

SEAN Annual Report 2019

A summary
of ECT in
Scotland for
2009-2018

Report prepared by
Scottish ECT Accreditation Network

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Summary Hospital Activity Table 2018

Hospital	Patients	Episodes	Treatments for episodes commencing in 2018 ⁹	Treatments in 2018 for all Episodes ¹⁰	Stimulations	Median Treatments per Episode	Median Stimulations per Episode
Argyll & Bute	*	*	20	21	28	5	7
Carseview	13	13	113	115	131	7	10
Forth Valley Royal	13	14	170	166	198	12	13
Hairmyres ²	18	21	249	245	298	12	15
Huntlyburn House	*	10	104	94	116	10	12
Inverclyde	11	12	65	88	69	6	6
Leverndale ³	25	28	297	354	340	10	12
Midpark Hospital	16	25	241	235	257	9	10
Murray Royal	16	20	215	219	238	10	10
New Craigs	12	12	102	87	115	7	9
Queen Margaret ⁴	31	39	408	391	457	12	12
Royal Cornhill	48	56	539	631	631	10	10
Royal Edinburgh ⁵	38	43	511	682	622	10	13
St John's	17	20	241	258	262	8	10
Stobhill ⁶	33	38	378	378	420	10	12
Susan Carnegie	*	*	61	61	77	9	10
Wishaw ⁷	27	32	398	353	469	12	13
Woodland View ⁸	23	30	263	261	276	10	11
Total	352	424	4,375	4,639	5,004	10	12

Notes:

* Indicates values that have been suppressed because of the risk of disclosure.

- In order to prevent rates being skewed by continuation/maintenance episodes administered by hospitals, medians are presented in the above table.
- Includes patients from Udston Hospital.
- Includes patients from Western Isles Hospital, Royal Alexandra Hospital and Dykebar Hospital.
- Includes patients from Stratheden Hospital and Whyteman's Brae Hospital (from November 2011 onwards).
- Includes patients from Herdmanflat, Royal Victoria, Rosslynlee and Midlothian Community Hospitals.
- Includes patients from Vale of Leven, Parkhead and Gartnavel Royal Hospitals.
- Includes patients from Monklands Hospital, Coathill Hospital, Beckford Lodge and Airbles Road Centre.
- Ailsa & Crosshouse moved to Woodland view during 2016.
- Treatments in this column are associated with episodes that commenced in 2018. These treatments may have occurred during 2018 or 2019.
- A number of treatments may be associated with episodes that began in years prior to the year to which the majority of this annual report relates (2018). We have included this information as an extra column to recognise these further treatments that occurred during 2018.

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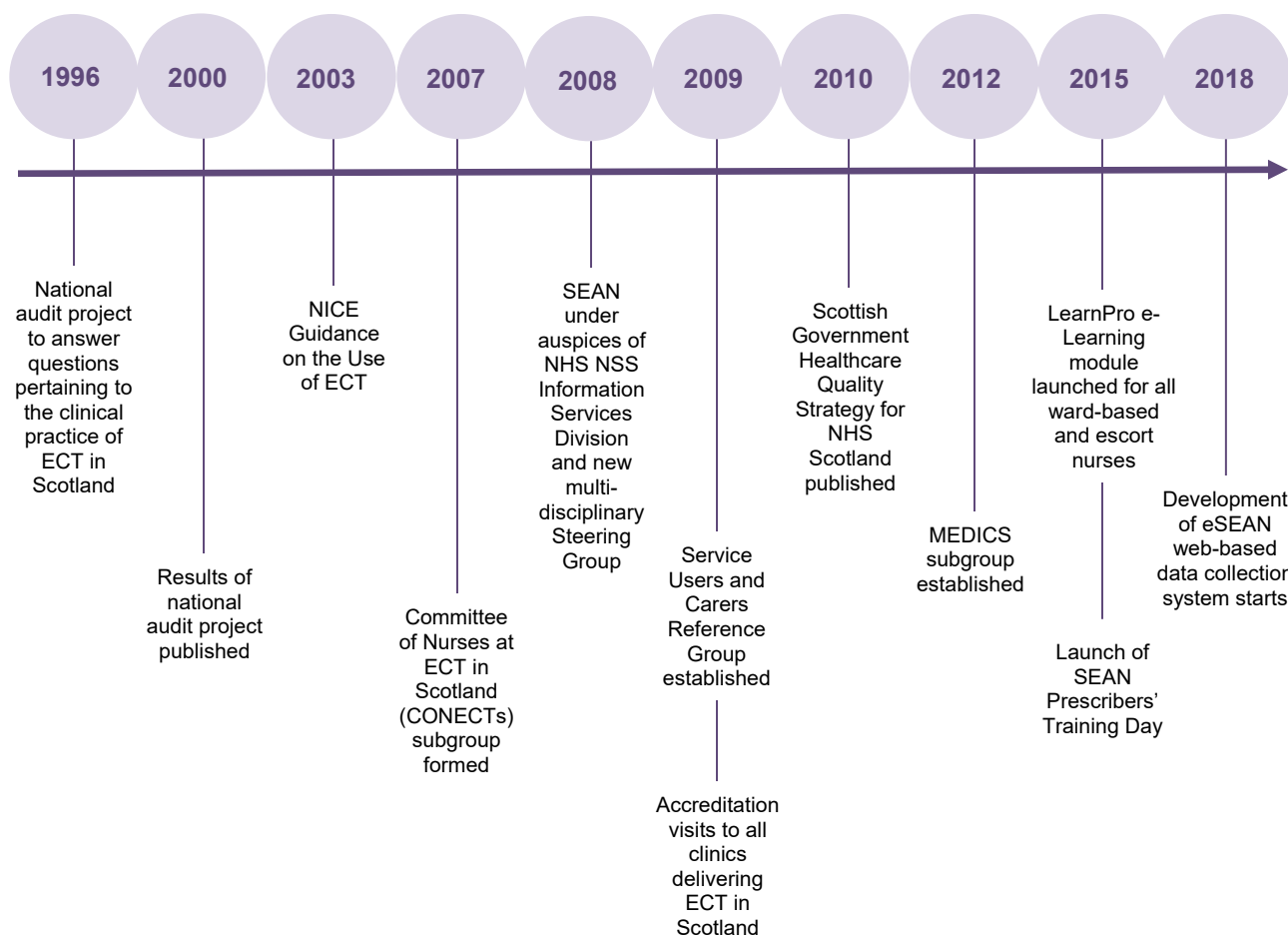
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Background

Key developments in the Scottish Electroconvulsive Therapy Audit Network (SEAN) from its inception in 1996 are outlined below. SEAN has evolved from an initial national audit project, examining the clinical practice of ECT in Scotland, to an established clinical network and accreditation service.

SEAN engages support from a variety of clinical staff, including: consultant psychiatrists, consultant anaesthetists, clinical psychologists, ECT nurses, operating department practitioners and recovery nurses.

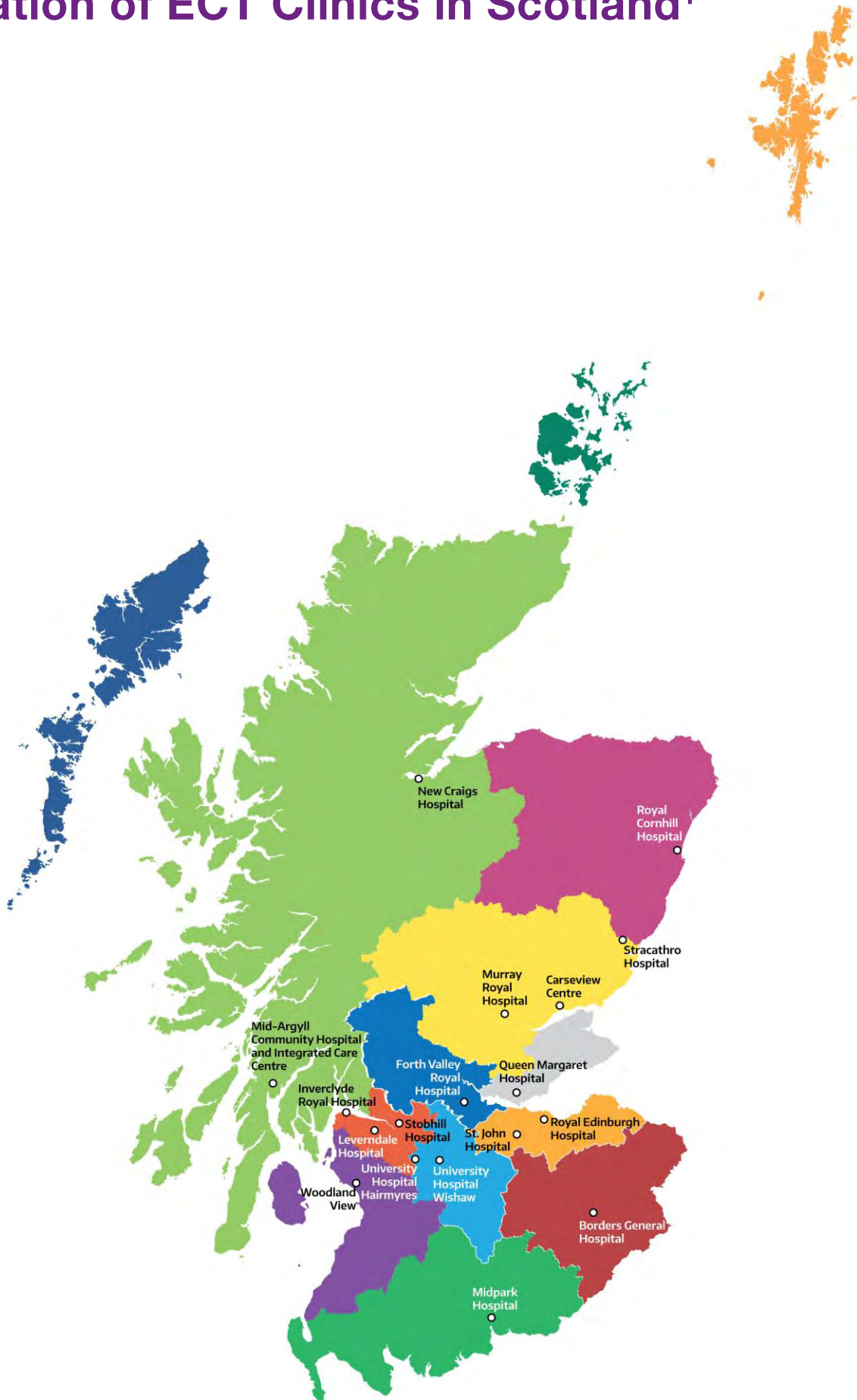
Importantly, we also actively encourage service users and carers to contribute to the work of SEAN to ensure that views of patients and relatives are included.



SEAN continues to build on its experience to date and is currently in the process of developing a web-based replacement for the clinical system currently used to record information about ECT treatments in Scotland.

This year (2019) also sees the commencement of a further round of accreditation visits to all clinics delivering ECT in Scotland to assess these services against the SEAN Standards which were updated in January 2019.

Location of ECT Clinics in Scotland¹



Introduction

This report summarises data that have been collected via an electronic care pathway installed in all ECT treatment clinics in Scotland. Data are collected on every aspect of patient care relating to ECT that are reflected in, and can be measured, against the SEAN standards⁴.

The data within this report are presented in sections relating to patient characteristics, consent and legal status, diagnosis, details of the actual treatment administered and clinical outcomes. In addition to this information, there is also a summary table available at the beginning of the report.

This year's report aims to include more information on ECT activity for a ten-year period, from 2009-2018, rather than focus predominantly on the latest year. Where possible, most years will be shown individually to allow the latest year's figures to be considered in the context of the wider period.

A Report Writing Group was formed with representation from each discipline involved with the delivery of ECT. As a result, the report meaningfully reflects clinical issues relevant to the practice of ECT by having input from professionals of all disciplines required for the provision of a high quality clinical service. This provides clinical staff with more precise information on certain aspects of care and treatment relevant to their day to day practice and thereby enables them to evaluate their current practice and improve the quality of patient care.

The current SEAN standards follow the publication of the Royal College of Psychiatrists ECT Handbook (3rd Edition)⁵; the Royal College of Anaesthetists Guidelines for the provision of Anaesthetic Services⁶ and the Association of Anaesthetists of Great Britain & Ireland Safety Guidelines on Immediate Post-anaesthesia Recovery 2013⁷.

From 2015, we devised a new, more rigorous, accreditation process involving both announced and unannounced visits (described in Section 7). Updated, and more challenging, SEAN Standards were published in January 2019⁴.

Data are presented in tables and charts with accompanying text to alert the reader to points of interest and compliance with available national standards where appropriate. The emphasis within this report is on providing a descriptive account of ECT activity while protecting the interests and confidentiality of patients undergoing treatment. To this end, we are duty bound to introduce a degree of suppression within the report tables and charts in accordance with ISD's Disclosure Control Protocol⁸. We are continuing to work to improve our data collection by working closely with ECT clinics.

Summary and Key Findings

The number of treatment centres responsible for the safe delivery of ECT as an effective therapeutic treatment has varied slightly over the period 2009-2018 and currently there are eighteen hospitals providing an ECT service.

