Electroconvulsive Therapy

Policy Guideline

Edition No. 2: Version No. 1
Approval date: 11 June 2020

Government of South Australia
SA Health

Contents

1. Introduction / Policy Statement

Electroconvulsive Therapy (ECT) is a therapeutic medical procedure for the treatment of severe psychiatric disorders (RANZCP 2013). In South Australia, ECT is a prescribed treatment under Section 42 of the *Mental Health Act 2009*.

The Electroconvulsive Therapy Policy Guideline (the Guideline) has been prepared to provide a comprehensive overview of the administration of ECT in South Australian health facilities, and to promote and facilitate standardisation and consistency of ECT practice, using a multidisciplinary approach. The Guideline is based on a review of published evidence and expert opinion, current at the time of publication.

The Guideline applies to all facets of care, indications for treatment and each element of the treatment pathway, including minimisation of potential risks, issues of consent, facilities, anaesthesia, application of procedure, and quality improvement framework.

Special issues include:

- the potential use of ECT in children and adolescents, which remains a rare occurrence; and
- the use of continuation and maintenance ECT.

Application of the Guideline in clinical practice will assist in ensuring that people who will benefit from ECT receive evidence-based treatment delivered with professionalism and respect.

If for good clinical reasons, a decision is made to depart from the Guideline, the responsible clinician must document in the patient's medical record the decision made, by whom and detailed reasons for the departure from the Guideline.

Linked to this Guideline is the *Electroconvulsive Therapy Chief Psychiatrist Standard*, (the Standard) which defines the requirements that must be maintained by health care providers and the health care system where ECT is provided. The Guideline should be used in conjunction with the Standard, and practised in line with national safety and quality standards, professional standards, and Local Health Network service or facility protocols and procedures.

The mental health outcomes for the individual patient and the population that result from this prescribed treatment will be routinely measured and monitored to ensure the best appropriate clinical treatment and care, continuous quality improvement (CQI) and assist in health service review.

Services, managers and clinicians will be guided by the following principles:
ECT services should be designed to bring about the best therapeutic outcomes for patients and, as far as possible, support their recovery and participation in community life.

- ECT services should be guided by evidence based best clinical practice;
- ECT should be provided on a voluntary basis whenever possible;
- There should be regular medical examination of every patient's mental and physical health;
- The needs of patients, their families and carers from diverse cultural and linguistic groups should be considered in providing treatment that is accessible and responsive to the specific needs of these groups;
- Patients, and their families and carers, should be provided with information about their illness; treatment options and rights, unless there are specific reasons that it is not practicable and safe to do so; and
- All aspects of the provision of ECT should be documented.

NOTE: This Guideline does not address the use of restrictive practice to administer ECT, and the effect of an Advance Care Directive refusing ECT. Refer to the Office of the Chief Psychiatrist for current advice.

2. Roles and Responsibilities

2.1 SA Health Chief Executive

- Ensure appropriate SA Health systems and resources are available for the promotion, implementation and monitoring of this Guideline.

2.2 Chief Executive Officers and Chief Operating Officers of Local Health Networks

- Ensure the promotion, monitoring and evaluation of this Guideline.
- Ensure managers and clinicians are trained and supported for its implementation. Ensure appropriate Local Health Network systems and resources are available for the implementation of inspection and case review recommendations.
- Participate in the management or oversight of ECT service recommendations.

2.3 Chief Psychiatrist

- Establish, maintain and review the effectiveness of the Standard and the Guideline.
- Ensure allocated Office of the Chief Psychiatrist systems and resources are available for the implementation of this Guideline.
- Ensure delegates to ECT suite inspections are trained and oriented.
- Support the implementation of this Guideline through the provision of resource materials.
- Provide advice to health services in response to specific matters arising from inspections and case reviews.
- Participate in and provide advice for the local, regional and state-wide implementation of recommendations.

2.4 Clinical Directors, Directors of Nursing and Strategic Directors

- Ensure appropriate SA Health systems and resources are available for the promotion, implementation and monitoring of this Guideline.
- Ensure managers and clinicians are trained and supported for its implementation. Ensure appropriate Local Health Network systems and resources are available for the implementation of inspection and case review recommendations.
- Participate in the management or oversight of ECT service recommendations

2.5 Safety, Quality and Risk Directors and Managers

- Participate in the management or oversight of ECT service recommendations.
- Ensure appropriate safety and quality systems and resources are available for the implementation of ECT Suite inspection recommendations.
- Participate in the management or oversight of inspection recommendations as required.

2.6 Clinicians

- ECT specialist clinicians, mental health service staff and other treatment centre staff will implement and monitor the use of this Policy Guideline.

2.7 All SA Health staff, students and contractors

- Facilitate the implementation of best practice ECT treatments and system processes.

3. Electroconvulsive Therapy Policy Guideline

Background

The first ECT treatment in Australia was conducted by Dr Hugh Birch at Glenside Hospital, South Australia in 1942. Since World War II, the development of ECT has made significant progress internationally as a key medical treatment in psychiatry for severe psychiatric illness (Abrams 2002). In the past decade, double-blind randomised controlled trials have identified that the efficacy and side effects of ECT are highly dependent on treatment technique, which involves the electrode placement and dosage interactions, relative to seizure threshold (Sackeim et al 2008). Advances in the delivery of ECT, including anaesthesia and muscle relaxation, with carefully adjusted ECT dosing schedules, ensure that treatment is generally well tolerated by patients.

The decision to use ECT is dependent on several factors, including severity and chronicity of the patient's condition, the likelihood that alternative treatments would be effective, the patient's preference, and a weighing of the risks and benefits (Sackeim et al 2008; Lisanby et al 2008).

The best evidence for effectiveness of ECT is in the treatment of major depression. A first-line treatment recommendation for moderate major depressive disorder includes antidepressant mono-therapy, psychotherapy, and the combination of both (Davidson 2010). In severe psychiatric illnesses, combinations of pharmacotherapy and electroconvulsive therapy, or combinations of pharmacotherapy and psychotherapy are recommended (Davidson 2010, Pompili 2013).

While there continues to be debate about refinement of treatment techniques, there are many areas of consensus (RANZCP 2007). As knowledge and practice of ECT has continued to develop, the environment in which ECT is administered has reflected these changes.

3.1 Guideline 1 - Indications for Electroconvulsive Therapy

ECT has been used for over 60 years in the treatment of psychiatric disorders. In this period, ECT treatment has undergone significant improvements in Western facilities worldwide (Tiller and Lyndon 2015). The most common indication for ECT in Australia is a major depressive episode (Tiller and Lyndon 2015). ECT is also known to have a role in the treatment of other conditions including mania, schizophrenia, schizoaffective disorder, catatonia, neuroleptic malignant syndrome and Parkinson's disease (Weiss 2018).

Each of these indications for ECT detailed below includes Recommendations for Clinical Practice, which were derived from the scientific evidence-base underpinned by expert consensus from the SA ECT Advisory Committee and Expert Reference Group. The preferences of the patient, their family and carers should always be considered in the decision to treat any patient with ECT.

3.1.1 Major Depressive Episodes

Recommendations for Clinical Practice

Major depression is the primary diagnostic indication for treatment with ECT. ECT is a highly effective treatment, particularly for severe depressive disorders (RANZCP 2014). There are certain clinical presentations of major depression where ECT may be more or particularly efficacious:

a) Depression with psychotic features.
b) Depression with psychomotor agitation or retardation.
c) As an emergency intervention in major depression;
   i.e. high suicide risk and those patients who pose a risk by reason of poor oral intake.
d) Depression with treatment resistance to an adequate course of pharmacotherapy.
e) Depression that has previously responded well to ECT; or
f) Features of catatonia

Research Evidence

The efficacy of ECT treatment (over sham-ECT; a placebo form of treatment) has been established in a series of randomised controlled trials conducted between 1956 and 1985, and confirmed in meta-analyses (Janicak et al 1985; Group 2003; Kho et al 2003; Pagnin et al 2004; Greenhalgh et al 2005). The efficacy of ECT has been demonstrated despite the inclusion of trials that used forms of ECT now known to be relatively ineffective, such as low-dose right unilateral ECT. Randomised control trials have compared ECT to a range of medications, most commonly tricyclic antidepressants or monoamine oxidase inhibitors. ECT has demonstrated remission rates of more than 60% for major depression when the most effective forms of ECT are used (Sackeim 1993, 2000; McCall 2002).

- Remission rates have been as high as 83 per cent following ECT treatment for major depression together with psychotic features (Petrides et al 2001).
- One study compared ECT to a more contemporary antidepressant (paroxetine) and found that moderate dose, right unilateral ECT was superior to medication (Folkerts et al 1997). However, there were no randomised control trials comparing ECT to newer dual-action anti-depressants such as venlafaxine.
- A number of clinical variables including the depression sub-type and the degree of medication resistance may help predict responses to ECT (Sobin et al 1996; Fink et al 2007; Rasmussen et al 2009; Spaans et al, 2016). Response rates vary greatly according to the ECT treatment technique particularly associated with the electrode placement and the dose of relative seizure threshold (Sackeim et al 1993, 2000: Mukherjee et al 1994).
- ECT has also been shown to be an appropriate 'first-line' treatment when a rapid response to treatment is required; e.g. in the case of high suicide risk, when there is inadequate oral intake or medication is contradicted or cannot be tolerated (Sobin et al 1996).
- An adequately powered non-inferiority trial comparing bitemporal ECT with 6x threshold right unilateral ECT showed that RUL ECT was equally efficacious in major depression but with fewer side effects (Semkovska et al 2016). This was subsequently confirmed by Kolshus et al, in a systematic review in 2017.

3.1.2 Manic Episode

RANZCP Electroconvulsive Therapy Position Statement 74 (RANZCP 2019) states that ECT has therapeutic benefit for patients with mania and should be considered a therapeutic option alongside other treatments on an individual basis, after detailed specialist psychiatric assessment. There are certain clinical presentations of mania where ECT may particularly efficacious:

a) As an emergency intervention in mania i.e. for patients with a compromised physical state and/or patients who pose a danger to themselves or others.
b) Mania with treatment resistance to appropriate pharmacotherapy.
c) For patients who are intolerant to medication side effects where ECT may be a safer alternative to high dose neuroleptics.

Research Evidence

ECT was used extensively in the treatment of manic episodes prior to the advent of effective pharmacological treatment. A 1994 review of pooled, non-randomised data regarding use of ECT in mania over the previous 50 years suggests rates of remission or clinical improvement in up to 80 per cent of patients (Mukherjee et al 1994). A more recent systematic review (Versiani et al, 2011) of 28 studies concluded that ECT was effective treatment of mania, especially for treatment refractory and medication resistant cases. This was also confirmed in a review by Loo et al, in 2011.
Only three randomised controlled studies have compared pharmacological treatment and ECT for the treatment of manic episodes (Small et al 1988; Sikdar et 1984; Mukherjee et al 1989).

- ECT was more rapidly effective than lithium carbonate in acute mania in an 8 week trial (Small et al 1988).
- Bi-temporal sine-wave ECT was more effective than sham ECT in augmenting chlorpromazine (Sikdar et al 1984).
- ECT achieved better responses in patients who had already failed a trial of lithium or haloperidol or lithium plus haloperidol (Mukherjee et al 1989).

Recent studies have compared bifrontal and bitemporal ECT in severe mania and found that bifrontal ECT was as effective but better tolerated than bitemporal ECT (Barekatain et al 2008)). Another study found bifrontal ECT to produce a more rapid response than bitemporal ECT (Hiremani et al 2008).

3.1.3 Schizophrenia

Recommendations for Clinical Practice

Largely due to improvements in the pharmacotherapy treatments, ECT is now less commonly used in the treatment of schizophrenia than was historically the case.

There is a lack of well-designed, large scale studies that address the role of ECT in the treatment of schizophrenia (Pompili et al 2013). Therefore it is difficult to determine definitive recommendations on its use. The role of ECT in chronic treatment-resistant schizophrenia is unclear, but may be of benefit in some cases.

The available data suggests that ECT is a relatively safe treatment and may be of value when used in combination with antipsychotic medications in treating both an acute episode of schizophrenia and in the prevention of relapse.

It is recognised that ECT may be helpful in patients with incomplete response to pharmacotherapy who present with:

a) Acute onset of psychotic symptoms (rather than chronic symptoms) and/or the presence of mood symptoms.
b) Schizophrenia with catatonia.
c) Previous beneficial response to ECT.

Benefit of ECT in the treatment of schizophrenia

With the advent of effective antipsychotic medications, the use of ECT in the treatment of schizophrenia has declined (Gazdag et al 2009).

- The evidence-base supporting the benefit of ECT in the treatment of schizophrenia is limited.
- Interpretation of the available study findings for ECT treatment of schizophrenia is difficult because the analysis of pooled results are from heterogeneous patient samples, including those with acute and chronic symptoms, and those with catatonic features who may well have a different response to treatment (Gazdag et al 2009; Pompili et al 2013).
- Only two small studies have compared ECT alone with sham ECT plus pharmacotherapy: ECT was equivalent to chlorpromazine in combination with sham ECT (Bagadia et al 1983), and ECT was found to be superior to risperidone in lorazepam-resistant catatonic schizophrenia (Girish 2003).
- All other sham-controlled studies of ECT in schizophrenia explored the efficacy of ECT as an augmentation strategy rather as a than mono-therapy (Taylor et al 1989; Agarwal et al 1985; Brandon et al 1985; Abraham et al 1987; Sarkar et al 1994; Goswami et al 2003; Ukpong et al 2002; Melzer-Ribeiro et al 2017). These studies showed ECT as an augmentation strategy achieved mixed results, with some finding advantage for ECT in speed and/or extent of response, but others finding no difference between the groups.
- In a Cochrane review of the efficacy and safety of ECT in schizophrenia, only 24 randomised control trials conducted over the last 50 years met inclusion criteria:
    - Many of these randomised control trials had significant methodological flaws, including poorly defined patient samples and treatment regimens and inadequate sample sizes and trial durations (Tharyan et al 2005).
    - When all the randomised data was pooled, ECT resulted in greater and faster rates of global and symptomatic improvement than sham ECT or placebo in the short term treatment of schizophrenia.
    - However, any advantage of ECT appears to be lost within 6-8 weeks of its cessation. Monotherapy with antipsychotics was superior to ECT alone. There was a trend favouring the combination of antipsychotics and ECT compared to antipsychotics alone, however this was not statistically significant (Tharyan et al 2005).

- A systematic review of indications for ECT treatment in schizophrenia by Pompili et al (2013), found the most common indication for ECT was to augment pharmacotherapy:
    - The most common accompanying symptoms were, in order, catatonia, aggression and suicidal behaviour.
    - Catatonia patients responded significantly better to ECT than any other subtype of schizophrenia.

Benefit of ECT in treatment-resistant schizophrenia

- The use of ECT combined with antipsychotics in chronic-treatment resistant schizophrenia has been poorly studied, although it may have a significant role given the disabling nature of the condition (Braga et al 2005; Goswami et al 2003).
- The combination of ECT with pharmacotherapy can be useful for drug resistant patients when rapid global improvement and reduction of acute symptomology are required. The use of an ECT-risperidone combination or ECT-clozapine combination in patients non-responsive to prior pharmacotherapy was found most effective (Pompili et al 2013).
- The combination of clozapine with ECT in treatment-resistant schizophrenia may be beneficial and safe according to findings of several case reports and series (Kho et al 2004; Braga et al 2005, as well as a systematic review and meta-analysis (Lally et al, 2016).

Electrode Placement in schizophrenia

- A double blind, randomised controlled trial comparing bifrontal and bitemporal ECT for schizophrenia showed bifrontal ECT to have superior clinical and cognitive outcomes in schizophrenia (Phutane, 2013). A randomised naturalistic comparison study comparing bitemporal ECT, bifrontal ECT and high dose right unilateral ECT in schizophrenia showed BT ECT to have more cognitive side effects that BF ECT, and RUL ECT to have less efficacy than BF ECT, suggesting that BF ECT has the best balance of efficacy and side effects when used to treat psychotic symptoms in schizophrenia (Ansod 2018)
- This suggests that BF ECT may be the placement of choice for this indication, although more evidence is required to confirm this.

3.1.4 Schizoaffective disorder

Recommendations for Clinical Practice

For patients with schizoaffective disorder presenting with affective symptoms as part of the clinical picture, diagnostic indications for treatment with ECT will follow the affective episodes of the illness as outlined above for major depressive episode and manic episode. For patients with psychotic symptoms in the absence of an affective episode, ECT has the same indications as for schizophrenia.

Research Evidence

There is little evidence on the use of ECT in schizoaffective disorder. ECT may be effective in treating affective symptoms; however the heterogeneity of the disorder in the case-based literature makes it difficult to draw firm conclusions (Ries et al 1981; Fear 2005). ECT may have a role in the management of affective or psychotic symptoms in schizoaffective disorder when other treatment options have failed.

3.1.5 Neuroleptic malignant syndrome

Recommendations for Clinical Practice

Neuroleptic Malignant Syndrome (NMS) is a life threatening neurological emergency following the use of neuroleptic agents with a characteristic clinical profile (Greenberg and Gujavarty 1985, Davis et al 1991).

ECT may be considered for treatment of neuroleptic malignant syndrome (NMS) when:

a) Autonomic stability has been re-established.
b) There is inadequate response to pharmaceutical measures or non-pharmacological treatment is required for continuing co-morbid psychiatric illness.

Research Evidence

- The efficacy of ECT in neuroleptic malignant syndrome (NMS) is well recognised, despite the absence of randomised controlled data (APA 2001).
- ECT reduces the mortality of NMS by approximately a half - t. This same effect being achieved by treatment with dantrolene, amantadine, L-DOPA and bromocriptine (Nolan and Zwaan 1990, Davis et al 1991).
- When pharmacological treatments fail to control the NMS disorder, ECT can be potentially lifesaving in severe cases (Trollor et al 1999).
- A more recent review (Strawn et al 2007) suggested that ECT was an appropriate second line intervention if withdrawal of the neuroleptic, dantrolene and supportive measures were ineffective.
- However, ECT for NMS is not without hazard and has been associated with ventricular fibrillation, cardiac arrest and uncontrolled spontaneous seizures (Regestein et al 1985).
- ECT is sometimes used to control psychiatric symptoms whilst neuroleptics may be contraindicated during an episode.
- Care must to be taken in the anaesthetic management of patients with NMS, particularly when autonomic instability is a key feature.

3.1.6 Catatonia

Recommendations for Clinical Practice

Malignant catatonia (MC) and NMS share the common features of hyperpyrexia and rigidity, however in MC a prodrome of behavioural agitation or psychosis usually precedes the neurological symptoms (Nolan and Zwaan 1990). For patients with malignant catatonia (MC), consideration of treatment with ECT should follow the same principles as outlined above for NMS.

For catatonic presentations caused by schizophrenia or a major depressive episode, please see recommendations under those indications above.

Research Evidence

- Most of the evidence on the use of ECT in catatonia is drawn from single case reports or case series that suggest that ECT is a very effective treatment for catatonia regardless of the underlying cause (Rholand et al 1993; Hawkins et al 1995; Hatta et al 2007). However, a systematic review of the published studies failed to demonstrate efficacy and effectiveness (Leroy et al, 2017) and a quality RCT is needed to robustly validate the use of ECT in catatonia according to the authors.
- Many case reports suggest that ECT can be effective in treating catatonia related to organic conditions (Gazdag et al 2009).
- In one study, ECT was more effective than oral risperidone in 18 in-patients with non-organic, non-functional catatonia (Girish 2003).
- ECT has been demonstrated as the ‘first-line’ treatment and is effective in malignant catatonia, a condition defined as an acute onset of excitement, fever, autonomic instability and delirium that may be fatal (Phibrick et al, 1994; Fear 2005; Baker et al 2008).

