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THE ACUTELY AGITATED PATIENT IN A REMOTE LOCATION

Assessment and Management Guidelines – a consensus statement by Australian aeromedical retrieval services.

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SUMMARY

- **Safety of the acutely agitated patient and their health care providers, including the aeromedical retrieval team, is paramount in a remote location**
- **Adequate medical and mental health assessments form the foundation of such safety**
- **Management of the acute agitation in a remote location requires adequate patient supervision with judicious use of behavioural and pharmacologic techniques to reduce the agitated state**
- **Reversible causes of agitation must be excluded**
- **Involuntary assessment and treatment may be required and emergency retrieval to higher level care is often necessary to facilitate this.**
- **Aeromedical retrieval of acutely agitated patients with a mental health condition confers unique risks that can be managed with careful planning and preparation of the patient**
- **Adequate preflight 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 & nicotine withdrawal**
- **Mechanical restraints are recommended for aeromedical retrieval of the acutely agitated patient in the event of unpredictable agitation**
- **Pharmacologic sedation is often required during aeromedical retrieval to minimise risk of patient injury when mechanical restraints are applied**
- **Ketamine sedation has an important and growing role in the care of the acutely agitated patient, amongst Australian aeromedical services**
- **Tracheal intubation and mechanical ventilation under general anaesthesia may rarely be required , when routine measures have failed to adequately reduce agitation for aeromedical retrieval**

Introduction

The assessment and management of an acutely agitated patient in a remote location with limited resources requires adaptation of usual procedure from hospital based processes. There exists no standard or researched guidelines for such a situation and so the evidence base for best practice is poorly defined. These guidelines provide expert opinion from Australian clinicians involved in assessing and managing the acutely agitated patient in a remote location

Assessment

The major issues in assessment of the acutely agitated patient are:

1. Safety
2. Medico-legal
3. Medical assessment
4. Mental health assessment
5. Follow-up/Disposition

Safety in assessment:
The major theme of these guidelines is to emphasise safety at all times. In terms of the assessment phase, it must be planned that assessment occurs in a safe setting for both patient and clinician. In remote settings this can be difficult to achieve but as a minimum standard it is recommended:

- a second clinician or assistant be present or nearby to offer immediate assistance. This maybe local police, clinic security staff or nursing staff. Health workers who have no conflicts of interest in caring for the patient would also be of high value in the overall management of the patient.
- the assessment occur in a room or area that is readily accessible by other staff from other locations in the clinic. Ideally it would be in a centrally located area of the clinic and have easily accessible exit points
- supportive friends or family who can obviously assist in the assessment and care of the patient be present or readily available in the clinic
- consideration of clearing the clinic area of unnecessary people not directly relevant to immediate patient care should be a priority and assigning dedicated security and/or police to control entry /egress points
- a personal duress alarm or agreed method of signalling for immediate help be available

Medico-legal issues in assessment:
There are only two groups of patients to consider - voluntary and involuntary. At all times, if practicable, patient consent for assessment should be sought. If the situation arises whereby it is impractical to seek consent or the risks of safety to patient and others is significant then the necessary sections of the RELEVANT Mental Health Act need to be pursued to allow involuntary assessment for acute agitation. If the clinician believes the agitation is due to a medical or surgical condition then providing acute assessment and care under the Guardianship Act/Medical duty of care is appropriate to preserve the safety of the patient and others.

Medical assessment:
Acute agitation maybe the only sign of an acute medical or surgical illness and therefore warrants a standard approach to medical assessment. As a minimum the following aspects are recommended to be assessed and documented:

- vital signs (temperature, blood pressure, pulse rate, respiratory rate, oxygen saturation reading, conscious level)

- blood sugar reading
- general physical examination to assess for cardiac, respiratory and neurologic abnormalities

Mental Health assessment:
Acute agitation in the context of a suspected mental health condition should be assessed in a standard manner but this can be difficult if there is significant arousal. It is reasonable to offer oral sedation prior to assessment. The following are minimum aspects to assess:

- general appearance
- behaviour
- speech
- cooperativeness/level of insight
- specific thoughts of self harm or violence
- delusional ideation, hallucinations

Follow-up/Disposition

Acutely agitated patients may respond to simple observation and sedation in the remote clinic setting. If the decision is to discharge such patients from the clinic then the following minimum criteria are recommended to be met:

- Initial agitation must be resolved at time of discharge
- At least one support person should be available to assist and supervise the discharged patient for at least 24 hrs
- A clear plan of action must be agreed upon amongst all parties as to what to do in event of agitation recurring
- A clear plan of action must be agreed upon amongst all parties as to what to do in event of agitation recurring and in terms of followup if intoxication from substance ingestion was the cause of the agitation initially, the patient must not be intoxicated at time of discharge THE DANGERS OF INTOXICATION SHOULD BE UNDERSTOOD BY THE PATIENT AND THOSE INTO WHOSE CARE S/HE WILL BE GOING AND ASSURANCE SOUGHT THAT FURTHER SUBSTANCE USE WILL NOT OCCUR
- There must be no ongoing thoughts of self harm or violence
- There must be clear plans for re-assessment of the patient by Health staff within 24 hours