- In 2018, a total of 352 patients received ECT through 424 treatment episodes with a median number of 10 treatments per episode.
- Around one tenth of ECT episodes each year, on average 9%, involved ECT administered as an emergency life-saving treatment during the period 2009-2018.
- Patients receiving ECT had expressed a specific preference for the treatment in approximately 25% of episodes over the ten years to 2018, ranging from 20% to 31% in specific years.
- Approximately 44% of episodes each year involved patients who received ECT because they had previously responded well to the treatment.
- The majority of patients who received ECT were suffering from symptoms of depression either in the context of depressive or bipolar disorders and the most prevalent single ICD-10 diagnosis remains Depression without Psychosis (42% in 2018).
- The most common indication remains treatment resistance to anti-depressant medication and this accounts for just over half of episodes in each year from 2009 to 2018.
- The majority of treatments (58% in 2018) involved patients deemed to have capacity and thus capable of giving informed consent.
- 68% of patients in 2018 who completed an episode of ECT showed significant improvement as evidenced by a 50% or greater improvement in MADRS score over the course of treatment.
- In 2018, around two thirds (64%) of patients with capacity displayed this improvement following treatment, compared with three quarters (75%) of patients without capacity. The greater improvement among patients who lack capacity has been observed in previous years.
- ECT was given to adults of all age groups, with a higher percentage of females to males receiving treatment each year (ranging from 63% to 73%). This reflects the relative incidence of depressive illness in woman compared with men.
- The percentage of patients from ethnic minorities receiving ECT remains lower than the percentage in the whole general population (around 4%).
- The majority of patients (69%) received just one episode of treatment since the SEAN audit began in 2005 whilst a small proportion (4%) received 5 or more episodes of treatment since 2005. This would appear to be suggestive of the relapsing nature of depressive illness in these particular patients.

- In 2018, 94% of episodes involved exclusively bilateral ECT and this remains the most common treatment approach.
- The most frequently recorded single side effect is headache which has been a documented side effect in approximately 20% to 30% of episodes in the period 2009-2018.
- Critical incidents remain rare among the volume of ECT treatments delivered each year, ranging from 2 to 12 critical incidents annually out of around 4,200 treatments per annum during the years 2009 to 2018. These form a fraction of 1% of treatments.

Methods

The SEAN Annual Report uses records submitted to ISD from hospitals providing ECT treatment in Scotland. The database of records is administered by ISD analysts from the Scottish Healthcare Audits service area.

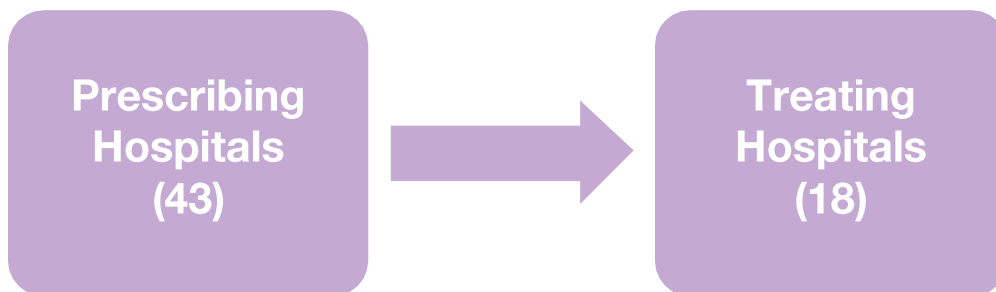
Some tables and charts, where numbers are small, will group years together for disclosure control purposes. To prevent identification of patients, particularly in centres where very few patients are treated, some numbers have been suppressed within report tables and charts in accordance with ISD's Disclosure Control Protocol⁸.

Where small numbers can be calculated from remaining numbers, further values are also suppressed. In charts, small numbers of patients or episodes are suppressed and the values underlying the accompanying bars are replaced with dummy values.

It is the intention of SEAN to record details of all ECT administered in Scotland. All Scottish ECT clinics participate in the audit and this report is based on data received between April and August 2019.

Some hospitals do not deliver ECT as a treatment on site but may prescribe ECT and refer patients to another hospital for treatment. Over the ten-year period we examined, the numbers of prescribing hospitals and treating hospitals varied slightly in different years because services within each NHS board may have been reconfigured during the period.

The current list of 43 prescribing hospitals and 18 treating hospitals is shown in Appendix B.



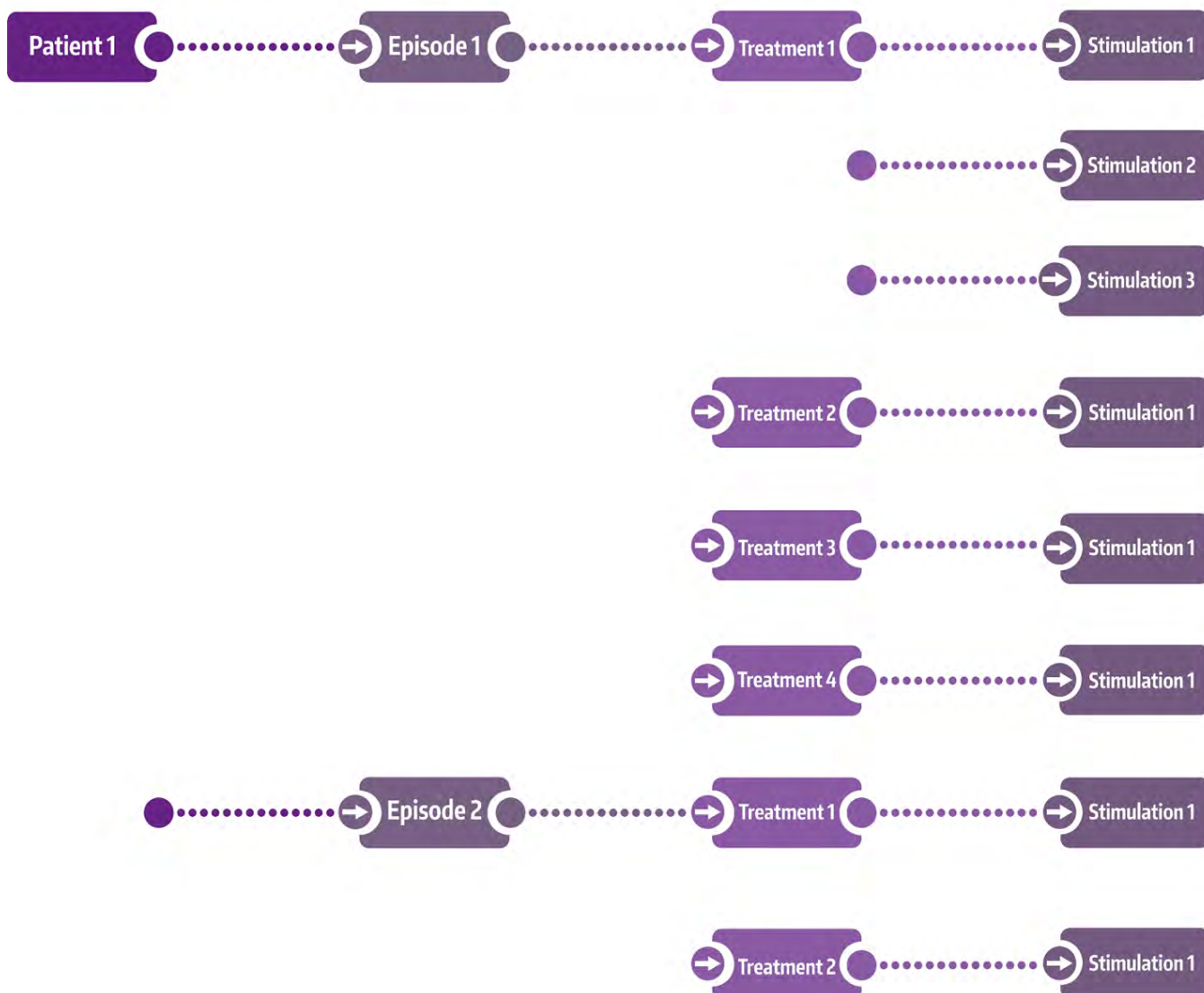
Analyses are presented mainly at the level of an ECT episode, an episode being a series of treatments.

Some sections of the report focus on patients and episodes while others focus on the numbers of treatments (i.e. scheduled visits to the ECT suite) and stimulations (i.e. instance of administering electric current). We also describe the outcomes of ECT where episodes have been completed.

The inclusion of a patient, treatment or stimulation within a particular time period is determined by the date that the episode of ECT commenced.

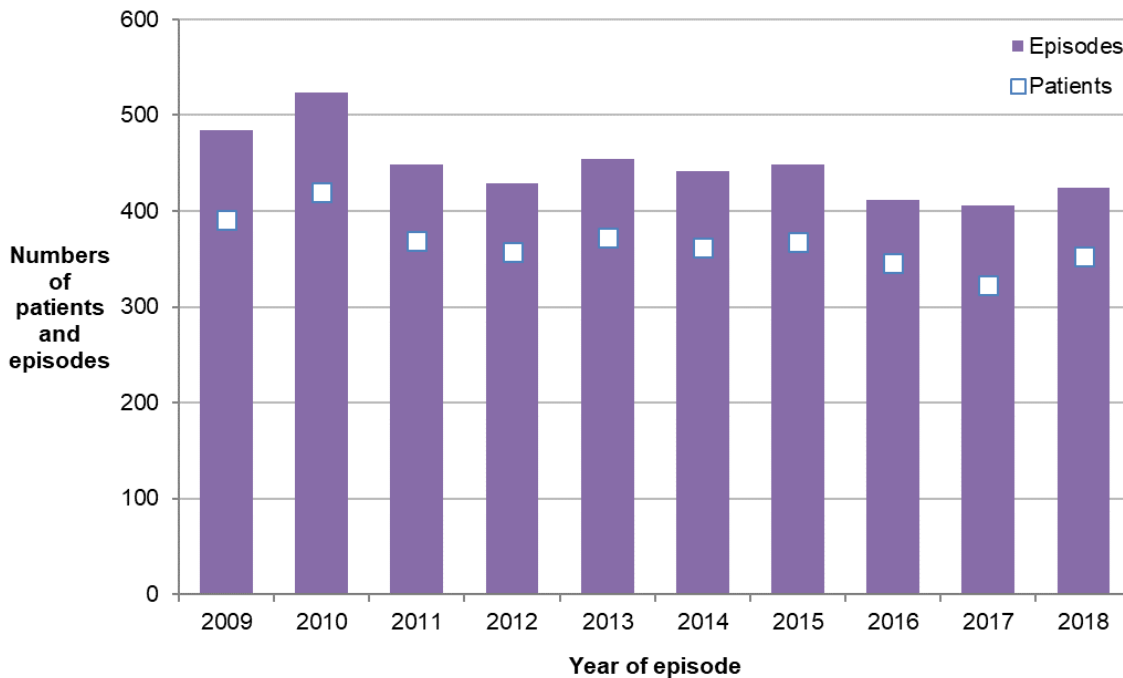
Figure 0.1 demonstrates how this data terminology is applied to ECT treatment and to the report itself using an example of a single patient receiving two episodes of ECT where each episode involved four and two treatments respectively.

Figure 0.1: SEAN data structure



Population figures are based on National Records of Scotland (NRS) (formerly General Register Office for Scotland) mid-year estimates⁹.

The annual number of ECT episodes included in this report is illustrated below along with the respective numbers of patients involved. The majority of patients have one episode of ECT and this is reflected in the chart (Figure 0.2).

Figure 0.2: Numbers of patients and episodes by year (2009-2018)


Data completeness varies over time and Table 0.1 indicates the level of recording of the data items commonly used for routine reports.

As well as incomplete records because of ongoing treatment, records may also be incomplete because of data entry issues (data not available or not entered). When reporting on records that are not fully complete, this will be indicated in accompanying commentary or notes.

A small proportion of records are excluded each year because of data recording issues such as duplicate data entry or records with many missing data items indicating that they were most likely started in error.

Table 0.1: Data completeness for common data items used for reporting (2009-2018)

Data Item(s)	Percentage of episodes or treatments (dependent on data item)									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Age and Sex	100	100	100	100	100	100	100	100	100	100
Diagnosis	92	95	96	98	95	97	96	98	94	93
Indications	98	99	100	100	100	99	100	100	99	99
Side effects assessed	94	93	95	94	95	95	96	96	95	97
ASA	56	73	81	83	84	88	86	89	88	92
Consent & Capacity at start	100	100	100	100	100	100	100	100	100	100
Consent & Capacity at end	60	64	62	70	63	65	62	60	66	63
Complete or discontinued	69	69	66	75	67	69	65	64	70	67
MADRS entry and exit	82	89	88	88	93	92	88	90	83	84
CGI entry and exit	78	83	89	88	96	92	90	94	87	83
Treatment frequency at start	98	99	100	100	100	100	100	100	100	100
Treatment frequency at end	98	99	98	98	99	96	99	98	98	98

Demographics

A hospital by hospital summary table of ECT activity in Scotland is presented inside the front cover of this report. The relative year-on-year use of ECT, by NHS Board throughout Scotland, is shown in Table 1.1.

