Dundee Advanced Interventions Service

Annual Report

1 April 2017 to 31 March 2018

Host Board: NHS Tayside

In partnership with:

NHS Tayside

University of Dundee

UCL

The National Hospital for Neurology and Neurosurgery

University College London Hospitals NHS Foundation Trust

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Section 1 - Introduction

1.1 Foreword

We are pleased to present our annual report for the financial year 2017-18.

For more information about the service, please visit our website at www.advancedinterventions.org.uk. Whilst the annual report provides detailed information on activity and outcomes for the previous year, the most up-to-date information about and any changes to the service will be on our website.

We regularly update our published information about criteria for referral and treatment recommendations and these are available on our website for both Obsessive-Compulsive Disorder (OCD)[1] and major depression[2].

[1] http://www.advancedinterventions.org.uk/index.php/ocd/ocd-treatment-guidelines.html
[2] http://www.advancedinterventions.org.uk/index.php/depression/treatment-guidelines-for-depression.html

Section 2 - Executive summary

2.1 Activity

2.1.1 Summary of activity for year ending March 2018

	Actual	Predicted
Assessments	26	24
Neurosurgical procedures	0	3-5
Follow-up	7	12
Intensive OCD treatment	2	3-5

2.1.2 Referrals

Forty-five referrals (20 men and 25 women) were received during the reporting period. The M:F ratio was 0.8:1. The mean (± SD) age of referrals was 42.1 ± 14.9 years.

2.1.3 Assessments

Twenty-six assessments were conducted during the 2017-18 financial year for 22 patients. Nine men and thirteen women were seen, with a mean age of 45.5 years (range 19.6 – 62.7 years). Most (90.9%) assessments were for Scottish patients. Two assessments were conducted outwith the SLA.

The location for assessments was as follows: Ninewells Hospital (86.4%); Other Hospital in Scotland (4.6%); and other community site in Scotland (4.6%).

The percentage of people seen with OCD was 31.8%, with 9.1% having major depression. 13.6% of assessments had an autism spectrum disorder. Other disorders were also seen. These indicate the diagnosis made by the AIS (rather than the referrer) and reflect the nature of complex and comorbid mental disorders reaching tertiary and quaternary services.

2.1.4 Procedures

No neurosurgical procedures were performed during 2017-18.

2.1.5 Intensive treatment for OCD

Two individuals underwent intensive (inpatient) treatment for OCD.

2.2 Mortality data & adverse effects

There continue to have been no deaths and no post-operative infections during the reporting year. Rates of adverse effects are unchanged from previous years and are consistent with the published literature on the procedures undertaken. Consistent and widespread effects on neuropsychological functioning have not been seen.

2.3 Waiting times

The average (±SD) waiting time (from referral to assessment) for Scottish patients was 9.6 ± 3.7 weeks. Overall, 50% of Scottish patients waited less than 8.1 weeks to be seen; down slightly from the previous year. Only 4 people waited longer than 12 weeks but there were documented reasons for the delay (*e.g.* awaiting further investigations) in all cases.

2.4 Quality of care

2.4.1 Formal complaints

There have been no formal complaints during this reporting period.

2.4.2 Improving the patient experience – patient satisfaction

Patient satisfaction for outpatient assessment and inpatient admission continues to be high, with the overwhelming majority reporting positive experiences of the service. This high level of patient satisfaction continues to be maintained, with no changes over time.

2.5 Best value healthcare – clinical audit and outcomes

2.5.1 Outcome data for Cingulotomy

The following table only includes those patients undergoing cingulotomy reviewed in 2017-18. It is not possible to generalise to all patients undergoing the procedure. Those undergoing other procedures (*e.g.* VNS, ACAPS) are not included here.

	Size of change in symptom scores (categories are exclusive)			
Indication for surgery	≤20%	≥20%	≥35%	≥50%
Depression (N=6)	4	-	-	2
OCD (N=1)	-	-	-	1

2.5.2 Intensive OCD treatment

Two patients have been treated as part of the intensive OCD treatment programme. One patient experienced an improvement of 55.9% in OCD symptoms. The other patient underwent a detailed assessment admission to determine future care needs.

2.6 Teaching and research activities

The service continues to contribute to the teaching of University courses on psychological therapy and the Clinical Associated in Applied Psychology (CAAP) course. We also contribute to national training programmes in affective disorders.

We have published several papers and have presented four posters internationally. We have given several talks at regional, national, and international conferences; with all disciplines within the service being able to contribute. We have an active research programme, and the services has supervised several projects undertaken by undergraduate and postgraduate students.

2.7 Summary and conclusions

The service meets a relatively niche but important need in Scottish mental health services, and we recognise that we operate in a rapidly-changing landscape where mental health services are under considerable stress and services are under-developed at a tertiary level.

Despite this, the outcomes from neurosurgical treatment and intensive OCD treatment are comparable to other expert centres worldwide and represent meaningful outcomes for patients who do not respond to conventional treatments.

We continue to discuss opportunities for further developing the service with our commissioners so that we can meet the future needs of NHS Scotland and patients with difficult-to-treat mood disorders and OCD.

Section 3 - The Advanced Interventions Service

3.1 Overview of the service

The Dundee Advanced Interventions Service provides comprehensive, multidisciplinary clinical assessments for patients with chronic, treatment-refractory depression (TRD) and Obsessive-Compulsive Disorder (OCD).

The service represents one of only a few clinical teams internationally who provide neurosurgical interventions for psychiatric disorders. The provision of psychiatric neurosurgery by a multidisciplinary/ multi-professional team with members drawn from psychiatry, neurosurgery, mental health nursing, and dynamic psychotherapy is, to our knowledge, entirely unique internationally. However, it is only by drawing on such multidisciplinary expertise within an integrated clinical team that patients with such disabling, long-term, healthcare needs can be provided with comprehensive, bespoke, treatment plans that best meet those needs.

Since April 2013 we have also been able to provide intensive (usually inpatient) treatment programmes for people with chronic and severe OCD for whom other treatment options have been tried and failed. We also provide outreach to community mental health teams who are treating patients with OCD.

3.2 What is Neurosurgery for Mental Disorder (NMD)?

The standard definition of Neurosurgery for Mental Disorder (NMD) is that provided by The Royal College of Psychiatrists:

> *"...a surgical procedure for the destruction of brain tissue for the purposes of alleviating specific mental disorders carried out by a stereotactic or other method capable of making an accurate placement of the lesion"* (Royal College of Psychiatrists, 2000)

This definition is most relevant to ablative (lesion-based) neurosurgery procedures (for example, Anterior Cingulotomy). However, although the term 'NMD' is often used to refer to non-lesion based neurosurgical procedures such as Vagus Nerve Stimulation (VNS) and Deep Brain Stimulation (DBS), these latter treatments are more accurately referred to as 'neuromodulation'. Similarly, other treatments such as Transcranial Magnetic Stimulation

(TMS/ rTMS)[3] or Direct Current Stimulation (DCS)[4] are considered to be neuromodulatory and are not currently provided by the Service.

3.3 The current status of neurosurgical treatment

The Royal College of Psychiatrists has recently issued a position statement on psychiatric neurosurgery. The College position is:

> *"The Royal College of Psychiatrists considers that the delivery of safe and effective neurosurgical interventions represents an important element of the ethical and optimised management of patients with chronic, otherwise treatment refractory mental disorder – specifically mood disorders (Major Depression and Bipolar Disorder) and Obsessive-Compulsive Disorder (OCD). The evidence base to support this College position is derived from an accumulated literature comprising open case series evaluations, some of prolonged duration and high quality."* (Committee on ECT and Related Treatments, 2017)

3.4 Designation as a National Service

The Dundee Advanced Interventions (Neurosurgery for Mental Disorder) Service was first designated as a National Specialist Service in April 2006 and became fully staffed in the first quarter of 2007. We have now been operating as a full service for over ten years (2007-2018).

3.5 Description of the patient pathway – neurosurgical treatment

3.5.1 Target group for service

The service exists to provide specialist assessment and treatment options for patients with severe, chronic, treatment-refractory depression and OCD. Although 'chronic' depression is usually defined as unremitting symptoms for at least two years (American Psychiatric Association, 1994), the patients we see are defined not only by prolonged periods of illness,

[3] https://en.wikipedia.org/wiki/Transcranial_magnetic_stimulation
[4] https://en.wikipedia.org/wiki/Transcranial_direct-current_stimulation

but also by having not responded to a range of pharmacological (*e.g.* antidepressants), physical (*e.g.* ECT), and psychological (*e.g.* Cognitive-Behavioural Therapy) treatments.

It should be noted that tertiary-level services[5] for patients with mood disorders (*e.g.* depression), and anxiety disorders (*e.g.* OCD) do not exist in Scotland. Dundee AIS, whilst operating to some extent as a quaternary service, will often assess patients with complex mood and anxiety disorders for whom there is uncertainty about diagnosis or management. We consider this to be an essential part of delivering a useful service to clinicians and the people of Scotland.

Whilst this means that some patients referred to the AIS might be at low likelihood of progressing to neurosurgical intervention, it does mean that: a) Patients for whom future treatment options are uncertain are able to benefit from a specialist, multi-disciplinary assessment; and b) we may become involved with patients at an earlier stage who may later enter a neurosurgical treatment pathway. This improves communication between clinical services, provides improved continuity and clinical care for patients, and facilitates decision-making later.

