remember	29	1.5	8	.4
Not recorded	780	40.2	674	33.9
Total acute courses	1989	100.0	1989	100.0

Table 15: Subjective memory ratings by patients before and after an acute course of ECT. Patients having more than one course of ECT are represented more than once. CPRS, Comprehensive Psychopathological Rating Scale.

Further analysis of the data excluded the 793 ECT courses for which both pre- and post-ECT scores were not available, leaving 1196 cases. Defining stability as a 0 or ±1 point change on CPRS item 17, in 120 cases (**10.0%**) memory subjectively worsened after ECT, in 170 (**14.2%**) it improved and in the remaining 906 (**75.8%**) it remained stable. These findings are similar, although of a smaller magnitude, to the findings of Sigström and colleagues (2020), who reported 16% of their sample worsening and 31% improving, using the same criteria but over a longer follow-up period.

The likelihood of change varied markedly according to the degree of memory impairment at the outset, as shown in Table 16. Of patients who started ECT with no or little memory complaint (i.e., baseline scores of 0 or 1), only **14.1%** reported a subsequent deterioration in memory. Conversely, there were improvements in subjective memory ratings in nearly two thirds (**65.7%**) of those that had complained of significantly poor memory at the start of treatment (i.e., baseline scores of 4 to 6).

Score on CPRS item 17 prior to ECT	Total, n	Improving		Deteriorating	
		n	%	n	%
0 - Memory as usual	678	-	-	101	14.9
1 -	87	-	-	7	8.0
2 - Occasional increased lapses of memory	238	58	24.4	12	5.0
3 -	59	24	40.7	0	0.0
4 - Reports of socially inconvenient or disturbing loss of memory	89	58	65.2	0	0.0
5 -	18	10	55.6	-	-
6 - Complaints of complete inability to remember	27	20	74.1	-	-

Table 16: Changes in subjective memory functioning during acute courses of ECT according to pre-treatment subjective rating. Includes courses for which both pre- and post-treatment ratings are available, n=1196. Improvement or deterioration defined as ≥2 points change on CPRS item 17. CPRS, Comprehensive Psychopathological Rating Scale.

It is notable that scores using this scale were not recorded for a large minority of cases, which may reflect that this was the first year that clinics had been asked to collect this information. Patients were far more likely to select one of the (even) responses, containing a descriptor, than an (odd) response without a descriptor. Furthermore, the descriptors themselves are not mutually exclusive and conflate frequency of symptoms with their severity. These shortcomings call into question the utility of this particular tool.

Conclusions

Of some 1989 acute courses of ECT completed during 2021, the vast majority (**84%**) were used to treat depressive episode. Improvement in symptoms on the CGI scale was demonstrated, with the vast majority markedly ill or worse at the outset of treatment, and **90%** improved to some degree following treatment. Almost a third of patients who were too unwell to have mental capacity to consent to ECT at the outset of their treatment had regained capacity in this regard by the end of their course.

In the treatment of depressive episodes, scores on symptom rating scales improved markedly. Furthermore, **60%** of patients exhibited a pre-defined response using clinician-rated symptom scales, with **41%** reaching remission. Older people, females and those without mental capacity had higher rates of response or remission. Interestingly, these are groups of people that clinics have been criticised for treating preferentially.

Whilst cognitive scores markedly improved overall during acute courses of ECT, this recovery was seen mainly in patients whose cognition was significantly impaired prior to initiation of treatment. Those whose cognition was higher at baseline tended to show only a very minimal change in cognition by the cessation of treatment, suggesting that the well documented temporary adverse effects of ECT upon memory are largely balanced by the positive effects of symptom resolution upon cognitive performance in this subgroup.

Finally, subjective memory ratings were much improved following ECT. These changes were particularly pronounced in those who had memory problems at baseline, with two-thirds showing improvements. Conversely, only one in seven patients without memory problems at baseline reported a subsequent deterioration in memory.

In summary, ECT is an effective and well-tolerated treatment for depressive episode and other illnesses.

CONTINUATION COURSES OF ECT

62

submissions

As stated in the introduction to this report, continuation ECT (cECT) is defined as ECT, usually delivered at intervals of one week or more, used to prevent a relapse of symptoms, for a period of up to six months after an acute course of ECT has brought about a resolution of such symptoms. The odd missed treatment during an acute course does not constitute cECT: there must be an intention to lower the frequency and a change in purpose of the ECT (from active treatment of symptoms to prevention of relapse) for the course to be considered "continuation". The 2021 dataset is the first to distinguish cECT from maintenance ECT (mECT), which is covered in the next section of this report.

Returns were made by **25** clinics for a total of **62** courses cECT completed during 2021. Fifty-eight individual patients had one continuation course and two further patients each had two continuation courses. In 18 cases, the linked acute course had been completed the previous year (2020), whilst in the remaining 44, the acute course also finished during 2021. It is not currently known how many further patients completing acute courses in 2021 will have gone on to have continuation treatment finishing in 2022. Consequently, a precise calculation is not possible, but assuming unchanged practice year on year and using the tally of 1989 acute courses completed during 2021, these figures suggest that approximately **3%** of acute courses are being followed by continuation treatments.

Age and Gender

The mean age of patients receiving cECT was **65.2 years** (standard deviation (SD) = 14.7 years). The range was **31 to 85 years**. 51 patients (**81.7%**) were female, 11 (**18.3%**) were male. This is a higher proportion of females, compared to those having acute or maintenance courses.

Diagnostic indications

Most of the preceding acute courses (**50**) had been for the treatment of depressive episode, with **3** for schizophrenia, **7** for schizoaffective disorder and **2** for bipolar disorder. For those 50 patients treated for depressive episode, most had a diagnosis of recurrent depressive or bipolar disorder with only four having a first affective episode.

Reasons for using cECT

Clinics were asked to list the reasons for using ECT. They were presented with a drop-down menu with eight options, with multiple responses possible, including an "other" option, for which further information was required. The results from the 62 continuation courses are detailed in Table 17. No “other” reasons were listed. In the vast majority of cases (**85%**) a previous relapse was listed as a reason for giving cECT.

Reason for using continuation ECT	Courses	
	n	%
Previous relapse soon after cessation of a prior acute course of ECT	53	85
Poor concordance with prophylactic drug treatment	11	18
Comorbidities make prophylactic drug treatment less desirable	4	6
Patient choice	30	48
Carer choice	16	26

Table 17: Reason for referral for a continuation course of ECT. Data include all 62 continuation courses. Multiple responses were allowed for each course of treatment. Responses related to pregnancy and breastfeeding were not selected in any cases and are not listed.

Legal Status

Clinics were asked about the patient's mental capacity and detention status. Results are depicted in Table 18 and show that four patients regained capacity during their courses of cECT.

Legal Status	Start of cECT course, n	End of cECT course, n
Informal	**39**	**43**
With mental capacity	39	43
Without mental capacity	0	0
Detained	**21**	**17**
With mental capacity	4	4
Without mental capacity	17	13

Table 18: Detention status and mental capacity of patients before and after a course of continuation ECT. n=60, due to missing data in 2 cases. cECT, continuation ECT.

Hospital status

31 patients (**50%**) began cECT as inpatients, but only 20 (**32.2%**) were still in hospital at completion of the continuation course.