Table 1.1: Numbers of episodes and treatments, by year and hospital (2009-2018)

Hospital	Episodes										Treatments ¹									
	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
Argyll & Bute	*	*	*	17	10	8	20	7	5	*	39	15	27	114	73	41	185	47	33	20
Carseview	23	28	20	18	18	16	14	16	27	13	218	256	201	193	193	138	118	116	214	113
Forth Valley Royal	13	*	9	*	18	15	14	27	16	14	115	9	47	33	202	176	120	281	140	170
Hairmyres	15	26	15	14	18	18	12	12	11	21	108	224	111	99	158	151	101	158	114	249
Huntlyburn House	9	10	12	7	6	16	11	*	7	10	76	114	164	62	54	128	89	63	51	104
Inverclyde	18	22	13	14	19	14	15	22	25	12	477	414	118	116	281	204	149	249	206	65
Leverndale	42	44	32	38	29	29	30	21	25	28	351	361	318	346	316	317	377	194	261	297
Midpark Hospital	24	22	20	23	25	27	22	21	26	25	223	185	151	199	235	190	173	164	210	241
Murray Royal	16	29	14	14	24	26	25	15	16	20	111	211	107	116	226	243	280	190	197	215
New Craigs	7	14	*	*	*	5	10	*	8	12	73	104	79	37	25	51	95	28	60	102
Queen Margaret	*	8	15	27	24	25	36	42	37	39	44	79	149	327	243	291	333	401	367	408
Royal Cornhill	70	75	77	72	87	76	66	59	67	56	499	546	600	598	728	583	683	595	659	539
Royal Edinburgh	67	64	64	50	51	47	45	54	35	43	741	498	1,117	444	508	784	525	643	482	511
St John's	29	25	24	23	24	31	27	20	18	20	205	202	197	156	191	245	337	269	158	241
Stobhill	48	61	41	34	40	43	47	28	29	38	366	497	301	292	345	339	415	285	345	378
Susan Carnegie	11	6	8	9	9	7	13	10	7	*	86	45	62	90	96	69	129	114	80	61
Wishaw	31	24	19	22	15	9	17	16	18	32	274	155	151	150	144	59	172	169	181	398
Woodland View ²	44	37	48	40	34	30	25	32	29	30	382	307	445	285	283	271	203	223	208	263
Total	484	524	449	429	454	442	449	411	406	424	4,456	4,445	4,413	3,657	4,301	4,280	4,484	4,189	3,966	4,375

Notes:

* Indicates values that have been suppressed because of the potential risk of disclosure.

1. The number of treatments may vary annually depending on each hospital's use of continuation/ maintenance ECT.
2. Ailsa & Crosshouse moved to Woodland View during 2016.
3. Excludes Dr Gray's and Dunnikier where data submission transferred to different hospitals during the period. For Dr Gray's Hospital, prescribed episodes from November 2010 onward are included in data from Royal Cornhill Hospital. For Dunnikier, prescribed episodes from November 2011 onward are included in data from Queen Margaret Hospital.

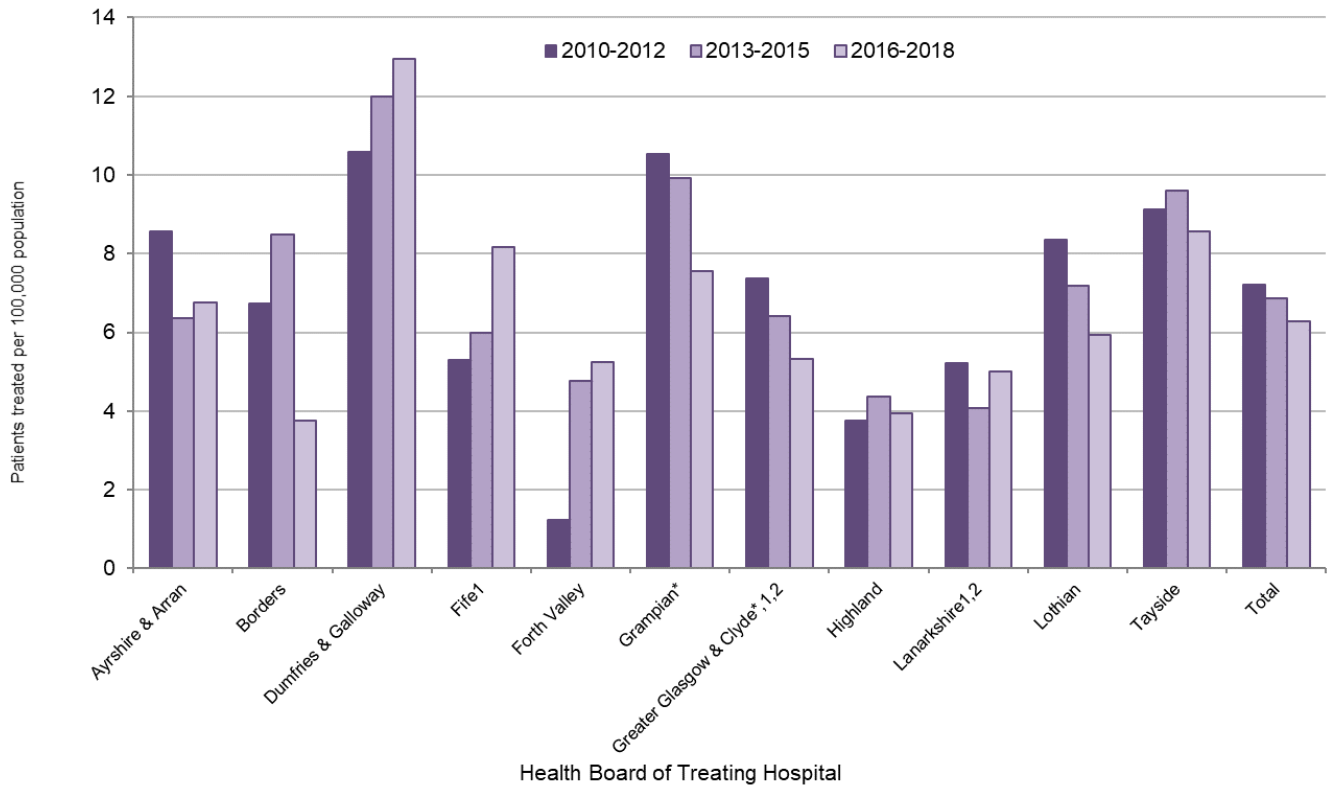
ECT is now provided in 18 units in Scotland. In the last 10 years, services at Dr Gray's (Grampian) and Dunnikier (Fife) transferred to larger units at Royal Cornhill and Queen Margaret Hospital respectively and Ayrshire's clinics at Ailsa and Crosshouse hospitals centralised in the new mental health unit at Woodland View. Some clinics serving urban areas record relatively large numbers of treatment episodes while units serving more remote areas record smaller numbers.

The relative year-on-year use of ECT, by NHS board together with data for Scotland as a whole,

is shown in Figure 1.1. Data for 2010 to 2018 is shown as 2009 data for Lanarkshire and Dumfries and Galloway are incomplete.

Orkney, Shetland and the Western Isles do not have ECT services but instead send their patients for treatment to a mainland service. Their populations have been added to the relevant health board area (Grampian and Greater Glasgow and Clyde) to give a rate of use of ECT per 100,000 population.

Figure 1.1: Number of patients treated by Health Board, per 100,000 population (2010-2012, 2013-2015 and 2016-2018)

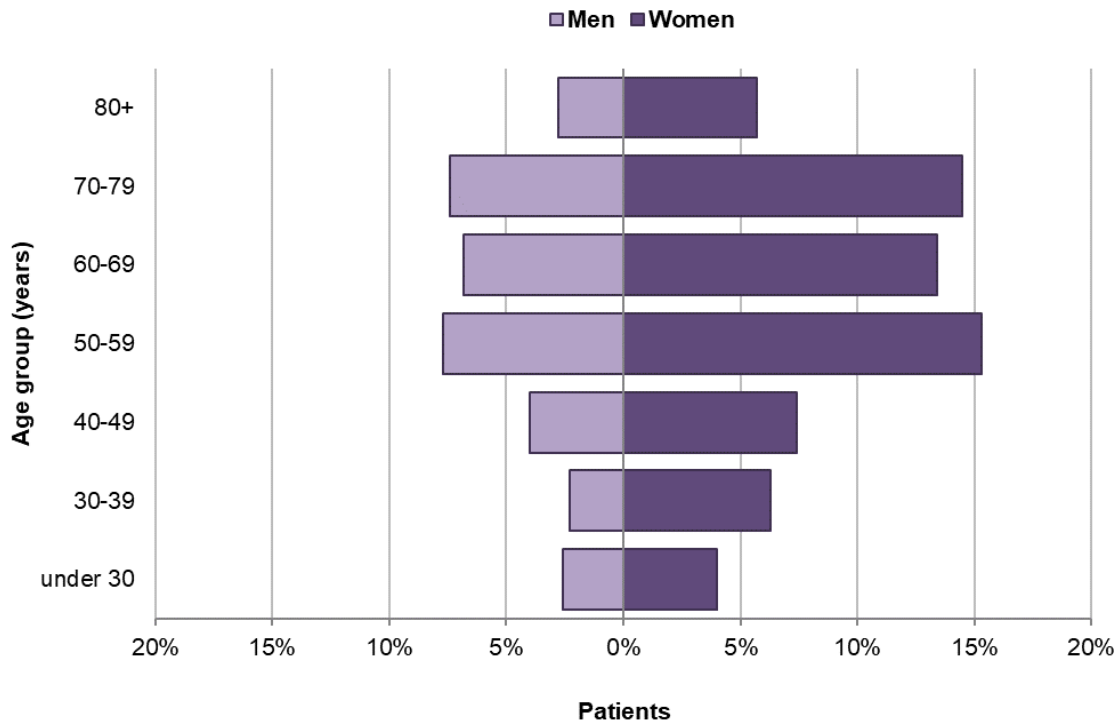


There is some variation in the relative use of ECT between health boards. This may in part be explained by the relatively small patient numbers and the differing health board sizes. Some health board areas may also have a greater proportion of older residents who are likelier to receive ECT for their mental health problem than younger or middle aged people.

Patients

ECT continues to be a treatment used mostly for people in their middle and later life (Figure 1.2).

Figure 1.2: Number and percentage of total patients treated, by age group and gender (2018)



There has been another slight rise in the number of individuals aged under 40 who received ECT, increasing to 53 (15%) in 2018. The numbers in this group decreased from 75 to 42 in the years 2009 to 2015 before starting to increase from 2016.

In 2018, the number aged 80 or over was 30 (8.5%) and this is slightly lower than the average for the preceding years. The trend for the relative use of ECT to increase with age persists.

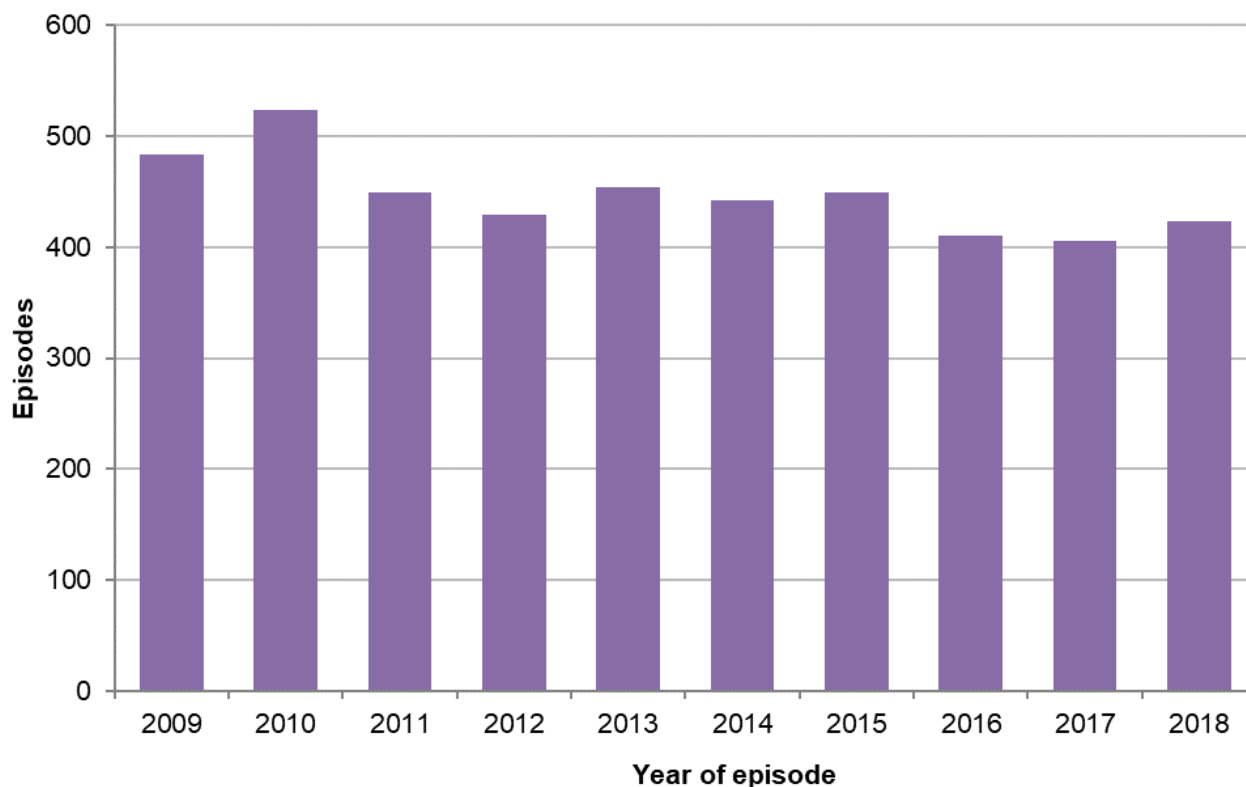
Women continue to account for two thirds of all patients receiving ECT (Figure 1.2), in keeping with the rates of depressive disorder in the general population. At the start of the decade, this proportion was slightly greater.