3.5.2 Referral

Referrals to the AIS come from consultant psychiatrists who are asked to retain clinical responsibility for the coordination and delivery of patient care in the patient's locality throughout the assessment process. We are unable to accept referrals from psychiatrists working in the private sector but would instead make recommendations for transfer of care to the NHS and subsequent onward referral if clinically-indicated.

Referrals are accepted on the understanding that the referring consultant retains overall clinical responsibility for the ongoing care of the patient, including the implementation of any treatment recommendations made by the service. The patient's own psychiatrist and team has a clear accountable role for the overseeing of ongoing treatment and the coordination of relevant clinicians and organisations.

Referrals are accepted from throughout the UK and Eire. We recommend that referrals from outside of the UK are only made following detailed prior discussion. In some cases, we can advise on accessing comparative services within the referring country.

[5] Tertiary services are those that see patients who do not respond to secondary care (*i.e.* community mental health teams and inpatient treatment) services.

3.5.3 Assessment

We anticipate that patients will normally be able to travel to Dundee for assessment. However, it is acknowledged that there are some clinical circumstances where it is better for us to travel to conduct the assessment:

1) Where the patient is currently a hospital inpatient and travel to Dundee may be impractical. Patients who are detained under the respective mental health act will usually be assessed locally;
2) Where the patient cannot attend for reasons such as: infirmity; concerns over mental state; legal status; or inability to leave home (due to symptom severity, for example);
3) Where it is considered of additional importance to assess the patient at home. For example: in the case of severe obsessive-compulsive disorder where symptoms may manifest most prominently within the home environment, and it is important to observe and understand the nature of the symptoms.

Assessments will usually take place over the course of a full day. Prior to the patient's attendance, we will have endeavoured to have reviewed all available case notes so that we have as much information as possible on previous treatments, response, and adverse effects. This means that when we see the patient we can focus on presenting difficulties and structured assessment.

In the morning, the patient will undergo an extensive diagnostic psychiatric assessment, using diagnostic interviews[6] and standard rating scales to quantify the severity of symptoms and associated disability.

We will also meet with relatives/carers/friends so that we can get a comprehensive understanding of the patient's difficulties. This is often done as a separate interview (with the permission of the patient) so that we can also get important information about the individual's premorbid functioning and the effects of illness over time. Many carers or family members tell us that this is often the first time that anyone has spent time with them.

In the afternoon, an experienced psychological therapist will focus on the previous psychological therapies that the patient has received and explore the patient's experiences of these. After review of all relevant information, we meet with the patient (and carers) to provide feedback on our clinical opinions and to summarise and explain the treatment recommendations we are likely to make. This is an opportunity for the patient and accompanying carer or relative to ask questions and to seek further clarification.

[6] For example, the MINI International Neuropsychiatric Interview.

For referrals of patients with severe, disabling OCD, it is often helpful to conduct the evaluation at home or elsewhere in their local environment. This may, therefore, require a series of visits by several members of the AIS team.

Following assessment, the referrer is provided with a detailed clinical report on diagnosis, and advice on future management that will commonly include the combination of evidence-based pharmacological (drug) and psychological therapies. For some patients, the treatment recommendations may also include neurosurgical intervention.

It is our standard practice to provide the patient with a copy of the report so that recommendations (and the rationale for making them) can be considered and discussed as part of collaborative care planning.

3.5.4 Neurosurgical pathway

Since patient histories and their journeys through healthcare are almost always complex, and illnesses present with a range of diagnostic issues, the service will aim to review the patient on several occasions before settled agreement is reached to proceed with neurosurgery. Further care planning may involve additional visits with the patient and/or the local psychiatric services. Since patients and their families may require considerable time to consider treatment options, the time from initial assessment to neurosurgery may be extensive. We continue to be guided by our patients regarding the pace of progression through the pathway.

Since we have partnered with neurosurgeons at the National Hospital for Neurology and Neurosurgery in London, we would routinely arrange for the patient (and carers) to meet with members of the AIS team along with the neurosurgical team to discuss treatment prior to referral to the Care Quality Commission (CQC); the statutory body overseeing psychiatric neurosurgery in England and Wales.

3.5.5 Follow-up

All patients who have undergone neurosurgical intervention are reviewed by the service at one year, two years, and 5 years after surgery. In addition, the team retain contact with the patient's own clinical service, and rating scales completed prospectively help to provide complementary information on the patient's progress.

Whilst scheduled follow-up only extends to 5 years, our relationships with patients and referrers make it easy to ensure that we retain contact with all neurosurgical patients

indefinitely.[7] Given the nature of the interventions, we believe that it is important to observe outcomes for as long as possible.

3.6 Intensive OCD treatment – outreach

3.6.1 Overview

The OCD outreach step is likely to be applicable to most people referred to the service with OCD. It has several features:

1) It will provide support to local treating teams to optimise the delivery of psychological and pharmacological treatments. Although the AIS won't deliver the treatment, such support will accelerate the rate at which patients can progress through the most effective treatment options;
2) It will increase the prospective contact that the AIS has with the local teams. This will have the advantage of making treatment planning more efficient should the patient require intensive/inpatient treatment;
3) It will provide knowledge and skills to local teams with regards to behavioural treatments for OCD. This will have wider benefits for people with OCD throughout NHS Boards in Scotland.[8]
4) It will 'front-load' assessment so that the AIS will be better placed to make decisions about more intensive treatment at an earlier stage.

Key steps are summarized below in Table 1.

[7] This might not necessarily involve full review assessments in Dundee, but may involve telephone/email contact with patients and referrers, or the collection of rating scale data.
[8] There is already evidence that a number of local teams have accumulated greater skills in managing OCD.

TABLE 1. OVERVIEW OF OCD OUTREACH PROGRAMME

Step	Objectives	Location	Duration (weeks)	Pharmacological treatment steps	Therapy treatment steps
1	• Where applicable, communicate recommendation to change medication to consultant & GP. • Liaise with local team to set up a community-based treatment programme.	N/A	12	1. If patient has not responded to current medication, a further trial will be recommended.	None.
2	• Team to develop community-based treatment programme, with input from AIS to set up programme. • Family assessment by AIS (may be considered in step 1, depending on circumstances).	Community / Dundee	4-12 (depending on response to treatment)	2. Review response to treatment and determine total duration of current trial. 3. Recommendations regarding augmentation.	• Hierarchy building: clear end point and beginning; the use of SUDS in treatment-delivery. • Establishing response prevention. • Test/demonstration of ERP trial. Does habituation take place?
3	• Review patient and if no evidence of response, start planning for intensive treatment.	Community / Dundee	4-8	4. Review tolerability and response. 5. Ensure optimisation of therapy before intensive treatment.	• Supporting local team / troubleshooting
4	• Intensive treatment in Dundee	Inpatient (Dundee)	4	6. Maintenance of existing drug treatment.	• Intensive inpatient ERP (15 hours/week).
5	• Home-based treatment	Community	1	7. Maintenance of existing drug treatment.	• Transfer treatment gains to home. • Work with family.
6	• Six-month review.	Community / Dundee	0	8. Consider additional augmentation strategies.	• Relapse prevention.
7	• Exploration of 4th-line and higher medication trials • Discussion of next-step options	Community / Dundee	26-104	9. Less-evidentiary and more complex psychopharmacology	• Troubleshooting and optimisation. • Consideration of alternate modalities (*e.g.* cognitive-focus > behavioural focus)

3.7 Intensive OCD programme and inpatient treatment

Patients will only progress to intensive treatment if they fail to get clinically-significant benefit from enhanced community-based treatment and optimised pharmacological therapy; both delivered by their local team.

3.7.1 Duration of treatment

Intensive treatment programmes will be tailored to the individual. In most cases, intensive treatment will aim to deliver 30-50 hours of therapist-guided exposure therapy (excluding self-directed sessions by the patient). For most people receiving inpatient treatment, this will take between 3-5 weeks (not including assessment/ pre-treatment).

3.7.2 Interventions

The following describes the range of interventions that can be provided.

3.7.2.1 Exposure and Response Prevention (ERP)

Typically, patients will receive 3 hours of therapist-guided ERP per day, for five days each week. The target 'dose' will be ≥ 15 hours of ERP per week. Patients will be expected to engage with homework tasks, *i.e.* the patient will have additional self-directed exposure tasks to complete outside of the therapist-guided treatment sessions.

3.7.2.2 Family work/ work with carers

It is recognised that OCD does not occur in isolation, and families and carers are invariably affected by the illness. Their engagement and involvement is a vital part of treatment and the AIS is committed to working with them as part of the intensive treatment programme. Importantly, the involvement of family is related to assessments of service quality and satisfaction (Mavrogiorgou, Siebers, Juckel, *et al*, 2013).

The assessment process will involve families and carers, and the discharge planning process will usually involve those with close contact with the patient. We recognise that attempting to reduce symptoms without wider environmental change is less effective.

Section 4 - Quality domains

4.1 Efficient

4.1.1 Report of actual versus predicted activity

Table 2 below shows the summary of activity for the service during 2017-18.

