SA Health

Management of Acute Presentations Related to Methamphetamine Use Clinical Guideline for Adults

Version 3.0

Approval date: 02/05/2024

Government of South Australia

SA Health

Contents

Management of Acute Presentations Related to Methamphetamine Use Clinical Guideline for Adults

1. Name of clinical guideline

Management of Acute Presentations Related to Methamphetamine Use Clinical Guideline for Adults

2. Introduction

Disclaimer

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

SA Health does not accept responsibility for the quality or accuracy of material on websites linked from this site and does not sponsor, approve or endorse materials on such links.

Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

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.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for:

- discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes the use of interpreter services where necessary,
- advising consumers of their choice and ensure informed consent is obtained wherever possible.
- providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct and
- documenting all care in accordance with mandatory and local requirements.

Context to guideline

Acute intoxication with amphetamine-type stimulants such as methamphetamine can be associated with disturbed behaviour including agitation and psychotic symptoms such as delusions and hallucinations. The possibility of adverse cardiovascular and cerebrovascular effects makes it important that a full assessment is undertaken to guide further management.

Agitated behaviour can be hazardous for all involved, including patients, staff and visitors. Therefore it is imperative to adopt a safe and structured approach for the assessment and management of agitated patients in accordance with the principles of the SA Health Preventing and Responding to Challenging Behaviour Policy Directive and Procedure and the Mental Health Act 2009.

This guideline aims to promote best practice management of adult patients presenting to Emergency Departments or equivalent settings with disturbed behaviour or medical conditions which are probably related to the use of methamphetamine or related substances.

These guidelines apply to adults (18 years and over) only.

Amphetamine type substance use in adolescents is often associated with complex issues, and there is little research evidence related to behavioural disturbance from amphetamine type substance use in adolescents. Seek advice from the Women's and Children's Hospital regarding management in this age group.

The aim is to minimise the risk of harm, while respecting the rights of the patient by using the least restrictive means to de-escalate behaviour.

There are two companion documents to these guidelines:

"What is Methamphetamine?" provides information for patients and their families on the effects of methamphetamine, withdrawal and recovery.

"Management of patients presenting with acute methamphetamine-related problems: evidence summary" provides a summary of the evidence underlying these guidelines.

3. Definitions

Acute severe behavioural disturbance	Behaviour that puts the patient or others at immediate risk of serious harm and may include threatening or aggressive behaviour, extreme distress, and serious self-harm which could cause major injury or death
De-escalation	The process of engaging the patient as an active partner in the process of assessment, treatment and recovery with the express purpose of alleviating their current distress and reducing risk
Physical restraint	The immobilisation or physical restriction of a patient by health care staff, to prevent the patient from harming themselves, endangering others or to facilitate the provision of urgent medical treatment

4. Acute Behavioural Disturbance

4.1 Non-pharmacological approaches (de-escalation)

Early de-escalation can reduce the need for chemical and physical restraints.

Never approach a patient who is holding or has access to a potential weapon. Verbally de-escalate from a safe distance with the intention of encouraging the patient to place the weapon on the floor and step away to a safe distance for the team to remove the weapon.

Approach in a calm, confident manner and avoid sudden or threatening gestures. Tell the person you are going to approach them. Allow the person physical and emotional space to respond. Use questions such as "how are you feeling" and simple statements such as "I'm here to help".

Assess in a space where distractions are minimised and you can give full attention to the patient. (The area should have easily accessible exit points, and mechanisms to signal for assistance.) Do not allow the patient to get between you and your most accessible exit.

Avoid prolonged eye contact, do not confront, corner or stand over the patient.

Seek help if you feel threatened or at risk.

When de-escalation methods are unsuccessful, consider pharmacological sedation and/or physical restraint. Continually talk with the person to explain what is happening and monitor their level of distress. Continue to try to negotiate with the person with a view to achieving best practice of using the least restrictive options.

A de-escalation strategy that could be tried is the AGRO+ method described below:

- **Assess** the cause of the patient's agitation. Try to calmly engage the patient in conversation in order to determine the trigger(s) for the current crisis. Adopting a patient centred focus will assist in establishing the motivation behind the behaviour.
- **Gauge** how you are feeling. Be mindful of what you are projecting on the patient, and how this may escalate or de-escalate the patient's behaviour.
- **Respond** to the patient. You should do this from a safe distance. Be calm and yet firm in your interactions with the patient and utilise techniques such as open-ended questions, empathic paraphrasing of the patient's responses, and open stance body language.
- **Observe** the patient's verbal and non-verbal cues. Judge whether your de-escalation techniques are working.
- **Positive reinforcement**. This may be something you say or do, such as giving them some water to drink. The aim of positive reinforcement is to increase a desired behaviour and should only be utilised when the patient is cooperating.

When interacting with Aboriginal and Torres Strait Islander people, it is culturally appropriate to enquire as to alternative methods of managing acute agitation and trying to accommodate specific cultural aspects of patient care. Ask the patient or a family member in attendance if they need an interpreter.

If possible, arranging for the patient to have a positive support person present can be a useful strategy to reduce the chances of the patient's level of distress or agitation escalating, and can make overall management of the episode a smoother and safer process for all involved.

SA Health staff in relevant areas need to attend initial and ongoing training on de-escalation techniques as outlined in the Challenging Behaviours Education and Training toolkit.

4.2 Other causes of agitated behaviour

Consider and exclude, where possible, factors other than methamphetamine use that could be the basis of disturbed behaviour, such as:

- Medical conditions (hypoglycaemia, hypoxia, hyponatremia, seizures or post-ictal state, head injury, encephalitis)
- Delirium +/- dementia
- Withdrawal symptoms in people with recent history of chronic, sustained use of GABA agonists such as alcohol, benzodiazepines, or gamma-hydroxybutyrate (GHB).
- Intoxication with CNS depressants (alcohol, benzodiazepines, GHB), synthetic cannabinoids, or multiple drugs
- Mental disorders such as acute psychosis, mania, schizophrenia, personality disorders, acting out

4.3 Capacity to consent, involuntary treatment and restraint

At all times, if practicable, patient consent for assessment and treatment should be sought. This includes explaining potential benefits, side effects and reactions from treatment and providing the person with an explanation of all their possible options, and consequences of inaction.