3.1.7 Parkinson's Disease

ECT may be considered when the patient has a mental illness with co-morbid Parkinson's disease

Note: Under section 42 of the *Mental Health Act 2009*, be administered to a patient unless the patient has a mental illness, ECT has been authorised by a psychiatrist who has examined the patient and written consent to ECT has been given by the patient, a substitute decision maker, SACAT or, if the patient is under 16, a parent.

Treatment Considerations

- In treating patients with Parkinson's disease and associated sub-cortical dementia, consideration should be given to selecting a form of ECT that is less likely to cause cognitive impairment (Loo et al 2011).
- L-DOPA, if continued, should be reduced by half during a course of ECT to reduce the frequency of emergent dyskinesia and delirium (Douyon et al 1989).

Research Evidence

- ECT (bilateral or unilateral) was shown in a number of case studies to be effective in the treatment of Parkinson's disease and Parkinsonism (perhaps with the exception of tremor) independent of psychiatric co-morbidity (Lebensohn and Balldin et al 1981; Jenkins 1975, Andersen et al 1987).
- However, alleviation of parkinsonian symptoms was short lived with remissions of up to 6 weeks following a single course of treatment (Douyon et al 1989; Andersen et al 1987).
- There is considerable experience in the use of ECT in Parkinson's disease and case reports have suggested more sustained success with maintenance ECT over several months before relapse (Douyon et al 1989; Popeo and Kellner 2009).
- ECT may have a role in management of motor symptoms – even in the absence of a psychiatric disorder, and this is especially true when pharmacological treatment is contraindicated or the patient develops intolerable medication side-effects (Kennedy 2003).
- In a small randomised controlled study of people with 'on-off' phenomena, ECT was more effective than sham ECT in prolonging the duration of 'on' periods (Andersen et al 1987).
- In a systematic review regarding ECT for depression in Parkinson's disease involving 116 patients;, depression improved in 93.1% and motor symptoms improved in 83% of patients. Cognition did not worsen in the majority (94%) but many patients experienced delirium or transient confusion (Borisovskaya et al, 2016).
- If ECT is being considered for the treatment of the motor symptoms of Parkinson's disease, a neurologist experienced in the management of Parkinson's disease must be consulted.

3.1.8 Other Indications

Recommendations for Clinical Practice

A second opinion from a senior psychiatrist must be obtained:

a) Where ECT is being considered for mental illness indications other than those listed above.
b) Where there is uncertainty around diagnostic indication.

Note: At least 1 of the reviewing psychiatrists must be a credentialed ECT practitioner.

Research Evidence

- Case series and reports suggest evidence for the use of ECT in:
  - Obsessive compulsive disorder (Fontenelleet al, 2015).
  - Post-traumatic stress disorder (Youssef & McCall, 2017).
  - Severe agitation in Dementia (Glass et al, 2017; Isserles et al, 2017).
  - Repetitive self-injurious behaviours in Autism (Ghaziuddin and Walter, 2013; D'Agati et al, 2017).

Note: The efficacy of ECT in these conditions is still being established by randomised controlled trials and ECT should only be used to treat these disorders in consultation with a psychiatrist with expertise in the use of ECT for such indications.

3.2 Guideline 2 – Adverse Effects of ECT

3.2.1 Non-cognitive risks of treatment

ECT is a safe, effective treatment when it is performed by a qualified multidisciplinary team in a dedicated clinical setting. The balance of risks and benefits of ECT treatment must be assessed for each individual, and it may be important to consult relevant medical specialists. Risks of adverse effects of ECT must be considered in the context of the risks to the patient when unresponsive to other treatments. Importantly, untreated psychiatric illness has been associated with higher morbidity and mortality from co-morbid medical disorders, morbidity from attempted suicide and mortality from completed suicide.

3.2.2 Cardiovascular risks

- Increased complication rates from ECT have been associated with pre-existing cardiac disease.
- However, most complications are minor and the vast majority of patients can safely complete treatment.
- In patients at risk of prolonged asystole and arrhythmias during ECT, careful consideration of electrode placement is recommended. Preliminary research suggests that bi-frontal placement is associated with less asystole than bi-temporal and right unilateral placements (Stewart et al, 2011, Nagler 2010, 2011).
- The risk benefit of stimulus dose titration must also be carefully assessed in these patients as sub-convulsive stimuli may increase the risk of bradycardia and asystole.
- In patients with active cardiac conditions (e.g. unstable angina, poorly compensated congestive cardiac failure, severe valvular heart disease, significant arrhythmias, uncontrolled hypertension), referral to a cardiologist is advisable.
- Once cardiovascular conditions are stable, most patients can safely complete an ECT course.

3.2.3 Cardiovascular complications of ECT

- During and immediately following the electrical stimulus: sinus bradycardia, asystole, and hypotension may occur. This is due to vagal stimulation caused by the electrical charge and a pronounced parasympathetic surge. Factors associated with post-stimulus asystole include pre-existing unstable cardiac disease, older age, use of beta blockers, hypoxia and use of an acetylcholinesterase inhibitor (Bryson et al, 2017). When a seizure occurs, catecholamines are released, reversing this effect and correcting bradycardia. Sub-threshold seizures are therefore undesirable in patients with cardiac disease.
- During the seizure: tachycardia and hypertension, resulting from increased sympathetic outflow and adrenal catecholamine release. This increases myocardial oxygen demand and may increase the risk of cardiac ischaemia among patients with coronary artery disease.
- Arrhythmias may occur, commonly ectopic beats, bigeminy and supraventricular tachycardia, but most are transient and resolve spontaneously.
- Immediately following the seizure: fall in heart rate and blood pressure to pre-treatment levels occurs. Some patients can experience persisting hypertension and tachycardia during this post-ictal period and serious cardiac complications can occur.

3.2.4 Musculoskeletal risks

- Muscle soreness due to suxamethonium may occur and a small dose of rocuronium, or vecuronium may be administered prior to suxamethonium to minimise this.
- Myalgia may also occur due to generalised tonic/clonic muscle contractions. An adjustment of the dose of Suxamethonium may rectify this.

- Headache is commonly reported and is generally managed conservatively with simple analgesia such as aspirin or paracetamol.
- Tonic spasm of the temporalis muscle due to the direct application of the electrical stimulus to the muscle leads to clenching of the jaw and possible tongue and dental injury.
- Use of appropriate disposable mouth guards and adequate muscle relaxation, mitigates against these risks. Dentition review should be considered prior to ECT.

3.2.5 High Risk Situations

3.2.5.1 **Recent myocardial infarction**

The risk is highest in the first 10 days after infarction. Arrhythmias and, less commonly, myocardial rupture, are possible complications. The risk is likely to have minimised by three months after the infarct. Clinical decision-making in this situation is guided by careful consideration of the cost versus benefit of ECT, in consultation with the patient's cardiologist.

3.2.5.2 **Unstable angina**

The administration of ECT places physiological stress on the heart that may precipitate myocardial ischaemia. Adequate assessment and management of angina is therefore required prior to ECT.

3.2.5.3 **Poorly compensated congestive cardiac failure**

Poorly compensated congestive cardiac failure (CCF) refers to chronic CCF that is poorly controlled by medication. ECT places extra stress on the heart which may precipitate respiratory failure. Consultation with a cardiologist is recommended.

3.2.5.4 **Cardiac pacemakers and implanted cardiac defibrillators**

Cardiac pacemakers generally protect against the marked changes in heart rate that usually occur with the administration of the ECT stimulus and the subsequent seizure. However, in rare instances pacemakers may over sense when exposed to Electro Magnetic Interference (EMI) which can result in inhibition of the pacemaker.

- To minimise the risk of a depleted battery or lead problem, it is recommended that the pacemaker has been interrogated within the last 12 months. If not done or unknown, this can be arranged before treatment with a cardiac technician.
- The patient's cardiologist and the device manufacturer can be consulted to determine whether the pacemaker needs to be switched to 'fixed rate' (asynchronous mode) from 'demand mode', though this is usually unnecessary with modern devices. Alternatively, a magnet can be placed over the device during delivery of therapy to force pacing in asynchronous mode in the unlikely event of pacemaker inhibition and prolonged asystole.
- It is recommended that patients with pacemakers have cardiac monitoring during ECT.
- Case reports indicate that adverse events are low when patients undergo ECT with their pacing mode unmodified. Therefore pacemaker reprogramming is not usually necessary during the course of ECT (Kokras et al 2011).

Implanted cardiac defibrillators (ICC) may misinterpret the EMI and the benign tachyarrhythmias that occur during seizures as ventricular tachycardia and deliver a shock. The unnecessary discharge of the ICD might initiate a true ventricular arrhythmia.

- To minimise the risk of a depleted battery or lead problem, it is recommended that the ICD has been interrogated within the last 6 months. If not done or unknown, this can be arranged before treatment with a cardiac technician.

- The patient's cardiologist and the device manufacturer should be consulted to check whether the defibrillator may be triggered by the changes in heart rate that occur with ECT.
- It is recommended that patients with ICDs have cardiac monitoring during ECT.
- Some case reports recommend that ICDs should be reprogrammed pre-operatively to deactivate defibrillation and reprogrammed post ECT (Davis et al, 2009). Alternatively, a magnet can be applied to temporarily to deactivate defibrillation in those devices which are responsive to magnets.
- More publications challenge the need to deactivate ICDs and conclude that the risk of inappropriate discharge is very low and outweighed by the benefit of an active device being rapidly available if required to treat a malignant arrhythmia (Galvez et al 2012; Bryson et al 2015).

3.2.5.5 Aortic and cerebral aneurysms

Hypertension associated with the seizure theoretically increases the risks of an aneurysm rupturing, but there have been no reports of such an occurrence and several reports of the safe administration of ECT in patients with repaired (Marks et al 2016) and untreated aneurysms (Toprak 2017). Consultation with relevant vascular surgeon or neurosurgeon is recommended.

3.2.5.6 Cerebral haemorrhage and infarction

Depression is common after stroke and is often associated with cerebral small vessel disease manifest on MRI. Consequently, ECT is often considered for people with pre-existing cerebrovascular disease. The increase in blood pressure and cerebral blood flow that occur with the seizure pose a theoretical risk of a previous stroke re-infracting or re-bleeding. There are some case reports of strokes occurring in the hours following ECT; whether there is a causal link remains unknown.

It is advisable to consult with a neurologist prior to considering ECT.

3.2.5.7 Intracranial space occupying lesions

Intracranial pressure that has been increased by a space-occupying lesion may be increased further by ECT, possibly leading to coning. The risk can be reduced with diuretics, steroids, antihypertensives and hyperventilation. Small slow growing masses are unlikely to cause problems.

3.2.5.8 Endocrine disorders

ECT can induce a thyroid storm in untreated hyperthyroidism. ECT can induce a hypertensive crisis in phaeochromocytoma.

3.2.5.9 Retinal detachment and glaucoma

Suxamethonium and seizures can both increase intraocular pressure, which could theoretically be problematic for patients with glaucoma (particularly the narrow angle type) and a history of retinal detachment. However, there have been no case reports of glaucoma being permanently affected by ECT, or of ECT causing retinal detachment.

3.2.6.10 Anaesthetic complications

Patients with the rare hereditary pseudo cholinesterase deficiency can suffer prolonged paralysis requiring respiratory support in intensive care, after receiving suxamethonium. Refer to further information regarding risks associated with anaesthesia for ECT in this document.

3.2.6 Other risks

3.2.6.1 **Poor dentition**

A loose or corroded tooth may break during the ECT stimulus due to temporalis spasm and jaw clenching, and could possibly be inhaled. Dentition assessment pre ECT will inform strategies to manage potential risks including consideration of formal dental review.

3.2.6.2 **Obesity**

Obesity can increase the risk of oesophageal reflux and airway complications during a general anaesthetic and may require modification of pre-treatment preparation and procedural management. Patients who have had a gastric band are likely to require the band deflated prior to ECT and reinflated at the conclusion of the course of ECT. Consultation with a bariatric surgeon is recommended.

3.2.6.3 **Asthma and COPD**

There is an increased risk of hypoxia in patients with asthma and chronic obstructive pulmonary disease (COPD).

3.2.6.4 **Osteoporosis**

Osteoporosis increases the risk of fractures if the seizure is not well controlled, emphasising the need for good relaxation. An increased dose of suxamethonium can modify motor activity in association with a cuffed limb technique to restrict the motor seizure to the isolated limb only.

3.2.6.5 **Pregnancy and puerperium**

Several systematic reviews (Leiknes et al., 2015; Pompili et al, 2014; Anderson and Reti, 2009; Miller, 1994) and a meta-review (Sinha et al, 2017) have reported on the safety of ECT for the treatment of severe mental illness during pregnancy. Although the data are limited, it appears that ECT is an effective treatment in pregnancy and that the risks to mother and foetus are relatively low.

Adverse events such as induction of premature uterine contractions or labour, foetal bradyarrythmias and vaginal bleeding have been reported but the causal role of ECT has been difficult to establish. These risks should be carefully weighed against those of other treatments, or no treatment. ECT may be considered in the first trimester, when there are significant risks of teratogenesis associated with some psychotropic medications including mood stabiliser. Furthermore, many psychotropic medications are problematic in the late stages of pregnancy due to neonatal toxicity, and ECT may be a valid alternative.

Principles to guide ECT in pregnancy developed jointly by anaesthetics, obstetrics and psychiatry are available to clinicians (Lakshmana et al., 2014; Centre of Perinatal Excellence, 2017). Screening and selection of appropriate patients is essential and should be conducted by a specialist psychiatrist in ECT, in consultation with both a specialist psychiatrist with appropriate training and expertise in perinatal psychiatry and an obstetrician.

Depending on the trimester of pregnancy, adjustments may be required to anaesthetic management to improve safety. These include left lateral or pelvic wedge tilt (to avoid compression of IVC and to maximise foetal blood flow), adequate pre-oxygenation, avoidance of hyperventilation (as this reduces foetal oxygenation), premedication with an antacid or H2 blocker and intubation (to reduce the risk of reflux and aspiration).

No teratogenic risks have been associated with brief exposure to the agents commonly administered with ECT, such as propofol, thiopentone, suxamethonium, atropine, and esmolol

Close monitoring of mother and foetus is essential pre, during and post ECT including consideration of fetal heart rate monitoring with Doppler from 14-25 weeks or cardiotocography (CTG) if the gestational age is 26+ weeks. ECT after 20 weeks gestation should only be administered in hospitals where obstetric support is available.

3.2.6.6 Elderly and cognitively impaired

There is evidence that elderly people with a major depressive episode are more likely to respond to ECT than younger people. With appropriate intervention, many common medical illnesses in the elderly are not a barrier to the safe administration of ECT.
Elderly people with cognitive impairment can usually proceed to ECT with appropriate measures to reduce post-ECT confusion such as:

- reduced treatment frequency
- right unilateral electrode placement
- Ultra brief pulse stimulus.

ECT may present less of a medical risk than tricyclic antidepressants or polypharmacy in the elderly. Late onset depression may be treatment resistant and respond better to ECT than pharmacotherapy.

3.2.6.7 Prolonged seizures

In the case of a prolonged seizure (greater than 120 seconds) the seizure should be terminated by the anaesthetist, using an appropriate pharmacological intervention (refer to Guideline 6 – Administration of ECT for detail).

3.2.6.8 Deep brain stimulators

Safety concerns have been expressed about patients with deep brain stimulators receiving ECT including possible changes to the electric field strength due to conduction through burr holes and the risk of electrical current concentration in the brain areas where stimulation leads have been implanted. Case reports suggest that ECT can be a safe and effective treatment in this patient group, without shifting electrode position or damaging DBS hardware (Gahr et al, 2014; Vila-Rodriguez et al 2014; Erickson and Carty, 2015; Cunningham et al, 2016).

3.3.7 Cognitive risks of ECT

The occurrence of cognitive side-effects with ECT is well recognised and has been a major source of concern for patients undergoing treatment (APA Taskforce 2000; Donahue 2000). Conditions most commonly treated with ECT (major depression, mania and schizophrenia) are also associated with significant cognitive impairment (Porter et al 2007; Reichenberg and Harvey 2007).
Many patients report an improvement in memory and cognition as their depression improves after treatment with ECT. The vast majority of research has been conducted in patients receiving ECT for major depression, and has aimed to characterise the incidence and severity of cognitive deficits associated with ECT (Ingram et al 2008).
Studies have aimed to optimise ECT technique in order to maintain efficacy whilst minimising cognitive side-effects (Loo et al 2006; Loo et al, 2015; Mayur et al, 2013).The cognitive effects associated with ECT may be broadly considered as:

- Acute effects.
- Anterograde memory effects.
- Retrograde memory effects.
- Long term / short term memory effects in the long term experience of patients.
- Non-memory effects.

3.3.1.1 **Acute cognitive effects**

General disorientation immediately after ECT is common (Daniel and Crovitz 1982). This usually lasts from minutes up to two hours. The anaesthesia as well as ECT contributes to this temporary disorientation which is generally mild and resolves without intervention.

- Orientation to person, place and time generally recover at different rates, with orientation to time generally the slowest to recover (Calev et al 1991).
- The duration of disorientation is greater with sine-wave stimuli, bitemporal electrode placement, a higher number of treatments in an episode of ECT and higher dose above seizure threshold (Daniel and Crovitz 1982; Sackeim et al 1993; McCall et al 2000).
- Some evidence suggests that longer duration of post-ictal disorientation predicts the severity of retrograde amnesia after ECT (Sobin et al. 1995; Martin et al, 2015).
- Routine measurement of this parameter may be useful in identifying those patients at high risk of developing retrograde amnesia earlier in the ECT course, enabling alterations in treatment technique to minimise this adverse effect (Porter et al 2008).
- This parameter is either measured as ‘time to re-orientation’ or ‘level of disorientation at 30 minutes post-ECT’.
- There can be rare occurrence of a persistent delirium that emerges during a course of ECT. ECT should be suspended until this delirium resolves.
- Post-ECT delirium is a condition of confusion and behavioural agitation that commences in the recovery room after ECT and can last for minutes to a couple of hours. Management of this should be done in conjunction with the ECT anaesthetist, and some medications that have been shown to be helpful include olanzapine, droperidol, midazolam, a further dose of propofol and dexmedetomidine. The anaesthetist will need to manage this and monitor the patient in recovery until the post-ECT agitation resolves.
- There can be rare occurrence of a persistent delirium that emerges during a course of ECT. ECT should be suspended until this delirium resolves.

3.3.7.2 **Anterograde memory effects**

Anterograde memory refers to the acquisition of newly learned information after the ECT has commenced. Impairment in acquisition and retention of verbal and non-verbal material is frequently observed during and immediately after a course of ECT (Ingram et al 2008). Deficits in memory retention are generally more marked and are often slower to recover than those in acquisition. Anterograde memory function generally returns at least to pre-ECT baseline levels within two weeks and almost always within two months, and performance often improves during this period, relative to baseline (Sackeim et al 1993). Longer-term follow-up studies have also demonstrated improvement in performance relative to baseline scores (Sackeim et al 2007).

3.3.7.3 **Retrograde memory effects**

Loss of key personal memories, if it occurs, can be the most distressing cognitive impairment for patients to experience.

- Retrograde memory refers to the recall, after ECT has commenced, of information that was already learnt prior to ECT. Autobiographical memory refers to information personally experienced whereas impersonal memory refers to information learnt through study (e.g. news information).
- Deficits in both autobiographical and impersonal memory can occur and tend to be most severe immediately after the index course. More recent memories tend to be more vulnerable than more remote memories, although some patients have reported loss of memories dating back several years (Donahue 2000; Lisanby et al 2000; Vamos 2008).