TABLE 2. OVERVIEW OF ACTIVITY DATA FOR YEAR ENDING MARCH 2018

	Actual	Predicted
Assessments	26	24
Anterior Cingulotomy / Anterior Capsulotomy	0	3-5
Follow-up	7	12
Intensive OCD treatment (including outreach)	2	3-5

4.1.2 Referrals

Forty-five referrals (20 men and 25 women) were received during the reporting period. The M:F ratio was 0.8:1. The mean (± SD) age of referrals was 42.1 ± 14.9 years.

Table 4 (on page 19 below) shows the recorded outcome from each referral. Not all referrals fall clearly within the remit of the service and we are usually able to discuss this with the referrer and advise on further management. Although it is not currently recorded in detail, the service often becomes involved in supportive discussions about the most appropriate pathways for the patient.

4.1.2.1 Referral diagnosis

A specific diagnosis (with an ICD-10 code) is rarely but it is usually possible to determine the general diagnostic category based on the information provided. This is shown below in Table 3.

TABLE 3. GENERAL DIAGNOSTIC CATEGORY FOR REFERRALS TO THE SERVICE

Diagnostic Category	**N**	**%**
OCD	28	62.2%
Depression	8	17.8%
Bipolar Disorder	6	13.3%
Autism Spectrum Disorders	1	2.2%
Psychotic disorders	1	2.2%
Other	1	2.2%
Total	**45**	**100%**

Although the presumed referral diagnosis might appear to be outwith the remit of the service, such patients typically had presenting problems (*e.g.* compulsive behaviour) that had been unresponsive to treatment and for which specialist opinion was being sought.

The percentage of referrals for OCD (62.2%) is slightly higher is higher than that of last year (53.5%) and the previous year (34.4%). This potentially reflects more demand for treatment of OCD.

4.1.2.2 Outcome from referral

Table 4 below describes the outcomes for all referrals (N=45). In a small number of cases the descriptions may not be ideal, but they illustrate the range of referrals that the service receives, and the various responses that the service is able to provide.

Of the 45 referrals, 19 (42.2%) were accepted straight away. This is similar to the rate last year (39.5%). It is worth noting that 10 (23.3%) of referrals were for patients whose diagnosis and/or clinical history suggested that their needs would be better met elsewhere. In many cases, the patient had not had the range of treatments that we would normally expect them to have had prior to being seen and recommendations and/or advice were given on further treatment options.

TABLE 4. OUTCOME FROM REFERRAL

Outcome	**N**	**%**
Referral Accepted - Appointment given	19	42.2%
Referral unclear - Further information requested	8	17.8%

Outcome	N	%
Not appointed - funding awaited/required	5	11.1%
Referral not accepted - Outwith remit of AIS (give details)	3	6.7%
Referral from Primary Care - Referral needed from psychiatrist	3	6.7%
Did not meet criteria - Casenote review offered	2	4.4%
Referral not accepted - Other (Give details)	1	2.2%
Referral not accepted - Diagnosis not appropriate	1	2.2%
Referral unclear - referrer invited to present to AIS	1	2.2%
Referral from Private Provider - Referral needed from NHS	1	2.2%
Referral not accepted - Advice given on treatment	1	2.2%
Total	**45**	**100%**

4.1.2.3 Referring NHS organisation (referrals)

Table 5 below shows the referring NHS organisation. This year, 82.2% of referrals came from Scotland, whilst 13.3% of referrals came from England (a slight increase from last year). One referral each (2.2%) came from Wales and Eire.

TABLE 5. NEW REFERRALS RECEIVED DURING 2017-18: NHS ORGANISATION REFERRING

NHS Organisation	Country	No. of Referrals
NHS Dumfries and Galloway	Scotland, UK	2
NHS Eilean Siar (Western Isles), NHS Shetland, NHS Orkney	Scotland, UK	4
NHS Fife	Scotland, UK	3
NHS Grampian	Scotland, UK	5
NHS Greater Glasgow and Clyde	Scotland, UK	3
NHS Highland	Scotland, UK	3
NHS Lanarkshire	Scotland, UK	1
NHS Lothian	Scotland, UK	6
NHS Tayside	Scotland, UK	10
Hertfordshire Partnership NHS Trust	England, UK	2
Private Provider | Bupa (ENGLAND)	England, UK	1

NHS Organisation	Country	No. of Referrals
South West London and St George's Mental Health NHS Trust	England, UK	1
West London Mental Health NHS Trust	England, UK	2
Cwm Taf University Health Board	Wales, UK	1
Health Service Executive, Western Area (Eire)	Eire	1
	Total	**45**

4.1.3 Assessments

The total number of appointments provided was 26. The number of unique individuals offered appointments was 22, with one person requiring three assessments and two people requiring two assessments. In these cases, further assessments were scheduled to obtain sufficient information to complete the assessment. The number of people seen represents 48.9% of all referrals (N=45); a similar figure to 2016-2017.

The source of assessments was: Scotland (90.9%); Wales (4.6%); and Eire (4.6%.

4.1.3.1 Demographics of assessments

There were 9 men (40.9%) and 13 (59.1%) women assessed. The M:F ratio was 0.7:1. The mean age of all assessments (±SD) was 45.5 ± 14.2. The lowest age was 19.6 and the highest age was 62.7 years. The marital status of assessments was: single (68.2%); married (18.2%); divorced (4.6%); co-habiting (4.6%); and not recorded (4.6%).

4.1.3.2 Location of assessment

The most common location for assessments was as Ninewells Hospital (86.4%). Other locations included: Other Hospital in Scotland (4.6%); and other community site in Scotland (4.6%).

4.1.3.3 Referring NHS organisation (assessments)

The NHS organisation (Board or Primary Care Trust) responsible for each assessment is shown below in Table 6.

TABLE 6. NEW ASSESSMENTS: REFERRING NHS ORGANISATION

NHS Organisation	Country	No. of assessments
NHS Dumfries and Galloway	Scotland, UK	3
NHS Fife	Scotland, UK	1
NHS Grampian	Scotland, UK	6
NHS Greater Glasgow and Clyde	Scotland, UK	4
NHS Highland	Scotland, UK	1
NHS Lanarkshire	Scotland, UK	1
NHS Lothian	Scotland, UK	2
NHS Tayside	Scotland, UK	2
Health Service Executive, Western Area (Eire)	Eire	1
Cwm Taf University Health Board	Wales, UK	1
Total Number of Assessments:		22
No. of assessments not covered by SLA:		2

4.1.3.4 Diagnosis of patients assessed

The general primary categorical diagnosis is shown below in Table 7. The most common primary diagnostic categories were: OCD (31.8%); an Autism Spectrum Disorder (13.6%); and Personality Disorder (13.6%). It should be noted that most patients had significant comorbidity and most received additional diagnoses. This means that a primary diagnosis of personality disorder, for example, does not meant that the patient did not have depression. In complex populations (such as the one being seen by the service), 'comorbidity' is the norm rather than the exception. In our reports back to referrers, we will always discuss the treatment recommendations in relation to different areas of difficulties that the patient may be experiencing and we incorporate all identified diagnoses into our recommendations.

TABLE 7. PRIMARY DIAGNOSIS (CATEGORY)

Diagnostic Category	N	%
OCD	7	31.8%
Personality disorder(s)	3	13.6%

Diagnostic Category	**N**	**%**
Autism Spectrum Disorders	3	13.6%
Bipolar Disorder	2	9.1%
Psychotic disorders	2	9.1%
Confirmed Diagnosis awaited	2	9.1%
Depression	2	9.1%
Eating Disorder	1	4.5%
Total	**22**	**100%**

The distribution of more-specific primary diagnoses is shown below in Table 8, ordered by ICD-10 diagnostic code. Please note that where further investigations are awaited, the diagnosis may not be confirmed at the time of writing (N=2), and it is not included below.

TABLE 8. PRIMARY DIAGNOSIS FOR NEW ASSESSMENTS

Diagnosis	**No. of patients**	**%**
F21 Schizotypal disorder	1	4.5%
F25.2 Schizoaffective disorder, mixed type	1	4.5%
F31.3 Bipolar affective disorder, current episode mild or moderate depression	2	9.1%
F32.1 Moderate depressive episode	1	4.5%
F33.2 Recurrent depressive disorder, current episode severe without psychotic symptoms	1	4.5%
F42.2 Obsessive compulsive disorder, mixed obsessional thoughts and acts	7	31.8%
F50.1 Atypical anorexia nervosa	1	4.5%
F60.31 Emotionally unstable personality disorder - borderline type	1	4.5%
F60.6 Anxious (avoidant) personality disorder	1	4.5%
F61.0 Mixed personality disorder	1	4.5%
F84.5 Asperger's syndrome	3	13.6%
Total	**20**	**100.0%**

The service continues to see a complex group of patients. Many will typically be experiencing symptoms in several areas, such as: autism spectrum disorder; OCD; personality disorder; and mood disorder.

4.1.3.5 Assessment outcomes

Broad categorical outcomes from assessments are shown below in Table 9. Please note that this table includes multiple assessments (where applicable).