If the patient does not have the capacity to provide consent AND the risks to patient and others are significant, then follow local protocols for involuntary assessment, restraint if necessary, and treatment. This includes liaising with family and other support people to obtain some indication of the person's wishes.

Staff are obligated to use the least restrictive means to manage agitated behaviour, with verbal de-escalation strategies and oral medications to be tried before parenteral medications and physical restraint.

4.4 Assessment

Initial brief assessment is aimed at determining the most likely cause of agitation and risk of injury or violence. If the presenting behaviour has or is likely to create risk for patient and/or staff, priority should be given to bringing the behaviours of concern under control as soon as is practicable for an assessment to be conducted safely.

Assess:

- Vital signs, blood glucose, oximetry
- Level of agitation
- History of alcohol and other drug use, especially in last 24-48 hours
    - drug, quantity, frequency, time of last use, route
- Mental state, with particular attention to
    - appearance (including injecting sites, dilated pupils)
    - behaviour (agitation, aggression, restlessness, hypervigilance, impulsivity)
    - speech (thought content, delusions, thoughts of self-harm or violence)
    - affect (anxiety, euphoria, irritability)
    - perception (hallucinations, illusions)
    - cognition (orientation)
    - insight and judgement (level of insight, degree of cooperation)
- Other features of stimulant toxicity
    - teeth grinding, flushing, dilated pupils
- Injection sites – confirming injecting drug use or as risks for possible infection
- General physical examination for cardiac, respiratory and neurological abnormalities
- Recent head injury
- Previous adverse drug reactions
- Possible investigations to assist in management of acute presentations include:
    - CBE
    - UEC/LFTs
    - Glucose
    - Urine Drug Screen
    - Breath or Blood Alcohol Level

Consider also, if clinically indicated:

- ECG – if chest pain, shortness of breath, decreased SaO2, persistent SBP>180, HR>120, or to monitor possible QT prolongation (see 3.6.1 Electrocardiogram and QT prolongation).
- Troponin if chest pain present
- CT brain if seizures, confusion, signs of head injury, severe headache
- CK if rigidity, clonus, fever

- Pregnancy test in all women of childbearing age

4.5 Sedation

Where necessary, pharmacological interventions should be prescribed as outlined in the flow chart. **Acute behavioural disturbance in adults flowchart**

Sedation should be undertaken in a suitable clinical area that provides privacy and ready access to oxygen, suction, resuscitation drugs and equipment. The aim is to have an awake but calm and manageable patient.

If the patient fails to respond to these pharmacological measures, then seek advice from a senior medical officer.

Oral therapy is the preferred option for the pharmacological management of disturbed behaviour.

Parenteral agents should be reserved for situations where:

- rapid response is required (e.g. the patient is exhibiting dangerous, violent or unpredictable behaviour);
- the patient will not accept oral administration;
- oral therapy has been tried and failed.

Intravenous (IV) administration is preferred to intramuscular (IM), as doses can be titrated more exactly and sedation is achieved more rapidly. IM administration may be used when IV access is not available or it is not practicable to administer medications via this route. Once an initial level of control has been achieved, consideration should be given to gaining IV access to allow subsequent doses of sedation to be given IV.

All agents administered parenterally have the potential to cause serious adverse effects, such as respiratory depression, and need to be given in a high dependency, monitored area in the presence of a senior medical officer with advanced airways skills. Caution must be advised when prescribing multiple sedative medications – the side effect profile and the potential for drug-to-drug interactions of each medication should be taken into account. Drugs from different classes can have a synergistic effect on respiratory depression.

Note that this guideline does not provide full prescribing information on medications. Clinicians should refer to appropriate clinical resources, such as the Australian Medicines Handbook, for additional information on contraindications, precautions, adverse effects and potential drug-drug interactions.

None of the medications mentioned below for acute agitation are absolutely contra-indicated in **pregnancy**. However, they are all sedating and short-term use immediately before delivery may increase the risk of neonatal sedation. In the case of droperidol, neonatal hypertonicity and dystonic reactions are possible. The risks of undertreated acute agitation need to be balanced against these possible neonatal risks. If delivery is imminent seek assistance from obstetric and paediatric specialist staff.

4.5.1 Selection of medication

i. First line (oral) options

- **Lorazepam**

  Peak effect at about 2 hours, duration 12-16 hours
  18-65 yrs: 1-2 mg oral 2 hourly prn (max 8 mg in 24 hours)
  >65 yrs: 0.5-1 mg oral 2 hourly prn (max 4 mg in 24 hours)

  AND/OR

- **Olanzapine**

  Peak effect at about 6 hours, elimination half-life about 30 hours
  18-65 yrs: 5-10mg PO 6 hourly (max 30mg in 24 hours).
  >65 yrs: 2.5mg PO 6 hourly (max 7.5mg in 24 hours)

ii. Second line (parenteral) options – **note that additional monitoring is required, plus adequate restraint**

- **IM or IV Droperidol**
  Onset of action 3-10 minutes, peak effect in about 30 minutes, duration of effect 2-4 hours

  18-65 yrs: 5-10 mg IM or 5mg IV stat, then repeat after 15 minutes if required (max 20 mg in 24 hours)

  >65 yrs: Droperidol is not approved for use in patients older than 65 years

  AND/OR

- **IM or IV Midazolam**
  Onset of action: 2 minutes (IV), 5-15 min (IM).
  Peak effect: 3-5 min (IV), 15-60 min (IM), duration of action 1-6 hours.