Number of treatments

The numbers of treatments in each continuation course are listed in Table 19.

Treatments in continuation course, n	Courses, n
1	1
2	3
3	4
4	3
5	5
6	5
7	3
8	4
9	4
10	2
11	0
12	3
13-18	7
>18	8

Table 19: Number of continuation treatments in each course. n=52, due to missing data in 10 cases.

Treatment frequency

Clinics were asked to state the frequency with which treatments were administered during each cECT course. These data are shown in Table 20 and Figure 8.

Frequency of treatments	Courses, *n*
Every 1 week	19
Every 2 weeks	9
Every 3 weeks	6
Every 4 weeks	6
A varied schedule of decreasing frequency over time	21

Table 20: Frequency of continuation ECT treatments. n=61, due to missing data in one case.

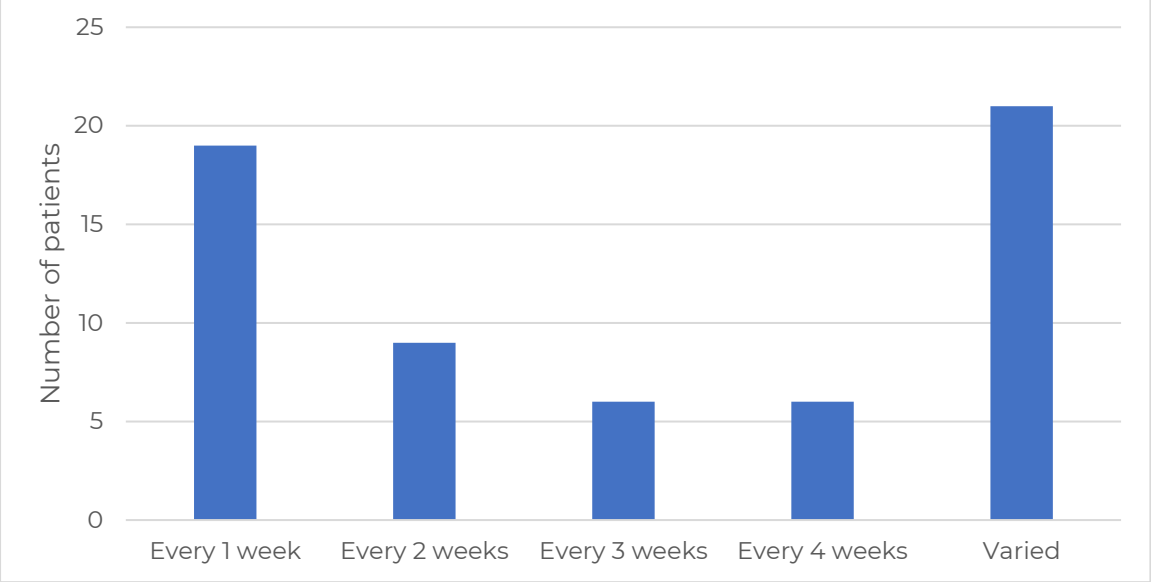

Figure 8: Frequency of continuation ECT treatments. n=61.

Severity of illness

At the start of the continuation course, **48.5%** of patients were rated as being 'mildly ill' or better, with **28.8%** being 'markedly ill' or worse, as shown in Table 21. This is surprising, given the expectation that cECT would be given to relatively well patients, with the intention of preserving the symptomatic improvements achieved during a recent acute course (Kellner et al 2006).

CGI-S rating	Courses, n (%)
1 = normal, not at all ill	9 (14.5)
2 = borderline mentally ill	11 (17.7)
3 = mildly ill	11 (17.7)
4 = moderately ill	15 (24.2)
5 = markedly ill	9 (14.5)
6 = severely ill	4 (6.5)
7 = amongst the most severely ill	1 (1.6)

Table 21: Severity of illness at the outset of continuation ECT. n=60, due to missing data in 2 cases. CGI-S, Clinical Global Impression (Severity) scale.

Patient outcomes

Clinical global impression

As the purpose of cECT is to prevent a relapse of symptoms following an acute course, it was intended that clinics would record symptom severity, using CGI-S, both before and after continuation treatment. Unfortunately, due to an error in the design of the online data collection form, clinics were instead asked to rate the degree of symptomatic improvement, using CGI-I, following cECT. Consequently, the returned data cannot be reliably analysed, not least because the time point of the baseline, against which any improvement or deterioration has been judged, is unclear for any given patient. Instead, this report focuses on symptom rating scale data, outlined below.

Symptom rating scales

Only 28 of the 62 courses of cECT following a depressive episode had rating scale scores at the start and end of cECT (24 using HAM-D and 4 using MADRS). Table 22 shows significant improvements in mean HAM-D score, but no significant change on mean MADRS score. Seven patients who were not in remission at the start of the cECT course had reached remission at the end (as defined by a HAM-D score of less than 8), while one patient relapsed after having been in remission at the outset.

Symptom rating scale	Patients, n	Mean score before cECT treatment	Mean score after cECT treatment	p-value
HAM-D	24	12.3	9.0	0.008
MADRS	4	15.5	16.2	n.s.

Table 22: Mean scores on symptom rating scales before and after courses of continuation ECT. MADRS, Montgomery-Åsberg Depression Rating Scale; HAM-D, Hamilton Depression Rating Scale; cECT, continuation ECT; n.s., not significant.

Objective cognitive assessments

Objective cognitive rating scale scores were reported at the start and end of 55 continuation treatment courses. Of those, **42** had scores reported that were not zero. MMSE and MoCA were used most frequently. Table 23 shows that the start and end scores are virtually identical for all rating scales, suggesting that patients did not experience any cognitive changes during continuation treatment, as measured by these scales.

Cognitive assessment	Courses, n	Mean score before cECT	Mean score after cECT	p-value
MMSE	17	28.0	28.1	n.s.
MoCA	18	23.4	23.2	n.s.
Hodges & ECT Recall	2	21.0	21.0	n.s.
Hodges	1	6.0	6.0	n.s.
mini-ACE	4	19.2	21.5	n.s.

Table 23: Objective cognitive assessment scores at before and after continuation ECT. n=42, due to missing data (7 cases) and exclusion from analysis of 13 cases for which a score of 0 at the start or end of treatment was recorded. cECT, continuation ECT; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; mini-ACE, mini-Addenbrooke's Cognitive Examination; ACE-III, Addenbrooke's Cognitive Examination version 3.

Subjective memory ratings

As for acute courses, clinics were asked to collect data using a subjective rating of memory functioning, namely item no. 17 of the Comprehensive Psychopathological Rating Scale (CPRS), prior to starting cECT and following completion of the course. The mean scores for the 49 courses with complete and valid data are shown in Table 24 and suggest that cognition is essentially unchanged. This indicates that cECT courses did not lead to any additional subjective memory complaints.

Score on CPRS item no. 17	Cases before cECT		Cases after cECT	
	n	%	n	%
0 - Memory as usual	17	34.7	20	40.8
1 -	7	14.3	4	8.2
2 - Occasional increased lapses of memory	19	38.8	17	34.7
3 -	2	4.1	4	8.2
4 - Reports of socially inconvenient or disturbing loss of memory	3	6.1	3	6.1
5 -	0	0.0	0	0.0
6 - Complaints of complete inability to remember	1	2.0	1	2.0

Table 24: Subjective memory ratings by patients before and after a continuation course of ECT. n= 49 as 13 courses with incomplete data are excluded. CPRS, Comprehensive Psychopathological Rating Scale; cECT, continuation ECT.