TABLE 9. OUTCOMES FROM ASSESSMENT

Outcome	**N**	**%**
Discharged with treatment recommendations (Drug & Therapy)	12	42.9%
Further appointment given	9	32.1%
Discharged with treatment recommendations (Medication only)	3	10.7%
Neurosurgical pathway (Ongoing discussions)	2	7.1%
Case note review only	1	3.6%
Neurosurgical pathway (Neurosurgery offered)	1	3.6%
Total	**28**	**100.0%**

4.1.3.6 Case vignettes

The following vignettes given an outline of some of the assessments that the service has undertaken and help to illustrate the complexities of presentation and the importance of extended assessment in collaboration with local services.

1) We saw a young woman who was presenting with extreme, highly-ritualised behaviours relating to toilet routine. The AIS conducted a number of assessment sessions, as well as meeting with the family. Diagnoses of OCD and Asperger's syndrome were made. Due to the concurrence of OCD and Autism Spectrum Disorder (ASD), classic exposure-based treatments would have been ineffective. Local services were struggling to implement a behavioural programme, so the AIS provided six treatment sessions, and ensured that the local team were better able to deliver ongoing treatment.
2) We also offer consultancy to teams who require support with regards to diagnosis and treatment. In the last year we provided consultancy to CAMHS services for a young woman in her mid-teens. This assessment is not reported in the figures above

because we had initially intended to discuss the case with the referring team. However, in order to support the team and provide meaningful input for the patient and their family, we met with the patient on four occasions and with the family on one occasion. Two multi-disciplinary case planning meetings were held and we delivered a workshop to the local team so that they were better equipped to deliver a community-based exposure-and-response prevention programme.

3) We assessed a man in his 30s who had been referred with OCD and a number of comorbid conditions. We identified previously-undiagnosed Autism Spectrum Disorder and Bipolar Affective Disorder. However, to do this necessitated an extended assessment over six separate visits, and we also provide feedback and support to his local team via their multi-disciplinary meeting.
4) A man in his mid-50s was referred due to the onset of OCD symptoms in later life. As this was an unusual presentation, we asked for additional neuropsychological testing and MRI scanning. We also arranged for two additional assessments in the patient's home, along with the wife, to fully understand the nature of his symptoms. Ultimately, we concluded that his presentation was not due to primary OCD and ongoing care was transferred back to his CMHT with recommendations on pharmacological and psychological treatment strategies.
5) A young man in his mid-20s was referred due to OCD. Additional home-based assessment was needed to clarify the diagnosis, and this was done alongside his local psychologist. This ongoing assessment required six additional sessions (which involved his parents), but it was possible to ensure that the patient had ongoing treatment (based around a re-conceptualisation of his difficulties) with the local psychologist.
6) A woman in her 40's was referred because of chronic and severe OCD. She was seen as part of the outreach programme and this involved the local CMHT as well. Although she was not able to participate in treatment (because of a need to treat additional comorbidities), we were able to ensure that her ongoing care within her local CMHT was framed around her current treatment needs.

4.1.4 Reviews

Seven formal reviews were conducted this year, and we also reviewed another patient at the request of the local psychiatrist. Where the purpose of the review is to assess outcomes

following neurosurgery at a formal follow-up point (1-year, 2-year-, and 5-year), these reviews are reported under Section 4.2.1 below.

All patients with OCD who were assessed between 2010 and 2015 have been invited to participate in a longer-term follow-up. The aims of this include: a) identify if those seen a number of years ago still require treatment and if this should be within the framework of the specialist service[9]; b) understand from referrers how helpful the referral to the service was, and whether we can improve what we provide to NHS Boards in Scotland; and c) re-establish links with local teams who may be struggling to manage some patients.

As part of this review a second cohort of 22 people have been invited to take part. Over the last year, 16 people have participated in a review of their difficulties and have completed additional ratings of symptom burden and quality of life. We hope to be able to report on the findings next year.

4.1.5 Procedures

No procedures were performed during this reporting period.

4.1.6 Inpatient admissions

4.1.6.1 Intensive Exposure and Response Prevention (ERP)

Two individuals received intensive treatment as an inpatient. One person underwent an 11-day assessment admission before undergoing a 29-day treatment admission a few months after. They received a total of 30 treatment sessions, with 121 therapy hours. Outcomes are reported in section 4.2.2 below.

The other individual had an 11-day assessment admission followed by a series of five home-based assessment and treatment sessions, but did not go on to have a treatment admission because of several clinical reasons that affected their ability to fully engage in an intensive treatment programme at that time. They are likely to be admitted for further treatment in the financial year 2018-19.

The NHS Board(s) for these two individuals were NHS Lanarkshire and NHS Greater Glasgow and Clyde.

[9] Some of the people assessed were seen before the service was able to provide intensive/ inpatient ERP.

4.1.6.2 Duration of inpatient stay

The total duration of inpatient stay in Carseview Centre, Dundee for all patients was 51 days.

4.1.7 Comments on variation between actual and predicted activity

4.1.7.1 Referrals and assessments

We continue to receive a many more referrals than translate into assessments. We have, over the last few years, worked hard to ensure that we try to offer support and advice to referrers before assessing an individual; particularly when there is some uncertainty as to whether the patient clearly falls within the remit of our service. For example, we have significantly reduced the total number of assessments conducted for patients from Tayside.

Of note is the high number of referrals from NHS Western Isles. We believe that this reflects well-established relationships between the service and clinicians in NHS Western Isles due to providing previous assessment/ treatment for a number of patients from this NHS Board.

4.1.7.2 Reviews

The total number of reviews is consistent with predicted activity and is recognised to vary from year to year because of levels of neurosurgical activity in previous years.

4.1.7.3 Surgical activity

As previously discussed, surgical activity tends to be relatively low and is dependent on the numbers and types of referrals that the service receives. This is discussed in more detail above.

4.1.7.4 Intensive OCD treatment

We continue to face significant challenges operating within a landscape of big changes in MH services. We have previously recognised the complexity of trying to support and coordinate treatment for patients in the community and enable local services to deliver treatment programmes that many local services are not equipped to provide. In some cases, local services are unable to identify a named therapist who can deliver 1-2-hour sessions in the patient's home. This is, currently, the most significant bottleneck affecting entry into the intensive treatment programme.

We recognise that many local services are struggling to do this and although it is hard to capture in this report, the AIS spends a considerable amount of time supporting local services in the co-ordination of these activities. In the year covered by this report, team members have attended a total of seventeen multi-disciplinary meetings for patients from: NHS Borders; NHS Tayside; NHS Lanarkshire; NHS Lothian; NHS Fife; NHS Greater Glasgow & Clyde; NHS Highland; and NHS Western Isles. We have also conducted a visit to a patient from Wales who had been referred for consideration for neurosurgical treatment. We met with the family and members of the local service.

Unfortunately, we find it difficult to move forward with many patient pathways until these crucial steps have been undertaken with local teams, families, and carers. We are constantly reviewing our pathways to try and support local services, but it is concerning that there are significant barriers within secondary care mental health services across the whole of Scotland.

4.1.8 Resource use

Details of inpatient admissions are given above in section 4.1.6.

Two assessments were performed outwith the SLA and the income received for these can be used to offset the overall costs of the service.

4.1.9 Finance and workforce

4.1.9.1 Financial Report

The financial report is submitted separately by NHS Tayside finance department.

4.1.10 Key performance indicators and HEAT targets

The HEAT targets most relevant to the service are those related to access (waiting times) – further details are given below in Section 4.4.1. The service has had no unplanned readmissions.

4.2 Effective

4.2.1 Clinical outcomes: Neurosurgery for Mental Disorder

In this report, we aim to provide a summary of outcomes for patients reviewed in 2017-18 as part of the scheduled follow-up process. More detailed, cumulative reporting will occur on a periodic basis when the accumulation of more data makes this process more meaningful. In addition, clinical outcomes will continue to be reported in peer-reviewed journals.

On a routine basis, detailed summaries of clinical outcomes are provided on a per-patient basis to clinical staff involved in their care and treatment using standard proformas that cover rating scale scores over long periods of time. All referrers receive very detailed summaries of the rating scales we complete, along with all the self-reported measures.

4.2.1.1 Neurosurgery for Mental Disorder – Outcomes during 2017-18

Seven patients underwent formal review during this reporting period. Outcomes are shown below in Table 10 and have been grouped by diagnosis.

We would continue to urge caution when trying to generalise outcomes from this small sample and we are keen to ensure that outcomes from neurosurgery are reported in a meaningful way.

The procedure number does not automatically indicate that the patient has had more than one neurosurgical procedure. For example, several patients will have had VNS as the first procedure and ACING as the second procedure. A few patients will have had VNS, followed by DBS, with ablative neurosurgery being their third procedure. To prevent problems with confidentiality, the details of all previous treatment(s) are not reported here.