  IV Midazolam
  18-65 yrs: 1-2 mg IV bolus every 2 minutes prn (max 15mg in 24 hrs, including IM if given)
  >65 yrs: 0.5-1 mg IV bolus every 5 minutes prn (max 7.5mg in 24 hrs, including IM if given)

  IM Midazolam only if IV not possible
  18-65 yrs: 5mg IM*
  >65 yrs: 2.5mg IM*
  *Wait 15 minutes before administering another medication for management of behavioural disturbance.

  Midazolam and droperidol may be administered simultaneously, but in separate syringes to allow for individual titration.

  THESE DRUGS SHOULD ONLY BE ADMINISTERED SIMULTANEOUSLY WHEN ADVANCED LIFE SUPPORT AND ADVANCED AIRWAY SKILLS ARE AVAILABLE.

iii. Third line: **Ketamine** particularly for country areas and where patient has not responded after 15 minutes to appropriate doses or combinations of antipsychotic or benzodiazepine.

- Onset of action 2-3 minutes (IM), duration of effect 12-25 minutes
- Consider small dose of Midazolam 1-2mg IV prior to use of Ketamine (reduces emergence, total ketamine dose and neurotoxicity)

  N.B. Most patients will already have had significant doses of benzodiazepine.
- Ketamine 0.25-0.5 mg/kg IV slow push or Ketamine 3-5 mg/kg IM
- Ketamine infusion. 200mg in 50 ml= 4mg/ml. Commence at 1-2mg/kg/hour (i.e 0.25 – 0.5 ml/kg/hr or 20-40ml/hr for the average sized adult male) and titrate to effect
- Administration of ketamine should be undertaken in consultation with MEDSTAR or senior critical care doctor; access to appropriate airway support is essential.

4.5.2 Principles for selection of medication

Consider:

- Timeframe – is there a need for rapid sedation? Is prolonged sedation desirable?
- Airway management – is there capacity to safely manage airway problems that might arise during sedation?
- Risk of adverse effects from the medication or drug interactions.
- Familiarity and experience with the medication

Benzodiazepines are generally first line agents for management of acute behavioural disturbance associated with intoxication due to methamphetamine. Longer acting oral agents, such as lorazepam, are preferred. Midazolam is short acting, but provides rapid sedation and can be administered IM or IV.

Be aware that the patient may be tolerant to benzodiazepines due to prior exposure.

Note that IV benzodiazepines may result in respiratory compromise, so close monitoring and full advanced airway support is required.

Antipsychotic medications such as olanzapine (oral) and droperidol (IM or IV) provide a longer period of sedation.

In situations where minimal oral intake is preferred, olanzapine wafers or orally disintegrating tablets have the advantage of dissolving in the mouth and hence, a drink is not required for administration.

Droperidol achieves rapid sedation and can be used in conjunction with benzodiazepines if required. There is the potential for droperidol to cause QT interval prolongation but evidence from a large clinical study in Australia (Calver et al., 2015) suggests that, even at repeated doses of 5 or 10 mg, the risk of clinically significant QT interval prolongation is rare (less than 3%). See section 3.6.1 for more information on QT prolongation. Exercise caution if other QT prolonging agents may be present, such as methadone.

Ketamine has been shown to be effective, with few adverse events, in adults with agitated behaviour who do not respond to droperidol. Ketamine may be appropriate particularly for country areas and patients who have not responded after 15 minutes to appropriate doses or combinations of antipsychotic medication or benzodiazepines. Possible adverse effects include hypertonicity and hyper-salivation, and some patients may dislike the dissociative effects on emergence from sedation. Emergence dysphoria may be reduced by minimising verbal, tactile and visual stimulation during the recovery period. Administer low doses of a benzodiazepine (e.g. midazolam) if necessary.

Pregnancy None of the above medications are absolutely contra-indicated in pregnancy. However, they are all sedating and short term use immediately before delivery may increase the risk of neonatal sedation. In the case of droperidol, neonatal hypertonicity and dystonic reactions are possible. The risks of undertreated acute agitation need to be balanced against these possible neonatal risks. If delivery is imminent seek assistance from obstetric and paediatric specialist staff.

4.6 Monitoring

The quality and intensity of care provided to behaviourally disturbed patients who have been sedated should be the same as that provided to any other sedated person.

Close observation and monitoring should be undertaken in a suitable clinical area with oxygen, suction, resuscitation drugs and equipment readily available. As soon as practical, initiate monitoring of:

- blood pressure (BP), pulse (PR), temp and respiratory rate (RR);

- oxygen saturation (O_2 sats);
- electrocardiogram (ECG) monitoring if chest pain, shortness of breath, decreased SaO_2, persistent SBP>180, HR>120, or if QT interval is above the line in the nomogram (Figure 2 below) following administration of droperidol; and
- agitation/sedation

Vital signs (O_2 sats, BP, PR & RR) should be recorded at least every 15 minutes, with 1:1 nursing until the patient returns to a minimum sedation score (rouses easily to voice).

Urgent clinical review by a senior medical officer if parenteral benzodiazepines are used and respiratory depression noted (e.g. O_2 sats <95%, RR < 12 or patient appears poorly perfused).

Benzatropine 1-2 mg IM/IV may be given for acute extra-pyramidal reaction, e.g. to droperidol.

4.6.1 Electocardiogram and QT prolongation

An ECG should be performed, if possible, as part of the baseline evaluation for patients administered droperidol.

For patients with acute agitation, performing an ECG prior to the initial dose(s) may not be possible.

However, an ECG should be performed as soon as the patient's acute symptoms have subsided.

The QT interval should be measured manually from a single 12-lead ECG (Figure 1), then use the QT nomogram (Figure 2) to ascertain the risk of cardiac dysrhythmias. This nomogram provides an effective alternative to heart rate correction formulae and incorporates heart rate correction and risk assessment in the same process (Isbister, 2015).