Conclusions

Continuation ECT was prescribed after roughly **3%** of acute courses, primarily in cases where there has been a rapid relapse following an earlier acute course. Both subjective and objective measures of cognitive functioning suggest there is no evidence that continuation ECT leads to further cognitive problems. In view of this positive safety profile, and the well documented significant risk of relapse following successful acute treatment of depressive episode (Kirov et al 2021), it could be postulated that continuation treatment should be used more frequently, to help lower this risk.

MAINTENANCE COURSES OF ECT

107
submissions

As stated in the introduction to this report, maintenance ECT (mECT) is defined as ECT, usually delivered at intervals of between one week and three months, used to prevent a recurrence of illness, starting from six months after an acute course of ECT has brought about a resolution of symptoms (i.e., from the end of a six-month period of continuation ECT). Subject to regular clinical review, mECT can continue for an indefinite period, but for the purpose of data collection, ECT clinics were asked to submit data annually on patients who had been receiving mECT for a continuous period of more than one year.

Returns were made by 42 clinics for a total of 107 patients who received maintenance ECT.

Age and Gender

The mean age of patients receiving mECT was **66.7 years** (standard deviation (SD) = 13.5 years). The range was **26 to 89 years**. Table 25 shows the age distribution. 71 patients (**66.4%**) were female and 36 (**33.6%**) were male.

Age	Patients, n	Patients, %
<18	0	0
18-29	2	2
30-39	3	3
40-49	6	6
50-59	17	16
60-69	27	25
70-79	35	33
80-89	17	16
90-99	0	0

Table 25: Age distribution for patients receiving maintenance ECT. n=107.

Diagnostic indications

Most of the courses that preceded the mECT (**96**) had been for the treatment of depressive episode, with 7 for schizoaffective disorder, 3 for schizophrenia and 1 for catatonia. Of the 96 patients treated for depressive episode, 89 had a diagnosis of recurrent depressive disorder and 7 bipolar affective disorder; in no cases had the index episode been a first affective episode.

Reasons for using mECT

Clinics were asked to list the reasons for using mECT. They were presented with a drop-down menu with eight options, with multiple responses possible, including an "other" option, for which further information was required. The results from the 107 maintenance courses are detailed in Table 26. In the "other" category, the free-text responses were "prevent catatonia as requested by mother" and "maintenance for the last 20 years".

Reason for using maintenance ECT	Courses	
	n	%
Previous recurrence after cessation of a prior continuation course of ECT	86	80.4
Poor concordance with prophylactic drug treatment	24	22.4
Comorbidities make prophylactic drug treatment less desirable	1	0.9
Patient choice	48	44.9
Carer choice	39	36.4
Other	2	1.9

Table 26: Reason for referral for a maintenance course of ECT. n=107. Multiple responses were allowed for each course of treatment.

Legal Status

Clinics were asked about the patient's mental capacity and detention status at the beginning and end of the maintenance course (or, in the case of a longer course of mECT lasting more than 12 months, at the beginning and/or end of the calendar year). Results are depicted in Table 27 and show the vast majority of patients were informal and had capacity to consent.

Legal Status	Start of mECT course, n	End of mECT course, n
Informal	89	91
With mental capacity	87	89
Without mental capacity	2	2
Detained	18	16
With mental capacity	1	2
Without mental capacity	17	14

Table 27: Detention status and mental capacity of patients before and after a course maintenance ECT. n=107. mECT, maintenance ECT.

Hospital status

Thirty-eight (**35.5%**) patients began mECT as inpatients; 34 (**31.8%**) were in hospital at the end of the maintenance course (or at the end of the data collection year for ongoing courses).

Number of treatments

The mean number of treatments during maintenance courses (or, in the case of a prolonged course lasting over 12 months, during the 2021 calendar year) was **12.6** sessions, with a range of **1 to 70**. The mean total number of consecutive maintenance treatments, including those given prior to 2021, was **48.2**, with a range between **1 and 942** sessions.

Treatment frequency

Clinics were asked to state the frequency of treatments for each patient during the mECT course. These data are shown in Table 28. Most patients had mECT at two, three or four-week intervals but it is clear that even longer intervals of six weeks are used effectively in the care of some patients.

Frequency of treatments	Patients, *n*
1 week	7
1½ weeks	2
2 weeks	31
3 weeks	11
4 weeks	32
5 weeks	1
6 weeks	6
8 weeks	1
12 weeks	1
a varied schedule of decreasing frequency over time	15

Table 28: Frequency of maintenance ECT treatments. n=107.

Patient outcomes

Clinical global impression

As the purpose of mECT is to prevent a recurrence of illness following an acute course and a period of continuation treatment, it was intended that clinics would measure symptom severity, using CGI-S, at the beginning and end of maintenance treatment. Unfortunately, due to an error in the design of the online data collection form (the same error that is outlined in the section above covering continuation ECT), clinics were instead asked to rate the degree of symptomatic improvement, using CGI-I, following mECT. Consequently, the returned data cannot be reliably analysed, not least because the time point of the baseline, against which any improvement or deterioration has been judged, is unclear for any given patient. Instead, this report focuses on symptom rating scale data, outlined below.

Symptom rating scales

Only **40** of the 96 patients having mECT following a depressive episode had rating scale scores at the start and end of their mECT courses (25 using HAM-D and 15

using MADRS). Although the goal of mECT is to prevent a recurrence of illness, Table 29 shows significant improvements in mean scores on both scales. Other rating scales used were the HADS (6 patients), MDI (5 patients) and BDI (1 patient), but these numbers were too small to allow analysis.

Symptom rating scale	Patients, n	Mean score at the start of mECT treatment	Mean score at the end of mECT treatment	p-value
HAM-D	25	11.0	7.4	0.032
MADRS	15	30.1	12.6	0.001

Table 29: Mean scores on symptom rating scales at the start and end of a course of maintenance ECT in patients with an index depressive episode. For prolonged maintenance courses lasting over 12 months, scores were taken at the start and/or end of the 2021 calendar year. MADRS, Montgomery-Åsberg Depression Rating Scale; HAM-D, Hamilton Depression Rating Scale; mECT, maintenance ECT.

Objective cognitive assessment

Objective cognitive rating scales had been used on **102** patients during their maintenance treatment. Table 30 shows the results for those rating scales that were applied at the start and end of treatment on more than one patient. Any score of zero is excluded from this analysis. Overall, there was no significant cognitive change during maintenance treatment, apart from the MMSE scores that showed nominally significant improvement.

Cognitive assessment	Patients, n	Mean score before mECT	Mean score after mECT	p-value
MMSE	20	26.6	27.3	0.048
MoCA	38	25.1	25.4	n.s.
6-CIT	3	8.0	6.3	n.s.
Hodges and ECT Recall	4	18.5	19.5	n.s.
Mini-ACE	6	27.3	28.0	n.s.

Table 30: Objective cognitive assessment scores at before and after maintenance ECT. For prolonged maintenance courses lasting over 12 months, scores were taken at the beginning and/or end of the 2021 calendar year. p-values calculated using paired samples t-test. Includes patients treated for any diagnostic indication. mECT, maintenance ECT; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; mini-ACE, mini-Addenbrooke's Cognitive Examination; 6-CIT, 6-item Cognitive Impairment Test, n.s., not significant.