TABLE 10. OUTCOMES FROM NMD PROCEDURES (FOLLOW-UP PERFORMED IN 2017-18)

ID	Procedure	Indication for surgery	Procedure No.	Weeks post-op	% Change in HRSD-17	% Change in MADRS	% Change in Y-BOCS	Response ?	Remission ?
67	ACING	F33.2 Recurrent depressive disorder, current episode severe without psychotic symptoms	3	262	1.4%	-6.1%	-	No	No
81	ACING	F33.2 Recurrent depressive disorder, current episode severe without psychotic symptoms	2	108.8	-61.3%	-51.2%	-	Yes	No
126	ACING	F32.2 Severe depressive episode, without psychotic symptoms	2	375.5	1.7%	-3.8%	-	No	No
310	ACING	F33.2 Recurrent depressive disorder, current episode severe without psychotic symptoms	2	106.2	-6.8%	-7.3%	-	No	No
441	ACING	F32.2 Severe depressive episode, without psychotic symptoms	1	314.7	-58.6%	-56.8%	-	Yes	No
540	ACING	F32.2 Severe depressive episode, without psychotic symptoms	1	107.7	1.6%	-4.0%	-	No	No
551	ACING	F42.2 Obsessive compulsive disorder, mixed obsessional thoughts and acts	1	105.8	-	-	-72.4%	Yes	Yes

HRSD-17 = 17-item Hamilton Rating Scale for Depression; **MADRS** = Montgomery-Åsberg Depression Rating Scale; **YBOCS** = Yale-Brown Obsessive Compulsive Scale.
Depression Criteria: *Response* is defined as a ≥ 50% improvement in baseline score on the HRSD-17 OR ≥ 50% improvement in baseline score on the MADRS. *Remission* is defined as HRSD ≤ 7, or MADRS ≤ 10.
OCD Criteria: *Response* is defined as ≥35% improvement in baseline Y-BOCS. *Remission* is a Y-BOCS score ≤ 10.

4.2.2 Clinical outcomes: Intensive treatment for OCD

One patient has undergone an intensive treatment programme as an inpatient. By the end of phase 2 (discharge from hospital), there was a 52.9% reduction in symptoms, indicating a clear response. After home treatment, there had been a 55.9% reduction in symptoms.

4.2.3 Service improvement and audit

We continue to develop our assessment processes and treatment pathways because of ongoing learning. Some examples in the last year include:

1) The introduction of computerised neuropsychological testing using the CANTAB battery for all patients admitted for intensive assessment or treatment for OCD. This will help us to understand the effects of potential deficits in information-processing, working memory, and learning on the outcomes of therapy.
2) We have developed a tool for the rating of adequacy of treatment for OCD, based on the Antidepressant Treatment History Form. Our tool, the OCD Treatment History Form (OTHF) allows clinicians to record previous treatment in a systematic way and obtain an overall score which can guide further treatment decisions. The tool has been presented at the WSSFN conference in Berlin.
3) We continue to develop clinical ratings that can allow psychiatrists to differentiate between OCD and Autism Spectrum Disorder, and OCD and psychosis. Both of these other conditions are often overlapping, and it can be challenging to determine if symptoms are due to OCD (and treatable using standard behavioural methods), or due to ASD or psychosis (which would require alternative treatment approaches).

4.2.4 Research

4.2.4.1 Journal publications

MCALLISTER-WILLIAMS RH, **CHRISTMAS DMB**, CLEARE AJ, CURRIE A, GLEDHILL J, INSOLE L, MALIZIA AL, MCGEEVER M, MORRISS R, ROBINSON LJ, SCOTT M, STOKES PRA, TALBOT PS, YOUNG AH. Multiple-therapy-resistant major depressive disorder: a clinically important concept. *British Journal of Psychiatry*. 2018; 212(5): 274-278. http://dx.doi.org/10.1192/bjp.2017.33

HOLTZHEIMER PE, HUSAIN MM, LISANBY SH, TAYLOR SF, WHITWORTH LA, MCCLINTOCK S, SLAVIN KV, BERMAN J, MCKHANN GM, PATIL PG, RITTBERG BR,

ABOSCH A, PANDURANGI AK, HOLLOWAY KL, LAM RW, HONEY CR, NEIMAT JS, HENDERSON JM, DEBATTISTA C, ROTHSCHILD AJ, PILITSIS JG, ESPINOZA RT, PETRIDES G, MOGILNER AY, **MATTHEWS K**, PEICHEL D, GROSS RE, HAMANI C, LOZANO AM, MAYBERG HS. Subcallosal cingulate deep brain stimulation for treatment-resistant depression: a multisite, randomised, sham-controlled trial. *Lancet Psychiatry*. 2017; 4(11): 839-849. http://dx.doi.org/10.1016/S2215-0366(17)30371-1

BALDACCHINO A, ARMANYOUS M, BALFOUR DJK, HUMPHRIS G, **MATTHEWS K**. Neuropsychological functioning and chronic methadone use: A systematic review and meta-analysis. *Neuroscience & Biobehavioral Reviews*. 2017; 73: 23-38. https://doi.org/10.1016/j.neubiorev.2016.11.008

TOLOMEO S, **MATTHEWS K**, STEELE D, BALDACCHINO A. Compulsivity in opioid dependence. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*. 2018; 81: 333-339. http://doi.org/10.1016/j.pnpbp.2017.09.007

HIGGINS C, SMITH BH, **MATTHEWS K**. Incidence of iatrogenic opioid dependence or abuse in patients with pain who were exposed to opioid analgesic therapy: a systematic review and meta-analysis. *British Journal of Anaesthesia*. 2018; 120(6): 1335-1344. http://doi.org/10.1016/j.bja.2018.03.009

ANTTILA V, BULIK-SULLIVAN B, FINUCANE HK, WALTERS R, BRAS J, DUNCAN L, ESCOTT-PRICE V, FALCONE G, GORMLEY P, MALIK R, PATSOPOULOS N, RIPKE S, WEI Z, YU D, LEE P, BREEN G, BULIK C, DALY M, DICHGANS M, FARAONE S, GUERREIRO R, HOLMANS P, KENDLER K, KOELEMAN B, MATHEWS C, SCHARF J, SKLAR P, WILLIAMS J, WOOD N, COTSAPAS C, PALOTIE A, SMOLLER J, SULLIVAN P, ROSAND J, CORVIN A, NEALE B. Analysis of shared heritability in common disorders of the brain. *bioRxiv*. 2017. http://biorxiv.org/content/early/2017/09/06/048991.abstract

4.2.4.2 Conference presentations

WALKER KJ, CHRISTMAS D, MATTHEWS K. Twelve Month Treatment Outcomes for Intensive Psychological Therapy versus Anterior Cingulotomy for OCD. Presented at *World Society for Stereotactic and Functional Neurosurgery 17th Quadrennial Meeting: Emerging Techniques and Indications*. Berlin, Germany; 26-29 June 2017. http://www.advancedinterventions.org.uk/images/posters/2017_06_WSSFN_Berlin_ITP_vs_ACING_Walker_et_al.pdf

CHRISTMAS D. When is a patient with OCD treatment refractory? Presented at *World Society for Stereotactic and Functional Neurosurgery 17th Quadrennial Meeting: Emerging Techniques and Indications*. Berlin, Germany; 26-29 June 2017.

MATTHEWS K. Neurosurgical Treatments for OCD. Presented at *World Society for Stereotactic and Functional Neurosurgery 17th Quadrennial Meeting: Emerging Techniques and Indications*. Berlin, Germany; 26-29 June 2017.

MATTHEWS K. Status of Neurosurgery for Psychiatric Disorders - A Psychiatrist's Perspective. Presented at *World Society for Stereotactic and Functional Neurosurgery 17th Quadrennial Meeting: Emerging Techniques and Indications*. Berlin, Germany; 26-29 June 2017.

MATTHEWS K. Lesion surgery for Major Depression. Presented at *Leksell Gamma Knife Surgery*. Dubai, UAE; 5 March 2018.

4.2.4.3 Conference posters

CHRISTMAS D, MATTHEWS K. Deep Brain Stimulation for Depression: Using A Patient-Level Registry to Explore Patient Characteristics and Clinical Outcomes [Poster]. Presented at *World Society for Stereotactic and Functional Neurosurgery 17th Quadrennial Meeting: Emerging Techniques and Indications*. Berlin, Germany; 26-29 June 2017. http://www.advancedinterventions.org.uk/images/posters/2017_06_WSSFN_Berlin_DBS_for_MDD_Registry_Christmas_et_al.pdf

CHRISTMAS D, MATTHEWS K. Patient Characteristics and Outcomes Following DBS for OCD: Using A Patient-Level Registry To Navigate Through The Fog [Poster]. Presented at *World Society for Stereotactic and Functional Neurosurgery 17th Quadrennial Meeting: Emerging Techniques and Indications*. Berlin, Germany; 26-29 June 2017. http://www.advancedinterventions.org.uk/images/posters/2017_06_WSSFN_Berlin_OCD_Registry_Christmas_et_al.pdf

MATHER A, CHRISTMAS D, MATTHEWS K. Changes in Interpersonal Functioning Following Bilateral Anterior Cingulotomy For Treatment-Refractory Depression Compared To Psychological Therapy For Chronic Depression [Poster]. Presented at *World Society for Stereotactic and Functional Neurosurgery 17th Quadrennial Meeting: Emerging Techniques and Indications*. Berlin, Germany; 26-29 June 2017. http://www.advancedinterventions.org.uk/images/posters/2017_06_WSSFN_Berlin_IIP-64_ACING_vs_CBASP_Mather_et_al.pdf

MATHER A, CHRISTMAS D, MATTHEWS K. Post-Operative Care Planning Following Neurosurgery for Depression: An Essential Part Of Care With Room for Improvement [Poster]. Presented at *World Society for Stereotactic and Functional Neurosurgery 17th Quadrennial Meeting: Emerging Techniques and Indications*. Berlin, Germany; 26-29 June 2017. http://www.advancedinterventions.org.uk/images/posters/2017_06_WSSFN_Berlin_Post-Operative_Care_Planning_Mather_et_al.pdf

4.2.5 Teaching

4.2.5.1 Workshops

- In September 2017, Professor Matthews and Dr Christmas presented two one-day workshops for the Royal College of Psychiatrists in Scotland. The workshops (one on treatment of OCD, and the other on treatment of depression). They were attended by senior trainees and consultant psychiatrists. All attendees received electronic copies of all teaching material, reference material, and rating scales and pathways. The workshops

were extremely well rated, with only one attendee recording a single item that was not the highest-possible rating.