Patients with a QT-heart rate pair above the line are at increased risk of torsades de pointes and require ongoing cardiac monitoring. These patients should have continuous cardiac monitoring and regular ECGs performed (at least hourly) until the QT-heart rate pair falls below the line. In Figure 2 the solid line indicates heart rates that are not tachycardic. The dashed line indicates extrapolation to allow assessment of faster heart rates (Chan, Isbister, Kirkpatrick, & Dufful, 2007).

Figure 1: ECG trace showing QT interval

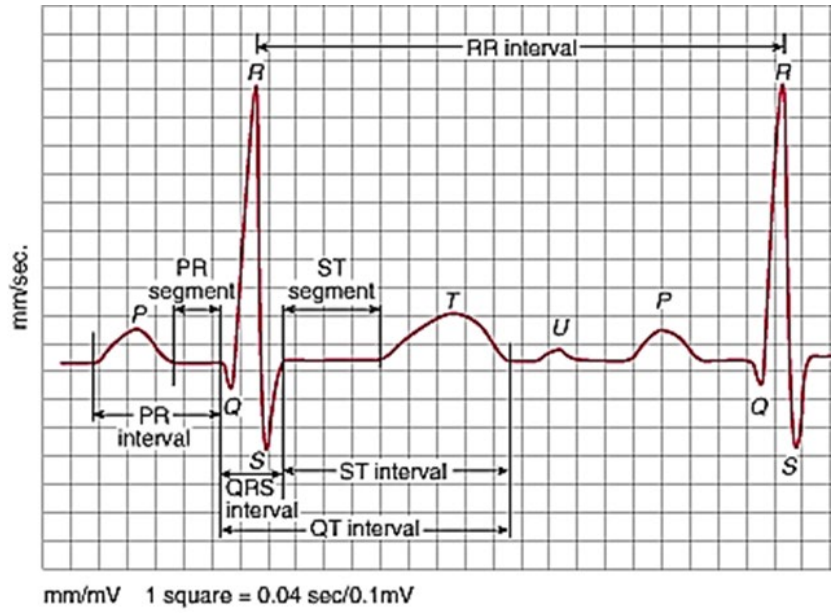
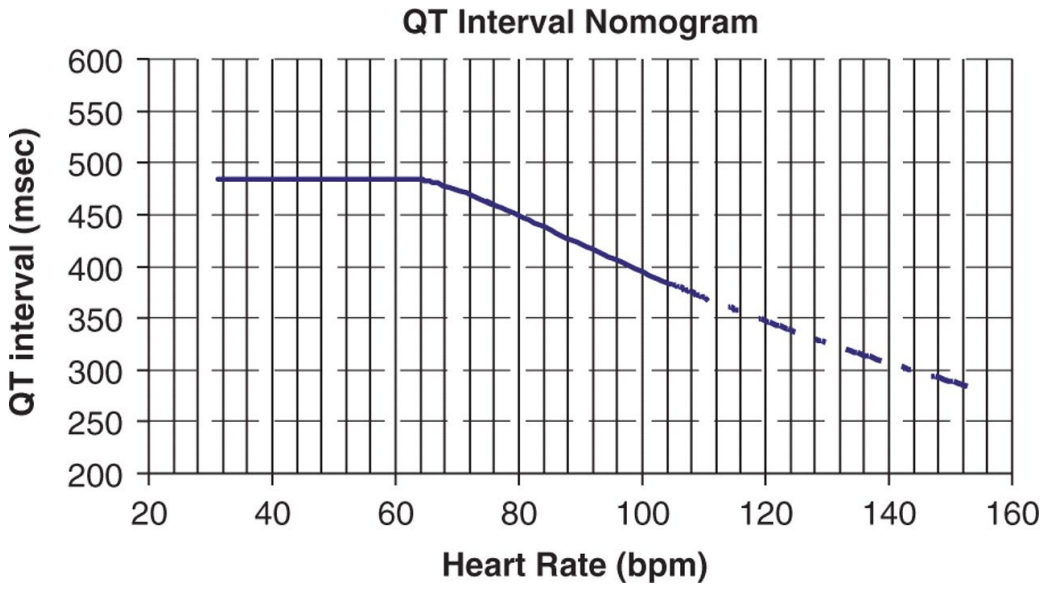


Figure 2: QT nomogram (Chan et al., 2007)



4.7 Transport

Information on the provisions of the Mental Health Act 2009 relating to involuntary assessment, treatment and transport can be found on the Chief Psychiatrist's website.

Patients with acute behavioural disturbance due to methamphetamine may need to be retrieved to a higher level of care from a rural or remote site.

If oral sedation is not possible, or has not been effective, and the clinical situation is not de-escalating within 30 minutes of presentation, then seek advice from Medstar and/or Rural and Remote Mental Health regarding management.

If area is inner rural, discuss transport options with SA Ambulance Service.

Adequate pre-flight reduction of the agitated state is crucial and is optimally achieved with adequate doses of oral sedatives.

Unpredictable worsening of agitation can occur during aeromedical retrieval due to multiple factors such as claustrophobia, air turbulence and nicotine withdrawal.

Mechanical restraints are recommended for aeromedical retrieval of the acutely agitated patient in case of unpredictable agitation during flight.

Pharmacologic sedation is often required during aeromedical retrieval to minimise the risk of patient injury when mechanical restraints are applied.

Refer to the Aeromedical retrieval services Guidelines on the Acutely Agitated patient in a Remote Location.

5. Potential Medical Complications of Methamphetamine

Requires urgent medical care (and possibly Code Blue) if:

- BP≥180/120 mmHg (see 5.1.2)
- Chest pain, shortness of breath (see 5.1.1)
- Severe headache (see 5.2.1)
- Seizure (see 5.2.2)

- Sudden neurological changes (e.g. speech changes or limb weakness, facial droop, gait disturbance – see 5.2.1)
- Serotonin syndrome/toxicity (see 5.3)
    - Temp ≥ 38°C, flushing, sweating, tachycardia
    - Mydriasis
    - Hyperreflexia, shivering, tremor, clonus, myoclonus
    - Ocular clonus
    - Muscle tone/rigidity
    - Altered conscious state (including delirium, confusion, disorientation)

5.1 Cardiovascular Complications

5.1.1 Chest pain

The pharmacologic treatment of patients with methamphetamine and cocaine related ischaemic chest pain is the same as for other patients. Routine monitoring including ECG and oximetry should be in place.