The percentage of patients from an ethnic minority receiving ECT in Scotland in 2018 has increased compared to 2016 but remains lower (2.3%) than the percentage in the general population (4%)¹⁰. Much of this difference continues to be explained by their demographic spread: over 76% are aged under 40 years.

Episodes

Over the last decade, the use of ECT in Scotland has remained at a steady level with at least 400 episodes of treatment completed in any year (Figure 1.3). The majority of patients (70%) will have only one episode of treatment in a calendar year.

Figure 1.3: Numbers of episodes by year (2009-2018)



Trends in treatment frequency over the decade are shown in Table 1.2. Twice weekly treatment predominates (around 90% on average per annum) while an increasing number of treatments are given at other intervals. Many of these are likely to relate to the use of continuation/maintenance ECT.

Table 1.2: Numbers and percentage of episodes by treatment frequency (2009-2018)

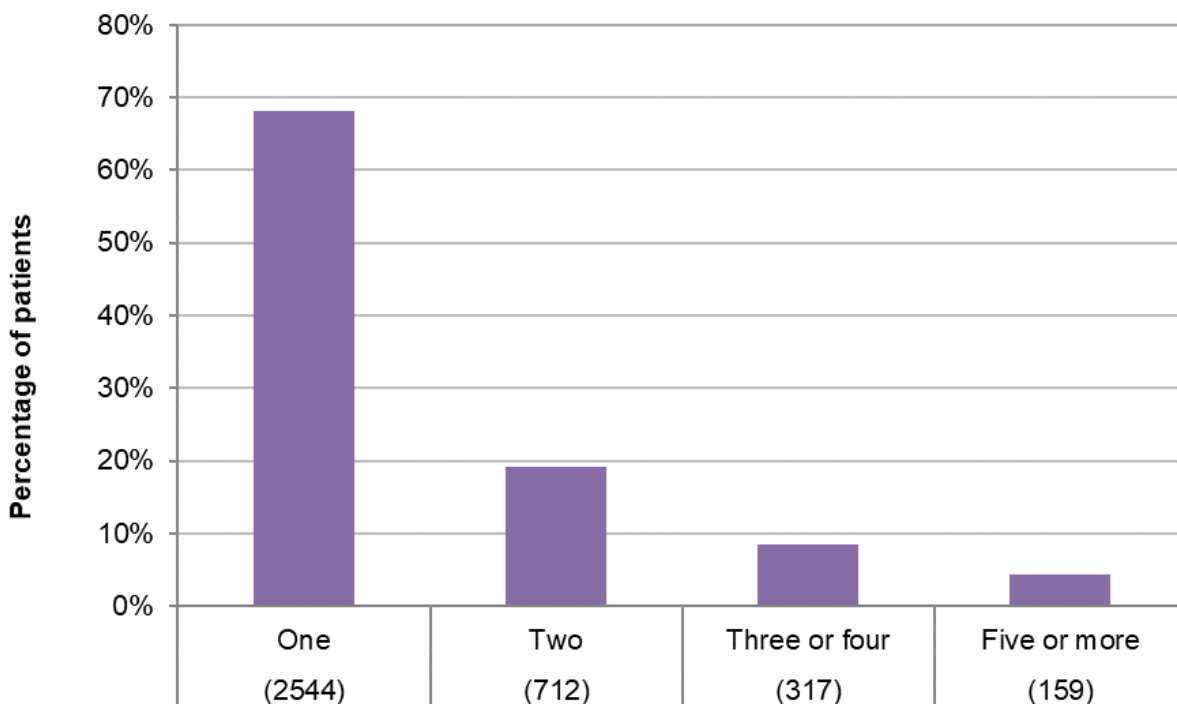
Treatment Frequency	Number										Percentage									
	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
Weekly	8	5	8	7	12	6	10	7	5	5	2.5	1.4	2.8	2.2	4.0	2.0	3.4	2.7	1.8	1.7
Twice weekly	306	323	256	291	274	264	264	225	257	262	94.2	93.4	90.8	92.7	91.6	89.5	91.0	86.5	91.1	91.0
Other ¹	11	18	18	16	13	25	16	28	20	21	3.4	5.2	6.4	5.1	4.3	8.5	5.5	10.8	7.1	7.3
Total	325	346	282	314	299	295	290	260	282	288	100	100	100	100	100	100	100	100	100	100

Notes:

1. Other includes maintenance ECT every: 2 weeks; 3 weeks; 4 weeks.

SEAN data collection now extends back for 14 years (to 2005). In that time, 3,732 individuals have received ECT in Scotland (Figure 1.4). We know that 2,544 individuals (68%) have had only one episode of treatment in that time. Of the remainder, 712 have had 2 episodes, 317 had 3 or 4 episodes and 159 individuals have had 5 or more treatment episodes.

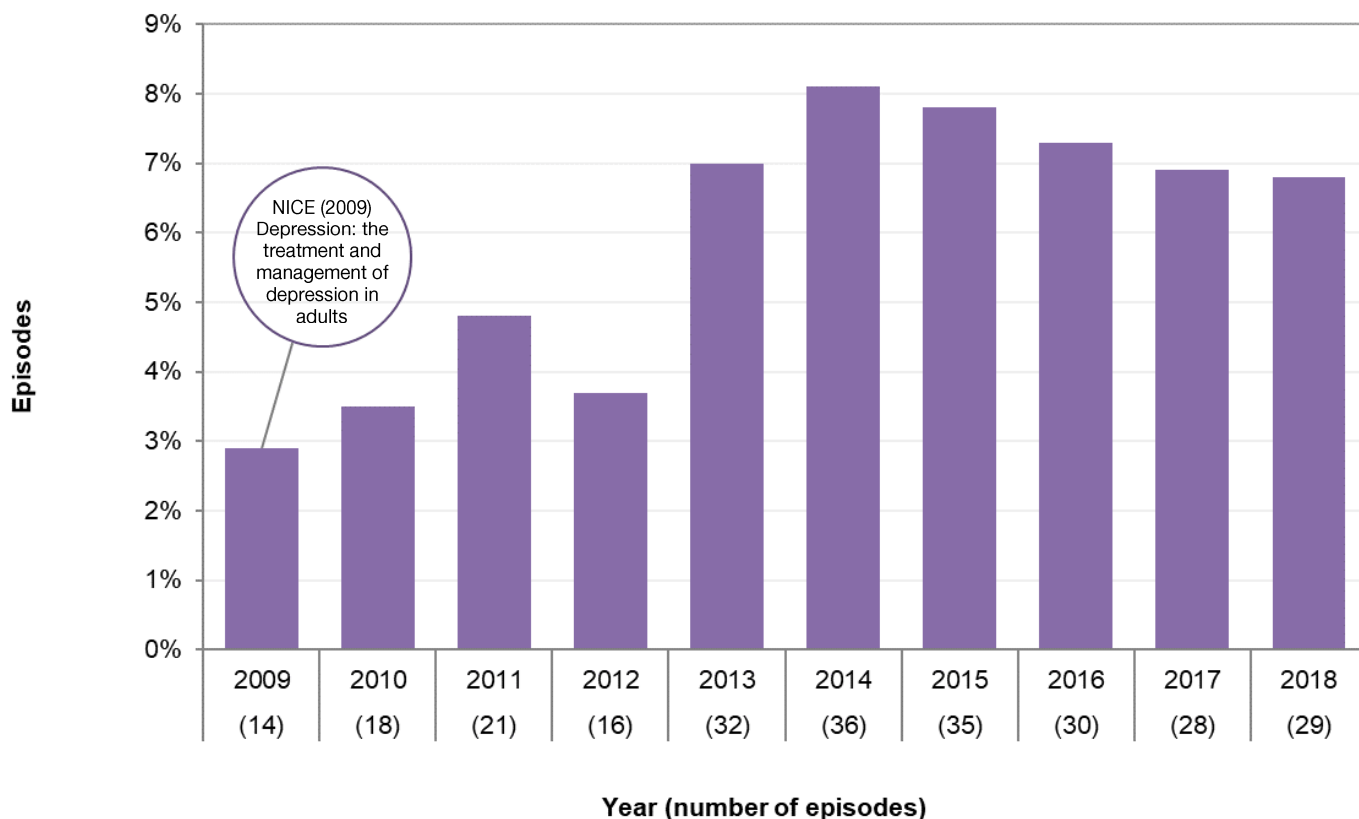
Figure 1.4: Number and percentage of patients who had multiple treatment episodes (2005-2018)



Continuation/ maintenance ECT can describe cases where ECT continues beyond the usual acute course of treatment, lasting several weeks, into a longer period of several months. It is a treatment option considered when an individual’s clinical recovery cannot be maintained by medication or other therapies and usually involves an increase in the time interval between treatments i.e. to fortnightly or longer.

Updated data on continuation/ maintenance episodes over the last decade is shown in Figure 1.5. These episodes are not recorded consistently throughout Scotland but appear to have increased in the second half of the decade.

Figure 1.5: Number and percentage of episodes involving continuation/ maintenance ECT, by year (2009-2018)¹



Notes:

* Indicates values that have been suppressed because of the risk of disclosure.

1. Continuation/ maintenance episodes are not recorded consistently throughout Scotland. These episodes have, therefore, been determined methodically based on the number and frequency of treatments in an episode.

Consent and Legal Status

All patients who receive ECT must either give informed consent or be protected by the legal safeguards in legislation. Relevant legislation is encompassed within:

- The Mental Health (Care and Treatment) (Scotland) Act 2003 (the 2003 Act)
- The Adults with Incapacity (Scotland) Act 2000 (the 2000 Act)

Consent must be in writing and be based on an understanding of the treatment, the reasons why it is being offered and possible risks and side effects.

If the patient is not capable of providing informed consent, treatment must be authorised by an independent psychiatric opinion. In urgent situations, the legislation allows for ECT to be administered before an independent opinion can be obtained.

Patients who are capable of providing informed consent but who refuse the treatment cannot be given ECT. The electronic care pathway was designed to ensure that ECT can only be given if the correct legal and consent documentation is provided.

The relevant legal and consent options are shown in Table 2.1.

Table 2.1: Legal status and consent for ECT

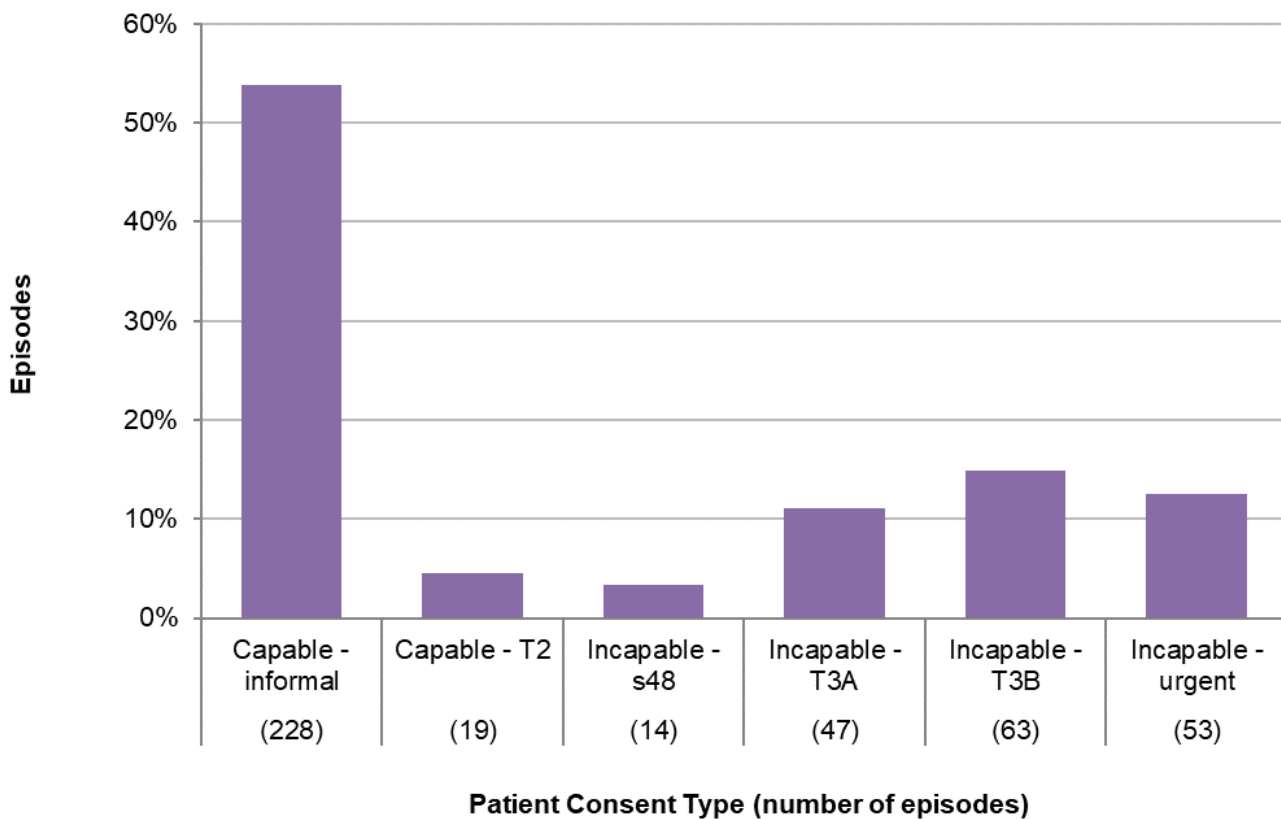
With capacity to consent (capable)	
Legal Status	Treatment Authorisation
Informal	Written consent
Detained	Written consent with capacity certified on form T2.
Without capacity to consent (incapable)	
Legal Status	Treatment Authorisation
Informal	Second opinion under section 48 of the 2000 Act ('s48'). This is not used if the patient resists or objects.
Detained – not resisting or objecting	Independent 'best interests' opinion under the 2003 Act recorded on form T3 (referred to as 'T3A').
Detained – resisting or objecting	As above but with indications limited to situations of necessity (referred to as 'T3B').
Urgent (including patients detained under emergency certificates)	Treatment given in advance of an independent opinion under either the 2003 or 2000 Act (common-law principle of necessity). Signed case note entry from prescribing practitioner that ECT is required as an emergency, preferably with informal local second opinion. T4 form (record of treatment) subsequently sent to MWC.