- Although retrograde amnesia generally improves over several weeks following an index course, persistent deficits have been demonstrated in patients receiving bitemporal ECT when compared to right unilateral ECT, both at one to two months after the course, and at longer-term follow-up (Squire et al 1981; Weiner et al 1986; Sackeim et al 2000; Sackeim et al 2007; Semkovska et al, 2016).
- In a systematic review of the literature conducted to ascertain patients' perspective on ECT, one in three patients reported lasting retrograde memory loss (Rose et al 2003), although a study has suggested this is an overestimate (Bergsholm, 2012). However, the authors of both reviews concluded that loss of autobiographical memory is widely described but insufficiently systematically investigated.

3.3.7.3 **Non-memory effects**

Studies of the effects of ECT on cognitive domains such as executive function, attention, information processing speed, and general intellect are relatively few and have yielded mixed results presumably as a result of variations in study populations and methodology (Ingram et al 2008). A number of ECT factors have been reliably demonstrated to be associated with more severe cognitive side-effects of ECT (including memory impairment).

These factors include:

- Bitemporal electrode placement.
- Higher dose above seizure threshold.
- Increased frequency of treatments.
- Use of sine-wave ECT.

Patient factors such as advanced patient age, low cognitive reserve, and the presence of comorbid neurological disorders may also be relevant, but the importance or effect of these factors is yet to be fully elucidated (Legendre et al 2003; Gardner and O'Connor 2008). Evidence suggests that the use of Ultra brief pulse width ECT (pulse width of 0.3 milliseconds [ms]) significantly reduces the cognitive side-effects of right unilateral ECT, and may prove to have an important role in reducing the cognitive side-effects of ECT (Loo et al 2008; Tor et al, 2015).

Assessment of cognitive function at baseline and at completion of a course using a standard screening instrument for cognitive impairment is considered essential and highly recommended (Martin et al, 2017). Further assessments during the treatment course are recommended in order to assist in early detection of cognitive deficits and facilitate alterations in treatment technique to minimise adverse cognitive effects. To monitor for the early development of anterograde amnesia, a tool such as the Brief ECT Cognitive Screen (Martin et al., 2013) can be administered pre ECT and after the first week of treatment. If early emerging cognitive deficits are detected, alterations to ECT technique may include changing electrode placement, re-titrating seizure threshold to confirm dosing protocol and reducing the stimulus dose if the dose is shown to be too high above threshold, reducing frequency of treatment or switching to a shorter pulse width.

Patients with cognitive impairment at completion of an ECT course should have at least one repeat cognitive assessment one month later as part of routine clinical follow-up in order to ensure resolution of, or improvement in, cognitive impairment. Further detailed specialist cognitive assessment should be undertaken if significant impairments persist.

3.3 Guideline 3 – Consent and Legal Framework

The administration of ECT in South Australia is governed by the *Mental Health Act 2009*, the Regulations and the relevant ECT clinical guidelines, policy statements and standards. Other relevant legislation includes: *Guardianship and Administration Act 1993*, *Consent to Medical Treatment and Palliative Care Act 1995* and the *Advance Care Directives Act 2013*.

3.3.1 The provision of ECT is underpinned by the following core principles

- A patient with capacity has the legal and ethical right to make their own decisions about medical treatment options, including refusal of medical assessment and/or treatment(s).
- All patients should have their dignity respected.
- If a patient is considered to have capacity to consent then they must also be considered to have the capacity to refuse treatment.
- If it is deemed that a patient's decision making capacity is impaired, it is desirable and best practice that they be supported to make their own decision to the extent they are able.
- A patient who is deemed not to have capacity cannot either give or withhold consent; therefore a third party must make the decision on the patient's behalf. In the case of a patient who has an advance care directive under which a substitute decision-maker has been appointed—by each substitute decision-maker that has been appointed under the advance care directive or by the South Australian Civil and Administrative Tribunal.
- Substitute Decision Makers (for example Medical Agents, Enduring Guardian, Guardianship Board or parent or guardian if the patient is under the age of 16 years) can decide the ECT treatment for the patient, including refusing treatment. Application may also be made to the South Australian Civil and Administrative Tribunal (SACAT).
- Medical assessment and/or treatment should be provided in the least restrictive way and in the least restrictive environment that is consistent with the patient's proper care and protection, treatment efficacy and public safety.
- The ECT provisions in the *Mental Health Act 2009* do not permit the use of reasonable force, including restraint, to administer ECT treatment to the patient.
- Consent by the person, or a substitute decision maker or a medical agent, guardian, parent or the South Australian Civil and Administrative Tribunal does not imply a permission to use reasonable force, including restraint to administer ECT.
- The provision of ECT itself is not included in an ITO but is subject to separate considerations under the *Mental Health Act 2009* as Prescribed Psychiatric Treatment.

NOTE: This Guideline does not address the use of restrictive practice to administer ECT, and the effect of an Advance Care Directive refusing ECT. Refer to the Office of the Chief Psychiatrist for current advice.

3.3.2 Mental Health Act 2009

The provisions relating to ECT are contained in section 42 of the *Mental Health Act 2009*. Under the Act, ECT can be administered to a patient if the following criteria are met:

a) The patient has a mental illness, and
b) ECT, or a course of ECT, has been authorised for the treatment of the mental illness by a psychiatrist who has examined the patient, and
c) Written consent to the ECT has been provided by:
   - the patient (if they are 16 or older and have decision making capacity), or
   - another person (if they are 16 or older but do not have decision making capacity), including:

i. each substitute decision maker nominated in an advance care directive, or
ii. a medical agent or guardian, or
iii. South Australian Civil and Administrative Tribunal (SACAT) on application, or if the patient is under 16, by a parent or guardian or by SACAT on application.

ECT can also be administered without consent if a psychiatrist has assessed that the patient has a mental illness of such a nature that the administration of an episode of ECT is urgently required for the patient's well-being and that it is not practicable to obtain consent in the circumstances: refer to section 42(6).

3.3.3 Consent is required for ECT

Consent is required prior to the provision of any medical treatment. For ECT, consent must be in writing and documented on forms approved by the Chief Psychiatrist under the *Mental Health Act 2009*.

If the patient is capable of giving voluntary and effective consent, the patient's consent to the ECT/anaesthesia must be obtained in writing prior to the ECT being given. A patient with decision-making capacity can refuse to consent to ECT and at any time. This decision must be respected. If a patient refuses ECT, then ECT must not be given.

If the patient is incapable of giving consent, that is they do not have decision-making capacity, third party consent is required. Third party consent includes from the substitute decision maker(s) nominated in an advance care directive, a medical agent, or a guardian. The substitute decision maker(s) or guardian can refuse to consent to the ECT, and if this is the case, ECT must not be provided because consent has not been obtained.

A parent or a guardian can consent for a child who is under 16 years of age.

If the patient does not have the capacity to consent, and there is no substitute decision maker, medical agent, or guardian to make the decision, an application for consent can be made to the South Australian Civil and Administrative Tribunal by a medical practitioner or mental health clinician.

Under the *Mental Health Act 2009*:

- Consent to the ECT also includes consent to the administration of anaesthetics for the purposes of the ECT treatment.
    - If the patient is capable of consent however, it may be preferable that consent to anaesthesia is sought from the patient by an anaesthetist who may be able to provide the patient with the best available information regarding the anaesthetic component.
- Consent to a course of ECT is limited to a maximum of 12 episodes of ECT and to a maximum period of 3 months.
- Titration sessions of ECT are counted as one treatment in that course of ECT.
- Any further courses of ECT can be separately consented to after the first course has commenced or is completed, and will commence from the date of that consent.
- A copy of each ECT Consent form must be sent to the Office of the Chief Psychiatrist.

<u>Ceasing or Re-commencing a Course of ECT</u>

While the Act, for the purposes of consent, defines a course of ECT as up to a maximum of 12 treatments or 3 months, a patient or substitute decision maker and the treating team may decide that a course of treatments has been completed at any time.

If the patient or substitute decision maker and the treating team subsequently decide that ECT treatment should re-commence, before the expiry of the previous consent, the treating team may continue to use the previous consent or may seek new consent, depending on the circumstances and the wishes of the patient or substitute decision maker.

3.3.3.1 **Procedures for obtaining consent for ECT treatment**

ECT is a medical treatment which cannot be provided without consent (unless it is an emergency situation). Consent must be in writing and be voluntary, informed and effective.

The clinician has an obligation to ensure the patient, carer, guardian, substitute decision maker or medical agent has been provided with full information about ECT, and in a format they can understand, including the implications of not having ECT and other alternatives. This full information must include the patient's clinical situation in the broader context of their mental health treatment and care plan and all other plans available. Refer to *Information for Patient and Carers* in References, Resources and Related Documents

For consent to be valid, informed and effective the patient must have the capacity to make the decision and be doing so free from coercion.

These terms are defined below:

Voluntary: the decision to consent or not consent to treatment must be made without pressure or coercion. This includes pressure by clinical staff, friends or family although a patient may choose to have one or all involved in the decision making process. Persuasion using evidenced-based information and advice to communicate and discuss the clinical merit of ECT for an individual does not constitute coercion.

Informed: the clinician has an obligation to provide the patient, and wherever possible family and carer, with full information in a format they can understand on the available treatment options and benefits and consequences of each option, other alternatives, and the implications of not having ECT.

Capacity: the person must be capable of giving consent, which means that they can understand the information given to them, use the information to make a decision, retain the information long enough to make a decision and communicate their decision. The patient must understand this information, including the consequences of refusing treatment. To be effective consent, the person should be able to demonstrate in his or her own words understanding of the proposed treatment. Impaired decision-making capacity must not be inferred simply because a patient has a mental illness or from the fact that the patient's decision is perceived by the clinician/staff as not in their best interests or "irrational" in the sense that it is not a decision that would be made by the majority.

If there are doubts about a patient's decision-making capacity in relation to ECT it is advisable to seek a second opinion from an appropriately qualified ECT consultant psychiatrist. This process and the reasons for deciding that the patient does not have capacity to make a decision about ECT must be clearly documented in the patient's medical record.

If a patient is deemed not to have decision-making capacity in relation to ECT and they have a legal representative/s (legal representative means: a substitute decision maker nominated in an advance care directive, a medical agent, Enduring Guardian appointed by the patient, a Guardian appointed for the patient by SACAT, or a parent or guardian of a child under 16), then this person/s consent must be sought. A legal representative has the lawful authority to make decisions on the patient's behalf, including being able to refuse ECT if this was the patient's expressed wish.

Where a person is deemed not to have decision-making capacity and has nominated more than one Substitute decision-makers in their advance care directive, consent is required from each of the Substitute decision-makers. It may not be possible to contact and obtain consent from all the Substitute decision-makers and, in that circumstance, an application to SACAT should be considered.

If the patient does not have a legal representative, and it is not an emergency (imminent risk to life or health) an application to SACAT for consent to ECT must be made.

3.3.3.2 **Patient's rights to refuse treatment, including ECT**

A patient with decision-making capacity has the right to refuse consent to ECT and can withdraw their consent at any time during the course of ECT treatment (i.e. they can ask to discontinue treatment) even if consent for the whole course of treatment was initially given by the patient.

A patient may have sufficient decision-making capacity to consent to or refuse to consent to ECT even if they have impaired decision-making capacity in other areas such as making financial decisions. Capacity to make a decision is decision specific, not general or absolute.

Where a patient has capacity and makes a voluntary decision to refuse ECT treatment, despite advice from the clinician to the contrary, the decision must be respected even if the treatment is considered life/health-saving by the clinician.

3.3.3.3 **Cultural considerations**

There may be specific beliefs or cultural issues around the use of ECT that can prevent patients from accepting ECT as a form of treatment. It is important to give consideration to cultural issues and the cultural context in which patients consent to or refuse ECT.

Mental health professionals must demonstrate the following specific knowledge, skills and attitudes in meeting the diverse needs of diverse cultural and linguistic groups (National Practice Standards for the mental health workforce 2013). These Practice Standards outline the capabilities that all mental health professionals should achieve. The specific knowledge and understanding, skills and ability, and attitudes and behaviours required of mental health professionals in their work with diverse cultural and linguistic groups are provided as a separate guide.

3.3.3.4 **Advance Care Directive**

A competent adult has the right to complete an Advance Care Directive (an Advance Care Directive can be a Medical Power of Attorney or Enduring Power of Guardianship) in regards to consent to ECT treatment in accordance with the *Advance Care Directives Act 2013*.

An Advance Care Directive is a document in which a competent adult can appoint one or more substitute decision-makers (SDMs) to make health care and other decisions on their behalf which apply when the patient's decision-making capacity is impaired. This also includes decisions about ECT. A person can also write down instructions for their appointed SDMs which they are required to follow if the instructions are relevant and applicable to the decision at hand. This document can include written instructions about a patient's wishes to not receive ECT treatment in the event that their decision-making capacity to consent is impaired in the future. A SDM's decision is as effective as if it were the patient making the decision.

There are three formats for Advance Care Directives and SDM that relate to the wishes of patient for ECT treatment:

a) An Advance Care Directive that describes the patient's wishes and/or appoints a substitute decision maker for decisions relating to ECT in accordance with the Advance Care Directives Act 2013.

b) An Enduring Power of Guardianship made prior to 29 March 2015 that describes a patient's wishes and/or appoints an Enduring Guardian for decisions relating to ECT in accordance with the then section 25 of the *Guardianship and Administration Act 1993*.

(The Enduring Power of Guardianship and Enduring Guardian are recognised as an Advance Care Directive and the guardian recognised as a substitute decision maker respectively.)

c) A Medical Power of Attorney made prior to 29 March 2015 that describes a patient's wishes and/or appoints a Medical Agent for decisions relating to ECT in accordance with the then section 8 of the Consent to Medical Treatment and Palliative Care Act 1995. (The Medical Power of Attorney and Medical Agent are now recognised as an Advance Care Directive and the medical agent as a substitute decision maker respectively.)

This Guideline does not address the effect of an Advance Care Directive refusing ECT. Refer to the Office of the Chief Psychiatrist for current advice.

3.3.3.5 **Emergency situations**

In the following limited circumstances emergency ECT can be provided without consent:

a) A psychiatrist considers that the episode of ECT is urgently needed for the patient's wellbeing; and
b) In the circumstances it is not practicable to obtain consent:
   - The patient does not have capacity to consent or refuse to consent to ECT;
   - The risk to the patient is such that there is no time to obtain consent from a legally appointed SDM or from the South Australian Civil and Administrative Tribunal; and the patient has not refused ECT previously or in an Advance Care Directive.

The psychiatrist authorising emergency ECT must complete the MRMHA-M Emergency ECT without Consent form and give a copy within 1 business day to the Chief Psychiatrist, as soon as practicable to the patient and, if appropriate, as soon practicable to the guardian, SDM, carer, relative or friend.

Authorisation of emergency ECT should be preceded by, or occur in parallel with, efforts to obtain third party consent.

The number of emergency treatments without consent should be kept to a minimum and be used only as a last resort. A psychiatrist must assess the patient before each emergency treatment, assessing as to whether the patient satisfies the above criteria.

The assessing psychiatrist must authorise each emergency treatment separately, and complete a new MRMHA-M Emergency ECT without Consent form.

If a person has recently expressed a refusal for ECT when they had decision-making capacity but has now lost capacity, and urgent ECT is considered clinically necessary; if possible, an urgent SACAT hearing for consent should be considered rather than using the provisions for emergency ECT without consent.

3.3.3.6 **Role of the South Australian Civil and Administrative Tribunal**

The same circumstances must be present when seeking consent to ECT from the SACAT as when seeking consent from the patient/legal representative:

a) The patient has a mental illness and
b) A psychiatrist has authorised the ECT i.e. a psychiatrist has examined the patient, believes this treatment is required and has completed sections 1, 2 and 3 of the MRMHA-L Consent to ECT Form.

A mental health clinician or medical practitioner can make an application to SACAT for consent to ECT in the following circumstances:

a) It is not an emergency situation; and
b) The patient does not have decision-making capacity to consent to or/ refuse ECT; and
c) The patient does not have legally appointed SDM who can consent/refuse on the patient's behalf (Legal representative includes: Enduring Guardian or Medical Agent appointed by the patient; a Guardian appointed for the patient by the Guardianship Board, or a parent or guardian of a child under 16.)
d) An application to SACAT for ECT must include a psychiatrist's supporting opinion that the proposed ECT treatment is necessary and appropriate and is in accordance with accepted clinical practice.
    - Consent by SACAT to a course of ECT is limited to a maximum of 12 episodes of treatment or a period of three months, whichever comes first.

If a patient subsequently regains decision-making capacity during the course of the ECT, then they should be given the opportunity to consent or refuse to consent to further ECT themselves. This upholds the principle of dignity and respect for the individual and ensures appropriate recognition of the right of the person to consent or refuse consent once decision-making capacity has been regained.

If the patient does not have capacity and a second or subsequent course of ECT is deemed necessary, a further application to SACAT for consent to ECT is required.

3.3.3.7 **Resolving disputes**

Consultation and Peer Support

If a clinician has concerns related to ECT, the patient's capacity to consent, a decision of a legal representative, or seeking consent from SACAT, it is recommended that the clinician seek a second opinion in the first instance. This could be through:

> Clinical Director/Chair - ECT Committee (LHN/Hospital);
> SA Branch - RANZCP – ECT sub-committee chair;
> Office of the Chief Psychiatrist.

Legal recourse

The following steps can be taken if the person receiving ECT treatment or another interested party is dissatisfied with the decision of a legal representative to consent to or refuse ECT.

> In the case of a medical agent(s), an application can be made to the Supreme Court to have the agent(s) decision reviewed.
> In the case of a guardian/Enduring Guardian of an adult, an application can be made to SACAT to hear and determine the matter.
> In the case of a child under 16, whose parents have refused consent to ECT, an application to SACAT may be made by a medical agent or practitioner or by anyone with interest in the matter. On the evidence presented, SACAT may approve the application and override the parent(s) decision.
> Parent(s) of a child under 16 can appeal to the District Court about the decision of SACAT to consent to ECT.
> A person, or other interested party, can appeal to the District Court about a decision of SACAT to consent to ECT. Under section 67(1) of the *Guardianship and Administration Act 1993*, anyone who has a proper interest in the matter can appeal. This includes the person to whom the proceedings relate, the person who made the application, and any person who

gave evidence at the Guardianship Board hearing. The correct form is *Form V 1-1, Notice of appeal or Application for leave to appeal*. This form must be lodged at the District Court.

3.3.3.8 **Prescribed Psychiatric Treatment Panel**

The amendments to the Act which took effect from 5 June 2017 established the Prescribed Psychiatric Treatment Panel (the Panel). The functions of the Panel are to:

- Review the progress of patients who have had 3 or more courses of ECT within a 12 month period;
- Review the progress of patients who have had 2 or more emergency ECT treatments within a 12 month period;
- Approve regulations that determine a treatment as a prescribed psychiatric treatment, or which regulate the administration of any such treatment, and
- Authorise the carrying out of neurosurgery for the treatment of mental illness.

The panel is composed of 8 members other than the Chief Psychiatrist, comprising:

- 1 patient or former patient
- 1 carer or former carer
- 1 lawyer
- 1 bioethicist
- 1 neurosurgeon, and
- 3 psychiatrists.

The Office of the Chief Psychiatrist administers the Panel. The Panel is convened monthly up to 11 times per annum.

3.4 Guideline 4 – ECT Facilities

In the past, ECT was administered predominantly in 'stand-alone' ECT suites within psychiatric hospitals. However, 'mainstreaming' of mental health services into general hospitals has led to ECT also being administered within the theatre complex of the general hospital in which the mental health service is based.

This section addresses the requirements for both stand-alone ECT suites and ECT administered within a general hospital operating theatre and clinical areas.