- Oxygen if indicated, sublingual glyceryl trinitrate and opioids (IV) are first line responses.
- If the patient is hypertensive or tachycardic due to acute toxicity, then benzodiazepines will often resolve these, reducing myocardial oxygen demands resulting in resolution of the chest pain.
- Note that the combination of opioids and benzodiazepines increases the risk of respiratory depression; administer benzodiazepines at lower doses if opioid drugs are also being administered.
- Aspirin can be used unless otherwise contraindicated.
- Patients with ST-segment elevation should be triaged according to local protocols.

5.1.2 Hypertension

- If hypertension is occurring in the setting of acute intoxication, then use of benzodiazepines or droperidol will often result in resolution.
- Hypertension is often transient and as such may not require pharmacological intervention unless severe.
- If hypertension persists or is accompanied by chest pain or neurological features, then treat as per usual guidelines.
- Beta-blockers may be used for persistent hypertension.

Based on a small number of case reports there is a possibility of unopposed alpha-stimulation following the use of beta-blockers to treat hypertension associated with stimulant use, but such effects are probably rare (Richards et al., 2015). If the possibility of unopposed alpha-stimulation is a concern, the use of combined alpha- and beta-blockers, such as Labetalol, is appropriate. Labetalol is given IV as 5-10mg boluses every 5-10 minutes, up to total of 4 boluses. Infusions can be used in HDU/ICU settings. The objective is BP normalisation.

5.2 CNS complications

5.2.1 Stroke

The use of cocaine or amphetamine derivatives is considered a strong risk factor for stroke.

Most are either haemorrhagic or thromboembolic but vasculitis is sometimes observed.

Investigation and management of stroke associated with methamphetamine use is in accordance with usual stroke management guidelines.

5.2.2 Seizures

Seizures can occur in association with methamphetamine use. Methamphetamine reduces seizure threshold, may result in stroke, and electrolyte disturbances such as hyponatremia.

In addition, methamphetamine users often use other drugs such as benzodiazepines, withdrawal from which may result in seizures.

Treat as any seizure of unknown aetiology.

Investigate to exclude other causes and treat accordingly.

5.3 Serotonin Toxicity (including Hyperthermia)

Amphetamine type substances have an effect on release, reuptake and metabolism of noradrenaline, dopamine and serotonin. Serotonin toxicity can occur as a side effect of some amphetamine type substances, in particular methylene-dioxy-methamphetamine (MDMA, ecstasy).

Additional serotoninergic agents such as selective serotonin release inhibitors (SSRIs) may or may not be involved.

Mono-amine-oxidase inhibitors, including moclobemide, have been implicated in serotonin syndrome related deaths in combination with MDMA.

Serotonin toxicity ranges from a mild, self-limiting condition through to a potentially fatal syndrome with symptoms such as muscle rigidity, coma, seizures, fever, hypertension or hypotension evident. When serotonin toxicity is severe, rhabdomyolysis with hyperkalaemia, acidosis and renal failure may subsequently result.

See Appendix 2 for criteria and differential diagnosis for serotonin syndrome.

The treatment of serious serotonin toxicity involves early recognition, prompt supportive care and judicious use of specific agents. Refer to local guidelines for details of management.

Supportive measures for severe toxicity include:

- hyperthermia above 39.5^{o}C requires rapid external cooling, paralysis and intubation with deep intravenous sedation
- IV fluids/volume resuscitation for dehydration, hypotension or rhabdomyolysis (ensure adequate urine output of 1.5-2mls/kg/hr)
- mechanical ventilation for respiratory compromise and sedation with IV benzodiazepines might be indicated
- paralysis and intubation may also have a role in cases of severe intractable rigidity, to avoid hyperthermia, rhabdomyolysis and respiratory compromise
- management of secondary cardiac arrhythmias or seizures involves standard measures
- Cyproheptadine, a 5-HT_2 antagonist may be indicated (It should only be used if the diagnosis of serotonin toxicity has been established and anticholinergic agents have not been co-ingested). It is not contra-indicated in pregnancy.

In all patients with suspected serious serotonin toxicity, serum electrolytes, glucose, renal function, creatinine kinase levels and ECG should be monitored.

Hepatic function and arterial blood gases should also be monitored in more severe cases.

Patients who develop coma, cardiac arrhythmia, disseminated intravascular coagulation or respiratory insufficiency require more specific measures.

5.4 Hyponatremia

This can be life threatening and presents with confusion, reduced consciousness or seizures. It can occur due to water intoxication from excessive water intake at dance events, and from drug effects of MDMA and paramethoxyamphetamine (PMA) particularly.

The combination of hypoglycaemia and or hyperkalaemia in association with hyponatremia suggests PMA which is not detected on many routine drug screen tests.

Treatment is per usual treatment guidelines.

6. Methamphetamine withdrawal

Methamphetamine withdrawal may be experienced following acute intoxication.

The initial phase (crash) of withdrawal syndrome occurs as the stimulant effects wear off.

Symptoms include:

- prolonged sleeping
- depressed mood (although some irritability even in the initial phase)
- overeating
- some cravings (not usually severe in this initial phase)

The initial phase may last one to two days and then is followed by a longer period of several days to weeks or months of:

- mood changeability (irritability, depression, inability to experience pleasure)
- anxiety
- cravings
- disturbed sleep
- lethargy

Psychotic symptoms may emerge during the first one to two weeks, particularly if they were present during times of use.