The Mental Welfare Commission for Scotland (MWC) arranges all independent opinions and is informed of treatment given under urgent situations. For more information, see

www.mwscot.org.uk.

Figure 2.1 shows consent and legal status at the start of treatment. Informal (voluntary) patients who give informed consent are the largest group of people receiving ECT. A small percentage of patients detained under the 2003 Act were also considered to have retained the capacity to give informed consent to ECT. In total, the majority (58%) of all episodes of treatment with ECT in 2018 had the patient’s informed consent. Over the last decade, the percentage of individuals who gave informed consent to ECT has declined from 73% in 2009.

Figure 2.1: Number and percentage of episodes by patient consent at episode entry (2018)



Of the 177 episodes of ECT in 2018 where the patient could not consent, 53 (30%) began with urgent treatment. This shows that many people who lack capacity to consent to ECT are seriously unwell. This percentage has varied little over the past decade.

Overall, there were 177 episodes in 2018 involving patients incapable of providing informed consent and 63 of these (36%) related to patients who lacked capacity and were also resisting or refusing.

In relation to all patients treated under the 2003 Act with the authority of a T3 form in 2018, 57% of these episodes (63 out of 110) involved patients who lacked capacity and were also resisting or refusing.

The gender and age of patients with and without capacity at the start of an episode is documented in Table 2.2. In 2018 more male patients were incapable (47%) than female (39%). Over the last decade there has not been a consistent gender difference in capacity at the start of an episode.

Table 2.2: Percentage of episodes by patient gender and capacity, and average age by capacity (2018)

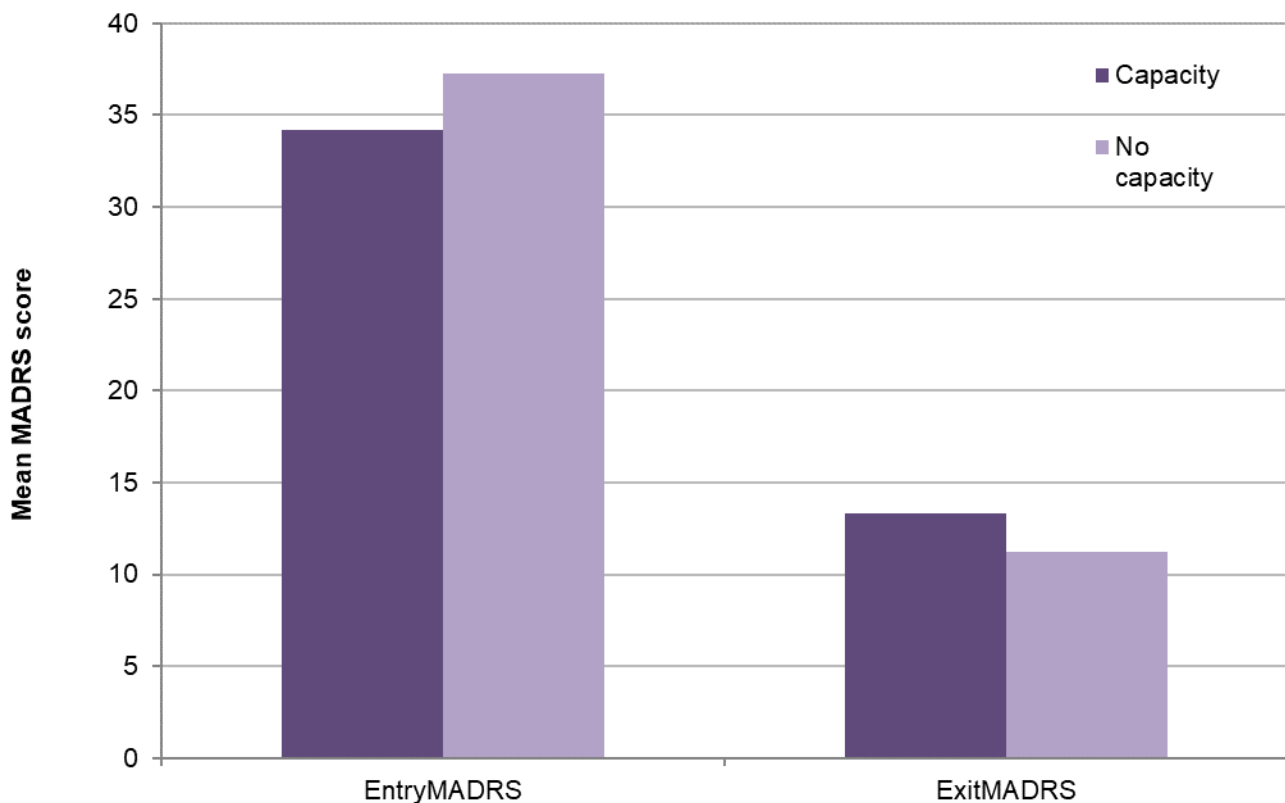
		Capacity	No Capacity
Gender	Male (%)	52.9%	47.1%
	Female (%)	60.8%	39.2%
	Both Sexes (%)	58.3%	41.7%
Age	Mean (SD ¹)	56.6 (14.5)	61.3 (18.2)
	Median	57	66

1. SD Standard Deviation, a measure that quantifies the amount of variation in a set of data.

Older patients appear more likely to lack capacity to consent to ECT but this difference is less marked in 2018 than in previous years. Older patients may be more prone to cognitive difficulties e.g. with memory and reasoning ability, during severe depressive illness.

Figure 2.2 demonstrates data on benefits associated with ECT treatment as measured by the MADRS¹¹ which is performed before and at the end of an episode of ECT. We note that patients who lack capacity to consent are more severely depressed prior to ECT and have a greater overall improvement as measured by the MADRS¹¹ following ECT. This reinforces the importance of making ECT available to patients who are too unwell to be able to give fully informed consent

Figure 2.2: Mean MADRS score before and after treatment, by patient capacity 2018



Reviewing data for the decade 2009 to 2018, we note that the mean MADRS¹¹ at entry for those patients with capacity ranged from 34 to 36, while for patients without capacity, it ranged from 37 to 44. Mean MADRS¹¹ at exit for patients with capacity ranged from 12 to 15, while for patients without capacity it ranged from 10 to 15.

Diagnosis and Indications for Treatment

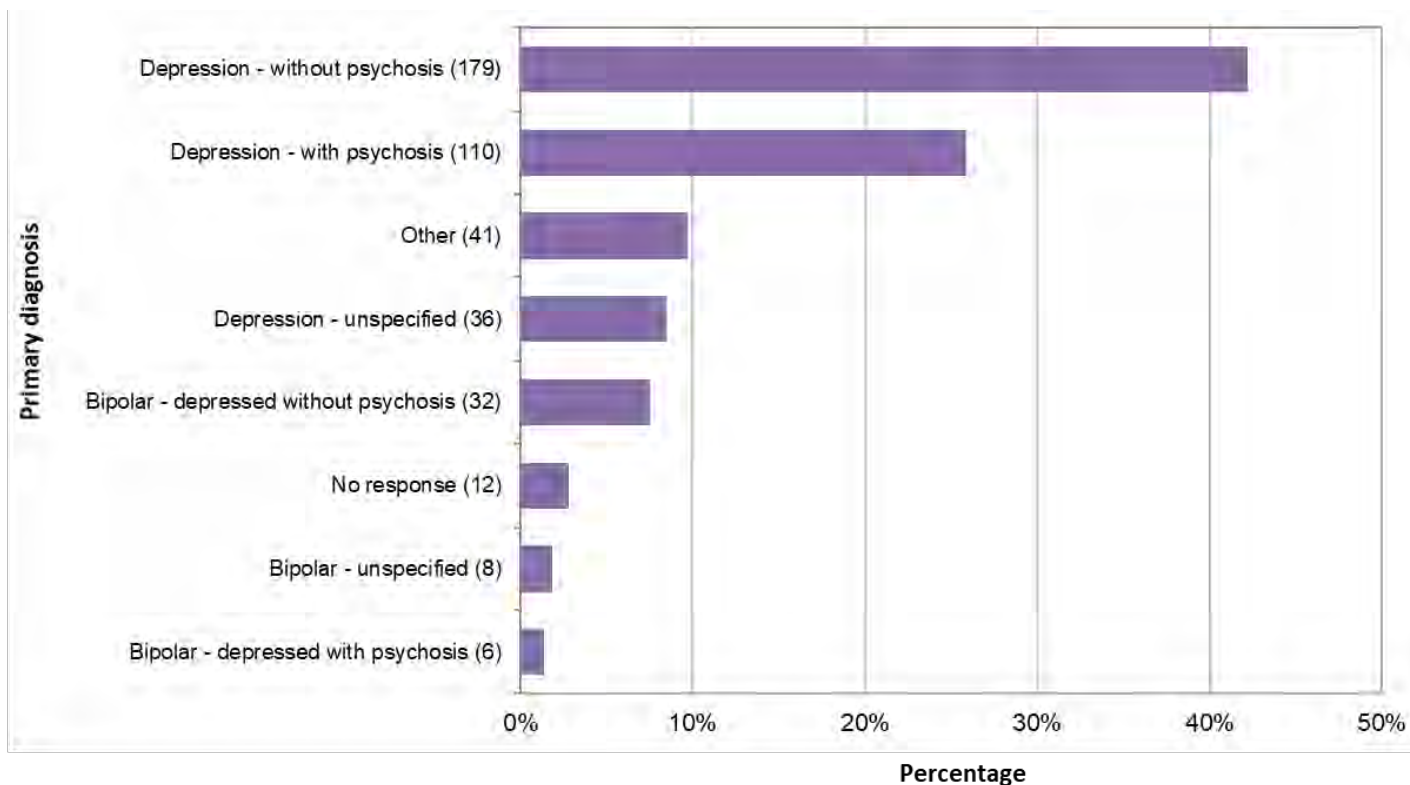
Figure 3.1 shows the primary diagnosis for each episode in 2018 based on 4-character ICD-10 codes¹².

The majority of patients who received ECT were suffering from symptoms of depression, either in the context of a depressive or bipolar disorder.

The two most common diagnoses were depressive episode without psychosis (42%) and depressive episode with psychosis (26%) and the proportions in these groups have been relatively stable over the ten years to 2018.

Patients for whom psychosis status was specified were just over five times as likely to lack capacity when psychotic symptoms were present. Psychotic symptoms are often taken as a proxy for severity and can lead to significantly impaired decision making abilities.

Figure 3.1: Number and percentage of episodes by primary diagnosis (2018)¹



Notes:

1. The most common diagnoses in the 'Other' category were: Schizophrenia & Schizoaffective disorders and these diagnoses accounted for over three quarters of this group. Additional diagnoses included: Manic episode / Mental and behaviour disorders associated with the puerperium NEC / Other persistent mood [affective] disorders/ Persistent mood [affective] disorder, unspecified/ Specific personality disorders/ Unspecified nonorganic psychosis.

ECT guidelines and depression guidelines produced by the National Institute of Health & Clinical Excellence (NICE)^{13,14} advise that ECT should be used when the illness is severe and life threatening, when a rapid response is required, or when other treatments have failed.

SEAN asks clinicians to record as many reasons for treatment as apply to each treatment episode (Figure 3.2). In line with these recommendations, the main reason for prescribing ECT

was for antidepressant-resistant illness (55%).

Similarly, illnesses resistant to antipsychotics (36%) or mood stabilizers (19%) were also widely reported.