Legislation and professional guidelines governing ECT facilities

The administration of ECT in South Australia is governed by the *Mental Health Act 2009* and following professional legislations, guidelines and bodies:

- Royal Australian and New Zealand College of Psychiatrists, Position Statement 74 Electroconvulsive Therapy (October 2019)
- Royal Australian and New Zealand College of Psychiatrists, ECT Professional Practice Guidelines (2019)
- The Australian and New Zealand College of Anaesthetists (ANZCA) – Recommendations for Minimum Facilities for Safe Administration of Anaesthesia in Operating Suites and Other Anaesthetising Locations (ANZCA 2012 PS55). The ANZCA PS55 covers both stand-alone facilities and ECT administered within a general hospital operating theatre.
- Australian Council of Operating Room Nurses.
- Operating Theatre Association.
- Guidelines for Determining Benefits for Private Health Insurance Purposes for Private Mental Health Care (2015)
- Other appropriate Health Service regulations or guidelines.

3.4.1 ECT Facility Design

In stand-alone ECT suites, or where ECT is administered within general hospital theatres and clinical areas, ECT services must be designed in a patient-focused manner that respects the need for autonomy and privacy.

In addition, there must be adequate time allowed for the preparation, administration and recovery from ECT proportionate to the clinical demand for the service, and should include arrangements for emergency ECT when necessary.

All ECT facilities must consist of a minimum of **three separate clinical areas**:

Clinical Area - Room 1: A waiting area for patients immediately prior to ECT

Clinical Area - Room 2: A treatment / procedure room - The treatment room must comply with the standards for safety as specified in the ANZCA PS55 (2012)

Clinical Area - Room 3: Post Anaesthesia Recovery Room - The recovery area must comply with the standards for safety as specified in the ANZCA PS55 (2012)

Clinical Area 1 – Waiting Room

The waiting room should have access to a toilet and change area. The waiting area should be quiet and separate from other clinical areas, respect patients' need for privacy, and accommodate their level of distress.

Clinical Area 2 - Treatment Room

a) A breathing system capable of delivering 100 per cent oxygen both spontaneous and controlled ventilation. An alternative breathing system should be immediately available. Where more than one patient is to be treated, this equipment must be duplicated or there must be in line viral filters (ANZCA PS28 2015).
b) Adequate reserves of oxygen must be available. If a reticulated or index gas connected system is in use, an oxygen failure warning device is necessary. An emergency cylinder supply of oxygen is necessary in the event of a central supply failure.
c) ANZCA guidelines specify that a treatment room should contain a stainless steel sink, drainer, and scrub-up basin. It should also comply with the specifications for cleaning, disinfecting and sterilising reusable medical and surgical instruments and equipment and maintenance of associated environments in health care facilities (ANZCA PS28 2015).
d) Space is also required for a fully equipped emergency trolley, sterile supplies, bed linen, instruments, equipment, and an area that complies with the minimum standards for the safe and proper storage of drugs including provisions for S4 and S8 drugs.

Clinical Area 3 - Recovery Room

a) Patients must not be routinely recovered in the treatment room at the same time as another patient is having their ECT.
b) Recovery from anaesthesia should take place under appropriate supervision by responsible designated nursing staff as specified by the local area and other governing bodies, in a designated area which conforms to ANZCA professional document – *Recommendations for the Post Anaesthesia Recovery Room* (ANZCA PS4 2018).
c) Contingency plans should exist for the safe emergency evacuation of patients from the operating suite and or recovery areas under adequate medical supervision.

***All three separate ECT clinical areas within the facility should include the following*:**

- Suitable illumination, airflow and/ or air-conditioning that meet the needs for; telephone and computer facilities to aid communication; and a duress system to obtain assistance in the event of an emergency
- Rooms are linked with common doorways so that there can be a smooth movement from one area to the next before leaving the suite. The doors and corridors need to be wide enough to accommodate trolleys and hospital beds.
- Be large enough to accommodate the number of people who are involved in the procedure. The size may vary dependent upon the flow of patients through the service. Services with a high volume of patient care will need more space for the treatment and recovery areas than those sites that are of low volume/ occasional users.

3.4.1.1 **Stand-alone ECT Suite as a unique anaesthetising location**

In that, only a single, standardised procedure is carried out, that the duration of anaesthesia required is invariably brief, that, although treatment may be urgent, it is never an emergency in a medical sense, that infants are not treated, that apart from intravenous injections, no invasive techniques are used and that anaesthetic technique does not usually involve administration of volatile agents.

Under these circumstances, apart from the ECT apparatus and its accessories, which should comply with RANZCP guidelines, other necessary equipment required in a stand-alone suite includes:

- A range of intravenous cannulae, taking into account the preferences of the attending anaesthetists.
- Monitoring apparatus capable of measuring and displaying:
  - Non-invasive arterial blood pressure (NIBP);
  - Oximetry
  - Three-lead electrocardiography.

The device(s) must be capable of providing a print-out which is included in the anaesthetic record.

Devices for management of the airway, including:

- A range of oropharyngeal and nasopharyngeal airways
- A range of laryngeal mask airways
- A range of (cuffed) endotracheal tubes
- A laryngoscope with adult and extra-large blades
- A flexible bougie/introducer
- Lubricant
- Suction accessories, including single-use catheters and handpieces
- Mouthguard
- Plastic face-masks for administering high concentrations of oxygen to spontaneously breathing patients, with or without nebulisation
- Gauzes, dressings and adhesive tapes
- Venous tourniquets.

Refer to Guideline 7 – Anaesthesia for ECT for more information on equipment.

3.4.1.2 **ECT administered at other locations**

In rare circumstances it may be necessary to administer ECT in a location other than a stand-alone ECT suite or a general hospital theatre, for example when patients have a serious physical illness that requires treatment elsewhere within a hospital. Decisions on such treatment must take account of the specific circumstances and be made in consultation with other senior clinicians involved in the patient's care.

3.5 Guideline 5 – Preparing the patient for ECT

3.5.1 Pre-ECT work up

3.5.1.1 **History, physical examination and baseline cognitive and symptom measures**

A comprehensive medical history and physical examination are the key components of a pre-ECT work up. These should focus on the neurological, cardiovascular and respiratory systems and include checking dentition. It is recommended that pre and post ECT measures are performed across the domains of cognitive functioning, psychiatric symptomatology and quality of life.

a) A baseline cognitive examination is imperative. Some instruments currently available include: The Folstein Mini Mental State Examination (MMSE), Montreal Cognitive Assessment (MOCA) and Addenbrooke's Cognitive Examination (ACE-R). For people with limited literacy skills or if English is not a first language, the Rowland Universal Dementia Assessment Scale (RUDAS) is recommended.
b) Routine use of an instrument to rate symptoms before and after a course of ECT is also recommended Some useful questionnaires include: the Montgomery-Asberg Depression Scale (MADRS), the Geriatric Depression Rating Scale (GDRS), the Hamilton Depression Rating Scale (HDRS), the Beck Depression Inventory (BDI) and the Quick Inventory of Depressive Symptomology (QIDS). General psychopathology can be assessed by the Clinical Global Impression Scales (CGI-I, CGI-S) and Brief Psychiatric Rating Scale (BPRS).
c) In order to gain further information about the impact of ECT on patients' overall wellbeing, a Quality of Life measure is recommended (Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Q-LES-Q-SF).

3.5.1.2 **Investigations**

Essential investigations performed prior to ECT include an ECG and serum electrolytes. These investigations provide important information about the risk of cardiac arrhythmias that is not always available from the patient's history and examination.

- Suxamethonium increases serum potassium, particularly in patients with pre-existing muscle damage. If already elevated, dangerously high levels can result, with the risk of a potentially fatal cardiac arrhythmia.
- Low potassium levels potentiate the effect of suxamethonium, possibly causing prolonged apnoea. Serum potassium should be corrected prior to the commencement of ECT.
- Hyponatraemia predisposes to a lowered seizure threshold and increased seizure duration, therefore serum sodium should be normalised before ECT if possible.
- A chest X-ray is not routinely required, but should be performed if clinically indicated.
- Blood screens such as a full blood count, renal function, fasting glucose and thyroid function tests can be organised if clinically relevant.
- Neuroimaging (cerebral CT and/or MRI) is not an essential routine investigation prior to ECT, but should be considered in patients with abnormal neurological examinations or when there is a clinical indication or concern of an intracranial space-occupying lesion, raised intra-cranial pressure or recent cerebrovascular accident.

3.5.1.3 **Consultations with other specialities**

A pre-ECT anaesthetic assessment is mandatory. Patients should be assessed prior to the start of a treatment course, rather than on the day of the first scheduled ECT, in order to allow adequate time for further investigations and/or consultation.

Opinions may be sought from other specialists including respiratory, cardiology, ophthalmic and neurology if clinically indicated. As there are no absolute contradictions for ECT, the decision to use ECT is a balance of risks and benefits. Rather than seeking a medical clearance to proceed with ECT, a good approach is to ask:

- What is the person's medical/surgical/anaesthetic condition?
- What is the risk involved in giving this person a course of ECT?
- What interventions could be made to reduce this risk?

Many non-psychiatric consultants are unfamiliar with modern ECT practice and the physiological changes that occur during the stimulus, seizure and recovery period. It is often necessary to provide this information so the consultant can offer a more informed opinion. Guidance for Anaesthetists and other medical specialists can be provided by a review of current practice of ECT anaesthesia (Bryson et al, 2017). Once specialist consultations are completed, the treating psychiatrist weighs up the medical risks of proceeding with ECT, versus the risks of not treating with ECT, to determine the treatment recommendations then discussed with the patient and their Substitute Decision Maker.

3.5.2 Medications and ECT

The following general principles apply when reviewing medication prior to a course of ECT:

- Give oral medications at their usual time up to one hour prior to each treatment with a sip of water, especially medications that will make ECT safer. Such medications might include antihypertensives, steroids, anti-oesophageal reflux agents, anti-anginals and anti-arrhythmias;
- Non-oral medications, such as bronchodilators, eye drops and topical medications should be administered as usual and not be withheld prior to treatment; and
- Avoid, as far as possible, medications that will increase the risks of ECT or make it less therapeutic. Drugs that require special consideration include theophylline, diuretics, hypoglycaemics, benzodiazepines, lithium carbonate and anticonvulsants.

3.5.2.1 **Antidepressants**

If a patient presents for ECT on an antidepressant that has been ineffective, there may be little benefit continuing this medication. Appropriate withdrawal and planning for another antidepressant after ECT should be considered in this case.

The majority of patients with a major depressive episode who respond to ECT are likely to relapse within six months without continuation pharmacotherapy. It is standard practice to commence an antidepressant, usually from a different class to that used prior to the ECT course. This is usually initiated during or just prior to the end of the ECT course. Generally, antidepressants have been administered safely during ECT, but the risks and benefits should be considered and discussed with the patient.

Anaesthetic Practitioners should be aware of the following:

- There have been reports of adverse cardiac effects (QRS prolongation, AV block, hypotension), confusion and excessive sedation in patients taking tricyclic antidepressants during ECT.
- There are also reports of prolonged asystole and hypotension in patients taking venlafaxine during administration of ECT, However, a study indicated that nortriptyline and venlafaxine were not associated with an increase in cardiac events compared to placebo (Sackeim et al, 2009). Furthermore, venlafaxine was well tolerated in combination with ECT in geriatric patients in the PRIDE study (Kellner et al, 2016).
- Monoamine oxidase inhibitors with ECT have been associated with blood pressure changes, hyper-reflexia and seizures. Patients taking MAOIs are at increased risk of

hypertensive crisis if they are treated in combination with sympathomimetic agents or meperidine, therefore these medications should be avoided during ECT.

- SSRIs are generally considered safe during ECT.

3.5.2.2 **Antipsychotics**

The use of antipsychotics during a course of ECT is common and is generally well tolerated. There have been many reports of the safe use of clozapine with ECT; however there may be a risk of prolonged seizures and confusion as clozapine lowers the seizure threshold. Patients taking clozapine may also be at risk of tachycardia and aspiration due to hyper-salivation. Typical antipsychotics may induce ECG abnormalities such as prolonged QTc interval.

3.5.2.3 **Lithium carbonate**

ECT can increase the permeability of the blood brain barrier and allow more Lithium into the brain at a constant serum level. Given lithium's narrow therapeutic index this can contribute to toxicity, particularly in high therapeutic serum concentrations. While concurrent treatment with lithium is well tolerated by some patients, there are reports of severe confusion resulting from ECT administered to patients taking lithium, particularly when serum levels are at the higher end of the therapeutic range. If it is clinically safe, it is advisable to suspend lithium prior to a course of ECT. This is usually practical when lithium is being used to augment an antidepressant. The risks and benefits of suspending lithium in a patient with bipolar disorder, where there is a risk of a manic swing if lithium is withdrawn, are more complex and need careful consideration. If the patient is maintained on lithium during the ECT course, then the evening dose prior to each ECT treatment can be omitted and the morning dose delayed until after recovery from the treatment. Alternatively, a lower regular dose can be used during ECT, aiming for a serum concentration at the lower end of the therapeutic range.

Lithium given as a post-ECT relapse prevention strategy has a strong evidence base, and can be used in conjunction with maintenance ECT. It is safer to give lithium during maintenance ECT than during an acute course of ECT, as the ECT is being given much less frequently (e.g. fortnightly to monthly in mECT, compared to two to three times per week in an acute course). The lithium dose in the evening prior to ECT can be omitted, which was the practice in the PRIDE study (Kellner, 2016).

3.5.2.4 **Anticonvulsant mood stabilisers**

Anticonvulsants increase the seizure threshold and reduce seizure expression and duration, and may reduce the efficacy of ECT. Where possible, an anticonvulsant being used to augment an antidepressant should be withdrawn prior to the ECT course commencing.

a) In bipolar disorder, the clinical decision to withdraw the anticonvulsant must balance the risk of manic relapse and the potential adverse effects on the seizure.
b) If the anticonvulsant is continued, it may be possible to reduce the dose to the lower end of the therapeutic range. Furthermore, it is often clinical practice to withhold the evening dose prior to each ECT treatment and to delay the morning dose until after recovery from the treatment.
c) This approach should also be considered where an anticonvulsant is being used for a seizure disorder in consultation with the treating neurologist. As ECT has a potent anticonvulsant effect, the dose of anticonvulsant may be reduced further as the course proceeds, but must be restored to pre-ECT levels at the completion of the course.
d) Some studies have challenged the practice of reducing anticonvulsants during ECT. Treating with full dose anticonvulsants during a course of bitemporal ECT was shown to result in faster recovery in patients with bipolar disorder, without deterioration of seizure quality (Rakesh et al, 2017). Continuing sodium valproate did not affect seizure duration or reduce recovery from mania compared to controls.(Haghighi et al, 2013).

3.5.2.5 **Benzodiazepines**

The concurrent use of benzodiazepines may result in failure of treatment and should be avoided. Use of benzodiazepines (particularly those with a longer half-life), during a course of ECT may:

- increase the seizure threshold
- increase the risk of cognitive impairment, and
- reduce the seizure length and efficacy.

If there is a risk of withdrawal seizures with abrupt cessation, the dose can be tapered and ceased early in the course as the anticonvulsant effect of ECT will mitigate against this risk. Reversal with flumazenil (0.4-1.0mg IV) administered immediately prior to ECT can be considered in patients on high doses of benzodiazepines or in those who are unable to tolerate discontinuation. Non-benzodiazepine hypnotics act in similar ways to benzodiazepines and can have similar detrimental effects on ECT if given to the patient close to an ECT treatment.

3.5.2.6 **Diabetic medication**

Depression, particularly with melancholic symptoms, can destabilise diabetic control. As depression improves through the course of ECT, the dose of diabetic medication may need to be reduced to prevent hypoglycaemic episodes. Blood sugar levels should be monitored closely during an ECT course as dosing of oral hypoglycaemics needs to take into account fasting prior to ECT and hyperglycaemia secondary to the seizure. On the morning of each ECT treatment, oral hypoglycaemics should be withheld until after treatment, unless instructed otherwise by the anaesthetist. For patients using insulin, it is advisable to consult an endocrinologist or anaesthetist about management of their treatment on the morning of ECT. The patient should be placed first on the list, and be given their breakfast and diabetic medication as soon as practical following ECT.

3.5.2.7 **Theophylline and bupropion**

Theophylline and bupropion can increase seizure duration. Where possible, they should be ceased prior to the ECT course commencing.

3.5.2.8 **Diuretics**

Diuretics should be avoided on the morning of ECT to avoid post-ictal urinary incontinence.

3.5.2.9 **Acetylcholinesterase inhibitors**

Acetylcholinesterase inhibitors may potentiate the bradycardia from the electrical stimulus and suxamethonium. They can potentiate the muscle relaxant effect of suxamethonium, particularly with rivastigmine which also inhibits butyryl cholinesterase, the enzyme which metabolises suxamethonium. There are numerous case reports of the safe use of donepezil and rivastigmine during ECT. The continued use of these drugs should be discussed with the anaesthetist. A systematic review of rivastigmine in ECT indicated that it may have a protective effect against ECT-induced cognitive impairment (Henstra et al, 2017).

3.5.3 Smoking

Patients should be strongly advised not to smoke on the morning of treatment to reduce the risk of anaesthetic complications. A comprehensive nicotine replacement and smoking cessation treatment should be offered to ECT patients.

3.5.4 Substance Abuse

Monitoring of patients substance use should be considered if their dependence or abuse is likely to lead to intoxication during ECT. This may be particularly relevant for outpatients receiving ECT.

3.6 Guideline 6 – Administration of ECT

3.6.1 Patient preparation

Patients are to be received as calmly and courteously as possible into the treatment area. All procedures are to be explained to the patient as they are performed, in a reassuring manner.

The final checks required include:

a) Identity
b) A confirmation that they consent to continuing treatment, and
c) Confirmation of recent voiding of urine, and that the patient has fasted.

The treatment room staff are to confirm:

a) For self-consenting patients: the consent form is valid
b) For third party consent or emergency ECT: that the documentation (including valid consent or emergency ECT treatment order) is signed and dated by the patient's treating doctor and fully compliant with the *Mental Health Act 2009*.

Some of the following procedures may be done before the anaesthetic is administered:

If using the isolated limb technique to monitor motor movement:

- The sphygmomanometer cuff should be applied to the right calf and not inflated until the anaesthetic induction agent has been given.
- This technique is recommended when performing a stimulus titration procedure (see below) to assist in the detection of a motor seizure and seizure threshold, but is optional under other circumstances.

To ensure the quality of the EEG recording

- The skin beneath the recording electrodes must be adequately prepared. This can be achieved using a moistened gauze swab.
- Care must be taken to avoid skin damage.

A standardised approach for applying the EEG recording electrodes should be used in order to facilitate the comparison of EEG recordings across the course of treatment.

- For 2-channel EEG recording, channel 1 electrodes are generally applied to the left hemisphere and channel 2 electrodes to the right hemisphere, with positive electrodes placed on the forehead and negative electrodes on the mastoid.
- It is useful to use the same placement for each treatment to enable meaningful comparison of tracings and assist with trouble shooting.