Methamphetamine withdrawal is largely subjective, but may be difficult to manage, particularly for friends and family members, due to mood swings. This may be marked for people with personality disorders who may become more agitated and irritable with amphetamine withdrawal.

6.1 Medications

No medication has been demonstrated to be effective in alleviating amphetamine withdrawal, but some medications may be useful with some symptoms.

Short-term use of oral benzodiazepines (diazepam 5 to 10mg QID PRN) and oral antipsychotics (olanzapine 2.5-5mg BD PRN) for control of irritability and agitation can be helpful, particularly in the inpatient setting. Care should be taken to limit access to large quantities of medications and to avoid development of benzodiazepine dependence. These medications should be prescribed for a maximum of 7 to 10 days.

Mirtazapine has been used to counter some of the acute effects of methamphetamine withdrawal, such as low mood and disturbed sleep. Modafinil may be indicated to mitigate withdrawal symptoms such as prolonged sleeping and lethargy. These medications may be used on advice from the DASSA Consultation Liaison service if available at the hospital or phone DACAS [7087 1742].

Modafinil is only used in the context of ongoing engagement in community based counselling or rehabilitation. It is not PBS or TGA approved for this indication.

7. Methamphetamine intoxication and Methamphetamine Induced Psychosis

Psychotic symptoms such as overvalued ideas, delusions and hallucinations are commonly associated with methamphetamine intoxication.

On a case-by-case basis, differentiating methamphetamine induced psychosis from a primary psychotic disorder is difficult, with highly overlapping phenomenology. Schizophrenia and methamphetamine use may co-exist, with the methamphetamine exacerbating psychotic symptoms.

While cessation of methamphetamine will result in resolution of the psychotic episode in most cases of methamphetamine induced psychosis, the duration of symptoms is quite variable. Between 8 and 27% of drug-induced psychoses have been reported to persist for more than one month (Vallersnes et al., 2016).

Recurrence of psychosis can occur in response to lower levels of methamphetamine use indicating that sensitivity to psychosis emerges with repeated use.

There is little evidence supporting a specific medication approach to methamphetamine induced psychosis. Therefore, in the short term, standard approaches to treating the psychotic symptoms should be followed.

Longer acting depot antipsychotic preparations should be reserved for people with a confirmed primary psychotic disorder.

Duration of use of antipsychotic drugs depends on the speed of resolution of the person's symptoms. A balance needs to be reached minimising side-effects from anti-psychotic medications, while also minimising rates of recurrence.

Particular attention to follow up is recommended for people experiencing first episode psychosis in this context, especially in the case of younger patients. The lack of clarity of diagnosis, engagement with the person to encourage them to cease methamphetamine use, to manage psychosocial stresses, education of the person and their family and encouraging medication adherence all require attention.

8. Post-Acute Management

The experience of forced sedation and/or restraint can be a distressing experience for those involved as well as those who might have observed the episode. At a time when the patient is calmer and able to engage with staff they, and any family members present, should be offered the opportunity to discuss the incident with a skilled staff member, or a peer support worker if available, who is able to listen to the patient's experience as well as providing feedback and the rationale for the intervention.

Consideration should also be given to the emotional wellbeing of other patients and/or visitors who witness such events. Staff debriefing is also important.

For those with repeated presentations relating to amphetamine-type stimulants, the person should be encouraged to develop an informal plan for dealing with future relapses, or relapse prevention strategies, or a formal plan such as an advanced care directive. Family members or carers should have an opportunity to provide their views on any plans.

The majority of patients presenting with intoxication due to amphetamine-type stimulants can be discharged within 18-24 hours provided the patient is not agitated or sedated, their observations are normal, and an adequate period of time has elapsed from dose of last sedative medication. The decision to continue antipsychotic medication post discharge should be made on a case-by-case basis. If psychotic symptoms do persist, this may be required. These patients require follow up.

Discharge is not appropriate where there is a high risk of self-harm or harm to others, or unresolved psychosis.

If the patient is admitted arrange:

- referral to Drug and Alcohol Consultation Liaison Service (if available) to attempt to engage with the patient to link with services after discharge;

- referral to Mental Health if significant psychotic or depressive features persist.

If the patient is well enough for discharge:

- provide information on post sedation care including the need to avoid driving and operating machinery
- explain the links between their amphetamine use and their presentation and advise against ongoing methamphetamine use
- provide information on amphetamines (SA Health Methamphetamine resource)
- provide Alcohol and Drug Information Service contact (1300 13 13 40)

If significant ongoing paranoia and psychotic features persist, discuss with Mental Health in the Emergency Department or Consultation Liaison Psychiatry, and if appropriate for discharge consider referral for follow up through Community Mental Health.

If the patient is, or could be pregnant, it is important to encourage engagement in prenatal care. Referral to DASSA obstetric services may be appropriate through the DASSA Consultation Liaison service if available at the hospital or phone DACAS [7087 1742].

9. Safety, quality and risk management

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
☒	☐	☐	☒	☒	☒	☐	☒

Hospital system performance will be monitored annually through the numbers of Code Blacks relating to acute methamphetamine toxicity.