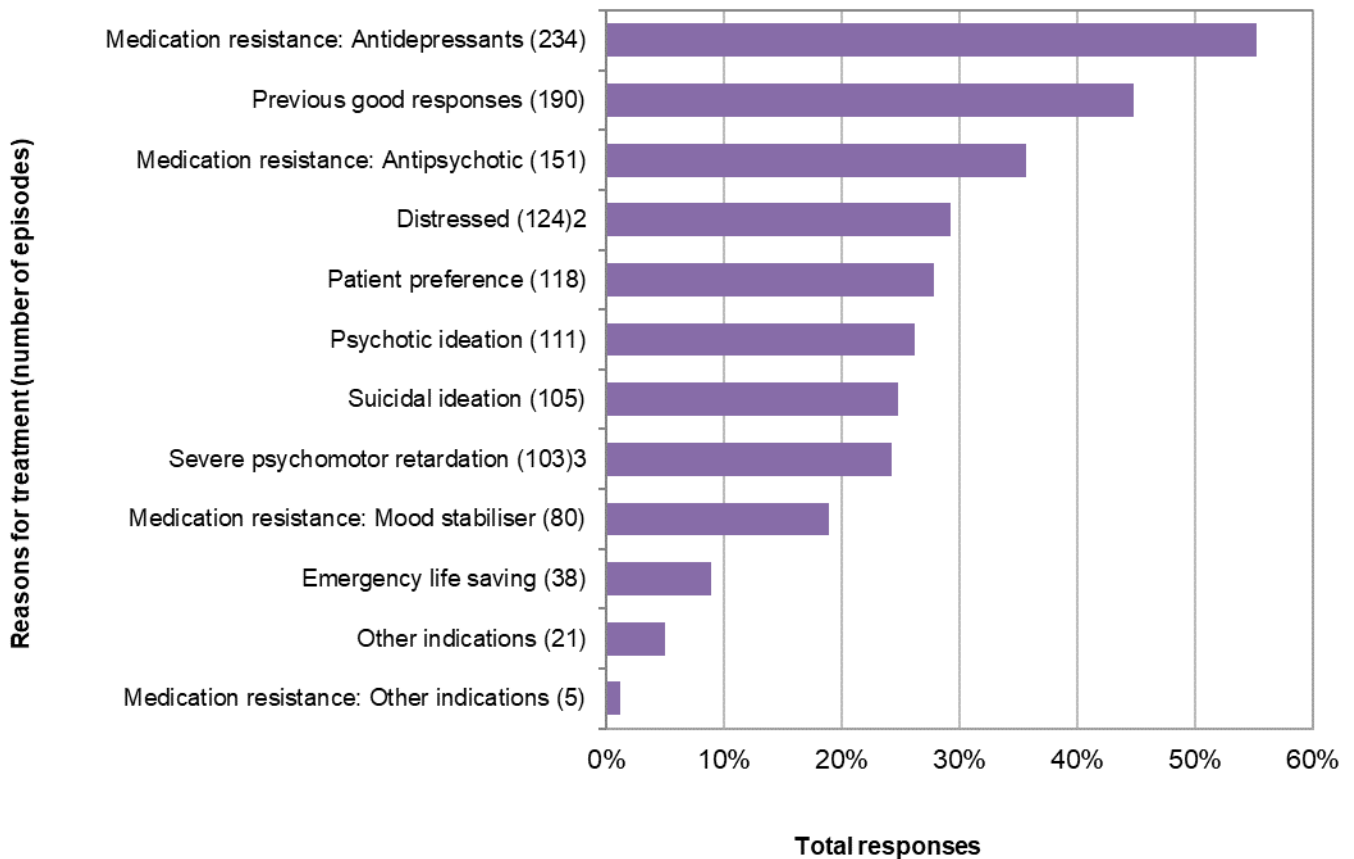
Severity of illness was also a deciding factor in many cases, illustrated by the reason for treatment being frequently recorded as ‘too distressed to await response to medication’ (29%), ‘psychotic ideation’ (26%), ‘suicidal ideation’ (25%) or ‘severe psychomotor retardation’ (24%).

Use of ECT as an emergency life-saving procedure, for example when the patient’s physical condition had deteriorated markedly because they refused food and fluids, was recorded in 9% of episodes.

Other common reasons for choosing ECT included previous good response (45%) and patient preference (28%).

These frequencies were not substantially different from those presented in previous SEAN reports.

Figure 3.2: Number and percentage of episodes by reasons for treatment (2018)¹



Notes:

1. Figures total more than 100% because of the multiple response nature of the variables examined. A single patient may have more than one reason for their treatment.
2. Distressed is an abbreviation of 'Too distressed to await response to medication'.
3. Refers to the medical and physical slowing that can occur in severe depression.

Treatment Details

The average number of treatments per episodes each year has varied little over the ten years to 2018, ranging from 8 to 10 per annum, with the more recent years, 2017 and 2018, at the slightly higher average.

Table 4.1: Mean and median treatments per episode and total treatments (2009-2018)

Year	Treatments per episode		Total Treatments
	Mean	Median	
2009	9.2	8	4,456
2010	8.5	8	4,445
2011	9.8	8	4,413
2012	8.5	8	3,657
2013	9.5	9	4,301
2014	9.7	8	4,280
2015	10.0	9	4,484
2016	10.2	9	4,189
2017	9.8	10	3,966
2018	10.3	10	4,375
2009-2018	9.5	8	42,566

SEAN data show the great majority of ECT treatments being delivered using a bilateral electrode placement. This mode of treatment was involved in 93% to 99% of episodes during each year in the period 2009-2018, including those where treatment modality changed during the episode (e.g. starting with unilateral but switching to bilateral).

Whilst bilateral ECT is recognised to be associated with greater short term cognitive (memory) difficulties than unilateral, patients receiving unilateral ECT usually require a greater number of treatment applications because the unilateral modality has a less potent treatment effect.

In consultation with patients, the psychiatrists responsible for prescribing and administering ECT thus have to weigh the relative risks and benefits of both approaches in order to optimise patient treatment outcomes. Current practice in Scotland is consistent with Royal College of Psychiatrists guidance⁵.

ASA score

Prior to each treatment, the patient’s general health is summarised according to the American Society of Anaesthesiologists’ Classification of Physical Status (‘ASA score’)¹⁵.

In the early years of the period 2009-2018, ASA score was recorded infrequently, with only 56% completeness in 2009 but recording has improved steadily in more recent years, approaching 90% in the latter half of the decade and achieving 92% in 2018.

The poor recording in the early years may have been because the ASA field was missing from the paper version of the care pathway. Provision of evidence that patients have been assessed prior to anaesthesia is an important step relating to the “Safe” ambition within the Healthcare Quality Strategy³ and the improved completion of ASA score is encouraging.

Side effects

The SEAN Standards⁴ recommend patients are reviewed after every second treatment and this review should include enquiries about the side effects of treatment. SEAN data indicate that side effects were assessed in over 90% of episodes in each year of the decade to 2018 and between a half and two thirds of episodes each year involved complaints of side effects.

Figure 4.1 illustrates the range of side effects captured in the SEAN data and Table 4.2 highlights the percentage of episodes involving these different side effects for each year in the decade 2009 to 2018.

The most common side effect complained of each year was headache and this has been indicated in around one fifth to one third of episodes. Confusion and memory problems are the next most common side effects noted, involving, on average, around 15% to 20% of episodes with muscle aches at approximately 13% of episodes.

The proportions of these most common side effects appear to be showing a slightly increasing trend over the years 2009-2018.

Figure 4.1: Prevalence of specific side effects experienced within episodes (2018)

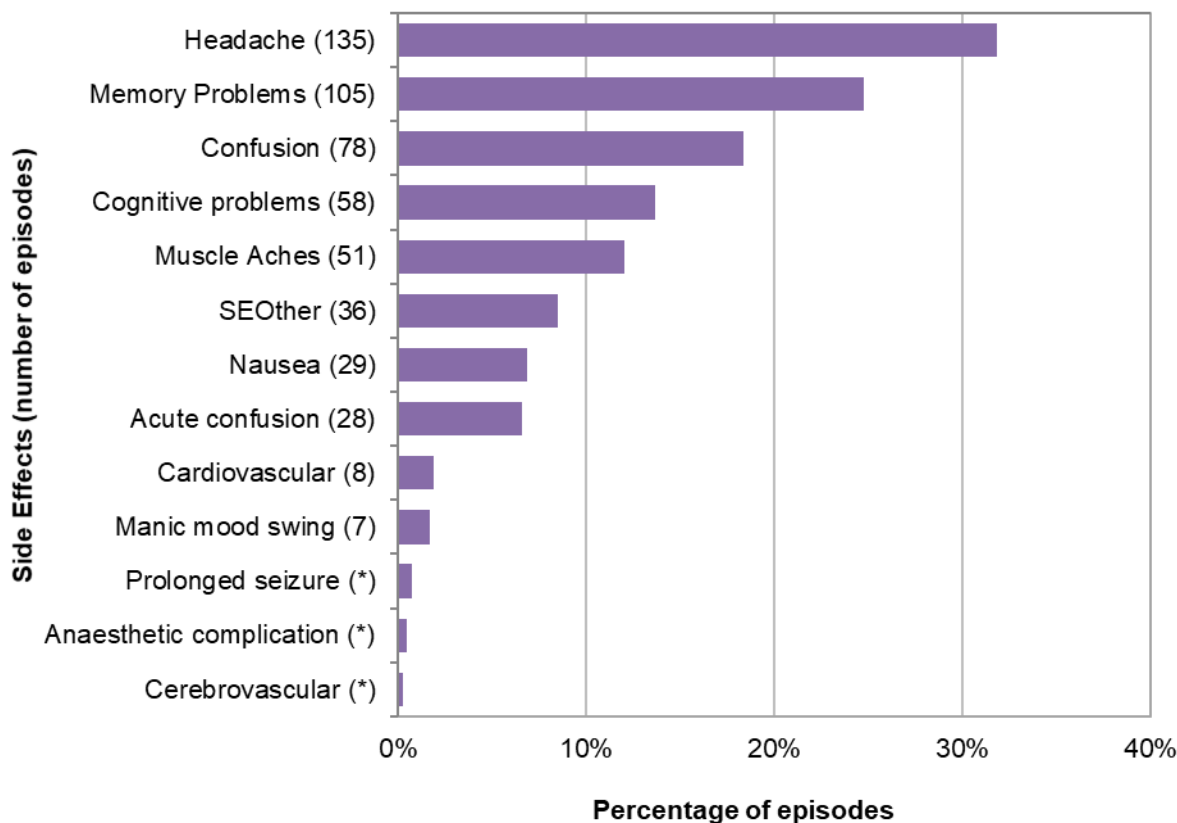


Table 4.2: Percentage of episodes involving specific side effects (2009-2018)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average per annum*
Number of episodes	480	512	439	429	454	442	449	411	406	424	445
Side effect	Percentage										
Headache	22.3	22.3	26.9	31.2	26.9	25.8	32.7	32.8	31.5	31.8	28.2
Confusion	12.9	11.3	16.9	16.3	17.4	20.1	18.3	22.6	19.2	24.8	17.8
Memory Problems	16.0	12.1	17.1	15.2	13.4	17.2	15.6	15.1	14.5	18.4	15.4
Muscle Aches	13.5	7.6	9.8	12.4	12.1	13.3	17.8	18.5	12.1	13.7	13.0
Cognitive problems	13.1	9.2	9.3	14.2	8.8	8.4	12.7	16.5	15.3	12.0	11.9
Cardiovascular	12.1	12.1	8.2	7.7	9.5	7.5	10.0	11.7	16.0	8.5	10.3
Prolonged seizure	6.9	5.7	5.9	9.8	5.5	5.2	8.2	7.8	9.1	6.8	7.0
Manic mood swing	3.5	2.7	4.3	5.4	4.4	9.0	6.5	7.3	3.2	6.6	5.2
Anaesthetic complication	1.0	2.7	1.8	3.3	2.6	2.7	2.2	2.2	2.0	1.9	2.2
Other side effects	0.8	1.0	1.4	1.9	0.9	1.4	0.9	1.5	1.5	1.7	1.3
Cerebrovascular	0.8	0.6	1.1	0.9	1.1	0.5	1.1	0.5	1.0	0.7	0.8
Nausea	0.6	0.8	0.7	0.5	1.3	1.4	0.9	0.7	0.5	0.5	0.8
Acute confusion	0.0	0.0	0.5	0.0	0.0	0.2	1.1	0.5	0.2	0.2	0.3

* Side effects are sorted in descending order of the average percentage (average number with specific side effect divided by average number of episodes)

Anaesthetic induction agents

The relative percentage of patients receiving propofol, etomidate and thiopentone for induction of anaesthesia changed little up to 2010 as indicated in previous SEAN reports.

An increase in the use of propofol was apparent from 2011, rising from 59% to 77% between 2010 and 2011. Table 4.3 shows that this trend has continued and, in 2018, 92% of treatments took place after induction of anaesthesia with propofol with the use of etomidate and thiopentone diminishing over the decade to 2018.

Each agent has advantages and disadvantages in the context of ECT. Each may have different effects on seizure threshold or seizure duration, thus consistency within an episode is probably more important than choice of individual agent.

Table 4.3: Use of anaesthetic induction agents for ECT (2009-2018)

Year	Propofol		Thiopentone		Etomidate	
	Number	Percentage	Number	Percentage	Number	Percentage
2009	2,663	59.8	438	9.8	1,614	36.2
2010	2,608	58.7	448	10.1	1,368	30.8
2011	3,407	77.2	180	4.1	586	13.3
2012	3,028	82.8	198	5.4	249	6.8
2013	3,544	82.4	251	5.8	364	8.5
2014	3,766	88.0	201	4.7	278	6.5
2015	3,929	87.6	178	4.0	335	7.5
2016	3,450	82.4	282	6.7	421	10.1
2017	3,516	88.7	163	4.1	230	5.8
2018	4,014	91.7	88	2.0	233	5.3
2009-2018	33,925	79.7	2,427	5.7	5,678	13.3

Critical incidents

A critical incident is an event which could have, or did, result in an adverse outcome. Examples may include harm to patients, such as deterioration in vital signs or prescribing errors, or harm to staff or other people in the vicinity (e.g. assault).

Staff are encouraged to report 'critical incidents' both on local systems (e.g. Datix) and in the SEAN database. The emphasis within SEAN is on establishing facts, with a view to preventing similar events, rather than apportioning blame.

ECT teams are strongly advised to have a team meeting to discuss the incident, examine if it was preventable and identify actions required to minimise the risk of a recurrence.