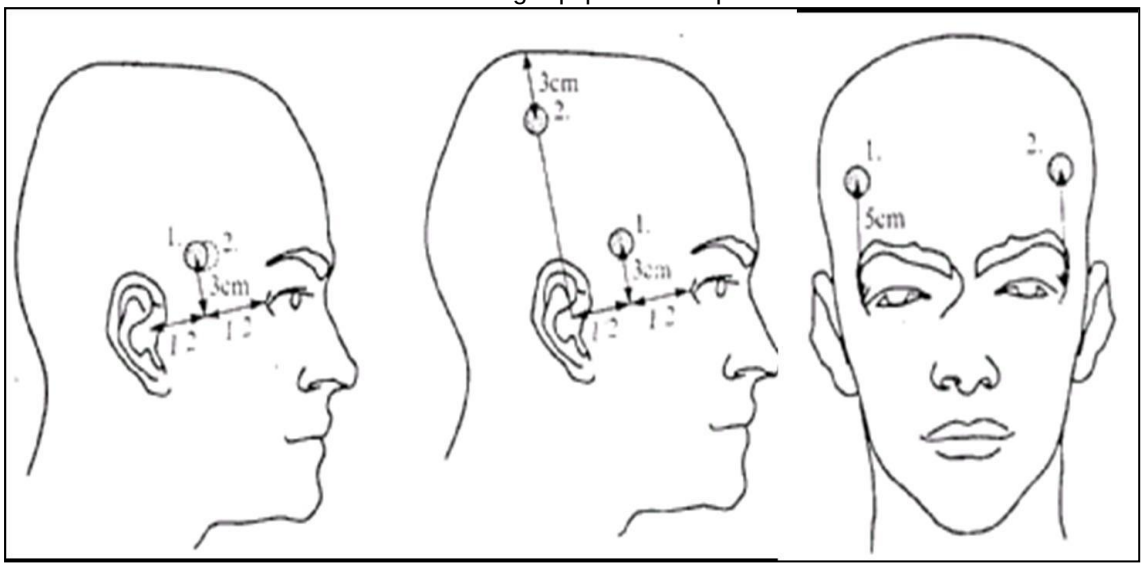
The recording electrodes are to be applied as follows:

- The anterior electrodes are placed on the forehead, 2.5cm above the midpoint of the eyebrow (mid-pupillary line).
- When bifrontal treatments are being given, the anterior recording electrodes are moved medially, either side of the midline (see below); the posterior recording electrodes are placed over the mastoid process, over bone, high enough to avoid being placed over the sternomastoid muscle – this will avoid both muscle artefact and any cardiac artefact that is transmitted along the carotid artery.
- The skin beneath the treating electrodes is to be prepared in the same way as described above for the recording electrodes.
- The use of abrasive materials to clean the skin is not recommended because of the possibility of electrical burns occurring following overly zealous cleaning.

3.6.2 ECT equipment

All sites where ECT is performed must be equipped with the following:

- A modern ECT device with the following features:
  - A constant current, bi-directional brief pulse square wave output
  - An EEG monitor with at least two channels of monitoring displayed on a paper print-out or capacity to save electronically.
  - Capable of delivering a charge of up to 1008 millicoulombs
  - Capable of delivering a variety of stimulus parameters, including brief pulse widths of 1.0 ms, down to Ultra brief pulse widths of at least 0.3 ms
  - A method of measuring circuit impedance
  - A safety mechanism for the treatment button to prevent accidental discharge
  - A maintenance program conducted by authorised personnel which complies with SA Health standards for medical equipment.
- Disposable EEG recording electrodes.
- Treating electrodes with a minimum diameter of 5cm. These may be metal or disposable adherent electrodes.
- Conductive gel or solution if using metal stimulus electrodes.
- A method of measuring muscle relaxation prior to delivering the stimulus. The anaesthetist will usually monitor muscle relaxation and advise when the treatment can proceed. The ECT psychiatrist should always check with the anaesthetist that the patient is ready to receive the stimulus.
- Cardiovascular and other monitoring equipment as specified under *Anaesthesia for ECT*.



Electrode placement: Figure 1, Figure 2, Figure 3

3.6.3 Treatment Electrodes

Depending on the technique used, the treating electrodes may be applied (Figure 1) either before the anaesthetic is administered (with appropriate reassurance to the patient) or afterwards.

Acceptable techniques are:

- Metal electrodes secured by a rubber headband;
- Metal electrodes attached to hand-held electrodes;
- Disposable adherent non-metal electrodes; or
- A combination of the above

To ensure low impedance at the skin-electrode interface and to avoid skin burns, the electrodes must be 5cm in diameter and adequate conducting gel must be applied between the electrode and the skin.

If using disposable adherent electrodes, it may be necessary to apply a small amount of conducting solution or gel to reduce the impedance to acceptable levels.

Care must be taken to ensure firm contact with the skin with all types of electrodes and techniques to ensure low impedance and to avoid skin burns. Cleansing the skin with a non-irritating agent (water is best) to remove local sebum which acts as an insulator is recommended.

It is essential when using metal electrodes to use a flat electrode on a flat skull surface (i.e. temporal placement) and a concave electrode on a rounded surface (i.e. vertex and bifrontal placements) to maximise skin contact and reduce the risk of burns.

3.6.4 Electrode placement

There are three types of electrode placement illustrated on page 35, which can be used depending on individual patient circumstances.

Type 1: *Unilateral placement – Brief Pulse*

- The available evidence suggests that provided the dose is 5 – 6 times seizure threshold, the efficacy of right unilateral (RUL) ECT delivered with a 1.0 ms pulse width is not inferior to bilateral ECT and is associated with less cognitive impairment than bitemporal placement (Semkovska, 2016, Dunne & McLoughlin 2013, Kolshus, 2017).
- The evidence suggests that for RUL ECT at 1.0 ms pulse width given at doses above 6x ST, the cognitive advantage may be diminished, with little advantage in increasing efficacy.
- Studies of ultra-brief ECT using an ultra-brief pulse width (0.3 ms) at 6 times seizure threshold have shown that the cognitive side-effects are significantly reduced. However, in ultra-brief ECT the speed of response may be slower and efficacy less robust, with lower remission rate, and one or two more ECT treatments required per course (Loo et al 2013, Tor et al, 2015).

Type 2: *Bilateral (bitemporal) Placement*

Bitemporal placement is generally regarded as the most effective form of ECT, but it is also associated with the greatest amount of cognitive impairment, particularly retrograde memory loss, which may not be fully reversible.

Its use should be restricted to the following situations:

- As a second line option when other electrode placements have been ineffective, or
- In emergency ECT when there is an urgency to achieve a rapid response (e.g. in a life-threatening situation such as intense suicidal ideation, catatonia etc.) or;
- When the patient's history indicates a previous poor response to unilateral ECT and a good response only to bitemporal ECT.

For bitemporal ECT the effective dose is 1.5x seizure threshold. Doses higher than this may produce excessive cognitive side-effects and should only be considered where the treatment response is inadequate at the lower dosage, and then cognitive side effects must be monitored closely.

Type 3: *Bifrontal placement*

Bifrontal placement has been less studied than the other electrode placements, with one study showing cognitive side effects similar to bitemporal and efficacy similar to RUL (Kellner 2010). However, a meta-analysis in 2012 showed BF to have equivalent efficacy to bitemporal ECT, but with fewer cognitive side effects. However, the same meta-analysis showed it to have no advantage in either efficacy or cognitive side effects over RUL ECT delivered with a 1 ms pulse width and 4-6x seizure threshold (Dunne & McLoughlin 2012). Further research is needed to establish its therapeutic role, but some individual patients may benefit from using this electrode placement.

For example, a patient who has not responded to unilateral ECT, who was switched to bitemporal ECT and had unacceptable cognitive side-effects, may achieve recovery with bifrontal placement and with less cognitive problems. When using bifrontal ECT, accurate placement of the electrodes avoiding placement over the Frontal Sinus is important to ensure low seizure thresholds.

It has also been shown that bifrontal ECT has less impact on the cardiac rhythm during the stimulus than other placements Therefore, bifrontal ECT should be considered for patients at risk of ECT-induced arrhythmias. (Stewart et al, 2011).

Electrode placement – recommendations

For most patients ECT should be commenced with either right unilateral placement brief pulse at a dose of 5-6 times seizure threshold with a pulse width of 1.0ms if efficacy is the primary consideration, or an ultra brief (0.3ms) pulse width at 6-7 times seizure threshold, if limiting cognitive side effects is the paramount consideration. (Tor et al, 2015).

Bilateral ECT, if used, is given at 1.5 times seizure threshold for bitemporal and 1.5-2.5 times seizure threshold for bifrontal electrode placement (see illustration on page 35).

Right sided treatment avoids direct stimulation of the dominant hemisphere. Given that a high proportion of left-handed people have either left-sided or bilateral cerebral dominance, either right unilateral placement or bifrontal placement should be used initially.

- If RUL placement is associated with an unusual degree of cognitive impairment, especially early in the treatment course, the electrode position should be changed to either left unilateral or alternatively bifrontal placement, thereby avoiding stimulation of both temporal lobes.

If after 4-6 treatments of an adequate dose for 1 ms pulse width unilateral ECT or after 6-8 treatments for Ultra brief unilateral ECT, there is an inadequate response, then options are as follows:

- Dose relative to seizure threshold may be increased, especially if there has been a decline in EEG quality.
- Unilateral Ultra brief ECT can be changed to unilateral 1 ms pulse width ECT. Note that some patients may not respond to treatment with unilateral ECT and may require a switch to bifrontal or even bitemporal ECT.
- Electrode placement can be changed to bifrontal or bitemporal ECT. If there is concern about excessive cognitive impairment with bitemporal placement, bifrontal placement can be used, or a 0.5 ms pulse width may be used with BT ECT.

If, after switching from standard pulse width unilateral ECT to bitemporal placement due to a failure of clinical response, there is excessive cognitive impairment, it is not appropriate to return to unilateral treatment if it has already proven to be ineffective. Options here may include either using a 0.5 ms pulse width for bilateral ECT, switching to a BF placement, or reducing the frequency of ECT to twice weekly

However, if there had not been an adequate prior trial of RUL ECT, or UB ECT, then this could be considered in patients with high cognitive side effects to bilateral ECT

Electrode placement – positions

Right unilateral ECT
The correct position is the D'Elia position. (Figure 1).

> The temporal electrode (flat) is placed over the right temporal fossa, with the centre of the electrode 2.5cm above the midpoint of a line drawn between the tragus and the outer canthus of the eye.

- The centre of the second electrode (concave) is placed slightly (1cm) to the right of the vertex, which is at the intersection of the line drawn between the nasion and the inion (occipital process), and the line drawn between the tragus of each ear.

Note: The vertex is not the crown, which is more posterior. The D'Elia position directs the current across the motor cortex, the area of the cortex with the lowest seizure threshold. For left unilateral ECT the same positions are used, but on the left side of the head.

Bilateral (bitemporal) Placement
Each electrode (flat) is placed in the temporal fossa bilaterally, as for the unilateral placement.

Bifrontal ECT
The anterior EEG recording electrodes should be moved medially, to approximately 1cm either side of the midline, to allow room for placement of the treating electrodes. Concave metal electrodes or adherent disposable electrodes are to be used. The midpoint of each treating electrode is placed 5cm above the outer canthus of the each eye, in a parasagittal plane (Figure 2).

A small mark made with a washable marker can be placed at the correct site to guide the electrode placement.

Note: Care must be taken to avoid any contact between the treating electrodes and the EEG recording electrodes, and that there is no excess conductive gel creating a short circuit of the current across the forehead. Skin burns may occur if the electrodes are placed too close together.

3.6.5 Dosage

It is now well established that for brief pulse ECT to be effective, the electric charge must be at least 5-6 times above seizure threshold for standard pulse width unilateral ECT (Dunne & McLoughlin, 2013); 6-7 times seizure threshold for ultra-brief unilateral ECT; and 1.5 times threshold for bitemporal ECT.

- The required dosage above threshold for bifrontal ECT has not been properly studied and commonly the same dose at BT ECT, 1.5x ST is used. However, some preliminary evidence suggests the optimum may be slightly higher than BT ECT, e.g. at 2.0-2.5x seizure threshold (Dunne & McLoughlin, 2012).
- In particular, it has been shown that for unilateral ECT, doses close to threshold are ineffective. This means that in order to be sure that a patient is receiving an adequate dose; the patient's seizure threshold needs to be determined.

Therefore, the preferred technique is to establish the individual seizure threshold by using a stimulus dose titration method at the first session. [Refer to ECT reference material on titration.]

- Subsequent treatments should be given at above threshold doses (at least 4 times for standard pulse width unilateral ECT, 6 times for Ultra brief unilateral ECT and 1.5 times for bitemporal and bifrontal placements).
- The main disadvantage of the titration procedure is that the patient will usually receive one, two or three sub convulsive stimuli, with the risk of bradycardia or asystole. In patients with significant cardiac risk factors, this can be prevented by pre-medication with atropine or glycopyrrolate, although this carries a risk of increasing the amount of tachycardia during the convulsion.
- A study showed that cardiac autonomic dysfunction worsens to a greater extent after atropine pre-medication, and advises that atropine premedication should be restricted to select patients susceptible to bradyarrythmia and should be avoided in others (Jadhav et al, 2017)

Another method of dosing for standard pulse width ECT is to use a fixed dose for patients based on age regardless of individual thresholds. This is a simpler technique, but is not considered to be best practice and has not been used with Ultra brief ECT.

- For age-based dosing in RUL standard pulse width ECT, the ECT practitioner sets the stimulus dose according to the age of the patient. That is, the dose % approximates the patient's age, rounded down to the nearest level. For Bilateral standard pulse width ECT the stimulus dose is set to half the patient's age, rounded up to the nearest level.
- The main disadvantage of this approach is that it is not possible to know the patient's seizure threshold and therefore to know that the dose is sufficiently above threshold to ensure adequate efficacy, especially for unilateral ECT.
- This approach is being used less in favour of stimulus dose titration.
- This method may be considered in patients who are medically unfit for stimulus dose titration.

3.6.5.1 Dosage increases during treatment

During a course of ECT the seizure threshold may rise at a rate which varies considerably between individuals. A rise in the seizure threshold also occurs with RUL ultra-brief ECT, in about 60% of patients by treatment number 7 (Suetani & Waite, 2013, Galvez et al, 2017). In order to ensure that the dose remains adequately supra-threshold, it is usually necessary to either increase the dose, or re-titrate during the course. The decision to increase the dose or re-titrate is based on changes in the quality of the EEG during the course. As the threshold rises, continuing with the same dose means that treatment is occurring at a lower dose relative to threshold and the EEG quality deteriorates. This is the signal to increase the dose according to the dosage chart.

It is necessary for the ECT practitioner to examine the previous EEG tracings in order to detect changes in the quality and to therefore adjust the dose. This action could be done either prior to each treatment or after a treatment taking into context all factors in order to recommend the next dose level. Note that ictal EEG appearances can vary considerably between individuals. For older patients and those receiving Ultra brief ECT, in particular, ictal EEGs may be of poor quality, even at high supra-threshold doses. If propofol is used as the anaesthetic agent it leads to ictal EEG's of lower quality and shorter duration than with thiopentone. In order to enable reliable interpretation of EEGs, avoidance of switching anaesthetic agents through the course of ECT is therefore recommended. However, thiopentone may be a valid alternative to propofol if seizure quality is unable to be maintained (Mir et al, 2017).

The decision to increase the dose, or re-titrate may also be based on an assessment of the patient's clinical progress, independent of or in conjunction with the EEG morphology. This may be the preferred method in those situations where EEG morphology is poor despite dose increases or is otherwise unreliable as an indicator of dose adjustments. If extraneous factors affect the seizure threshold e.g. medications stopped or started then a re-titration using stimulus dose titration can inform the clinician of the new seizure threshold.

3.6.5.2 Pulse width

The ECT device in use should allow for the electrical stimulus to be delivered at varying pulse widths. The device may allow for the operator to set the individual treatment parameters (e.g. some MECTA models) or the parameters may be pre-programmed (e.g. Thymatron).

- The most commonly recommended pulse width for all electrode placements has been 1.0 ms and most published efficacy studies have utilised 1.0 ms PW.
- More recent studies have examined Ultra brief pulse widths of 0.25-0.3 ms and have demonstrated that for unilateral ECT, the associated cognitive impairment is significantly reduced compared to 1 ms pulse widths.

- Efficacy outcomes are less consistent between studies, with most studies finding a slower speed of response for RUL Ultra brief (Loo et al, 2007; Loo et al, 2008; Sienaert et al, 2009, Loo et al, 2012; 2013). A meta-analysis in 2015 showed that efficacy (in terms of remission rates and speed of response) is lower in RUL UB ECT, although with significantly reduced cognitive side effects (Tor et al 2015).
- For bilateral placements, the studies looking at Ultra brief PW have not shown this to be sufficiently efficacious (Sackheim 2008, Sienaert 2009) for it to be recommended. Until further studies are available, Ultra brief PW bitemporal and bifrontal ECT should not be used routinely.
- If unilateral Ultra brief ECT is to be used it is recommended that the electrical dosage is at least six times seizure threshold.

A titration procedure will be necessary to enable accurate calculation of the supra-threshold dose. It is necessary to ensure that the ECT device can deliver small dosage increments in the low dose range.

- For example with the Thymatron device the programme needs to be adapted to allow dosage increments of 1% intervals between 1% and 10% (all new Thymatron devices have this function as standard). This is because, unlike 1 ms pulse width, the seizure threshold with Ultra brief unilateral ECT is generally very low, e.g. 10-20 millicoulomb (2-7% in the Thymatron device).
- Some units have used a pulse width of 0.5 ms as standard for all electrode placements and it is noted that the manufacturer of the Thymatron Series 4 device has a default pulse width setting of 0.5 ms and recommends that the 0.5 ms pulse width programme be used for all bilateral ECT patients.

Note: There are no prospective or randomised ECT efficacy studies that have compared ECT given at 0.5 ms pulse width with ECT given at other pulse widths. There is currently no data available to establish the efficacy and side effect profile of 0.5 ms pulse width ECT. However, many experts have positive anecdotal experience of this pulse width, arguing it has equal efficacy to 1 ms PW but with fewer cognitive side effects. What evidence there is suggests that it may sit half way between 1 ms and 0.3 ms in terms of both efficacy and cognitive effects, although this may not be the case for all placements. The optimum stimulus dose relative to seizure threshold has not been established, but is likely to be more than 1 ms PW but less than 0.3 ms PW. It appears that the role of 0.5 ms PW is most likely to be as a relatively cognitive sparing option for bilateral ECT (especially bitemporal ECT).

3.6.5.3 **Spacing of treatments**

ECT is usually given two or three times per week in an acute treatment course. These treatments should be spaced as evenly as possible across the week.

> The literature on the relative benefits of twice versus thrice weekly treatments suggests that the total number of treatments required is less with twice weekly ECT, but that the duration of the treatment course may be longer (for review and meta-analysis see Loo et al, 2010; Charlson et al, 2012, Bangalore & Thirtalli, 2010). Twice weekly is probably the optimum balance between efficacy and side effects for Bitemporal ECT, but few studies have compared these schedules for other placements. Given the slower speed of response already seen in UB ECT, this should routinely be given 3 times per week.

> In patients who are particularly susceptible to cognitive side-effects, e.g. those with pre-existing cognitive impairment, or where significant cognitive impairment or a rapidly rising seizure threshold becomes evident during the treatment course, slowing ECT sessions to twice weekly is often beneficial.

- For patients with rare severe and life threatening clinical states e.g. malignant catatonia, ECT may be introduced with closer spacing between treatments (i.e. successive days) to achieve a rapid response and then the spacing resumed at 2 or 3 per week.

3.6.6 Outpatient ECT

A number of criteria should be satisfied before patients are offered ECT as outpatients.
The treating clinicians should be confident that the patient:

- Will not drive or do anything else hazardous on the day of treatment.
- Is under the continuing care of a psychiatrist who is reviewing their progress at an appropriate frequency, prescribing their treatment, and, ensuring legal requirements have been complied with.
- Can be present at the appropriate section of the hospital where ECT is to be administered before the scheduled time of treatment.
- Will reliably fast for a specified duration (for example, eight hours) before the scheduled time of treatment and administration of the anaesthetic.
- If required, will take essential medication as directed (for example, anti-arrhythmic and antihypertensive medication) at the usual time with only a sip of water.
- Will have a reliable person to take them home (when the patient has been assessed as fit to leave under local health service protocols) after treatment and supervise them as directed.
- Has access to a clinician who can reassess their physical condition should an inter-current illness arise that could affect the efficacy of ECT and/or the decision to provide ongoing ECT.