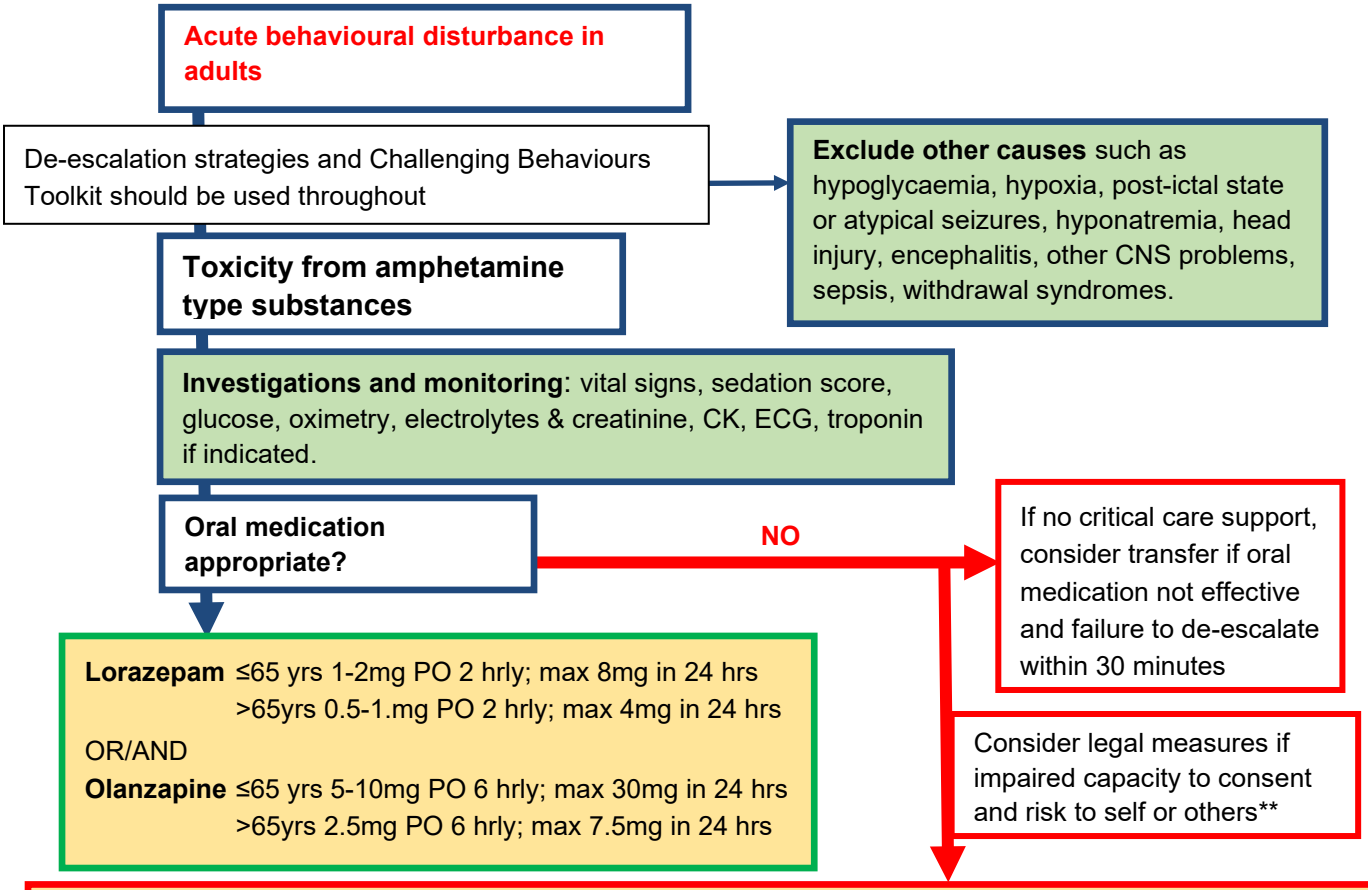
DASSA will also take comments regarding improvement of this guideline via email (DASSACLRAH@sa.gov.au, DASSACLLMHS@sa.gov.au or DASSACLFMC@sa.gov.au).

For more information

DASSA
Primary and Tertiary Liaison
91 Magill Road
Stepney SA 5069
Telephone: 08 7425 5000
www.sahealth.sa.gov.au