Subjective memory rating

As for acute and continuation courses, clinics were asked to collect data using a subjective rating of memory functioning, namely item no. 17 of the Comprehensive Psychopathological Rating Scale (CPRS), prior to starting mECT and following completion of the course (or, for prolonged courses lasting more than 12 months, at the beginning and end of the calendar year). The mean scores are shown in Table 31 and are essentially unchanged. This indicates that mECT courses did not lead to any additional subjective memory complaints.

Score on CPRS item-17	Cases before mECT		Cases after mECT	
	n	%	n	%
0 - Memory as usual	24	22.4	26	24.3
1 -	3	2.8	12	11.2
2 - Occasional increased lapses of memory	30	28.0	26	24.3
3 -	3	2.8	2	1.9
4 - Reports of socially inconvenient or disturbing loss of memory	4	3.7	1	0.9
5 -	0	0.0	0	0.0
6 - Complaints of complete inability to remember	1	0.9	2	1.9
Not recorded	42	39.3	38	35.5

Table 31: Subjective memory ratings by patients before and after maintenance ECT. n=107. For prolonged maintenance courses lasting over 12 months, scores were taken at the beginning and/or end of the 2021 calendar year. CPRS, Comprehensive Psychopathological Rating Scale; mECT, maintenance ECT.

Conclusions

Maintenance ECT is used only rarely in the UK and Republic of Ireland, with under half of clinics reporting an average of just over two cases each, and the remainder reporting no cases. The evidence collected here suggests that symptom ratings remain stable and that there is no evidence of deteriorating cognitive functioning over the period in question, as measured by both objective assessments and subjective reports. The most frequent reason for initiating the treatment is evidence of previous recurrence after an earlier successful course of continuation ECT, followed by patient and carer choice.

FURTHER DISCUSSION AND RECOMMENDATIONS

To date, there has been no specific symptom rating scale recommended for use in any given disorder in an ECT setting. Analysis and interpretation of data has been made much more difficult and complex by the plethora of depressive symptom rating scales used by ECTAS-accredited clinics, which include both clinician-rated and patient-rated scales and multiple, incomparable versions of the Hamilton Depression Rating Scale (HAM-D). Furthermore, whilst feasible in some cases, patient-rated scales are inappropriate for universal application in an ECT setting, given the limited insight and ability to participate of many patients during the height of their illness.

In view of this, it is recommended that, the original 17-item version of the Hamilton Depression Rating Scale (HAM-D17, Appendix 4) (Hamilton 1960) is adopted universally by accredited clinics for use when treating patients for depressive episode. This practice should begin with courses initiated after 1 January 2023. During a transition period around this date, it is important that the same scale used at the outset of a course of treatment is used again at its conclusion. Currently, the HAM-D is the tool most used by clinics and the HAM-D17 the most frequently used version. However, it is important that ECT clinic staff, as well as the clinicians in the teams who refer patients for ECT, have adequate training and/or guidance in the use of this scale. Such training and guidance should be provided by ECTAS as required.

Additionally, it would be desirable to present outcome data in manic episode and schizophrenia similar to those for depressive episode. Yet use of specific scales for these diagnostic indications was very limited in this cohort. To this end, it is recommended to use the Young Mania Rating Scale (YMRS) (Young et al, 1978) and the Brief Psychiatric Rating Scale (Gorham et al 1960) in patients being treated for manic episode and schizophrenia respectively. However, it is recognised that clinics tend to encounter such patients relatively infrequently, which may lead to difficulties reaching a sufficient degree of expertise in administering these tests.

There is no specific objective cognitive test that is perfectly suited to use in the ECT setting. The domains that have been shown to be adversely affected by ECT, namely anterograde and retrograde memory, processing speed and executive functioning (Semkovska et al 2010), are not well covered by standard tests such as the MoCA, MMSE or even supposedly tailored tests such as the ECT Recall test, used by one surveyed clinic, and attached in Appendix 3. Additionally, all these tests

feature various domains known to be affected by the symptoms of a severe depressive episode but not by ECT (other than in the immediate post-recovery period), such as attention and orientation. In light of this, although it would be ideal to have standardised, homogeneous cognitive data for analysis, there is currently no one test that is recommended over others.

Remission and response rates were consistent with those observed in some randomised trials (e.g., Semkovska et al 2016), but lower than in a recent meta-analysis of a combination of retrospective, prospective, observational, and interventional studies in major depression (van Diermen et al 2018). Reaching remission, defined in this context as a very low degree of symptomatology, is self-evidently a particularly important goal for patients and their families.

Consequently, there is no clinical logic to explain the commonplace, habitual use of 12 treatments in acute courses of ECT. Referring clinicians must dispense with the erroneous idea that 12 sessions somehow constitutes a 'standard course' of ECT that will reliably bring about remission without exposing patients to unnecessary treatments. Many patients require significantly fewer than 12 treatments, whilst others need more. Patients must be reviewed regularly between treatments, with no more than two treatments prescribed at once.

Towards the end of an acute course of ECT during which a steady response has been observed, clinicians will naturally consider all the needs of each individual patient, taking into account any adverse as well as therapeutic effects of treatment, along with the effects of ending treatment prematurely. In general, however, ECTAS encourages clinicians to continue twice-weekly treatments, either until remission is achieved or there is a clear plateauing of therapeutic effect. In many cases, this will require courses of a duration that necessitates fresh legal authorisation for treatment, be that a new informal consent form or a repeat formal application. But clinicians are reminded that the goal of each individual patient reaching remission should be at the forefront of clinical decision-making.

It is incumbent upon ECT Lead Clinicians to ensure the education of their referring colleagues on these and other ECT-related matters.

Not all ECTAS member clinics submitted data. ECTAS should encourage all clinics to do so, including regular communication with individual clinics including instruction on how to use the online data submission system. As part of its accreditation process, ECTAS continues to provide support to clinics to ensure systems are in place locally to allow the necessary information to be adequately recorded.

In 2021, member clinics were unable to access their submitted data. This may have led to different clinicians submitting duplicate entries for the same course of treatment, which then required extensive manual checking and communication with the clinic to cleanse the data. Similarly, it is theoretically possible that some ECT courses might not have been submitted, due to uncertainty amongst colleagues over whether data had already been completed. In future, ECTAS should give clinics access to their 'dashboards' (the data submitted by each clinic thus far), to ensure complete data collection and avoid duplicate entries or omissions.

The widespread use of zeros to signify missing data, resulted in marked challenges in data analysis, as indicated throughout this report. The data collection process needs to be altered to allow for clinics to state when a particular task has not, in reality, been completed, such that the data used in analysis are accurate and reliable. This should also enable any systemic inability by a specific clinic to provide certain types of data on their patients to be easily identified and raised during that clinic's next accreditation cycle.

ECTAS would like to thank all staff members at its member clinics for their time and effort in submitting their anonymised patients' data. Without their dedicated input, it would not be possible to produce this report.