Management of the acutely agitated patient in a remote Clinic

The major issues in the management of the acutely agitated patient in a remote setting are:

- Staff safety
- Patient safety
- Acute arousal management
- Medical monitoring
- Retrieval to higher level care
- Follow-up/evaluation

Staff safety:
The primary concern is to ensure staff safety in managing the acutely agitated patient. It is recommended that the following minimum criteria be adopted in this situation:

- At least two clinic staff be in attendance whose purpose is solely attention of the agitated patient
- At least one security staff or police officer whose sole purpose is to provide physical restraint if required.

- The area where the patient is cared for primarily during the agitation has adequate lighting and access points from other areas of the clinic so that further staff can readily come to assist if requested urgently
- The patient should be checked for any items that may be used to self harm

Patient safety:
The principles of least restrictive means of restraint and reasonable care should enable optimum patient safety in the setting of management of acute agitation. It is recommended that the following minimum criteria be adopted in this situation:

- At least one health trained provider be supervising the patient at all times
- If sedation is administered, the patient should be nursed in the designated treatment area of the clinic with continuous physiological monitoring and acute resuscitation equipment immediately available.
- If sedation administered, there must be a minimum of two health trained providers attending to patient undergoing sedation. At least one of them must possess current advanced life support skills.
- Acute sedation should be provided by health staff who have undertaken specific sedation training encompassing all aspects of oral and parenteral emergency sedation, deep sedation rescue, sedation monitoring and emergency airway skills.

Acute arousal management:
The first principle of managing an acutely agitated patient is a calm and reassuring approach
The aim of acute arousal management is two fold. Firstly there should be a rapid identification of readily reversible causes of agitation. The following should be assessed for as a minimum:

- Airway obstruction/compromise
- Respiratory distress/acute hypoxia/hypercarbia
- Circulatory shock/poor peripheral perfusion
- Acute pain
- Hypoglycaemia
- Full bladder
- Drug withdrawal (opioid, alcohol, nicotine)

Secondly, having excluded rapidly reversible causes of agitation, acute arousal should be treated with pharmacologic sedation to reduce risk of injury to all involved and allow better assessment of the problem to occur. Acute sedation carries significant risks and the following are recommended minimum criteria should be met:

- Two health providers should be dedicated to patient care for acute parenteral sedation
- Acute parenteral sedation should only occur in a designated treatment area with adequate physiological monitoring and resuscitation equipment available. The minimum resuscitation equipment required is:

    1. Oxygen supply
    2. Suction device
    3. Basic airway equipment including bag and mask (self inflating resuscitator)
    4. Airway support adjuncts; LMA, Oropharygeal and nasopharyngeal airways
    5. Cardiac defibrillator
    6. Blood pressure monitoring
    7. Pulse oximetry device
    8. ETCO2 monitoring

9. Emergency resuscitation drugs including adrenaline, benztropine, naloxone and flumazenil

- The order of acute sedation administration should be oral route then intramuscular then finally intravenous
- If intravenous sedation is required then at least one of the two health providers in attendance must be current in advanced life support skills and emergency airway management
- An airway assessment should be performed and documented if sedation is required (refer *Appendix A*)
- Fasting status and medical co-morbidities must be taken into consideration when assessing the patient requiring sedation (refer *Appendix A)*
- All patients assessed as having a potentially difficult airway and/or non fasting status and/or with at least one medical co-morbidity are deemed high risk sedation candidates and consultation with an emergency physician, intensive care physician or aeromedical retrieval physician or medical coordinator is advised
- All acute sedation should be targeted to a validated standardised sedation scoring system. It is recommended the Richmond Agitation and Sedation Scoring (RASS) system be used (refer *Appendix A*) and a target range of 0 to -3 be achieved and maintained
- -Sedation drugs and dosages are dictated by relevant statewide guidelines and the availability in the remote clinic setting. This consensus statement offers a practical retrieval sedation guideline based on Australian aeromedical experience and expert clinician opinion (refer *Appendix A*)

Medical Monitoring:
All acutely agitated patients should be medically monitored with appropriate staffing and adjunctive devices . The minimum medical monitoring for the sedated patient is:

- continuous pulse oximetry
- continuous ETCO2 monitoring
- regular blood pressure and pulse check readings
- regular measurement of respiratory rate
- regular assessment of conscious level and arousal state using the RASS scoring system

Retrieval to higher level of care:
The issues surrounding the retrieval of an acutely agitated patient to a higher level of care from a remote clinic can be grouped into following headings:

a. Triage/prioritisation/timing
b. Patient preparation for transport

a. *Triage/prioritisation/timing:*
   The following are recommended:
   - The more remote the location the higher the priority for retrieval
   - The less remote staff available to care for the agitated patient the higher the priority for retrieval
   - If retrieval cannot occur overnight, then at least two health providers must be present to constantly supervise the patient in the designated treatment area of the remote clinic. IN this case it is recommended that oral sedation be provided as the mainstay of management of acute arousal. If ongoing parenteral sedation is required then consultation with the remote psychiatrist and aeromedical retrieval physician is recommended.