- Professor Matthews also presented on '*The management of refractory depression*' at the Perth ECT Prescribers Training Day (20 September 2017).
- Nursing staff from the service have delivered eleven one-day workshops for staff in multi-disciplinary teams in Scotland who are caring for patients with OCD. These workshops have taken place in a variety of settings (including community, in-patient wards, and CAMHS outpatient clinics). Workshops have been delivered in: NHS Lothian; NHS Highland; NHS Greater Glasgow & Clyde; and NHS Tayside.
- The service has also provided a one-day invited workshop to the West of Scotland peri-natal group which was held in Edinburgh.

4.2.5.2 Contributions to training in NHS Scotland

- Staff contribute their expertise on an annual basis to both the MSc in cognitive-behavioural psychological therapies and to the Clinical Associate in Applied Psychology (CAAP) course; both run by the University of Dundee. In recent years, Dr Christmas and Professor Matthews have both supervised projects, which ensures close links between developing psychological therapists throughout Scotland and ensures that the service maintains as high profile as possible.
- Nursing staff provide teaching on OCD annually to the nursing students of the Universities of Dundee and Abertay.

4.2.5.3 Teaching on national / international courses

- For the last few years, Dr Christmas has delivered teaching on the Kings College London Affective Disorders MSc.

4.2.5.4 Contributions to national activity

- In April 2017, Dr Christmas presented at the Joint meeting of the Cross Party Group on Older People, Age and Ageing and the Cross Party Group on Mental Health. This was an opportunity to present information on depression in older age to MSPs, members of the public, and other stakeholders.

4.3 Safe

4.3.1 Risk register

Risk management is managed within the framework of the host service, NHS Tayside. The service also holds a separate risk register.

4.3.2 Clinical governance

Dundee AIS is subject to the clinical governance framework operated by the host NHS Board. For example: appraisal; job planning; continuing professional development; knowledge and skills framework (KSF); *etc*.

The quality and governance approach of Dundee AIS measures up to the key drivers for NHS Scotland strategies as well as local frameworks.

4.3.3 Healthcare Associated Infections

Details of HAIs are given below in Section 4.3.4.2

4.3.4 Adverse events

Significant adverse events are discussed first, followed by a more detailed discussion of adverse effects relating to the treatments provided.

4.3.4.1 Survival data

Survival following neurosurgical intervention continues to be 100%.

4.3.4.2 Number of Hospital Acquired Infections (HAIs)

There have been no HAIs reported during this year.

4.3.4.3 Number of critical incidents

There were no critical incidents in the last 12 months of activity.

4.3.4.4 No. of deaths

No deaths have occurred because of neurosurgical intervention since such interventions were first offered in 1992. In 2011, a patient who underwent neurosurgery in the early 1990s died from an unrelated cause.

4.3.4.5 Adverse effects

We continue to systematically collect information on adverse effects from both Anterior Cingulotomy and VNS. In addition, we conduct extensive neuropsychological assessments (including computerised testing) to identify post-surgical impairments in cognitive function.

The following section has not changed significantly from previous reports as significant adverse effects continue to be uncommon.

4.3.4.5.1 Anterior Cingulotomy

Attributing adverse effects to neurosurgery is challenging, since some potential adverse effects (such as lack of energy and/ or motivation) are common symptoms of the underlying disorder and/ or some treatments (*e.g.* antidepressants). We continue to attempt to attribute patient complaints to neurosurgical intervention, adverse effects from medication, or symptoms of the underlying disorder, maintaining a low threshold for attributing adverse effects to neurosurgery.

The most common adverse effects in the first 2-3 weeks after surgery are: Headache (40.9%) Tiredness (40.9%); Nausea (27.3%); Concentration problems (27.3%); Dizziness (18.2%); and Incontinence (13.6%). These are expected to have resolved in the first 2-4 weeks after surgery. The adverse effect profile of Anterior Cingulotomy continues to be relatively benign, with few effects persisting beyond the immediate post-operative period. At 12 months, the most common problems reported are: Memory problems (36.85%); Concentration problems (26.3%); Weight gain (26.3%); and Headache, Nausea, Tiredness (each 15.8%). The confidence that we have in attributing these effects to the procedure is relatively low, since depressive symptoms will explain many of them. Similarly, weight gain is relatively small and is frequently due to medication effects.

The service continues to collect data on adverse effects using the Systematic Assessment for Treatment Emergent Effects (SAFTEE; Levine & Schooler, 1986) and it is used pre-operatively and post-operatively. However, due to its recent introduction, baseline data are unavailable for most patients currently being followed-up, so it will be a little time before we are able to report in detail.

Neuropsychological assessment, conducted prospectively for many years, has failed to evidence consistent changes in performance, with most patients demonstrating improvements which are probably mediated by the reductions in symptom burden. The fact that self-reports of memory problems and concentration difficulties are not evidenced by objective testing would suggest that these complaints are explainable by on-going depressive symptoms.

4.3.4.5.2 Neuropsychological performance

The service has used the CANTAB neuropsychological test battery for many years. A summary of the key tests is as follows:

TABLE 11. SUMMARY OF CANTAB TESTS

Test name	**Cognitive domain tested**
ID-ED shift	Tests the ability to learn new rules and attentional set shifting
Spatial Working Memory	Tests working memory and the ability to develop strategies to solve learning problems
Stockings of Cambridge	Tests spatial planning, motor control
Paired Associates Learning	Tests episodic memory and learning – a version of the 'pairs' game
Reaction Time	Measures time to respond to a stimulus
Spatial Recognition Memory	Tests memory for spatial locations
Pattern Recognition Memory	Tests memory for patterns
Delayed Matching to Sample	Tests memory relating to matching patterns immediately and after a delay
Spatial Span	A test of working memory capacity
Rapid Visual Processing	Measures ability to sustain visual attention

The following table reports everyone who was followed-up this year and whether there were clinically significant[10] changes in neuropsychological performance on the CANTAB computerised test battery. The code used is:

[10] 'Clinically-significant' means changes that are not only measurable on formal testing, but which correspond to reports from the patient and/or others relating to performance in a range of tasks. The magnitude of change must be large enough to impact on functioning to qualify for this criterion.

Imp = Improvement in performance

NC = No significant change

SD = Slight deterioration, but unlikely to be clinically significant

D = Deterioration in performance and corroborated by impaired functioning

TABLE 12. SUMMARY OF NEUROPSYCHOLOGICAL CHANGES AFTER SURGERY

ID	Procedure	Weeks post-op	ID-ED Shift	Spatial Working Memory	Stockings of Cambridge	Paired Associated Learning	Reaction Time	Spatial Recognition Memory	Pattern Recognition Memory	Delayed Matching to Sample	Spatial Span	Rapid Visual Processing
67	ACING	262	NC	SD	Imp	NC	Imp	SD	SD	D	NC	NC
81	ACING	108.8	Imp	Imp	NC	NC	Imp	Imp	NC	Imp	Imp	NC
126	ACING	375.5	D	NC	Imp	Imp	Imp	NC	NC	Imp	NC	NC
310	ACING	106.2	Imp	NC	Imp	NC	NC	SD	NC	NC	SD	NC
441	ACING	314.7	SD	NC	SD	SD	NC	NC	Imp	SD	NC	NC
540	ACING	107.7	Imp	Imp	NC	Imp	Imp	NC	Imp	Imp	Imp	NC
551	ACING	105.8	Imp	Imp	NC	NC	SD	SD	SD	NC	NC	NC
67	ACING	262	NC	SD	Imp	NC	Imp	SD	SD	D	NC	NC

The summary above does not consider changes in symptom severity or changes in medication which could affect performance on neuropsychological testing. For example, medication may affect reaction time.

It is important to note that these scores compare current testing to baseline testing. In many cases, there has been improvement in recent years (*e.g.* between years 3 and 5) that are not reflected in this summary table. Similarly, evidence of reductions in performance may have occurred later than the effects of surgery and probably reflect recurrence of symptoms.

Overall, however, there is no consistent pattern of neuropsychological impairment. Many of the tests measuring 'executive' functions (*e.g. ID-ED shift*, *SWM*, *SOC*, *PAL*) show improvements or no change in most people. Where there may be measurable reductions in performance, these are not widespread and in the majority of cases, other tests of similar functioning are unchanged or improved. We are unable to find consistent impairments in functioning at an individual level, or at a test level.

4.3.5 Formal complaints

No complaints were received during this reporting period.

4.4 Timely (access)

4.4.1 Waiting times

NHS Scotland has had a target "*for 90 per cent of patients to wait no longer than 18 weeks from referral to treatment*", from December 2011.[11] Compliance with this target is reported below. The service aims to assess all Scottish patients within 12 weeks of referral, where there is no definable reason for delay.