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APPENDIX 1 : LIST OF PARTICIPATING CLINICS

TRUST	COUNTRY	CLINIC NAME
Betsi Cadwaladr University Health Board (Central)	Wales	Ablett Unit, Glan Clwyd Hospital
South Eastern Health and Social Care Trust	Northern Ireland	Adult Psychiatry Unit Downe Hospital
Southern Health Partnership Trust	England	Antelope Unit, Royal South Hants Hospital
Essex Partnership University NHS Foundation Trust	England	Basildon Mental Health Unit
Leeds and York Partnership NHS Foundation Trust	England	Becklin Wing ECT Suite
Northamptonshire Healthcare NHS Foundation Trust	England	Berrywood Hospital
Southern Health & Social Care Trust	Northern Ireland	Bluestone Unit, Craigavon Hospital
Cornwall Partnership Trust	England	Bodmin Hospital ECT Department
Cheshire and Wirral Partnership NHS Foundation Trust	England	Bowmere Hospital ECT Suite
Leicestershire Partnership NHS Trust	England	Bradgate ECT Clinic
West London NHS Trust	England	Broadmoor Hospital ECT Department
Mersey Care NHS Trust	England	Broadoak Unit
Dudley & Walsall MH Partnership NHS Trust	England	Bushey Fields Hospital ECT Suite
South West Yorkshire Mental Health Trust	England	Calderdale ECT Clinic
Avon and Wiltshire Mental Health Partnership NHS Trust	England	Callington Road Hospital ECT Department
Oxleas NHS Foundation Trust	England	Carol Foster Suite
Abertawe Bro Morgannwg University NHS Trust	Wales	Cefn Coed Hospital ECT Suite

Barnet, Enfield & Haringey Mental Health Trust	England	Chase Farm ECT Clinic
Sussex Partnership NHS Trust	England	Eastbourne District General Hospital ECT Clinic
Cambridgeshire and Peterborough Mental Health NHS Trust	England	Edith Cavell Suite
Black Country Partnership NHS Foundation Trust	England	Edward Street Hospital
HSE Dublin North-East	Republic of Ireland	Elm Mount Unit
Surrey and Borders Partnership NHS Foundation Trust	England	Farnham Road Hospital ECT Department
South West Yorkshire Mental Health Trust	England	Fieldhead
Livewell Southwest	England	Glenbourne Unit
Herefordshire and Worcestershire Health and Care NHS Trust	England	Grafton Treatment Centre
Avon and Wiltshire Mental Health Partnership NHS Trust	England	Green Lane Hospital ECT Department
Cumbria, Northumberland, Tyne & Wear NHS Trust	England	Hadrian ECT Clinic
Hywel Dda Health Board	Wales	Hafan Derwen ECT Clinic
Cardiff and The Vale University Health Board	Wales	Hafan Y Coed
North Staffordshire Combined Healthcare NHS Trust	England	Harplands ECT Clinic
Camden & Islington NHS Foundation Trust	England	Highgate Mental Health Centre ECT Clinic
Northern Health and Social Care Trust	Northern Ireland	Holywell ECT Clinic
West London Mental Health Trust	England	John Conolly Suite
Norfolk and Suffolk NHS Foundation Trust	England	Julian Hospital ECT Clinic
Hertfordshire Partnership University NHS Foundation trust	England	Kingfisher Court ECT Clinic

Mersey Care NHS Trust	England	Knowsley Resource and Recovery Centre, Whiston Hospital
Coventry & Warwickshire Partnership NHS Trust	England	Lakeview ECT Clinic
HSE Mid-West	Republic of Ireland	Limerick University Hospital
Lincolnshire Partnership NHS Foundation Trust	England	Lincoln County Hospital ECT Department
Essex Partnership University NHS Foundation Trust	England	Linden Centre ECT Clinic
Sheffield Health and Social Care NHS Foundation Trust	England	Longley Centre ECT Suite
East London NHS Foundation Trust	England	Luton Treatment Centre
Kent & Medway NHS & Social Care Partnership Trust	England	Maidstone ECT Service
Aneurin Bevan University Health Board	Wales	Maindiff Court ECT Department
Belfast Health & Social Care Trust	Northern Ireland	Mater Hospital
South London and Maudsley (SLaM)	England	Maudsley Hospital
HSE West	Republic of Ireland	Mayo General Hospital
Nottinghamshire Healthcare NHS Trust	England	Millbrook Mental Health Unit
Humber Mental Health Teaching Trust	England	Miranda House
Greater Manchester West Mental Health NHS Foundation Trust	England	Moorside ECT Clinic
Cumbria, Northumberland, Tyne and Wear NHS Trust	England	Morpeth Treatment Centre
Central & North West London NHS Foundation Trust	England	Northwick Park Hospital ECT Clinic
Western Health and Social Care Trust	Northern Ireland	Omagh Hospital and Primary Care Complex ECT Service
Pennine Care NHS Trust	England	Parklands House ECT Clinic (Oldham)
Lancashire Care NHS Trust	England	Pendleview, Royal Blackburn Hospital

Berkshire Healthcare NHS Foundation Trust	England	Prospect Park Hospital ECT Clinic
Nottinghamshire Healthcare NHS Trust	England	Queens Medical Centre
Derbyshire Healthcare NHS Foundation Trust	England	Radbourne ECT Clinic
Rotherham, Doncaster & South Hamber Mental Health NHS Foundation Trust	England	Rotherham ECT Suite
Greater Manchester West Mental Health NHS Foundation Trust	England	Royal Bolton Hospital Rivington Unit
East London NHS Foundation Trust	England	Royal London Hospital Tower Hamlets ECT Clinic
Lancashire Care NHS Trust	England	Royal Preston Hospital ECT Treatment Suite
Isle of Wight NHS Trust	England	Sevenacres Hospital
Health Service Executive West	Republic of Ireland	Sligo General Hospital ECT Clinic
Dorset Healthcare NHS Foundation Trust	England	St Anns Hospital Purbeck Suite
Midlands Partnership NHS Foundation Trust	England	St George's Hospital, Stafford
St John of God Hospital	Republic of Ireland	St John of God Hospital ECT Clinic
St Patricks Mental Health Services	Republic of Ireland	St Patrick's University Hospital ECT Clinic
2gether NHS Foundation Trust	England	Stonebow Unit
North East London Foundation Trust	England	Sunflowers Court
Health Service Executive	Republic of Ireland	Tallaght University Hospital
Somerset Partnership NHS Trust	England	Taunton, Wellsprings Hospital
Essex Partnership University NHS Foundation Trust	England	The Lakes Mental Health Unit
Birmingham and Solihull Mental Health Trust	England	The Oleaster National Centre for Mental Health ECT Department

Midlands Partnership NHS Foundation Trust	England	The Redwoods Centre
HSE West	Republic of Ireland	University College Hospital
Oxford Health NHS Foundation Trust	England	Warneford Hospital
Norfolk and Suffolk Mental Health Partnership NHS Trust	England	Wedgwood House
Oxford Health NHS Foundation Trust	England	Whiteleaf Centre
Devon Partnership NHS Trust	England	Wonford House Hospital ECT Clinic
Norfolk and Suffolk NHS Foundation Trust	England	Woodlands ECT Clinic
Sussex Partnership NHS Trust	England	Worthing ECT Unit

APPENDIX 2: FULL DATA COLLECTION TOOL

Name of ECT Clinic*

Demographic Details

Patient's local clinic ID*

Either use the patient's local medical records number, or assign unique numbers to each of your ECT patients for the purpose of these data returns. Do NOT use NHS numbers.