In addition, the patient should be well enough to be managed in the community setting in terms of the possible risks resulting from their primary mental illness.

3.6.7 Clinical monitoring over the treatment course

The effects of ECT on psychiatric symptoms (such as mood and psychotic symptoms) and side-effects (both cognitive and non-cognitive) should be carefully monitored over the ECT treatment course, to allow adjustments of treatment as necessary, objective assessment of outcomes and cessation of treatment once the target symptoms are resolved.

As well as frequent clinical assessments (at least twice per week during an acute course of ECT), the use of structured rating scales is recommended, administered prior to commencing ECT and at the end of the treatment course.

Regular physical examination must occur monitoring the patient for inter-current illness or physical complications from ECT that may impact on the risk of providing ongoing ECT.

3.6.8 The ECT procedure

The ECT practitioner should greet the patient and provide reassurance.

3.6.8.1 **Checking process**

The treatment orders, including electrode placement and dose are to be checked. The dose should then be set on the machine.

Before the patient is anaesthetised, a ‘team time out‘ during which the 'Correct patient, correct procedure, correct site' (TeamSTEPPS 2008) is to be observed. In the case of ECT the check needs to be 'Correct patient, correct consent, correct electrode placement and pulse width, correct dosage'. This checking process is to be conducted jointly and simultaneously by the ECT practitioner, the ECT nurse and anaesthetist, and recorded as completed. The anaesthetic can then be given.

If using the isolated limb technique to monitor motor seizure, the cuff should be inflated to 40% above systolic blood pressure just prior to the administration of the muscle relaxant.

If the recording and treating electrodes are not already in place, they should now be attached and the following procedures observed:

- Test ECG equipment
- Perform baseline measurements on EEG (Thymatron)

The anaesthetist inserts the mouthguard.

Check impedance: This may be done automatically (for example, MECTA devices) or manually (Thymatron). The static impedance level should be below the machine's maximum limit (Mecta 5000 ohms, Thymatron 3000 ohms). If it is too high the following steps are required:

- Ensure that the treatment cable is connected to the treatment electrodes and to the ECT device.
- Ensure that the electrodes are firmly against the skin and that there is sufficient conductive gel – add more gel if needed.

If using disposable adhesive electrodes, a small amount of conductive solution may need to be placed in the centre of the electrode which is then replaced and held firmly with a 'dummy' electrode if necessary.

i) MECTA device: If the impedance cannot be reduced below the machine's maximum limit, the machine will not discharge and treatment cannot proceed.

ii) Thymatron device: If using the Thymatron device, treatment can safely proceed but by Ohm's Law, the dose delivered will be less than the dose required, as the voltage increase needed to overcome the high impedance is capped for safety reasons. Generally it is better to proceed with treatment rather than abandon the procedure.

iii) It should be noted that at very high doses, when the impedance is above 1500, the dose may not be delivered in full. The actual dose delivered can be seen on the printout of the trace.

Check with the anaesthetist that the patient is fully anaesthetised, and that adequate muscle relaxation has been achieved and that the bite block has been inserted. If so, proceed with treatment by lifting the safety guard and pressing the treatment button, which then needs to be held until the discharge is complete.

The duration of both motor and EEG seizure are to be observed and recorded. The quality of the EEG seizure should also be recorded and compared with previous tracings so as to assist in guiding the dose for the next treatment.

If a titration procedure is being performed, the initial dose should be as determined by the titration chart which is appropriate for the pulse width program being used. [Refer titration reference guide]

- If a seizure (defined as a generalised motor seizure or definite EEG seizure of any length or quality, with or without visible motor seizure) is not elicited then the dose should be increased by one level as indicated on the chart and the patient re-stimulated.
- This should be repeated until a seizure is elicited, provided that no more than four stimuli are delivered at one session and that there are no anaesthetic or medical issues which would place the patient at unreasonable risk by continuing.
- A stimulus which has failed to elicit a seizure can be followed by a repeat stimulus without delay, as there will be no refractory period.

If a threshold seizure is elicited at the first, second or third stimulus, a further treatment stimulus at the appropriate supra-threshold dose may be given depending on:

- The risk-benefit analysis, taking into account the severity of the patient's psychiatric condition, co-morbid medical issues and the anaesthetist's assessment of the patient's suitability to proceed.
- Generally, re-stimulation at a supra-threshold dose within the titration session is more critical for unilateral than bilateral ECT. If a treatment stimulus is to be given, a period of 60 – 90 seconds delay is required between stimuli to prevent re-stimulation during the post-seizure refractory period.

In the case of a missed seizure (except during a titration procedure):

- The dose should be increased by one level and the patient immediately re-stimulated.
- The operator should also check that the electrode placement is correct.
- If the seizure is again missed, the treatment session should end and prior to the next scheduled treatment the patient should be assessed for potential causes of the missed seizure, such as the inappropriate administration of anti-convulsant drugs.

If a patient has repeated missed seizures or persistently poor quality EEG recordings despite adequate dose increases:

- Consideration should be given to employing methods to enhance seizure production, such as hyperventilation (Askay et al, 2014), changing the type or dose of the anaesthetic agent and increasing the time interval between the start of anaesthesia injection and start of ECT stimulus (Galvez et al, 2017).
- Augmenting the anaesthetic with remifentanil (Takekita et al, 2016) or ketamine (Zhong et al, 2016) may allow a further reduction of the dose of the main anaesthetic induction agent. The use of augmentation strategies such as theophylline or caffeine is not recommended because of medical risk.
- Consider using Ultra brief pulse width right unilateral which is more efficient at producing seizures.
- Acknowledge that poorer quality EEG's may occur with Ultra brief pulse width RUL ECT but still be effective.

In the case of a prolonged seizure (greater than 120 seconds) the seizure should be terminated by the anaesthetist, using an appropriate pharmacological intervention.

- In the rare instance that this fails to terminate the seizure, the appropriate management is to re-stimulate the patient at a higher electrical dose.
- Prior to the next scheduled session, the patient's neurological status and medical history as well as the current medications should be reviewed to eliminate any potential cause for a prolonged seizure. It should be noted that healthy young patients will sometimes have prolonged seizures.
- If a patient has more than one prolonged seizure, then treatment should be suspended until there has been a thorough neurological review.

Provided that no neurological or other cause has been found, the correct procedure at the following treatment session is to increase the dose by one level and continue treatment.

- The higher dose is most likely to prevent a prolonged seizure, as the most common cause of prolonged seizure is the stimulus dose at or near seizure threshold.
- It is not appropriate to reduce the dose in subsequent treatments as this may produce a missed seizure, another prolonged seizure, or may lack efficacy.

3.6.9 Information for patients

Information should be provided to patients about ECT treatment (regarding pre and post treatment care).

3.6.10 Records

The patient's medical records must include:

i) Continuing patient consent to treatment (Information and Consent Form ECT MRMHA-L or MRMHA-M 2009);
ii) Results of an appropriately comprehensive physical examination, investigations and/or anaesthetic review;
iii) Any side-effects resulting from ECT;
iv) Results of any cognitive testing and symptom measures.
v) The ECT procedure details are recorded including:
    - Stimulus dose
    - Electrode placement
    - Pulse width
    - Medication used
    - Seizure quality
    - Recommendations for next treatment.

3.6.11 Post-ECT follow-up and monitoring

Following the end of the treatment course and discharge from hospital it is recommended that:

i) A comprehensive and detailed record is made of the ECT course.
ii) The patient is monitored regularly by a psychiatrist or community treatment team in conjunction with the general practitioner for a minimum of six months.
iii) The patient should be monitored for any return of symptoms in order to detect any relapse of illness at an early stage.
iv) The progress of any ECT-related cognitive impairment must also be monitored.

The inpatient treatment team must ensure at the time of discharge that:

The follow-up clinicians are informed of the patient's response to treatment, the presence of any persisting symptoms of illness, an assessment of any ECT-related cognitive impairment and the post-ECT management plan.

3.7 Guideline 7 – Anaesthesia for ECT

Anaesthesia for ECT must be conducted in accordance with ANZCA Guidelines

3.7.1 Staffing the anaesthesia service

- The anaesthetic service for ECT must be under the direction of a consultant anaesthetist with extensive relevant experience.
- Where trainees are involved they must be supervised in accordance with the ANZCA Guidelines.
- A member of nursing staff needs to be solely available to assist the anaesthetist throughout the procedure. This person should have adequate experience in assisting anaesthetic services to the satisfaction of the anaesthetist present.

3.7.2 Equipment

The ANZCA has guidelines on the equipment required for anaesthetising in locations other than the operating suite.

3.7.3 ECT Locations

Where provision of an anaesthetic delivery system is not essential, as in an electroconvulsive therapy area, there must be:

- A breathing system capable of delivering 100 per cent oxygen for both spontaneous and controlled ventilation. An alternative breathing system should be immediately available. Where more than one patient is to be treated, this equipment must be duplicated or there must be an inline viral filter. Refer to: College Professional Document PS55 (2012) *Guidelines on Infection Control in Anaesthesia*;
- Adequate reserves of oxygen must be available. If a reticulated or indexed gas connection system is in use, an oxygen failure warning device is necessary. An emergency cylinder supply of oxygen is necessary in the event of a central supply failure;
- Devices to manage the airway as required, including oropharyngeal and nasopharyngeal airways, laryngeal mask airways, endotracheal tubes and the means for their introduction.
- A device capable of detecting expired carbon dioxide;
- A monitoring apparatus capable of measuring and displaying arterial oxygen saturation, electrocardiography and non-invasive arterial blood pressure; and
- ‘First-line’ emergency drugs, as determined by anaesthetist responsible for the ECT service.

3.7.4 The pre-anaesthetic examination

The patient scheduled for a course of ECT will already have had an admission history and physical examination performed by medical staff. The anaesthetist must perform a patient assessment as described in the ANZCA’s Guideline, the pre-anaesthetic consultation.

Particular attention needs to be paid to previous experience of anaesthesia, oral health and the presence of any dental prostheses. Patients who have prostheses which may be at risk during the procedure need to be warned of possible damage to these items.

3.7.5 Fasting

Fasting prior to ECT needs to be of sufficient duration to ensure minimal gastric residue, but excessive deprivation of fluids is to be avoided. The common routine of ‘nil by mouth after midnight’ is simplistic and often results in no intake after 9 pm. Current standards of care require ‘solid’ food to be withheld for a minimum of six hours, but water is permissible for up to two hours pre-treatment. Patients who are awake at any time up to this hour may drink water totalling no more that 200mls per hour, if the anaesthetist agrees.

3.7.6 Pre-medication

Waiting time should be kept to a minimum in order to reduce patient distress and the need for pre-medication. Benzodiazepines are relatively contraindicated before ECT because of their anticonvulsant effects. Other pre-medications should be discussed with the anaesthetist.

3.7.7 The anaesthetic

The principles for anaesthesia in ECT are:

- To render the patient unaware of the procedure;
- To protect the patient from injury resulting from the unconscious state or the procedure being performed;
- To maintain physiological stability throughout the anaesthetic and until its effects have dissipated;
- To collaborate with the psychiatrist to ensure an optimal outcome for the patient;
- pre-oxygenation is recommended;
- An induction which ensures that the patient is unaware of the onset of muscle relaxation and of the passage of the stimulus;
- The degree of muscle relaxation must be sufficient to minimise the motor component of the seizure, as well as reducing demands on the myocardium for increased cardiac output;
- It is important that there is minimal variation in hypnotic dose between treatments to minimise the effect on seizure threshold; and
- Appropriate documentation of anaesthetic agent and patient monitoring is required according to ANZCA Guidelines.

3.7.8 Protecting the teeth

The temporalis muscle is directly stimulated by the passage of current in both bilateral and unilateral electrode applications. The muscle relaxant cannot abolish the resulting jaw clench, hence an effective mouthguard is essential. An effective mouthguard must distribute most of the load over the posterior teeth, which are better able to cope with such force. Supporting the chin ensures that the teeth are in contact with the mouthguard and remain in the correct position as the stimulus is applied.

3.7.9 Monitoring

Oximetry and non-invasive arterial blood pressure recording are mandatory. Prolonged bradycardia and potential asystole may occur during seizure initiation, and ECG monitoring is highly valuable during ECT treatment and is at the discretion of the anaesthetist. Monitoring should continue throughout the seizure and recovery period.

3.7.10 Recovery

Recovery from the usual anaesthetic given for ECT may be prolonged by post-ictal impairment of consciousness. Oxygen and airway support needs to be provided by appropriate recovery staff until the patient's return of consciousness, and the patient's observations have returned to baseline. Blood pressure measurement and recording at 15 minute intervals during recovery is normal practice. Discharge from recovery can occur when the patient's observations are stable and with the agreement of the anaesthetist. Assisted transport back to the ward is required.

3.7.11 Drug interactions and regular medications

Relevant drug interactions and the use of regular medications at the time of ECT are described in detail in section 3.5.2.

3.7.12 Complications

Management of short-term complications occurring while the patient is still in the ECT suite is the responsibility of the anaesthetist. Complications include those arising from the anaesthetic or the physiological response to ECT as follows:

3.7.12.1 **Anaesthetic complications**

- Anaphylaxis to any of the agents used;
- Prolonged paralysis to suxamethonium due to pseudocholinesterase deficiency. This may be genetic or acquired, associated with severe malnutrition (e.g. anorexic patients), liver or renal disease;
- Malignant hyperpyrexia (MH) is a potential risk following the use of suxamethonium for ECT. Therefore the availability of a suitable supply of dantrolene is mandatory;
- Muscle pain due to suxamethonium is common after the initial treatment. Minor analgesics are effective in managing symptoms.

3.7.12.2 **Physiological Response to ECT**

The most common and serious complication is an acute hypertensive event. Appropriate intravenous anti-hypertensive drugs can be used to terminate persistent hypertension. Post-ictal agitation can occur and may pose risks to the staff as well as the patient. Appropriate sedatives may be effective. There is no evidence to recommend a time at which a seizure may be defined as clearly prolonged. Whilst the duration of the seizure needs to be considered in the context of the individual patient, if the seizure lasts 2-3 minutes it would be generally considered to be prolonged. The seizure should then be terminated by drugs administered by the anaesthetist.

3.7.13 Administration

The Consultant responsible for the anaesthetic service is encouraged to be a member of the ECT Committee. Anaesthetists are encouraged to take part in quality assurance activities and research.

3.8 Guideline 8 – ECT in children and adolescents

ECT is rarely used for children (under 16 years) and young people. It is not recommended for children and young people and should only be conducted in exceptional circumstances and following assessment by a Child and Adolescent Psychiatrist for younger patients.

3.8.1 Effectiveness and indications

There have been no controlled trials of ECT in children or adolescents. A comprehensive review in 1997 (Rey and Walter, 1997) examined 60 reports and highlighted that the overall quality of studies was poor, but more recent studies have been of better quality. In a systematic review, (Lima et al, 2013) concluded that ECT use in adolescents is considered a highly efficient option for treating several psychiatric disorders, achieving high remission rates, and presenting few and relatively benign adverse effects. There has been no suggestion that, across the range of disorders, the effectiveness of ECT in adolescents differs from that in adults.

3.8.1.2 **Indications for ECT in adolescents**

The presence of major depression (with or without psychotic features), mania, schizoaffective disorder, catatonia, schizophrenia or neuroleptic malignant syndrome;
AND
The presence of symptoms serious and disabling enough to threaten the patient's life (for example, refusal to eat or drink, or high and unrelenting suicide risk) or to cause persistent and grave disability;
AND/ OR
An illness that is resistant to other treatment or where the patient is unable to tolerate medication due to serious side-effects.

3.8.2 Consent

Refer to Guideline 3 and the *Mental Health Act 2009.*

Note: A person aged 16 years and over can consent to treatment.

3.8.3 Adverse events

The adverse events reported with ECT in young people were mostly mild and transient and in general were similar in type and frequency to those described in adults. The exception is that the rate of prolonged seizures may be higher than in adults. There have been no reported fatalities in children or adolescents attributable to ECT in South Australia.

3.8.4 Procedural aspects

ECT administration in young persons is generally similar to that in adults. There is little evidence on the optimal method of administration in adolescents, but the following points should be noted:

- All young patients require a personal examination which includes comprehensive psychiatric assessment and a psychiatric diagnosis according to a major classification system such as DSM-5 or ICD-10. A structured diagnostic interview is sometimes helpful.
- A specialist child and adolescent psychiatrist should always conduct an assessment of the patient for proposed ECT as part of the comprehensive psychiatric assessment.
- All patients require a comprehensive medical assessment. There are no absolute medical contraindications to ECT in young people. (There are the same medical contraindications as for adults)
- Consent must be carefully addressed. Every effort should be made to explain the procedure clearly to the young person and their family, including the benefits and risks, with due attention to the patient's age and developmental stage.

- The need for concurrent medication during the ECT course should be ascertained on a case-by-case basis.
- The seizure threshold for adolescents is often lower than that in adults.
- The site of electrode placement and frequency of ECT treatment are as for adults.
- The number of treatments usually required (6-12) is similar to that required by adults. The total number should be based on treatment response rather than a pre-determined plan.
- Improvement and side-effects should be monitored by regular clinical assessment, patient self-report, collateral observations from family and carers and weekly use of subjective and objective symptom rating scales.
- Monitoring should also include ongoing assessment of academic performance.
- Adolescents may require medication and/ or psychological interventions following the ECT treatment course, in order to maintain improvement and prevent relapse.
- Maintenance ECT may occasionally be considered when the initial improvement is not sustained despite other measures. Its role should be carefully considered by the treating psychiatrist/team and discussed thoroughly with the patient and family before implementing this approach in adolescents.

3.9 Guideline 9 – Continuation and Maintenance ECT

ECT is a highly effective treatment, particularly for depression. However, the risk of immediate relapse after an acute course of treatment is high if ECT treatment is stopped abruptly in the absence of any post-ECT relapse prevention strategy. Generally, prophylactic psychotropic medication should be introduced prior to the end of the acute course of ECT and continued afterward. Some patients may also require continuation and maintenance ECT to prevent relapse.

3.9.1 Continuation and maintenance ECT

Continuation ECT (C-ECT) is defined as treatment administered following a successful course of ECT, at a frequency of weekly to monthly, for up to six months after the index ECT course. It aims to prevent relapse of symptoms, and is sometimes administered together with medication for a short period, with the expectation that medication will provide effective prophylaxis in the long term. If patients remain well during this phase, the interval between treatments should be progressively extended.

Maintenance ECT (M-ECT) is administered at weekly to monthly intervals (and occasionally less frequently) more than six months after treatment of the acute illness. The objective is to prevent another episode or recurrence of illness. Both C-ECT and M-ECT are generally administered as outpatient treatments.

Clinical Practice Recommendations for Continuation and Maintenance ECT (Gill, Kellner, 2019) have been published and the following guidelines are based on these.

3.9.1.1 **Indications for continuation and maintenance ECT**

Factors to be considered when assessing whether a patient may benefit from continuation or maintenance ECT include the following:

- **Response to ECT during the initial course of treatment**. A clear and substantial benefit from a previous course of optimally-administered ECT is a prerequisite.
- **Illness acuity**. Because of the limited availability of ECT, its cost and the potential for adverse events associated with ECT and anaesthesia, continuation and maintenance ECT

should generally be reserved for individuals with a history of frequent, recurrent episodes of severe illness.

- **Resistance to alternative maintenance medication**. Candidates for continuation or maintenance ECT are likely to have a history of frequent relapse or recurrence despite having taken appropriate medications at adequate doses for an adequate duration.
- **Intolerance of alternative treatments**. It may be impossible to maintain treatment with sufficient doses of multiple medications for sufficient time to provide adequate prophylaxis against further episodes of illness.
- **Patient preference**. Some patients may choose continuation or maintenance ECT over other therapeutic approaches, in order to prevent relapse.