Table 4.4 highlights the relative rarity of critical incidents among the, on average, 4,200 treatments per annum, where the annual number of critical incidents ranged from 2 to 12 with the most recent year indicating 6 confirmed critical incidents.

Table 4.4: Number and percentage of treatments involving a critical incident (2009-2018)

Year	Number of Treatments	Critical Incidents	Percentage
2009	4,456	4	0.1
2010	4,445	12	0.3
2011	4,413	8	0.2
2012	3,657	5	0.1
2013	4,301	11	0.3
2014	4,280	9	0.2
2015	4,484	9	0.2
2016	4,189	8	0.2
2017	3,966	2	0.1
2018	4,375	6	0.1

Outcomes

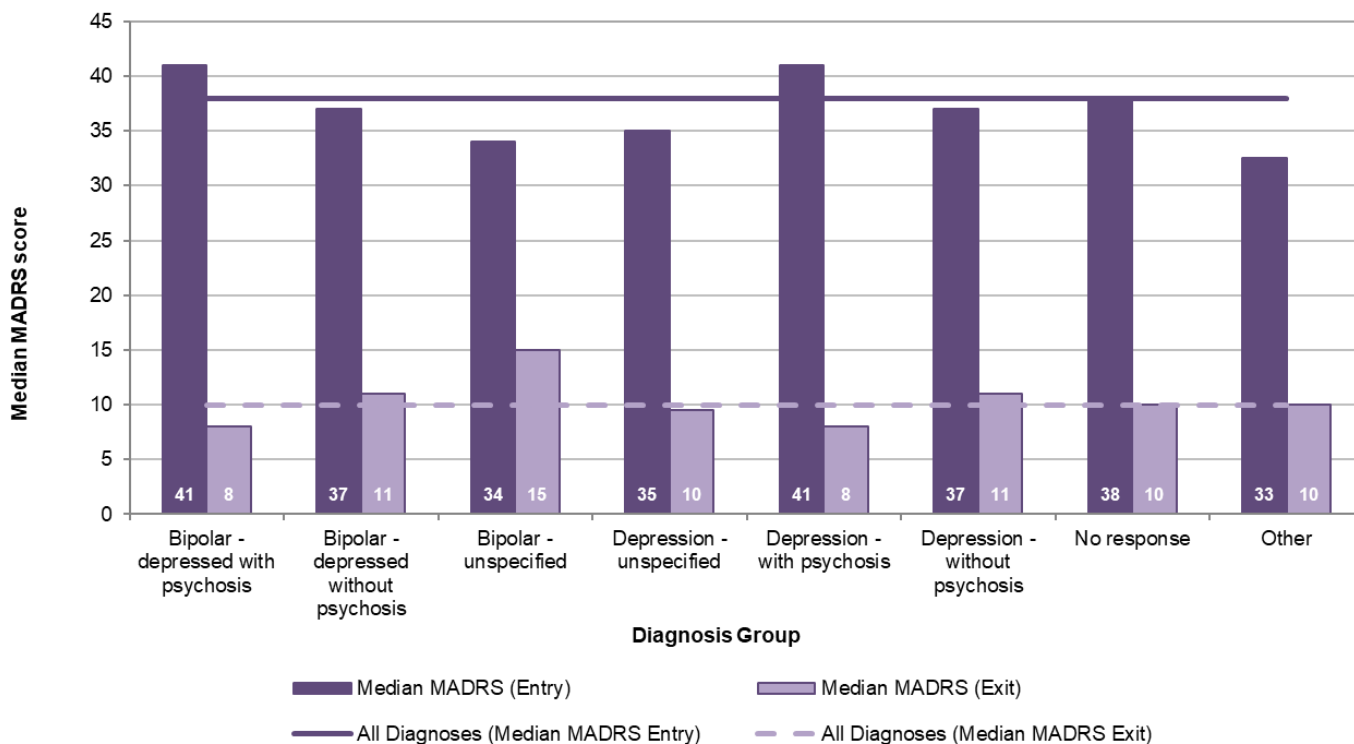
This section describes the results of completed ECT treatment episodes using established and standardised assessment tools. It also reports on ECT treatment episodes which discontinued (ended before completion). Episodes of treatment that were ongoing at the end of 2018 are not included.

In 2018, 293 out of 424 (69%) of episodes were completed as planned or discontinued. Rating scales were completed for the majority of these: 84% completion for the MADRS¹¹, 83% for the CGI¹⁶. This completion rate is slightly lower than the average for the preceding years in the decade to 2018 (approximately 88% for both MADRS¹¹ and CGI¹⁶).

MADRS¹¹ rates depression severity and measures change associated with treatment. While scores may range from 0 to 60, higher scores indicate more severe depression.

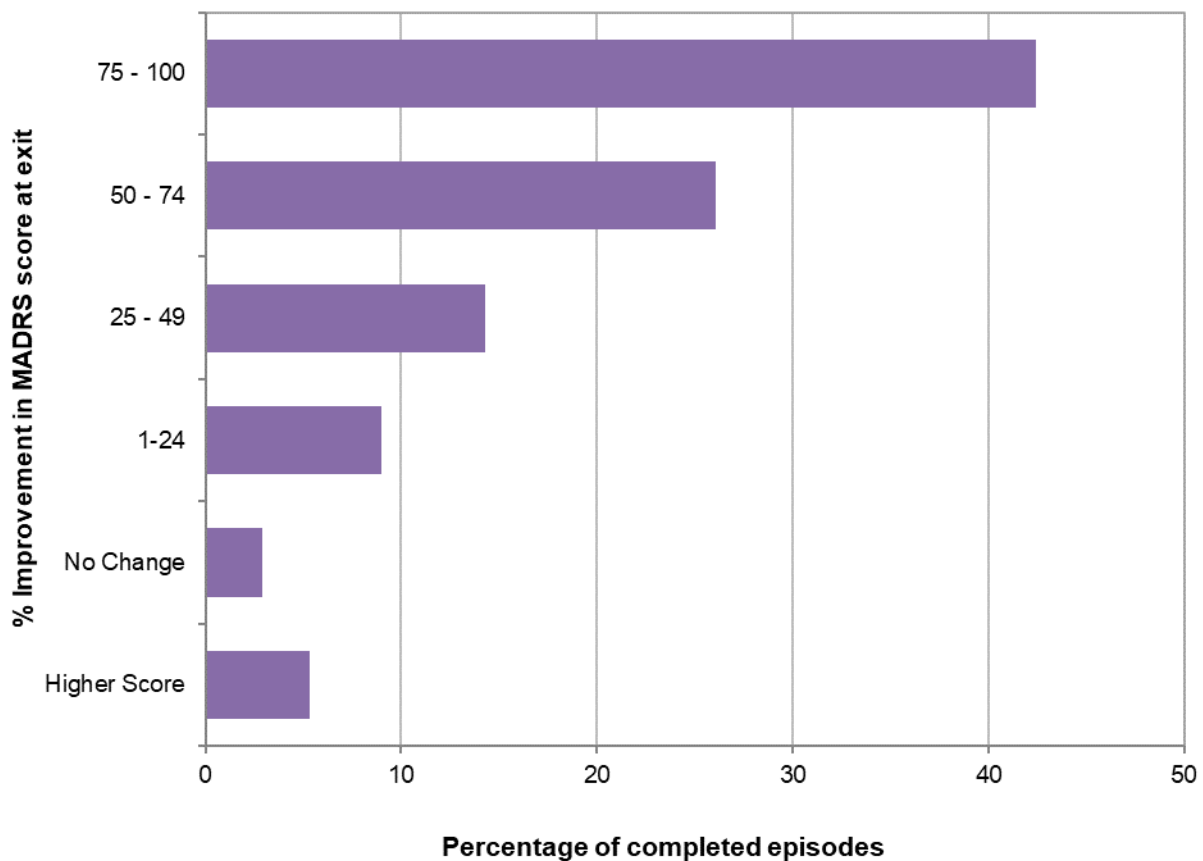
Figure 5.1 shows the median MADRS¹¹ score before and after treatment by diagnosis for the last decade. Median MADRS¹¹ for all patients was 37 at entry and 9 at exit. The observation that individuals experiencing psychosis as part of their illness before treatment appear to have a greater illness severity and show greater improvement with treatment, is reinforced.

Figure 5.1: Median MADRS score before and after treatment, by diagnosis (2009-2018)



Percentage improvement in MADRS¹¹ score in episodes completed in 2018, regardless of diagnosis, is shown in Figure 5.2. An increased percentage (68.5%) of patients showed a 50% or greater reduction in the MADRS¹¹ score compared to 2016. Although this percentage has varied slightly each year of the decade it is typical of the individual years and remains an impressive response rate for patients in “real world” clinical settings and is superior to those noted with any other treatment options for depression¹⁷.

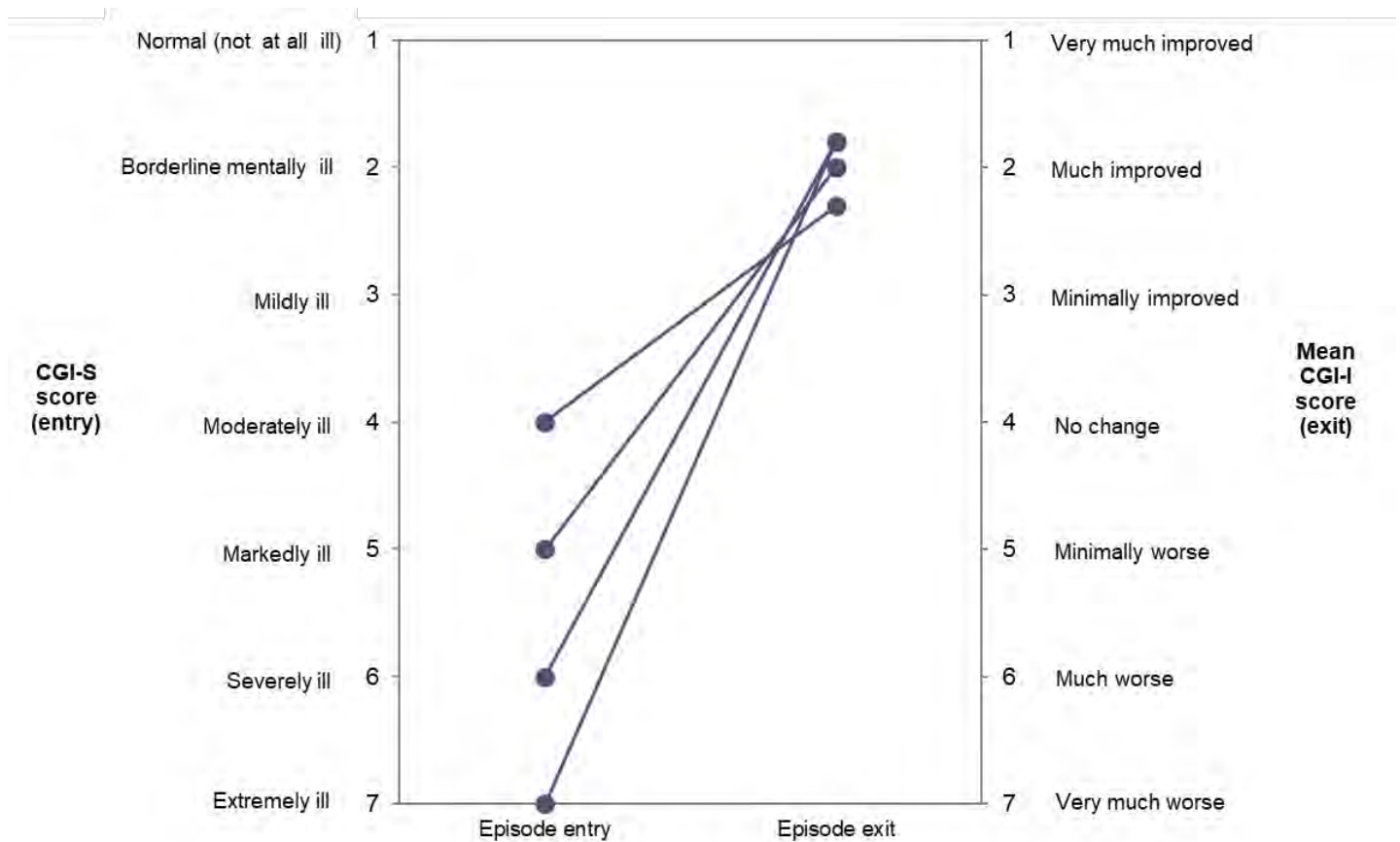
Figure 5.2: Percentage improvement in MADRS score (2018)



CGI¹⁶ rates severity of illness at entry and degree of improvement on exit. The CGI¹⁶ allows a clinician to rate all patients, irrespective of diagnosis. It can be used to rate illness severity across many different disorders, including depression. CGI¹⁶ has a 7-point rating for severity from “normal” to “among the most severely ill”. The CGI¹⁶ improvement scale rates change on 7 points with “very much improved” at one extreme, “very much worse” at the other and “no change” at the middle point.

In 2018, 81% of patients were rated as “markedly, severely or extremely ill” on entry and 77% were rated as “much improved” or “very much improved” on exit. Figure 5.3(a) summarises the general trend for patients’ CGI¹⁶ ratings to improve with treatment and for those who are the most unwell to experience the greatest improvement.