Age of patient (at the first treatment in this course) ex: 23

Age in years; do not use decimal points or fractions.

Gender

- Male
- Female
- Other

ECT Parameters

Electrode placement used at first session*

- Right unilateral
- Left unilateral
- Bitemporal
- Bifrontal
- Other

Pulse width used at first session*

- Brief pulse (0.6 - 7.0 ms)
- Brief pulse (0.5 ms)
- Ultrabrief pulse (0.25- 0.3 ms)

Type of ECT course (see FAQs for complete definitions)*

- Acute (i.e. at least twice-weekly, to treat active symptoms)
- Continuation (i.e. for preventing early relapse (<6 months))
- Maintenance (i.e. for preventing recurrence (>6 months))

Acute

Number of treatments given in this acute course

It is not uncommon for an acute course to be longer than 72 treatments.

Frequency of treatments

- Two times weekly
- Three times weekly
- Daily
- Three times weekly then two times weekly
- Other

Stimulus dosing method used at first session(s) *

- Dose titration (i.e. establish seizure threshold then use e.g. 6 x ST for unilateral or 7.5 x ST for bilateral ECT)
- Age-based
- Fixed dose
- Other

Clinical Details

Medical condition treated with ECT *

- Depressive episode
- Mixed affective episode
- Manic episode
- Schizophrenia
- Catatonia of another cause or unknown cause
- Neuroleptic malignant syndrome
- Other (please only use this option if it is impossible to use any of the diagnostic categories above)

Depressive episode - Long-term diagnosis*

- First affective episode
- Recurrent depressive disorder
- Bipolar affective disorder
- Schizoaffective disorder

Depressive episode - Presence of catatonia at initiation of this acute course of ECT*

- With catatonic symptoms
- Without catatonic symptoms

Depressive episode - Presence of psychosis at initiation of this acute course of ECT *

- With psychotic symptoms
- Without psychotic symptoms

Mixed affective episode - Long-term diagnosis*

- First affective episode
- Bipolar affective disorder
- Schizoaffective disorder

Mixed affective episode - Presence of catatonia at initiation of this acute course of ECT *

- With catatonic symptoms
- Without catatonic symptoms

Mixed affective episode - Presence of psychosis at initiation of this acute course of ECT *

- With psychotic symptoms
- Without psychotic symptoms

Manic episode - Long-term diagnosis*

- First affective episode
- Bipolar affective disorder
- Schizoaffective disorder

Manic episode - Presence of catatonia at initiation of this acute course of ECT*

- With catatonic symptoms
- Without catatonic symptoms

Manic episode - Presence of psychosis at initiation of this acute course of ECT*

- With psychotic symptoms
- Without psychotic symptoms

Schizophrenia - Sequence of current episode*

- First episode
- Recurrent or chronic

Schizophrenia - Presence of catatonia at initiation of this acute course of ECT*

- With catatonic symptoms
- Without catatonic symptoms

Schizophrenia - Presence of psychosis at initiation of this acute course of ECT*

- With psychotic symptoms
- Without psychotic symptoms

Catatonia of another cause or unknown cause - Underlying cause (if known)

Only use this category if the catatonia being treated was NOT thought to be caused by a mood episode or by schizophrenia.

Other medical condition treated with ECT

Try to avoid this selection, but if you must use this option, try to use ICD-70 diagnostic categories and be specific as possible.

Reason for using ECT (tick all that apply)*

Rapid response required

Poor-response to pharmacological and/or psychological treatments (i.e. treatment resistance)

Poor concordance with drug treatment

Co-morbidities make drug treatment less desirable

Pregnancy makes drug treatment less desirable

Breastfeeding makes drug treatment less desirable

Patient choice

Carer choice

Other

Reason for requiring rapid response (tick all that apply)

Severe self-neglect
Poor oral intake
Risk of suicide
Protection of others
Distressing symptoms
Other

Location of patient at initiation of acute course of ECT *

- Inpatient
- Outpatient

Legal Status

Legal status at initiation of acute course of ECT *

- Informal
- Detained

Was an urgent treatment authorisation used?*

- Urgent treatment authorisation used
- Urgent treatment authorisation not used

Mental capacity at initiation of acute course of ECT *

- Had capacity to consent to ECT
- Lacked capacity to consent to ECT

Legal status at end of acute course of ECT *

- Informal
- Detained

Mental capacity at end of acute course of ECT *

- Had capacity to consent to ECT
- Lacked capacity to consent to ECT

Outcome

Clinical Global Impression Severity (CGI-S} score prior to first treatment in this acute course *

- 1. Normal, not at all ill
- 2. Borderline mentally ill
- 3. Mildly ill
- 4. Moderately ill
- 5. Markedly ill
- 6. Severely ill
- 7. Amongst the most severely ill patients

Clinical Global Impression Improvement (CGI-1} score after completion of this acute course *

- 1. Very much improved
- 2. Much improved
- 3. Minimally improved
- 4. No change
- 5. Minimally worse
- 6. Much worse
- 7. Very much worse

Psychiatric symptom rating scale used (tick all that apply)

Montgomery-Asberg Depression Rating Scale (MADRS)

Hamilton Depression Rating Scale (HAM-D)

Young Mania Rating Scale (YMRS)

Bush-Francis Catatonia Rating Scale (BFCRS)

Other

Montgomery-Asberg Depression Rating Scale (MADRS) - Score prior to first treatment

Montgomery-Asberg Depression Rating Scale (MADRS) - Score after final treatment

Hamilton Depression Rating Scale (HAM-D) - Score prior to first treatment

Hamilton Depression Rating Scale (HAM-D) - Score after final treatment

Young Mania Rating Scale (YMRS) - Score prior to first treatment

Young Mania Rating Scale (YMRS) - Score after final treatment

Bush-Francis Catatonia Rating Scale (BFCRS) - Score prior to first treatment

Bush-Francis Catatonia Rating Scale (BFCRS) - Score after final treatment

Other psychiatric symptom rating scale used - Score prior to first treatment

Other psychiatric symptom rating scale used - Score after final treatment

Subjective memory assessment score (using Item 77 on the Comprehensive Psychopathological Rating Scale (CPRS)) prior to first treatment in this acute course

O - Memory as usual

2 - Occasional increased lapses of memory

4 - Reports of socially inconvenient or disturbing loss of memory

6 - Complaints of complete inability to remember

This was not recorded

Subjective memory assessment score (using Item 77 on the Comprehensive Psychopathological Rating Scale (CPRS)) after last treatment in this acute course

O - Memory as usual

2 - Occasional increased lapses of memory

4 - Reports of socially inconvenient or disturbing loss of memory

6 - Complaints of complete inability to remember

This was not recorded

Objective cognitive test used (tick all that apply)*

Montreal Cognitive Assessment (MOCA)

Mini-Mental State Examination (MMSE)

Other

Montreal Cognitive Assessment (MOCA} - Score prior to first treatment in this course*

Montreal Cognitive Assessment (MOCA} - Score after final treatment in this course

Mini-Mental State Examination (MMSE) - Score prior to first treatment in this course*

Mini-Mental State Examination (MMSE) - Score after final treatment in this course

Other objective cognitive test used - Score prior to first treatment in this course*

Other objective cognitive test used - Score after final treatment in this course

Continuation

Number of treatments given in this continuation course

Do not include any treatments given in the preceding acute course of ECT, which should have been counted as part of a separate ECTAS data submission.