3.9.1.2 **Specific indications for continuation or maintenance ECT**

> **Recurrent depression**. Where other therapies are inadequate to maintain improvements.
> **Bipolar disorder**. Continuation or maintenance ECT may be effective, especially in patients with rapid-cycling bipolar disorder.
    - Concurrent medications should be reviewed by the treating psychiatrist on a case by case basis.
    - More frequent sessions of ECT may be required, compared to other indications, with inter-treatment intervals as short as one to three weeks. Mood switches can occur with ECT, at a rate similar to that experienced with antidepressant medication, but concurrent treatment with lithium may reduce this risk. In general, a mood switch is not an indication to stop ECT
> **Treatment-resistant schizophrenia**. Maintenance ECT is often required to sustain an initial response in patients with schizophrenia that is resistant to other therapy.
    - Many case reports have described the co-administration of clozapine and maintenance ECT: most have been positive, but have been limited in the duration of follow-up. A meta-analysis in 2016 showed an overall response rate in 192 patients across all case series, case reports, chart reviews, open label trials and the sole RCT of 66% when ECT was added to clozapine, with 32% relapsing upon cessation of ECT. The paucity of prospective well designed RCTs is a limitation in this evidence base (Lally et al 2016).
    - In general, maintenance ECT should be considered only after options for antipsychotic medication have been fully explored and administered in combination with an antipsychotic medication. Objective measures of illness may be helpful to establishing the benefit of ECT.

3.9.2 ECT schedule and administration

The optimal timing and frequency of continuation and maintenance ECT treatments is yet to be determined, and probably varies between individuals. An important aim is to extend the inter-treatment interval and minimise the cumulative number of ECT treatments in order to reduce the risk of cognitive side-effects.

9.2.1 **Current Evidence**

> Tapering the ECT at the end of the course. This is sometimes called “step-down” ECT and involves a gradually reducing frequency of ECT at the end of the index course. An example is to give an ECT one week after completion of the index course, then a second two weeks after the first, before moving to a continuation protocol if required. Relapse rates can be lower than with an abrupt cessation (Prudic 2013, Lisanby 2008, Odeberg 2008);
> Slow transition to a monthly regime. In a large prospective clinical trial of continuation ECT, undertaken by the Consortium for Research on ECT (CORE) group in the United States, they

used a slow transition method (Kellner et al, 2006). Continuation ECT was administered weekly for four weeks, every two weeks for two months and monthly thereafter.

> Adhering rigidly to a pre-defined transition schedule is problematic. For example, pursuing a fixed goal of an inter-treatment interval of one month, especially too quickly, may result in relapse, particularly in patients with rapid-cycling bipolar disorder or depressive illness and a history of early relapse after ECT.

> A flexible approach using clinically indicated variance in frequency is, recommended, with treatment schedules adjusted as needed in response to frequent review of the benefits of ECT, possible breakthrough symptoms, and careful assessment for adverse effects (Lisanby, 2008, Prudic 2013, Brown 2014). Kellner's PRIDE Study in 2016 used weekly ECT for 4 sessions, then based the use of further ECT on weekly assessment of HAM-D scores. This is a clinically sound strategy, but may be impractical in routine clinical services.

3.9.3 Cognitive side-effects of continuation of maintenance ECT

Existing evidence suggests that Mini-Mental State Examination (MMSE) scores remain unchanged or are increased during continuation or maintenance ECT (Rami-Gonzalez, 2003). However, neuropsychological testing of 11 patients having maintenance ECT for an average of three years for the treatment of depression, with an average of almost two months between treatments, identified deficits in learning and frontal function compared to controls (Rami-Gonzalez, 2003). Other studies on cognitive effects of ECT given over a person's lifetime have shown no evidence of any cumulative cognitive deficits (Semkovska 2010, Kirov 2016).

Patients receiving continuation or maintenance ECT must have regular cognitive assessment with a standardised instrument. This should occur every three to six months, or more frequently if significant or worsening deficits are identified, or the patient is on lithium.

Cognitive side-effects might be reduced by:

- Extending the interval between maintenance treatments to as long as possible.
- Reviewing electrode placement and using RUL if a BL placement is used.
- Using Ultra brief pulse RUL ECT.
- Regular review and adjustment of psychotropic medications.

3.9.4 Duration of maintenance ECT

The need for maintenance ECT must be regularly reviewed and documented. Plans to continue or cease treatment should be made in consultation with the patient and their family. Note: Under the *Mental Health Act 2009* consent for ECT is valid for a maximum of 3 months.

3.9.5 Use of medication in combination with Maintenance ECT

3.9.5.1 **Antidepressant medication**

The evidence suggests that the combination of mECT with antidepressant medication is more effective than mECT alone or antidepressant medication alone (Brown 2014). If mECT is to be given, it should be in conjunction with an antidepressant, unless there is specific contraindication such as poor tolerability of medication in an individual patient. The antidepressants that have been used have been nortriptyline (Sackheim 2001) and venlafaxine (Prudic 2013), but an antidepressant that has been shown to be effective and well-tolerated in that patient would be preferred.

3.9.5.2 **Lithium**

There is substantial evidence that lithium has a special role in post-ECT prophylaxis (Rasmussen 2015). This is usually in combination with an antidepressant, and should be considered as an augmenting strategy if a patient has relapsed on antidepressant monotherapy, including as a step before mECT is recommended. For some patients, e.g. with a bipolar disorder, lithium monotherapy may be appropriate. Lithium-antidepressant combinations have been safely used in combination with

mECT (Kellner, 2016 PRIDE Study), although close monitoring for cognitive side effects is required. Kellner's study withheld the lithium dose on the night prior to ECT, and aimed to maintain the level at the lower end of the therapeutic range.

3.9.6 Documentation and legal requirements

3.9.6.1 **Voluntary Patients: capable of giving consent**

In addition to the usual requirements for consent to treatment and maintenance of an adequate medical record, an entry must be made in the patient's file whenever consent is obtained describing:

- The continuing need for ECT and the response.
- Discussions with the patient when capable of giving consent and, if appropriate, the family on the risk-benefit of maintenance treatment and the option of ceasing treatment.

3.9.6.2 **Third Party Consented Patients**

Additional documentation is required for patients who do not have capacity to consent to maintenance ECT. Refer Guideline 3.

3.10 Guideline 10 – Training, Credentialing and Clinical Privileging

ECT is a medical procedure that requires specialist medical, nursing and anaesthetic knowledge and skills. A specialist qualification in psychiatry, or in nursing, is not sufficient to deliver the safe and effective administration of ECT.

3.10.1 Definitions

Training

Training refers to the formal process of gaining specialist knowledge and skills. Medical and nursing staff involved in administering ECT must have appropriate theoretical and practical training. Formal programs therefore must be provided/made available to medical and nursing staff for training/retraining in ECT delivery. The other medical practitioner, who must be present for the ECT procedure, is a specialist anaesthetist or, in the absence of a specialist anaesthetist, a registered medical practitioner accorded with privileges in anaesthesia. The anaesthetist must have training and experience in anaesthesia for ECT. Where anaesthetic registrars are administering the anaesthetic for ECT delivery, adequate supervision and support must be provided by a specialist anaesthetist.

Credentialing

Credentialing of medical and nursing clinicians refers to the formal process used to verify the qualifications, experience, professional standing and other relevant professional attributes. The purpose of credentialing in the practice of ECT is to formally establish the clinician's competence, performance and professional suitability to provide safe, high quality ECT within specific organisational environments. Psychiatrists who are to provide ECT in a hospital must be specifically credentialed to undertake this procedure. There are specific requirements for training of psychiatry trainees, psychiatrists and nursing clinical staff, involved in the delivery of ECT in South Australian facilities, outlined in the section below.

3.10.2 Psychiatry

3.10.2.1 **Trainees**

The 2012 Fellowship Program requires all trainees to complete an Entrustable Professional Activity (EPA) in ECT during Stage 2 of their training. In order to attain this EPA, the trainee must demonstrate proficiency in all the expected tasks in management of patients receiving ECT and in the administration of ECT, and will need to attend as many supervised ECT sessions as are required to achieve competence in this EPA. Competence is demonstrated when the trainee has shown sufficient aspects of the knowledge, skills and attitudes described in the EPA, including through three formal workplace based assessments.

3.10.2.2 **Initial Credentialing of Psychiatrists for ECT**

The completion of Fellowship training is necessary but not sufficient for a consultant psychiatrist to be credentialed in the administration of ECT. To be credentialed in ECT the psychiatrist must demonstrate that they have attained advanced ECT competencies having completed the following:

- Attendance at a formal ECT training course for psychiatrists in ECT within the last five years; and having received supervised training in ECT at that site from a psychiatrist credentialed in ECT The supervising psychiatrist must be able to confirm in writing to the Director of ECT that the psychiatrist is competent to perform ECT without supervision; or
- Being currently credentialed in ECT at another psychiatric hospital or facility, or having been so credentialed within the last 12 months, with confirmation in writing from the Director of ECT of that service that the psychiatrist is competent in best practice ECT. The Director of ECT at the new service will usually arrange for a few sessions of supervised ECT to confirm their competence.

3.10.2.3 **Maintaining Clinical Privileges in ECT**

For a psychiatrist to maintain ongoing credentialing in ECT they need to:

a) Maintain currency of ECT practice by delivering a minimum of 20 ECT treatments in the previous 12 months, and;

b) Engage in continuing professional development in ECT through participation in a range of the following activities related to ECT for at least 10 hours per year. This can be verified by providing evidence of ECT-related CPD to the Director of ECT, e.g. via their RANZCP CPD record, or equivalent:
   i) Participation in an ECT Peer Review Group;
   ii) Provision of formal second opinions about ECT practice;
   iii) Attendance at seminars, conferences and workshops on ECT;
   iv) Presentations given at seminars, conferences, and workshops on ECT;
   v) Completion of other CME activities in ECT;
   vi) Involvement in teaching and/or supervision of ECT of psychiatry trainees or other psychiatrists;
   vii) Completion of Practice Improvement Activities, such as clinical audits, quality improvement, peer review of research manuscripts and undertaking research in ECT; and
   viii) Any other CPD activity approved by the Director of ECT.

c) Comply with the ongoing credentialing requirements of the health services in which the ECT Facility is located, including intervals between re-credentialing in ECT.

The SA Branch of the RANZCP Section of ECT and Neurostimulation (SEN-SA) has developed criteria for credentialing that operationalise these Guidelines. These criteria will be periodically updated by SEN-SA and the current version can be obtained from the SA Branch Office of the RANZCP.

The RANZCP SEN-SA provides training and education programs/workshops in South Australia and fosters and encourages the participation of clinicians. The SEN-SA holds an annual ECT Workshop that satisfies the requirement for an advanced skills workshop for initial credentialling. The RANZCP SEN-SA organises a biennial ECT and neurostimulation conference that meetings CME requirements for maintenance of credentialing in ECT, and the RANZCP SEN curates ECT sessions at every RANZCP Congress.

3.10.3 ECT Nurse Coordinators

ECT nurse coordinators must have the necessary training and experience to enable them to perform the various roles required in the ECT suite. There are minimum requirements to be met to fulfil the ECT Nursing Coordinator's role. The ECT coordinator or delegate must be in attendance at each treatment session (except when ECT is given in an emergency).

3.10.3.1 **Requirements**

To be credentialed as an ECT nurse coordinator the following criteria must be met:

i) Be a registered nurse with Mental Health Nursing experience;
ii) Demonstrate knowledge of protocols, procedures and relevant documentation;
iii) Have attended a formal training course in ECT;
iv) Have attended, and participated in, at least 10 treatments. One of these should be a titration;
v) Have recent work experience in ECT;
vi) Be aware of the relevance of the *Mental Health Act 2009*, other documents and guidelines framing the delivery of ECT in SA, and opportunity for voluntary participation in the South Australian ECT Nurses Special Interest Group (SAENSIG); and
vii) Participate in ECT peer review.

3.10.3.2 **Training**

Training courses for nurses should be developed within the nursing profession, and be approved by the Office of the Chief Psychiatrist (OCP). These courses should cover all aspects of the ECT including:

- Patient focused care including patient and family education.
- The workup for ECT.
- ECT treatment.
- Indications and contraindications including higher risk situations.
- Issues of concurrent medications.
- Potential adverse events.
- ECT device operations. Stimulus dosing guidelines and protocols.
- Ongoing monitoring of response to treatment.
- Legal issues and consent.
- Role of psychiatrists, anaesthetists and others assisting with ECT.

3.11 Guideline 11 – Nursing and Coordination Requirements for ECT

3.11.1 Care is safe

In South Australia, nurses work with the medical team and play a key role in the delivery of safe treatment and care of the highest standard for patients receiving ECT. The functions nurses perform may vary dependent on the ECT site and team, their specific clinical role, their qualifications and their experience. Important considerations for all nurses involved with patients for the preparation for, delivery of and recovery from ECT are described below.

3.11.1.1 **Care is person centred means:**

- Treating each person as an individual.
- Protecting a person's dignity.
- Respecting a person's rights and preferences; and
- Developing a therapeutic relationship between the care provider and care recipient which is built on mutual trust and understanding.

A nurse's ability to deliver person-centred care is determined by the attributes of the nurse; their nursing practice; and the care environment.

- Attributes of a nurse that enable her/him to deliver person-centred care include professional competence (the knowledge, skill, attitudes, values and judgments required); well-developed interpersonal skills; self-awareness; commitment to patient care; and strong professional values.
- Nursing practices that contribute to person-centred care include those that: acknowledge peoples' cultural and spiritual beliefs, preferences and rights; empower people to make informed decisions about their care; provide a sympathetic presence; and provide holistic care.

3.11.1.2 **Trauma Informed Care & Practice (TICP)**

The nursing care of a person having ECT will be part of a system and service which:

- Recognise that mental health treatment environments are often traumatising, both overtly and covertly.
- Recognise that coercive interventions cause traumatisation/re-traumatisation – and avoid.
- Recognise that some mental health staff are uninformed about trauma, do not recognise it and do not treat it.
- Recognise high rates of complex PTSD & other psychiatric disorders related to trauma exposure.
- Presume that every person in a treatment setting may have been exposed to abuse, violence, neglect or other traumatic experiences.
- Provide early and thoughtful diagnostic evaluation with focused consideration of trauma in people with complicated, treatment resistant illness.
- Value consumers in all aspects of care.
- Are inclusive of the survivor's perspective.
- Respond empathically, be objective and use supportive language.
- Offer individually flexible plans or approaches.
- Avoid all shaming/humiliation.
- Provide awareness/training on re-traumatising practices.
- Are institutions that are open to outside parties: advocacy and clinical consultants.
- Provide training and supervision in assessment and treatment of people with trauma histories.
- Focusing on what happened to the client rather than what is 'wrong with you' (i.e. a diagnosis).
- Ask questions about current abuse.
- Address the current risk and develop a safety plan for discharge.

3.11.1.3 **Sexual Safety**

People having ECT are acutely unwell and may be more vulnerable. Nurses and clinicians within the service should foster an open and compassionate culture which supports the sexual safety needs of all people. Nurses and clinicians providing care to people undergoing ECT need to respond appropriately and sensitively to sexual safety issues with high regard for their privacy, dignity, past trauma, cultural background, gender, religion, sexual identity, age and nature of their mental health illness. The service will recognise the challenges and barriers faced by the lesbian, gay, bisexual, transgender, questioning and intersex (LGBTQI) community and consideration is given to moving away from heteronormative language and assumptions.

3.11.1.4 **The principles of recovery-oriented mental health practice**

Ensure that mental health services such as the provision of ECT are delivered in a way that supports the recovery of mental health consumers.

The principals are:

- Uniqueness of the individual

Empowerment of individuals so they recognise they are at the centre of the care they receive. An acceptance that recovery outcomes are personal and unique for each individual and go beyond an exclusive health focus to include an emphasis on social inclusion and quality of life. A recognition that recovery is not necessarily about cure but is about having opportunities for choices and living a meaningful, satisfying and purposeful life, and being a valued member of the community.

- Real choices

Individuals supported to build on their strengths and take as much responsibility for their lives as they can. Ensuring there is a balance between duty of care and support for individuals to take positive risks and make the most of new opportunities. Supporting and empowering individuals to make their own choices about how they want to lead their lives and acknowledging choices need to be meaningful and creatively explored.

- Attitudes and rights

Instils hope in an individual about their future and ability to live a meaningful life. Supports individuals to maintain and develop social, recreational, occupational and vocational activities which are meaningful to them. Involves listening to, learning from and acting upon communications from the individual and their carers about what is important to the individual. Promotes and protects an individual's legal, citizenship and human rights.

- Dignity and respect

Involves sensitivity and respect for each individual, especially for their values, beliefs and culture. Involves being courteous, respectful and honest in all interactions. Challenges discrimination wherever it exists within our own services or the broader community.

- Partnership and communication

Involves working in positive and realistic ways with individuals and their carers to help them realise their own hopes, goals and aspirations. Acknowledges that each individual is an expert on their own life and that recovery involves working in partnership with individuals and their carers to provide support in a way that makes sense to them. Values the importance of sharing relevant information and the need to communicate clearly.

- Evaluating recovery

The mental health system reports on key outcomes that indicate recovery. These outcomes include housing, employment, education, social and family relationships, health and wellbeing. Services demonstrate that they use the individual's experiences of care to inform quality improvement activities. Individuals and their carers can track their own progress.

3.11.1.5 **Equitable access to health care, including Culturally Safe Care**

Ensuring equitable access to health care means taking into account the impact of various factors:

- Socio-economic status (education levels, health literacy and housing);
- Physical (structural, design, distance, transport);
- Systemic (planning, organisational culture, appropriate staff); and
- Care (person centred, culturally safe and respectful and trauma informed care).

Outpatient and inpatient consumers have the right to be informed about health services, costs, and treatment options available to them, and to receive this information in a way that they can understand.

Use language appropriate to consumer needs. For further advice, refer to the Equity of Access to Health Care Policy Directive.

3.11.1.6 Aboriginal and Torres Strait Islander Peoples

Health services have been striving towards building access to culturally competent services to improve health outcomes for Aboriginal and Torres Strait Islander peoples. Aboriginal Mental Health Clinical Practice Guideline and Pathways assists non-Aboriginal mental health workers to build understanding of culturally appropriate ways of working with Aboriginal mental health consumers:

- Build rapport and don't always focus on the medical procedure - take a person's spiritual wellbeing into account, and use a holistic approach.
- Actively involve family and carers, and advise them of services for support, assistance and respite.
- Be aware of non-verbal communication and language. Facilitate communication through interpreters, and seek the help of Aboriginal Liaison Officers, where appropriate.
- Create a culturally safe environment. Have staff trained in Aboriginal culture who act in a respectful way.
- Consider discharge / transfer of care planning strategies to minimise stress for the consumer and their family.

3.11.2 The ECT Nurse Coordinator

3.11.2.1 Educative role

Patients and carers, focusing on generating an informed understanding of ECT thus contributing to the process of gaining informed consent. The ECT coordinator ensures the availability of written materials and offers to show educational audio-visual aids and be available to answer questions and concerns. Community and health care professionals. Engaging other parties in understanding ECT as a treatment modality, providing education either one on one or as a group to the tertiary sector and in the health industry, clarifying attitudes, reducing stigma and reinforcing ECT as a life-saving treatment option.

3.11.2.2 Clinical knowledge and technical skills

Quality in practice, and contemporary methods relating to ECT requires continuous review to provide safe and effective care. ECT nurses must have competency and skills in:

- Setting up for the procedure;
- Induction of the anaesthetic;
- Airway management of an unconscious person;
- Medications used in anaesthesia;
- Recognising deteriorating patient;
- Post anaesthesia recovery; and
- Anaesthesia emergencies.