The mean (±SD) waiting time for all Scottish patients (irrespective of any delay) was 9.6 ± 3.7 weeks. The mean (±SD) waiting time for those without any recorded reason for delay was 8.0 ± 1.8) weeks. The shortest and longest waiting times (where there was no recorded delay) was 4.9 weeks 11.0 weeks respectively. Reasons for delay are described below.

The median waiting time was 8.1 weeks; which means that 50% of people waited less than 8.1 weeks to be seen. Around seventy-five percent of people waited less than 9.4 weeks to be seen. These indicators are more indicative than a simple mean (which is affected more by extremes) and are slightly reduced from last year. Overall, there has been no major changes in waiting times in recent years.

There were four Scottish patients who were seen later than 12 weeks from referral. Reasons for delay were: Appointment cancelled (N=1); Awaiting further investigations or other assessments (N=2); and ensuring availability of preferred staff to assess patient (N=1.

11 http://www.scotland.gov.uk/About/scotPerforms/partnerstories/NHSScotlandperformance/18weeksRTT

4.5 Person-centred

4.5.1 Overview

All assessments result in treatment recommendations which consider the individual's previous experiences, treatment history, and wishes regarding treatment. Prior to the patient going home we will discuss our formulation and treatment recommendations with the patient and their family to ensure that there is a shared understanding of their difficulties. We will, in most cases, give a copy of the completed report and recommendations to the patient so that they are fully informed regarding their ongoing treatment.

Further, in the run-up to neurosurgical intervention, individualised care plans are developed which involve identifying the patient's strengths, resilience, and future goals. These are planned alongside the patient, their current services, and their family.

4.5.2 Patient /carer /public involvement

The AIS was one of the first national services to have its own website which acts as a portal for professionals and patients. Up-to-date information is provided, along with rating scales and tools for the use of patients, and current guidelines used within the service.

The website continues to list all reports relating to the service and includes downloadable copies of many of the presentations made by members of the team. Copies of operational frameworks and other relevant information are made publicly available via the website.

4.5.3 Overview of patient feedback processes

We continue to collect patient satisfaction data on a regular basis. Patients are asked to complete and return a questionnaire after outpatient assessments and inpatient admissions. As in previous years, we will present cumulative summaries of responses received. Responses are categorised as follows and averaged.

TABLE 13. SCORING FOR PATIENT SATISFACTION QUESTIONNAIRES

Score	Represents	
1	Strongly Disagree	Much worse
2	Disagree	Worse
3	Neutral	Neutral
4	Agree	Better
5	Strongly Agree	Much better

4.5.4 Patient feedback for new assessments

The demographics of the sample are shown in Table 14. The mean scores, for each question are given below in Table 15.

TABLE 14. DEMOGRAPHICS OF PATIENT SATISFACTION QUESTIONNAIRE SAMPLE (N=108)

Characteristic	N	%
Gender		
Male	47	43.5%
Female	60	55.6%
Not answered	1	1.0%
Age Group		
18-29	10	9.3%
30-39	23	21.3%
40-49	27	25.0%
50-59	31	28.7%
60 and above	17	15.7%
Country of Residence		
Eire	1	0.9%
England/ Wales/ NI	9	8.3%
Norway	1	0.9%
Scotland	97	89.8%
Reason for referral		
Mood disorder	52	48.1%
Anxiety disorder	4	3.7%
OCD †	29	26.9%
Mood disorder + OCD	14	13.0%
Other	9	8.3%

At least one questionnaire has been returned from each NHS Board in Scotland.

† Obsessive Compulsive and Related Disorders (includes body dysmorphic disorder).

TABLE 15. RESULTS OF OUTPATIENT SATISFACTION QUESTIONNAIRE

Question	Mean Score	Description of Scale
Explained to me what would happen during the day	4.4	Strongly Disagree... Strongly Agree
Easy to complete questionnaires	3.6	Strongly Disagree... Strongly Agree
Helpful for partner/relatives/friend to come	4.6	Strongly Disagree... Strongly Agree
Pleased that partner/relatives/friend were also seen	4.6	Strongly Disagree... Strongly Agree
Helpful to be seen by two people	4.4	Strongly Disagree... Strongly Agree
Good to meet at end to discuss recommendations	4.6	Strongly Disagree... Strongly Agree
Information given at feedback was helpful	4.4	Strongly Disagree... Strongly Agree
Staff were interested in me and not just my illness	4.4	Strongly Disagree... Strongly Agree
Felt staff listened to what I had to say	4.6	Strongly Disagree... Strongly Agree
Felt staff were honest and open with me	4.6	Strongly Disagree... Strongly Agree
Felt I could talk freely with those meeting with me	4.5	Strongly Disagree... Strongly Agree
Had confidence in doctors and nurses who assessed me	4.6	Strongly Disagree... Strongly Agree
Staff seemed knowledgeable about my condition	4.6	Strongly Disagree... Strongly Agree
Felt staff involved me in decision-making about my care	4.4	Strongly Disagree... Strongly Agree
Staff seemed to respect my decisions about my treatment	4.5	Strongly Disagree... Strongly Agree
Overall, I am satisfied with care I received	4.6	Strongly Disagree... Strongly Agree
I found it helpful to be seen by the service	4.6	Strongly Disagree... Strongly Agree
I learned something new about my problems and available treatments	4.3	Strongly Disagree... Strongly Agree
After attending I feel more optimistic about treatment	4.0	Strongly Disagree... Strongly Agree
Compared to attendance at other outpatient assessments, my attendance at AIS was:	4.3	Much Worse... Much Better

We continue to maintain overwhelmingly positive responses from year-to-year. As before, respondents continue to value multidisciplinary assessment (being seen by two people) and the involvement of relatives and carers in the assessment process. Many people comment to us that it is often the first time that relatives and/or partners have been involved in the assessment process.

Respondents also rate the knowledge of staff highly. Overall, most respondents felt that it was helpful to be seen by the service, even if they did not feel as optimistic about

treatment. This is sometimes the case when diagnoses are revised, or further treatment recommendations are made. Importantly, staff were recognised as being knowledgeable, interested, open, and willing to listen.

The reception and admin team continue to receive favourable comments and make people welcome. Since people and their relatives will be attending all day, we are keen to make sure that people feel at ease. Patients and relatives continue to receive free tea and coffee, and we will ensure that people attending the clinic for the whole day do not have to worry about renewing parking tickets.

4.5.5 Free-text responses for new assessments

The following are free-text comments from patient-satisfaction questionnaires received since these were last reported in our 2016-17 report. The number in parenthesis represents the order in which the questionnaire was received.

- ***"I feel this service/assessment was much more professionally dealt with and they listened and understood all my/our problems." (#102)***
- ***"I felt like an actual person rather than a patient…It would be reassuring to know that Dundee AIS had on ongoing input in my treatment going forward." (#103)***
- ***"All the staff were some of the best I have ever had at other hospitals. I felt they were understanding and easy to speak to and very professional too and very welcoming." (#104)***
- ***"I was made to feel as comfortable as possible and given information at each stage of the process about procedures and opinions. The staff were extremely helpful." (#105)***
- ***"Everyone went out of their way to be helpful and to provide explanations every step of the way. Other practitioners could learn a lot from your practice. Thank you very much!" (#105)***
- ***"A lengthier and more intense experience in very capable, caring and professional hands." (#107)***
- ***"…after attending, I felt far more positive than I anticipated with regard to my future possibilities regarding treatment. The hope I thought had disappeared, has tentatively resurfaced." (#107)***
- ***"May I also thank Z and T…for making us so welcome and comfortable." (#107)***

4.6 Equitable

4.6.1 Age limits

The mean age of all assessments (±SD) this year was 45.5 ± 14.2. The lowest age was 19 and the highest age was 63 years.

The service has no upper or lower age limits, but we recognise that this is unusual for mental health services in general. This means, for example, that there is no specialist OCD provision for people with OCD that are under the age of 18. In many cases, we will provide consultancy (or assess the patient), but this is an identified treatment gap throughout Scotland.

4.6.2 Ethnicity of assessments

Ethnicity was recorded for over 90% of assessments and is shown in Table 16 below.

TABLE 16. ETHNICITY OF ASSESSMENTS

Ethnicity	N	Percentage
1A | White - Scottish	12	54.5%
1B | White - British	3	13.6%
1C | White - Irish	2	9.1%
1D | White - English	1	4.5%
1E | White - Welsh	1	4.5%
4D | African - African, African Scottish or African British	1	4.5%
Not recorded	2	9.1%
Total	**22**	**100.0%**

4.6.3 Geographical access

The NHS Board for referrals is shown below in Table 17.

TABLE 17. REFERRALS PER 100,000 FOR SCOTTISH NHS BOARDS (YEAR ENDING 2018)

NHS Organisation	No. of Referrals	Population (2013)	Referrals per 100,000
NHS Ayrshire & Arran	0	372,210	0.0
NHS Dumfries and Galloway	2	150,270	1.3
NHS Eilean Siar (Western Isles), NHS Shetland, NHS Orkney	4	72,170	5.5
NHS Fife	3	366,910	0.8
NHS Forth Valley	0	299,680	0.0
NHS Grampian	5	579,220	0.9
NHS Greater Glasgow and Clyde	3	1,137,930	0.3
NHS Highland	3	321,000	0.9
NHS Lanarkshire	1	652,580	0.2
NHS Lothian	6	849,700	0.7
NHS Tayside	10	412,160	2.4
Total	**37**	**5,169,060**	**0.7**

The NHS Board for all assessments in 2017-18 is shown below in Table 18.