Frequency of treatments

- Every l week
- Every l ½ weeks
- Every 2 weeks
- Every 3 weeks
- Every 4 weeks
- A varied schedule of decreasing frequency over time

Details of varied schedule of decreasing frequency over time

Enter the intended, or average, frequency of treatments. Ignore minor alterations to the treatment schedule due to holidays, physical illness, etc.

Clinical Details

Medical condition treated with the acute course of ECT that preceeded this continuation course*

- Depressive episode
- Mixed affective episode
- Manic episode
- Schizophrenia
- Catatonia of another cause or unknown cause
- Neuroleptic malignant syndrome
- Other (please only use this option if it is impossible to use any of the diagnostic categories above)

Reason for using continuation ECT (tick all that apply)*

Previous relapse soon after cessation of a prior acute course of ECT

Poor concordance with prophylactic drug treatment

Co-morbidities make prophylactic drug treatment less desirable

Pregnancy makes prophylactic drug treatment less desirable

Breastfeeding makes prophylactic drug treatment less desirable

Patient choice

Carer choice

Other

Location of patient at first treatment in this continuation course*

- Inpatient
- Outpatient

Location of patient at last treatment in this continuation course*

- Inpatient
- Outpatient

Legal Status

Legal status at first treatment in this continuation course*

- Informal
- Detained

Mental capacity at first treatment in this continuation course*

- Had capacity to consent to ECT
- Lacked capacity to consent to ECT

Legal status at last treatment in this continuation course*

- Informal
- Detained

Mental capacity at last treatment in this continuation course*

- Had capacity to consent to ECT
- Lacked capacity to consent to ECT

Outcome

Clinical Global Impression Severity (CGI-S} score prior to first treatment in this continuation course*

- l. Normal, not at all ill
- 2. Borderline mentally ill
- 3. Mildly ill
- 4. Moderately ill
- 5. Markedly ill
- 6. Severely ill
- 7. Amongst the most severely ill patients

Clinical Global Impression Improvement (CGI-1} score after completion of this continuation course*

- l. Very much improved
- 2. Much improved
- 3. Minimally improved
- 4. No change
- 5. Minimally worse
- 6. Much worse
- 7. Very much worse

Psychiatric symptom rating scale used

Montgomery-Asberg Depression Rating Scale
(MADRS) Hamilton Depression Rating Scale (HAM-
D)

Young Mania Rating Scale (YMRS)

Bush-Francis Catatonia Rating Scale (BFCRS)
Other

Subjective memory assessment score (using Item 77 on the Comprehensive Psychopathological Rating Scale (CPRS)) prior to first treatment in this continuation course

O - Memory as usual

2 - Occasional increased lapses of memory

4 - Reports of socially inconvenient or disturbing loss of memory

6 - Complaints of complete inability to remember

This was not recorded

Subjective memory assessment score (using Item 17 on the Comprehensive Psychopathological Rating Scale (CPRS)) after last treatment in this continuation course

O - Memory as usual

2 - Occasional increased lapses of memory

4 - Reports of socially inconvenient or disturbing loss of memory

6 - Complaints of complete inability to remember

This was not recorded

Objective cognitive test used (tick all that apply)* Montreal Cognitive Assessment (MOCA)

Mini-Mental State Examination (MMSE)

Other

Maintenance

Number of treatments given in this maintenance course

Do not include any treatments given in the preceding acute or continuation

Total number of consecutive maintenance treatment given

e.g. for an annual data return of a patient who has had fortnightly mECT for 3 years, you might enter 78 here, but just 26 in the box above.

Frequency of treatments

- Every 1 week
- Every 1½ weeks
- Every 2 weeks
- Every 3 weeks
- Every 4 weeks
- Varied schedule of decreasing frequency over time
- Other

Details of varied schedule of decreasing frequency over time

Enter the intended, or average, frequency of treatments. Ignore minor alterations to the treatment schedule due to holidays, physical illness, etc.

Clinical Details

Medical condition requiring maintenance course of ECT *

- Recurrent depressive episode
- Bipolar affective disorder
- Schizoaffective disorder
- Schizophrenia
- Recurrent catatonia of another cause or unknown cause
- Other (please only use this option if it is impossible to use any of the diagnostic categories above)

Reason for using maintenance ECT (tick all that apply)*

Previous recurrence after cessation of a prior continuation course of ECT

Poor concordance with prophylactic drug treatment

Co-morbidities make prophylactic drug treatment less desirable

Pregnancy makes prophylactic drug treatment less desirable

Breastfeeding makes prophylactic drug treatment less desirable

Patient choice

Carer choice

Other

Location of patient at first treatment in this maintenance course*

- Inpatient
- Outpatient

Location of patient at last treatment in this maintenance course*

- Inpatient
- Outpatient

Legal Status

Legal status at first treatment in this maintenance course*

- Informal
- Detained

Mental capacity at first treatment in this maintenance course*

- Had capacity to consent to ECT
- Lacked capacity to consent to ECT

Legal status at last treatment in this maintenance course*

- Informal
- Detained

Mental capacity at last treatment in this maintenance course*

- Had capacity to consent to ECT
- Lacked capacity to consent to ECT

Outcome

Clinical Global Impression Severity (CGI-S} score prior to first treatment in this maintenance course (NB it is normal for patients to have a relatively low score)*

- l. Normal, not at all ill
- 2. Borderline mentally ill
- 3. Mildly ill
- 4. Moderately ill
- 5. Markedly ill
- 6. Severely ill
- 7. Amongst the most severely ill patients

Clinical Global Impression Improvement (CGI-1} score after last treatment in this maintenance course*

- l. Very much improved
- 2. Much improved
- 3. Minimally improved
- 4. No change
- 5. Minimally worse
- 6. Much worse
- 7. Very much worse

Psychiatric symptom rating scale used (tick all that apply)

Montgomery-Asberg Depression Rating Scale (MADRS)

Hamilton Depression Rating Scale (HAM-D)

Young Mania Rating Scale (YMRS)

Bush-Francis Catatonia Rating Scale (BFCRS) Other

Subjective memory assessment score (using Item 17 on the Comprehensive Psychopathological Rating Scale (CPRS)) prior to first treatment in this maintenance course O - Memory as usual

2 - Occasional increased lapses of memory

4 - Reports of socially inconvenient or disturbing loss of memory

6 - Complaints of complete inability to remember

This was not recorded

Subjective memory assessment score (using Item 77 on the Comprehensive Psychopathological Rating Scale (CPRS)) after last treatment in this maintenance course

O - Memory as usual

2 - Occasional increased lapses of memory

4 - Reports of socially inconvenient or disturbing loss of memory

6 - Complaints of complete inability to remember

This was not recorded

Objective cognitive test used (tick all that apply)*

Montreal Cognitive Assessment (MOCA)

Mini-Mental State Examination (MMSE)

Other

Please press the button below to submit your response

APPENDIX 3 : HODGES & ECT RECALL TEST

HODGES MEMORY QUESTIONNAIRE

Childhood	1)	Can you name your school? .....
	2)	What did you do on leaving school? .....
Adulthood	1)	Where/What was your first job/responsibilities .....
	2)	What was the date of your wedding/mother's maiden name .....
Recent	1)	Can you tell me something you did yesterday/ate for tea .....
	2)	What is the name of your doctor/nurse? .....