Figure 5.3(a): CGI-S score before treatment by mean CGI-I score after treatment (2018)

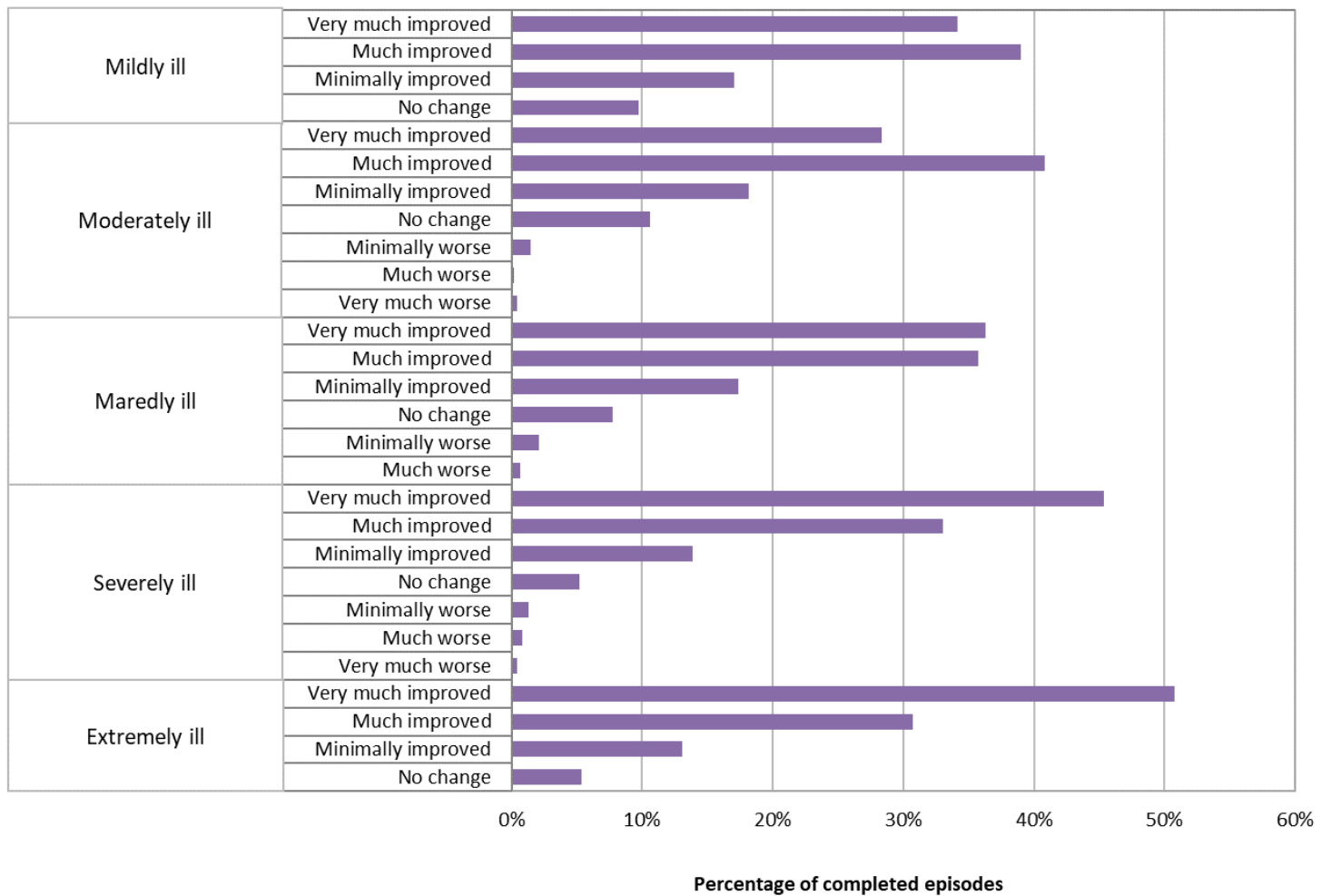


Notes:

1. Clinical Global Impression (CGI) rating scales are used to measure symptom severity and treatment response. CGI-S means Clinical Global Impression - Severity. The CGI-S score on entry is an indication of how unwell patients are prior to their treatment. CGI-I means Clinical Global Impression - Improvement. The CGI-I score is an indication of the degree of improvement or deterioration in a patient's illness after treatment. CGI-S and CGI-I are measured on different scales and are based on subjective clinical judgement.
2. Episodes where the patient was receiving continuation treatment are excluded.
3. CGI score categories with fewer than five responses are excluded.

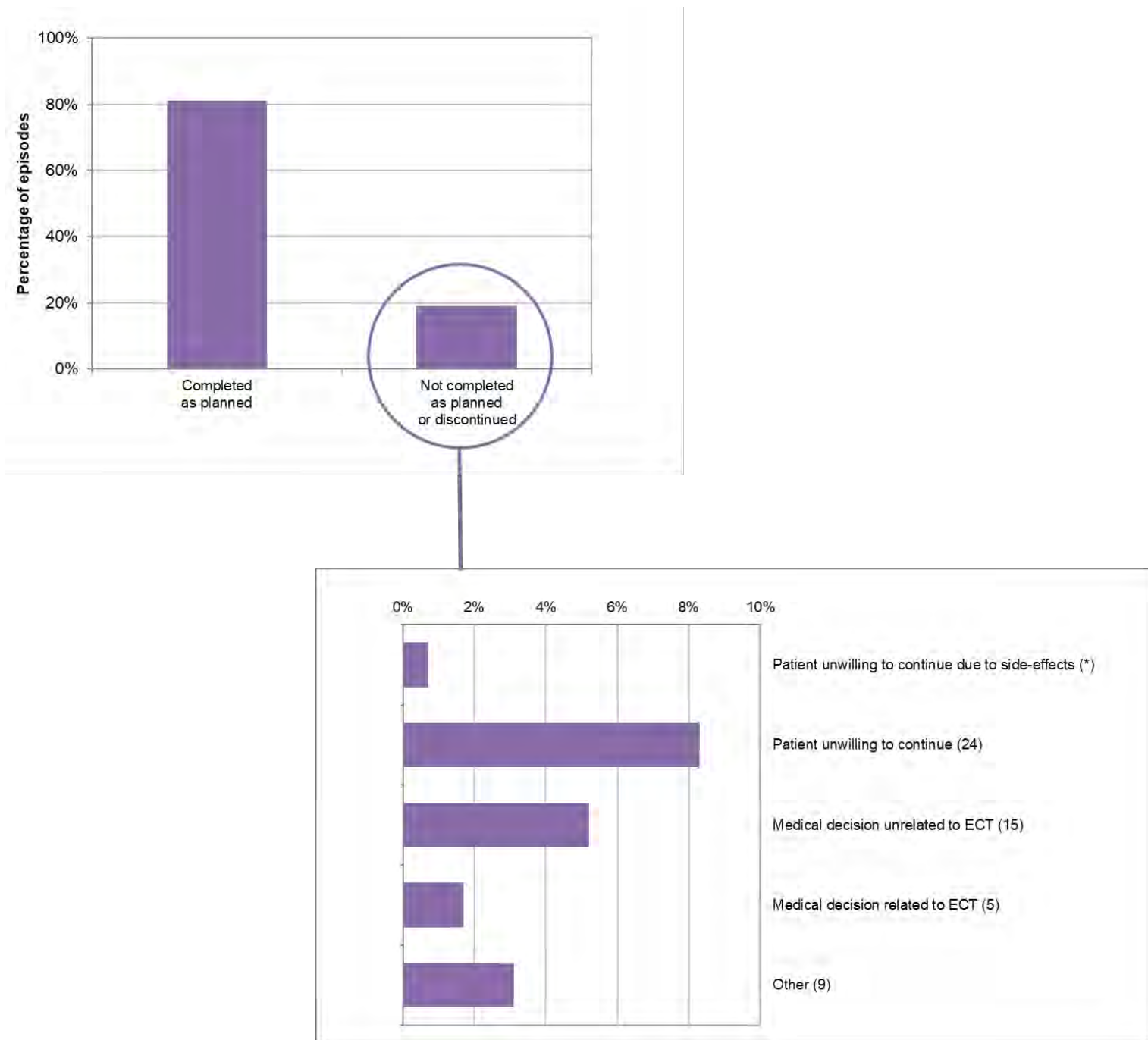
Figure 5.3(b) gives greater detail for the last decade regarding the proportions of patients in each CGI-I (CGI Improvement) category on exit, by their respective CGI¹⁶ category on entry. 77% of patients were rated as “markedly, severely or extremely ill” on entry and 75% were rated as “much improved” or “very much improved” on exit. Within the “markedly, severely and extremely ill” categories a gradient of improvement can be seen, with the greatest percentages of patients in each of these categories showing the greatest improvement. Just under 10% of episodes for patients completing treatment in the decade showed no change (7.5%) or some worsening in their condition at exit (2.4%).

Figure 5.3(b): CGI-S category before treatment by CGI-I category after treatment (2009-2018)



Just under a fifth of episodes were not completed as planned in 2018 and this figure is around the average for the preceding years of the decade. Figure 5.4 shows 8% of episodes stopped due to the patient’s wish to do so and almost 7% were stopped due to medical considerations, either related to ECT (1.7%) or unrelated to ECT (5.2%). These data suggest that ECT in Scotland remains a well-tolerated treatment.

Figure 5.4: Number and percentage of episodes completed as planned or discontinued, by reason for discontinuation (2018)



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Appendix A

Management Committee Membership

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Mrs Linda Cullen	SEAN Clinical Co-ordinator (ISD)
Dr Alistair Hay (Chair)	Consultant Psychiatrist (Highland)
Dr Nasim Rasul (Vice Chair)	Consultant Psychiatrist (Ayrshire & Arran)

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Mrs Natalie Lough (Vice Chair)	
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Representatives from:	Advancing Community Understanding of Mental and Emotional Needs (ACUMEN) Bipolar Scotland

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Mrs Lorraine Donaldson	Senior Information Analyst (ISD)

Appendix B

Prescribing and Treating Hospitals

NHS Board	Prescribing Hospital	Treating Hospital
Ayrshire & Arran	The Ayr Clinic	Woodland View
	Woodland View	Woodland View
Borders	Borders General Hospital	Borders General Hospital
Dumfries & Galloway	Midpark Hospital	Midpark Hospital
Fife	Lynebank Hospital	Queen Margaret Hospital
	Queen Margaret Hospital	Queen Margaret Hospital
	Stratheden Hospital	Queen Margaret Hospital
	Whyteman's Brae Hospital	Queen Margaret Hospital
Forth Valley	Forth Valley Royal Hospital	Forth Valley Royal Hospital
Grampian	Dr Gray's Hospital	Royal Cornhill Hospital
	Royal Cornhill Hospital	Royal Cornhill Hospital
Greater Glasgow & Clyde	Dykebar Hospital	Leverndale Hospital
	Gartnavel Royal Hospital	Stobhill Hospital
	Glasgow Royal Infirmary	Stobhill Hospital
	Inverclyde Royal Hospital	Inverclyde Royal Hospital
	Leverndale Hospital	Leverndale Hospital
	Rowanbank Clinic	Stobhill Hospital
	Royal Alexandra Hospital	Leverndale Hospital
	Skye House	Stobhill Hospital
	Stobhill Hospital	Stobhill Hospital
	Surehaven Hospital	Stobhill Hospital
	The Priory Hospital	Leverndale Hospital
	Vale of Leven General Hospital	Stobhill Hospital
	Highland	Mid-Argyll Community Hospital & Integrated Care Centre
New Craigs Hospital		New Craigs Hospital
Lanarkshire	Kirklands Hospital	University Hospital Wishaw
	The State Hospital	University Hospital Wishaw
	Udston Hospital	University Hospital Hairmyres
	University Hospital Hairmyres	University Hospital Hairmyres
	University Hospital Wishaw	University Hospital Wishaw
Lothian	Midlothian Community Hospital	Royal Edinburgh Hospital
	Royal Edinburgh Hospital	Royal Edinburgh Hospital
	St John's Hospital	St John's Hospital
Orkney	The Balfour	Royal Cornhill Hospital
Shetland	Gilbert Bain Hospital	Royal Cornhill Hospital
Tayside	Carseview Centre	Carseview Centre
	Dudhope House (Young Persons Unit)	Carseview Centre
	Kingsway Care Centre	Carseview Centre
	Murray Royal Hospital	Murray Royal Hospital
	Ninewells Hospital	Carseview Centre
	Stracathro Hospital	Stracathro Hospital
	Strathmartine Hospital	Carseview Centre
	Western Isles	Western Isles Hospital

Appendix C

Abbreviations

Abbreviation	Expanded text
AAGBI	Association of Anaesthetists of Great Britain & Ireland
ASA	American Society of Anaesthesiologists
CGI-S	Clinical Global Impression - Severity
CGI-I	Clinical Global Impression - Improvement
COMQI	Clinical Outcomes and Measures for Quality Improvement Working Group
CONNECTS	Committee of Nurses at ECT in Scotland
CRAG	Clinical Resource Allocation Group
ECT	Electroconvulsive Therapy
HIS	Healthcare Improvement Scotland
ICD10	International Classification of Diseases 10th Revision
ISD	Information Services Division
MADRS	Montgomery Asberg Depression Rating Scale
MWC	Mental Welfare Commission for Scotland
NICE	National Institute for Health and Clinical Excellence
NRS	National Records of Scotland
NSS	NHS National Services Scotland
PHI	Public Health & Intelligence
QIS	Quality Improvement Scotland
RCOA	Royal College of Anaesthetists
RCPsych	Royal College of Psychiatrists
SD	Standard deviation
SEAN	Scottish Electroconvulsive Therapy Accreditation Network