TABLE 18. NHS BOARD FOR ASSESSMENTS AND RATES PER 100,000 POPULATION

NHS Board	No. of Assessments	Population (2013)[12]	Assessments per 100,000
NHS Ayrshire & Arran	0	372,210	0.0
NHS Dumfries and Galloway	3	150,270	2.0
NHS Eilean Siar (Western Isles), NHS Shetland, NHS Orkney	0	27,400	0.0
NHS Fife	1	366,910	0.3
NHS Forth Valley	0	299,680	0.0
NHS Grampian	6	579,220	1.0
NHS Greater Glasgow and Clyde	4	1,137,930	0.4
NHS Highland	1	321,000	0.3

[12] http://www.gro-scotland.gov.uk/statistics/theme/population/estimates/mid-year/time-series.html

NHS Board	No. of Assessments	Population (2013)[12]	Assessments per 100,000
NHS Lanarkshire	1	652,580	0.2
NHS Lothian	2	849,700	0.2
NHS Tayside	2	412,160	0.5
	20	**5,141,660**	**0.4**

Referrals continue to come from all over Scotland and it is recognised that most referrals come from the 'central belt' because this is the most densely-populated part of Scotland. There is a higher 'density' of assessments from the eastern half of Scotland, however, and this will reflect the location of the host NHS Board; a common observation with almost all specialist services.

The rate for NHS Greater Glasgow & Clyde (previously much lower than the Scottish average) is now at the Scottish average. We continue to explore opportunities for raising the profile of the service in those Boards with low referral rates, but we recognise that referral rates vary from year-to-year, and there is a marked paucity of information available on how specialist services can influence referral rates from low-referring Boards.

We continue to explore reasons why some NHS Boards have a low rate of referral to the service, but we recognise that there is a lack of well-evidenced interventions that are effective for doing so. NHS Ayrshire and Arran have, historically, been lower-than-average in terms of referrals but Dr Christmas is scheduled to deliver a workshop on atypical depression in August 2018. This will be an opportunity to explore this in more detail with senior clinicians in Ayrshire, as well as raising the profile of the service.

4.6.4 Socioeconomic status of referrals

This was described in the previous report and a similar analysis has not been performed this year. We will continue to monitor this over time and report episodically.

4.7 AIS quality indicators

The service-specific quality indicators that we have developed in recent years are summarised in Table 19 below. The status of each indicator is as follows:

1. In preparation – sufficient incomplete data to prevent full reporting during this period;

2. In preparation – most data are available, and the indicator can be reported, although caution should be exercised before judgements are made on the reporting. Further refinement is expected in the coming years.
3. Complete – the data can be reported and there is sufficient confidence that there are no missing and/or incomplete data.

TABLE 19. AIS QUALITY INDICATORS SUMMARY (LINKS IN BLUE ARE CLICKABLE)

Category	Quality aim	Indicator code	Indicator description	Outcome	Status
Person-centred	All people seen will receive a copy of treatment recommendations within three weeks of assessment, where clinically-appropriate	PC1	Percentage of assessments that receive a copy of personalised and collaborative recommendations for treatment following assessment	50% of reports that had been completed by the end of the financial year had been sent to the patient. This is a similar figure to last year.	3
	The service will aim to see people in the most appropriate location	PC2	Percentage of initial assessments conducted within the referred patient's locality	13.6% of assessments took place in a hospital in the patient's locality or in their home. This is slightly higher than last year, and we will always aim to see people in the most suitable location.	3
Safe	No patient undergoing neurosurgery will develop a surgical site infection or a hospital-acquired infection	SAF1	Number (and percentage) of neurosurgical procedures where there is a reported adverse effect relating to infection	No procedures were undertaken in this reporting period.	3
		SAF2	Number of additional occupied bed days due to post-operative complications	None.	3
Safe	Neuropsychological sequelae from surgery will not differ significantly from those attributable to the underlying condition	SAF3	Number (and percentage) of patients who, at 12-months post-op, display evidence of clinically-significant deterioration in neuropsychological performance on three or more measures following neurosurgical treatment	These are reported in more detail above under Neuropsychological performance (Section 4.3.4.5 above).	3

Category	Quality aim	Indicator code	Indicator description	Outcome	Status
	All patients discharged from hospital will have a clear record of medication and the reasons for change	SAF4	Percentage of discharged patients where there is a clear documented record of medication changes, along with medicines reconciliation (where relevant)	All discharge correspondence has included clear communication about medication changes (and the reasons for change). The reporting rate is therefore 100%.	3
Effective	A significant proportion of people undergoing neurosurgery will experience improvement in their symptoms and quality of life	EFF1	Number (and percentage) of patients showing improvements in symptoms of 25% and 50% at 12-months, 24-months, and 5-years following neurosurgery	Outcomes for the reviews conducted are given above in Table 10.	3
		EFF2	Overall improvements in self-reported quality of life at 12-months, 24-months, and 5-years following neurosurgery	The service has introduced the WHODAS 2.0 in the last few years to measure quality-of-life. Currently, complete outcome data are not available for all patients, but we will report when it is.	2
Efficient	The pathways that patients follow will ensure the most efficient use of the service	EFC1	Total number of commissioned assessments, follow-ups, and procedures delivered	These are described in detail under 'Report of actual versus predicted activity' above.	3
		EFC2	Categorical outcomes (number and percentage of total) from referral to the AIS, including: not seen; recommendations made; assessed; treatment delivered; *etc.*	Outcome from referral is summarised in Table 4 and outcome from assessment is summarised in Table 9.	3

Category	Quality aim	Indicator code	Indicator description	Outcome	Status
	We will work with local services to increase their capabilities and quality of treatment following intensive treatment for OCD in Dundee	EFC3	Number of contacts (including visits and case discussions) with local services to discuss and plan care for patients going through the intensive OCD pathway.	In all cases (100%), members of the team meet with local services to plan care; often inviting members of the local team to meet with the AIS prior to discharge.	3
		EFC4	Number of workshops delivered to local services/teams	Staff have delivered 11 workshops with local teams in the last year; typically combining case discussions with training and support for teams. This is more than twice the figure for last year.	3
Equitable	We will ensure that the service is accessible to all Scottish patients and that there are no barriers to receiving treatment	EQT1	Number of referrals and assessments per 100,000 people for each NHS Board	These are reported above under 'Geographical access'.	3
		EQT2	Number (and percentage) of referrals and assessments received from non-NHS Scotland organisations	This year 17.8% of referrals came from outwith NHS Scotland. This is increased from last year. The percentage of assessments from outwith NHS Scotland was 9.1%.	3
		EQT3	Socioeconomic status of referrals will be compared to the Scottish distribution to ensure equitable access across all socioeconomic statuses	This will be reported bi-annually so that total numbers are more representative. Please see last year's report for the most recent figures.	3
Timely	All patients undergoing intensive treatment for OCD will receive treatment on time	TIM1	Total delays between agreed/planned admission date and start date of treatment	There were no recorded delays for patients whose treatment dates had been decided.	3

Category	Quality aim	Indicator code	Indicator description	Outcome	Status
	There will be no unnecessary delays in the patient pathway	TIM2	Percentage of Scottish patients who are offered an appointment within 12 weeks from date of receipt of referral	This is reported in more detail above under section 4.4.1 above. The mean ± SD waiting time for Scottish patients 9.6 ± 3.7 weeks. 50% of Scottish patients waited less than 8.1 weeks to be seen (down slightly from last year). Only four Scottish patients waited longer than 12 weeks and there were identifiable reasons for all these delays.	3

Section 5 - Looking ahead and future plans

5.1 Service developments

5.1.1 Transcranial Magnetic Stimulation (TMS)

The service has submitted a business case to add TMS to the portfolio of treatments that the service is able to provide. We believe that this treatment could be offered to a small number of patients in Scotland without a significant expansion of the funding envelope of the service. If approved, it would ensure that the AIS is the first service in Scotland to provide such treatment, and since all the interventions provided by the service are already embedded within a robust framework of outcome measurement, it would provide important information for NHS Scotland regarding the provision of TMS in Scotland.

5.1.2 General Data Protection Regulations

Although the service is hosted by NHS Tayside and will therefore fall within the remit of the information governance structures of the host Board, we intend to develop an additional information sheet for people being seen by the service. To operate effectively, we have to ensure that information is provided to a range of partner agencies (such as the Care Quality Commission, CQC), and we would like to ensure that patients fully understand how we use (and protect) the information obtained during our assessment processes.

Section 6 - References

American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition)*. Washington, DC: American Psychiatric Press.

Committee on ECT and Related Treatments (2017) *Statement on Neurosurgery for Mental Disorder (NMD), also known as Psychiatric Neurosurgery (Position statement CERT 05/17)*. London: Royal College of Psychiatrists. http://www.rcpsych.ac.uk/pdf/VNS%20DBS%20and%20ablative%20neurosurgery%20-%20ECT%20ctee%20statement%20Feb%2017.pdf

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