TOTAL SCORE OUT OF 6 =	**/6**

ECT MEMORY RECALL TEST

Questions	**Value**	**Score**
1) What year is it? *Correct answer score 1.*	1	
2) What month is it? *Correct answer score 1.*	1	
3) Repeat this address. *Score 1 for each correct item.* Ask the patient to repeat back to you a fictional name and address. Ensure they are can repeat the name and address correctly before moving on. Example: *John / Smith / 42 / West Street / Bedford*.	5	
4) About what time is it? *Score 1 if answer provided is within 60 minutes of correct time, otherwise score 0.*	1	
5) Count back from 20 to 1. *Correct answer score 1.*	1	
6) Say months in reverse. *Correct answer score 1.* Ask the patient to list the months in order (forwards), then give them backwards, starting from December. If the patient forgets where they were, you may provide a prompt.	1	
7) Repeat the address. *Score 1 for each correct item.*	5	
TOTAL WEIGHTED SCORE FOR TEST	**/15**	

APPENDIX 4: HAMILTON DEPRESSION RATING SCALE

Original 17-item version (HAM-D17)

Please note that this scale is in the public domain.

Ratings should be based upon symptoms over the past one week.

Ratings should be based on a clinical interview, supplemented, where necessary, by collateral history from caregivers.

HAMILTON DEPRESSION RATING SCALE (HAM-D17)

1 DEPRESSED MOOD *(sadness, hopeless, helpless, worthless)*
- 0 |__| Absent.
- 1 |__| These feeling states indicated only on questioning.
- 2 |__| These feeling states spontaneously reported verbally.
- 3 |__| Communicates feeling states non-verbally, i.e. through facial expression, posture, voice and tendency to weep.
- 4 |__| Patient reports virtually only these feeling states in his/her spontaneous verbal and non-verbal communication.

2 FEELINGS OF GUILT
- 0 |__| Absent.
- 1 |__| Self reproach, feels he/she has let people down.
- 2 |__| Ideas of guilt or rumination over past errors or sinful deeds.
- 3 |__| Present illness is a punishment. Delusions of guilt.
- 4 |__| Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations.

3 SUICIDE
- 0 |__| Absent.
- 1 |__| Feels life is not worth living.
- 2 |__| Wishes he/she were dead or any thoughts of possible death to self.
- 3 |__| Ideas or gestures of suicide.
- 4 |__| Attempts at suicide (any serious attempt rate 4).

4 INSOMNIA: EARLY IN THE NIGHT
- 0 |__| No difficulty falling asleep.
- 1 |__| Complains of occasional difficulty falling asleep, i.e. more than ½ hour.
- 2 |__| Complains of nightly difficulty falling asleep.

5 INSOMNIA: MIDDLE OF THE NIGHT
- 0 |__| No difficulty.
- 1 |__| Patient complains of being restless and disturbed during the night.
- 2 |__| Waking during the night – any getting out of bed rates 2 (except for purposes of voiding).

6 INSOMNIA: EARLY HOURS OF THE MORNING
- 0 |__| No difficulty.
- 1 |__| Waking in early hours of the morning but goes back to sleep.
- 2 |__| Unable to fall asleep again if he/she gets out of bed.

7 WORK AND ACTIVITIES
- 0 |__| No difficulty.
- 1 |__| Thoughts and feelings of incapacity, fatigue or weakness related to activities, work or hobbies.
- 2 |__| Loss of interest in activity, hobbies or work – either directly reported by the patient or indirect in listlessness, indecision and vacillation (feels he/she has to push self to work or activities).
- 3 |__| Decrease in actual time spent in activities or decrease in productivity. Rate 3 if the patient does not spend at least three hours a day in activities (job or hobbies) excluding routine chores.
- 4 |__| Stopped working because of present illness. Rate 4 if patient engages in no activities except routine chores, or if patient fails to perform routine chores unassisted.

8 RETARDATION (slowness of thought and speech, impaired ability to concentrate, decreased motor activity)
- 0 |__| Normal speech and thought.
- 1 |__| Slight retardation during the interview.
- 2 |__| Obvious retardation during the interview.
- 3 |__| Interview difficult.
- 4 |__| Complete stupor.

9 AGITATION
- 0 |__| None.
- 1 |__| Fidgetiness.
- 2 |__| Playing with hands, hair, etc.
- 3 |__| Moving about, can't sit still.
- 4 |__| Hand wringing, nail biting, hair-pulling, biting of lips.

10 ANXIETY PSYCHIC
- 0 |__| No difficulty.
- 1 |__| Subjective tension and irritability.
- 2 |__| Worrying about minor matters.
- 3 |__| Apprehensive attitude apparent in face or speech.
- 4 |__| Fears expressed without questioning.

11 ANXIETY SOMATIC (physiological concomitants of anxiety) such as:
gastro-intestinal – dry mouth, wind, indigestion, diarrhea, cramps, belching
cardio-vascular – palpitations, headaches
respiratory – hyperventilation, sighing
urinary frequency
sweating
- 0 |__| Absent.
- 1 |__| Mild.
- 2 |__| Moderate.
- 3 |__| Severe.
- 4 |__| Incapacitating.

12 SOMATIC SYMPTOMS GASTRO-INTESTINAL
- 0 |__| None.
- 1 |__| Loss of appetite but eating without staff encouragement. Heavy feelings in abdomen.
- 2 |__| Difficulty eating without staff urging. Requests or requires laxatives or medication for bowels or medication for gastro-intestinal symptoms.

13 GENERAL SOMATIC SYMPTOMS
- 0 |__| None.
- 1 |__| Heaviness in limbs, back or head. Backaches, headaches, muscle aches. Loss of energy and fatigability.
- 2 |__| Any clear-cut symptom rates 2.

14 GENITAL SYMPTOMS (symptoms such as loss of libido, menstrual disturbances)
- 0 |__| Absent.
- 1 |__| Mild.
- 2 |__| Severe.

15 HYPOCHONDRIASIS
- 0 |__| Not present.
- 1 |__| Self-absorption (bodily).
- 2 |__| Preoccupation with health.
- 3 |__| Frequent complaints, requests for help, etc.
- 4 |__| Hypochondriacal delusions.

16 LOSS OF WEIGHT ***(RATE EITHER a OR b)***

a) According to the patient:	**b) According to weekly measurements:**
0 |__| No weight loss.	0 |__| Less than 1 lb weight loss in week.
1 |__| Probable weight loss associated with present illness.	1 |__| Greater than 1 lb weight loss in week.
2 |__| Definite (according to patient) weight loss.	2 |__| Greater than 2 lb weight loss in week.

17 INSIGHT
- 0 |__| Acknowledges being depressed and ill.
- 1 |__| Acknowledges illness but attributes cause to bad food, climate, overwork, virus, need for rest, etc.
- 2 |__| Denies being ill at all.

Total score: |__|__|

Ratings should be based upon symptoms over the past one week.

Ratings should be based on a clinical interview, supplemented, where necessary, by collateral history from caregivers.

Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery, and Psychiatry, 23*(1), 56–62. https://doi.org/10.1136/jnnp.23.1.56

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