Regular attendance at life support and ECT training courses ensures currency of practice, participation in research activities and projects, proficiency in the use and maintenance of equipment – ability to diagnose and rectify faults. Issues with EEG traces and an inability to reach a satisfactory impedance level are due to wiring, hardware, electrode or contact faults, which require rapid and decisive response and resolution.

ECT nurses have an in depth understanding of:

- Clinical indicators for ECT;
- The risks and side effects;
- Technical placement of electrodes; and
- Dosing schedules, procedural algorithms and stimulus dose protocols.

3.11.2.3 **Coordination and liaison**

ECT Nurse Coordinators liaise with management and interact with key stakeholders and manage new referrals and facilitate in the medical workup. ECT coordinators require well developed interpersonal skills to communicate and liaise with health professionals, community workers, psychiatrists, theatre staff, and with suppliers, purchasing, biomedical engineers ensuring all equipment is maintained, electrically tested and tagged and in good working order.

3.11.2.4 **Manages the workforce**

The ECT Nurse Coordinators ensure the level of staffing reflects the complexities of the list and request additional staffing as required. They ensure staff have appropriate skills and qualifications to work in the area. In conjunction with the Director of ECT, the Nurse ECT Coordinator maintains a record of medical officers credentialed to work in the area. The Nurse ECT Coordinator ensures patients are asked permission to allow students or visiting clinicians to observe their treatment – privacy, respect and confidentiality are to be maintained.

3.11.2.5 **Manage flow and triage**

The ECT Nurse Coordinator ensures the safe journey and smooth transition through the service. The coordinator has global awareness of inpatient units, in terms of ward based systems and demand ensuring appropriate patient flow. Clinical prioritisation ensures that the safety and wellbeing of all patients and staff is maintained so that delivery of ECT to a patient whose behaviours place them at risk, are managed in a contemporary manner. Access and egress issues for community patients are managed. Sound management principals ensures the delivery of the ECT service is undertaken in the most effective, efficient and safe manner that upholds positive outcomes for patients and their families and promotes the efficient use of workforce and recourses.

3.11.2.6 **Quality improvement, evaluation and monitoring**

The ECT Nurse Coordinator monitors patient outcomes, adverse and potentially adverse effects of ECT, reports on incidences, assesses and minimises risk. Ensures staff are able to access policy and procedure frameworks, including workplace health and safety and infection control, and comply with same. Keeps statistics and regularly reports to management.

3.11.3 Pre-ECT Nursing Actions

- Prepare treatment area, check equipment and medications, ensure supply of consumables.
- Prepare ECT list prioritising patients with diabetes, with disturbed behaviour/mental state, or those who may be unable to maintain their fasting status. Inpatients are usually done before day patients.
    - Comprehensive nursing assessment
    - Ensure person understands fasting requirements (can have water, no more than 150mls per hour up to 2 hours before ECT.)
    - Apply an ID band using 3 identifiers
    - Ensure spare ID stickers are available
    - Complete and sign pre-treatment checklist including
- Fasting
- Ensure patient has empty bladder and record time last voided
- Baseline vital signs, report abnormalities to MO
- Hygiene attended to, hair clean, no clips or accessories
- Relevant medications such as antihypertensives, inhalers and anti-reflux medication given
- Personal items stored safely
- Suitable attire is worn (short sleeve loose top)
- Excess jewellery and piercings are removed
- Informed consent has been obtained
- Note if diabetic and current BGL

- Note pressure area risk score
- Note if pregnant
- Any additional precautions including for infection control:
    - to be escorted to ECT by a nurse known to them
    - ISBAR handover including risk assessment

3.11.4 Nursing Actions during Treatment

- Greet and introduce patient to staff
- Receive ISBAR handover. Ensure pre-procedure checklist as above has been completed including that medications have been given and withheld as required, fasting status and presence of valid consent
- Remove and label hearing aids and glasses
- Dentures usually left in and removed by anaesthetist if required
- Management of an environment conducive to the patient's privacy, comfort and wellbeing by minimising distractions, excessive noise and conversations (e.g. 'silent cockpit') The nurse in attendance must demonstrate an ability to empathise, read cues and be the patient's advocate. At times it can be necessary to intervene when the patient is not coping with the situation.
- Inform patient before undertaking each intervention. Provide explanations and answer questions. Include supporting family and carers who are present.
- Team Time Out. All staff to pay attention and check their documentation. No other activities to be undertaken at this time. Team members are to agree on the following information.
    - Identity – patient to state name and date of birth
    - This is to match information on the wrist band
    - Which must match all case notes and electronic devices
    - The treating psychiatrist and assisting medical officer/ECT coordinator to confirm electrode placement and dosage with written orders
    - Team time out is documented to have occurred
- Reassure and support patient while induction occurs
- The ECT coordinator may be required to undertake the following:
    - Assist anaesthetist with intravenous cannulation, application of physiological monitoring and pre oxygenation. Ensure bite block is available and used
    - Application of EEG monitoring and take 10 second baseline recording
    - Implement isolated limb technique
    - Assist psychiatrist in impedance test and delivery of stimulus
    - Observation of seizure
- Remain with patient during seizure to protect them if seizure is brisk
- Documentation of all aspects of care

3.11.5 Post-Treatment Nursing Actions

3.11.5.1 **Immediately post ECT**

The patient will be transferred to post-anaesthesia care unit (PACU) stage 1 when they are spontaneously breathing and rousable.

- Recovery nurse receives ISBAR handover from anaesthetist. Oxygen is administered and secretions are suctioned away if present
- Assess level of consciousness, gag reflex and airway patency, chin lift may be required
- Vital signs as per local protocol, minimum 15 minutely
- Assess and evaluate APGAR score e.g. activity, respiration, circulation, neurological status and colour

- Observe for restlessness, confusion or postictal agitation
- Report abnormalities to anaesthetist
- Offer pain relief and observe for nausea
- Remove IV access
- Document all care
- Organize transfer out of PACU stage 1.

3.11.5.2 **Post recovery**

- Nurse to escort back to ward or PACU stage 2 for day patients
- Allow to rest as required
- Re-establish food and fluid intake
- Give medication due
- Regular monitoring and reporting on mental state and progress
- Day patients
- Assessment of criteria to discharge home – mental state, gait, orientation, stable vital signs
- Patient is required to be escorted home and remain with a responsible adult for 24 hours
- Written discharge instructions to be given
- Ensure patient has adequate follow up in the community

3.11.5.3 **Duties between treatments**

- Cleaning of equipment and environment, disposable consumables to be used where possible
- Restocking equipment
- Attend ECT ward round and committee meetings
- Safety and quality activities and evaluation of service including
    - ECT statistics and data collection provided for relevant departments
    - Patient and carer questionnaires
- Develop guidelines and provide education.

3.12 Guideline 12 – ECT Facility Requirements

The *Mental Health Act 2009* provides for inspection by the Chief Psychiatrist of ECT facilities within any public hospitals incorporated under the *Health Care Act 2008* and private hospitals licensed under the *Health Care Act 2008.* Facilities will be inspected by the Office of the Chief Psychiatrist at least once every three years [refer to *ECT Inspection Report Checklist for Announced Inspections*.] This formal inspection is in addition to unannounced inspections. The formal inspection will be assessed against requirements and the *Electroconvulsive Therapy Chief Psychiatrist Standard*.

Requirements for ECT premises

The following information establishes the criteria against which services will be assessed, based on the four criteria, setting the minimum acceptable standard for premises at which ECT is to be performed - and referred to as the key criteria:

3.12.1 Suitability of the premises for ECT procedure

Suitability of the premises will be assessed against the following principles:

a) The premises facilitate the safe administration of ECT.
b) Privacy needs of persons receiving ECT are maximised.
c) ECT is able to be scheduled at a time that meets patient care needs.

All areas/suites where ECT may be performed are to be inspected. This includes operating suites for services that use them. The recommended requirement for an ECT service is three rooms:

a) A waiting room of sufficient size to accommodate the rate and number of persons treated per session with access to toilet facilities.
b) A treatment room, including scrub-up basin/sink, oxygen supply, emergency oxygen supply, suction, emergency suction, adequate lighting, emergency lighting and telephone/intercom.
c) A recovery room of sufficient size to accommodate the rate/flow of persons treated per session, including scrub-up basin/sink, oxygen supply, emergency oxygen supply, oxymeters, suction, emergency suction, adequate lighting, emergency lighting, telephone/intercom and access to toilets in privacy.

3.12.2 Suitability of the ECT procedures in place

The Clinical Director (ECT) in each facility must have evidence of the following procedures in place and available for inspection by the Office of the Chief Psychiatrist:

3.12.2.1 **Procedures for ECT staff credentialing and mandatory training**

i) The Clinical Director (ECT) must have privileging rights, and be currently credentialed in ECT administration, and be prepared to supervise in EPA program for trainees;
ii) All psychiatrists responsible for administering ECT must be privileged in the facility and currently credentialed in ECT administration;
iii) The ECT Nurse Coordinator must have completed an approved ECT training course, be credentialed in ECT administration, and be able to supervise nursing staff credentialing;
iv) A register of practitioners with privileges in ECT, and their qualifications, is to be maintained by the clinical director (ECT);
v) As a minimum requirement all nursing and medical staff must undergo Basic Life Support (BLS) training every two years.

3.12.2.2 **Demonstrable systems must be in place to manage physical and psychiatric emergencies**

3.12.2.3 **Quality improvement plan for ECT services for various aspects of quality in use of ECT, and evidence of patient outcomes as a result of treatment**.

3.12.2.4 **Documentation of ECT procedure including**

i) Notification of Emergency ECT treatments to the Office of the Chief Psychiatrist within 24 hours of the procedure in accordance to the *Mental Health Act 2009*.
ii) Record patient ECT data (assessment and treatment) in the electronic databases provided.

3.12.2.5 **Reporting**

i) Report ECT data annually.
ii) Patient ECT records must be documented in an electronic hospital database available for de-identified and aggregated reporting purposes.
iii) Adverse incident reporting and management.

3.12.3 Suitability of equipment to be used in the performance of ECT

The minimum requirements are:

i) ECT machine must be listed with the Therapeutic Goods Administration, must provide EEG monitoring and recording of the seizure, permit a charge of up to 1008 mc to be given, and be capable of delivering stimulus dose titration.
ii) Documented servicing of the ECT machine must occur at least once a year.

iii) Anaesthetic equipment, resuscitation equipment and emergency drug supplies to be in accordance with ANZCA's technical Standard PS55: Recommendations on Minimum Facilities for Safe Administration of Anaesthesia in Operating Suites and other anaesthesia locations (ANZCA 2012).
iv) Demonstrable systems for the maintenance and servicing of anaesthetic and resuscitation equipment are in place.
v) Demonstrable systems for regular replacement of out-of-date and missing anaesthetic and emergency drugs are in place.
vi) A demonstrable infection control policy is in place.
vii) Annual review of anaesthetic and emergency drugs kept in the ECT service is conducted by a specialist anaesthetist.
viii) A designated person, such as the ECT coordinator, is to be responsible for these duties.

3.12.4 Staffing of ECT services

The minimum requirements are:

i) Each facility must have a qualified psychiatrist and a registered nurse with training, and experience in the administration of ECT. There must be a designated Clinical Director (ECT) and an ECT coordinator.
ii) Only a registered, accredited medical practitioner is permitted to perform ECT; the practitioner must be a qualified psychiatrist or advanced psychiatric trainee and have clinical privileges for administration of ECT at the site. Advanced psychiatric trainees performing ECT must do so only under the effective supervision of a Consultant Psychiatrist who is credentialed to administer ECT at the treatment facility. Refer to 3.10 *Guideline 10 – Training, Credentialing and Clinical Privileging*, for a full description of requirements.
iii) Nursing staff numbers at each session are to be in accordance with ANZCA's PS4 Recommendations for Post Anaesthesia and Recovery (ANZCA PS4 2018) as follows:
    - Staff trained in the care of patients recovering from anaesthesia must be present at all times.
    - A registered nurse trained in recovery area care should be present at all times.
    - Trainee nurses and registered nurses who are not experienced in the care of patients recovering from anaesthesia must be supervised.
    - The ratio of registered nurses to patients needs to be flexible so as to provide no less than one nurse to three patients, and one nurse to each patient who has not recovered protective reflexes or consciousness.

4 Implementation and Monitoring

The Office of the Chief Psychiatrist will document ECT suite inspection findings and case reviews, in addition to recommendations from reviews of patient reports received by the Prescribed Psychiatric Treatment Panel. That data will inform regular and periodic evaluation of service improvement and the effectiveness of this Guideline and the Standard.

5 National Safety and Quality Health Service Standards

							
National Standard 1 Clinical Governance	National Standard 2 Partnering with Consumers	National Standard 3 Preventing & Controlling Healthcare-Associated Infection	National Standard 4 Medication Safety	National Standard 5 Comprehensive Care	National Standard 6 Communicating for Safety	National Standard 7 Blood Management	National Standard 8 Recognising & Responding to Acute Deterioration
☒	☒	☒	☒	☒	☒	☐	☒

This Guideline is relevant to National Standards 1, 2, 3, 4, 5, 6 and 8, described below.

Standard 1 – Clinical Governance
The clinical governance, and safety and quality systems that are required to maintain and improve the reliability, safety and quality of health care, and improve health outcomes for patients.

Standard 2 – Partnering with Consumers
The systems and strategies to create a person-centred health system by including patients in shared decision making, to ensure that patients are partners in their own care, and that consumers are involved in the development and design of quality health care.

Standard 3 – Preventing and Controlling Healthcare-Associated Infection
The systems are in place to support and promote prevention and control of healthcare-associated infections, and improve antimicrobial stewardship.

Standard 4 – Medication Safety
The systems and strategies to ensure that clinicians safely prescribe, dispense and administer appropriate medicines to informed patients, and monitor use of the medicines.

Standard 5 – Comprehensive Care
The integrated screening, assessment and risk identification processes for developing an individualised care plan, to prevent and minimise the risks of harm in identified areas.

Standard 6 – Communicating for Safety
The systems and strategies for effective communication between patients, carers and families, multidisciplinary teams and clinicians, and across the health service organisation.

Standard 8 – Recognising and Responding to Acute Deterioration
The systems and processes to respond effectively to patients when their physical, mental health or cognitive condition deteriorates.

6 Definitions

Substitute Decision Maker (SDM) under a particular advance care directive, means a substitute-decision maker under the *Advance Care Directive Act 2013*

7 References, Resources and Related Documents

Aboriginal Mental Health Clinical Practice Guideline and Pathways

Advance Care Directives Act 2013

Consent to Medical Treatment and Palliative Care Act 1995

Guardianship and Administration Act 1993

Electro-Convulsive Therapy Chief Psychiatrist Standard 2020

Electroconvulsive Therapy Policy Guideline – Guiding Document - Academic References

Electroconvulsive Therapy Position Statement 74 Royal Australian and New Zealand College of Psychiatrists October 2019

Equity of Access to Health Care Policy Directive

Health Care Act 2008

Mental Health Act 2009

MRMHA – L – Consent for ECT

MRMHA – M – Emergency ECT Without Consent

National Practice Standards for the Mental Health Workforce 2013

National Safety and Quality Health Service Standards, 2nd Edition, 2017.

National Safety and Quality Health Service User Guide for Health Services Providing Care for People with Mental Health Issues 2018

National Standards for Mental Health Services. 2010

Royal Australian and New Zealand College of Psychiatrists professional practice guidelines for the administration of electroconvulsive therapy 2019

8. Document Ownership and History

Document developed by: Office of the Chief Psychiatrist, Department for Health and Wellbeing

Review date: 11 June 2023, unless an earlier review is required.

Document location: SA Health internet – "policies" and SA Chief Psychiatrist website.

Objective Reference: a1777475

Previous edition: 2013-13690

Valid from: 11 June 2020

8.1 Guideline Development

The development of the South Australian Guidelines for ECT (2014) was led by the Office of the Chief Psychiatrist (OCP) together with the SA ECT Advisory Committee and Expert Reference Group. These Guidelines were built on the previous SA ECT Practice Guidelines (RANZCP, SA 2003) and the ECT Guidelines published by other Australian jurisdictions.

The ECT Advisory Committee and Reference Group membership included local, state and national clinical discipline experts, public and private sector service management, government policy and information technology experts, and consumers and carers with lived experience expertise. The evidence-base used in these ECT Guidelines was determined on the clinical recommendations, judgement, experience and consensus of the ECT Advisory Committee and Expert Reference Group.

These Guidelines were developed to be disseminated and implemented in the South Australian healthcare facilities that administer ECT treatment. The implementation and impact of the Guidelines are to be evaluated and the guidelines revised regularly.

This version has been reviewed by ECT services, clinicians as well as consumer and carer advisers and members of the Prescribed Psychiatric Treatment Panel which is established under section 41 of the *Mental Health Act 2009*.

Acknowledgments

The South Australian Department for Health and Wellbeing (DHW) acknowledges the South Australian Branch of Royal Australian and New Zealand College of Psychiatrists (RANZCP SA Branch) for their commitment to excellence and best practice in the administration of ECT to the South Australian community. The first SA ECT Guidelines were developed by the RANZCP SA Branch, ECT Subcommittee in 2003. DHA acknowledges the generosity of the NSW Department of Health for permission to use the *Policy Directive and Guidelines: Electroconvulsive Therapy: ECT Minimum Standards of Practice in NSW* (2011) in this development.

The DHW and the OCP wish to acknowledge the generosity of Professor Colleen Loo, who willingly provided her knowledge and expertise in reviewing the SA ECT Guideline drafts, participated in the March 2013 ECT Guidelines Workshop, and assisted in the development of clinical consensus.

South Australian ECT Advisory Committee
Chair: Dr Panayiotis Tyllis, Chief Psychiatrist, Mental Health Strategy Policy and Legislation.
Membership (2012-2014): Dr Patrick Clarke, Mr Don Davidson, Ms Lyn English, Dr Shane Gill, Ms Elizabeth Kaye, Dr Caroline Lake, Dr Brian McKenny, Ms Mary Merchant, Ms Sandra Miller, Dr George Rawson, Ms Bronwyn Scott, Ms Tracey Siebert, Mrs Patricia Sutton, Dr Sue Waite, Ms Jeanette Walsh, Dr Ivan Ward.

ECT Expert Reference Group
Membership (2012-2014): Dr Naz Barbato, Dr Taryn Cowain, Dr Nathan Davis, Dr Belinda Edwards, Mr Frank Garreffa, Mr Chris Hofmeyer, Mr Ian James, Dr Simon Jenkins, Mr David Lindsay, Professor Colleen Loo, Dr Randall Long, Ms Julia McMillan, Dr Glenys Miller, Ms Ann O'Donnell, Dr Tom Paterson, Mr Alan Scarborough, Ms Magda Simon, Ms Carol Turnbull, Ms Emma Willoughby, Mr Peter Whitehouse.

Prescribed Psychiatric Treatment Implementation Group
This update to the 2014 Guideline was made by the *Prescribed Psychiatric Treatment Implementation Group*, comprising the Chairs Dr Aaron Groves and Dr Brian McKenny, Ms Kay Anastassiadis, Dr David Ash, Ms Tanya Blazewicz, Mr Don Davidson, Dr Anthony Dinesh, Dr Shane Gill, Dr Glenn McCulloch, Ms Janne McMahon, Ms Mary Merchant, Dr Titus Mohan, Dr Tom Paterson, Mr Ben Sunstrom and Dr Sue Waite.

Further review has also been provided by the members of the Prescribed Psychiatric Treatment Panel: Dr John Brayley, Dr Tom Paterson, Dr Shane Gill, Dr Belinda Edwards, Ms Judy Smith AM, Dr Cecil Camilleri, A/Professor Bernadette Richards and Ms Tara Simpson.

Approval Date	Version	Who approved New / Revised Version
11 June 2020	V1.0	Chief Psychiatrist Dr John Brayley