10. Appendices

1. Acute behavioural disturbance in adults flowchart

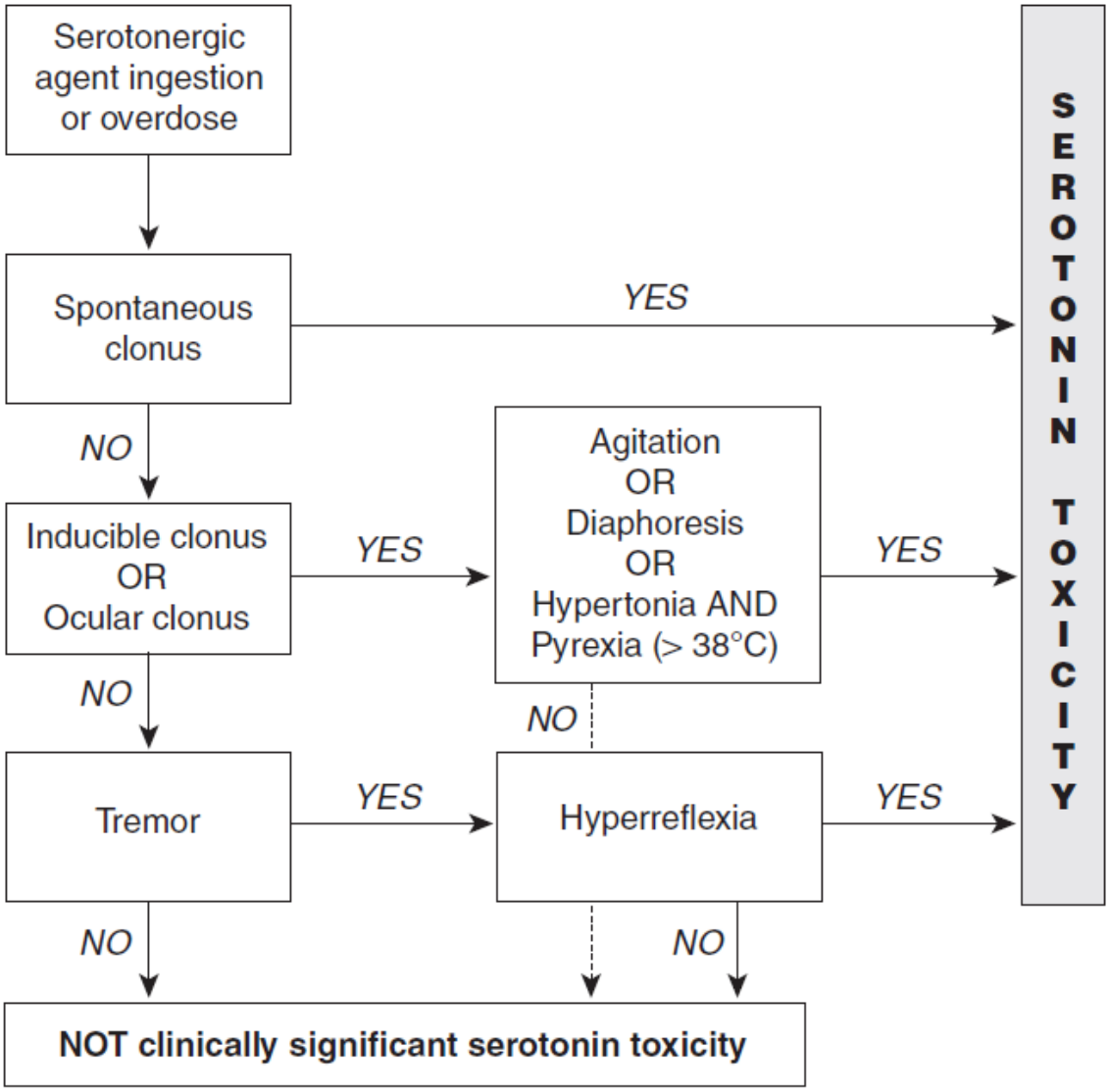


* *IV benzodiazepines require advanced airway management skills and equipment*

** *additional staff required if restraint indicated*

2. Criteria for differential diagnosis of serotonin syndrome

Source: Isbister *et al*. (2007)



11. Reference

Calver, L., Page, C. B., Downes, M. A., Chan, B., Kinnear, F., Wheatley, L., . . . Isbister, G. K. (2015). The safety and effectiveness of droperidol for sedation of acute behavioral disturbance in the emergency department. *Annals of Emergency Medicine*, 66(3), 230-238. doi: 10.1016/j.annemergmed.2015.03.016

Chan, A., Isbister, G. K., Kirkpatrick, C. M. J., & Dufful, S. B. (2007). Drug-induced QT prolongation and torsades de pointes: evaluation of a QT nomogram. *QJM*, 100(10), 609-615. doi: 10.1093/qjmed/hcm072

Isbister, G. K. (2015). Risk assessment of drug-induced QT prolongation. *Australian Prescriber*, 38(1), 20-24.

Isbister, G. K., Buckley, N. A., & Whyte, I. M. (2007). Serotonin toxicity: a practical approach to diagnosis and treatment. *Medical Journal of Australia*, 187(6), 361-365.

Jones, R., Woods, C., Barker, R., & Usher, K. (2019). Patterns and features of methamphetamine-related presentations to emergency departments in QLD from 2005 to 2017. *International Journal of Mental Health Nursing,* 28, 833-844.

Richards, J. R., Albertson, T. E., Derlet, R. W., Lange, R. A., Olson, K. R., & Horowitz, B. (2015). Treatment of toxicity from amphetamines, related derivatives, and analogues: A systematic clinical review. *Drug and Alcohol Dependence*, 150, 1-13. doi: http://dx.doi.org/10.1016/j.drugalcdep.2015.01.040

Taylor DM et al Midazolam-Droperidol, Droperidol, or Olanzapine for Acute Agitation: A Randomized Clinical Trial, Ann Emerg Med. 2017 Mar;69(3):318-326

Vallersnes, O. M., Dines, A. M., Wood, D. M., Yates, C., Heyerdahl, F., Hovda, K. E., & Giraudon, I. (2016). Psychosis associated with acute recreational drug toxicity: A European case series. *BMC Psychiatry*, 16, ArtID 293.

Relevant Legislation

Consent to Medical Treatment and Palliative Care Act 1995

Mental Health Act 2009

Resources

Emergency Department Management of Acute Agitation in Adults, NALHN

The Acutely Agitated Patient in a Remote Location. Assessment and Management Guidelines – a consensus statement by Australian aeronautical retrieval services. Royal Flying Doctor Service.

SA Health Challenging Behaviour Strategic Framework

SA Health Preventing and Responding to Challenging Behaviour Policy

SA Health Restraint and Seclusion in Mental Health Services Guideline

SA Health Consent to Health Care and Medical Treatment Policy (previously known as Providing Medical Assessment and/or Treatment Where Patient Consent Cannot be Obtained Policy)

12. Document Ownership and History

Developed by: Drug and Alcohol Services South Australia
Contact: Dr Will Liaw willy.liaw@sa.gov.au
Endorsed by: Domain Custodian, Clinical Governance, Safety and Quality
Next review due: 30/11/2028 (usually 5 years' time)
ISBN number: 978-1-76083-681-8

CGSQ reference: CG284
CG history:
Is this a new clinical guideline (V1)? **N**
Does this clinical guideline amend or update and existing clinical guideline? **Y**
If so, which version? **V2**
Does this clinical guideline replace another clinical guideline with a different title? **N**
If so, which clinical guideline (title)?

Date approved	Version	Approved by	Amendment notes
02/05/2024	V3	Domain Custodian, Clinical Governance, Safety & Quality	Addition of IM Ketamine dose – pages 8 &17 Addition of IM Midazolam dose- pages 8 & 17 Reversal of Droperidol and Midazolam order 8 & 17 Addition of clinical indicators for use of Mirtazepine or Modafanil – page 15 Rewrite of part 7 – pages 14 & 15 Addition of LMH and FMC contacts- page 16 Minor non-material amendments to language – pages 4, 5, 6, 7, 14 Previously known as Acute Presentations related to Methamphetamine Use for Adults clinical guideline
23/10/2018	V2	SAMAC	Comments received on V1
23/11/2017	V1	Strategic Safety and Quality Committee	Original SSQC approved version