- Formal risk assessment should be undertaken to determine optimal retrieval planning and preflight preparation. A suggested risk assessment protocol is included (Refer for to Appendix B)

b. *Patient preparation for transport:*
The following are recommended minimum criteria:
   - Oral sedation should be administered well beforehand to achieve a relatively calm and cooperative patient within 2 hrs of arrival of retrieval team
   - IV access should be obtained
   - adequate explanation of the retrieval process to the patient including possible need to acute sedation
   - Assessment for nicotine dependence and offer of nicotine replacement patch therapy at least 4 hrs prior to retrieval
   - Ideally maintaining fasting status of no solid food for 6 hrs and no fluids for 2hrs. As a minimum, achieving no food or fluids for 2 hrs is recommended. Intravenous fluids and ice chips are recommended to address complaints of thirst. For hunger, small sweets or lollies can be provided on a limited basis
   - Patient should be toileted adequately prior to retrieval. Consideration for a bladder catheter may be required if deep sedation considered reasonable for retrieval

Follow-up/evaluation:
After the acutely agitated patient has either been retrieved to higher level of care or the episode has resolved after observation and treatment and the patient has been discharged from clinic care there should be a debrief and review of the clinical episode, recognising such patient presentations can be stressful and traumatic to remote staff including ancillary services such as police and security staff. Family and friends of the patient should be consulted for their feedback and experience of the patient. Fatigue management is important to address and plan for, as limited remote staff may be easily overwhelmed by a single acute presentation. Flying in extra support clinical staff to address fatigue management may be a consideration of the retrieval planning.

APPENDIX A

Title: Retrieval sedation guidelines for the acutely disturbed patient

Objectives:

1. Provide standardized clinical approach for the sedation of a patient requiring aeromedical transport who is acutely disturbed
2. Maintain minimum standards of sedation assessment and monitoring in the aeromedical and retrieval setting
3. Enhance patient and transport team safety

Absolute contraindications to retrieval sedation:

- Known allergies/adverse reactions to sedative agents

Relative contraindications to retrieval sedation:

- Recent ingestion of food (last 6 hrs) or clear fluids (last 2 hrs)
- Respiratory tract disease/infection
- Substance abuse/intoxicated state

Rationale/background:

The aeromedical and remote retrieval setting has unique constraints in the management of the acutely disturbed patient. Limited space, excessive noise, vibration are all elements that may exacerbate patient agitation. Transport times may necessitate prolonged periods of sedation. Modern aeromedical retrieval medical practice dictates formal risk assessment for disturbed behaviour during transport and outlines levels of risk management. Acute sedation is part of this risk management strategy along with physical restraints and appropriate escort mix.

There is a paucity of evidence base in the aeromedical and psychiatric literature to guide the practice of acute sedation in the air transport and remote retrieval environments. Extrapolation from published sedation articles in the intensive care and emergency department settings has been used in the writing of this clinical guideline as well as expert clinical advice from a specialist reference group (Acknowledgements to: Professor Ernest Hunter, Dr Geraldine Dyer and Dr Bruce Gynther, remote area psychiatrists, Dr Peter Schuller, consultant anaesthetist, Cairns Base Hospital, Dr Geoff Ramin, emergency physician, Gold Coast.)

Disclaimer:

This guideline does not replace sound clinical judgment by individual practitioners dealing with specific clinical problems for a given case.

Definitions:

The Australian and New Zealand College of Anaesthetists' professional standards for sedation details the following descriptors:

1. DEFINITIONS

1.1 Conscious Sedation is defined as a drug-induced depression of consciousness during which patients are able to respond purposefully to verbal commands or light tactile stimulation. No interventions are usually required to maintain a patent airway, spontaneous ventilation or cardiovascular function. Conscious sedation may be achieved by a wide variety of techniques including propofol and may accompany local anaesthesia.

1.2 Deep levels of sedation, where consciousness is lost and patients only respond to painful stimulation, are associated with loss of the ability to maintain a patent airway, inadequate spontaneous ventilation and/or impaired cardiovascular function. Deep levels of sedation may have similar risks to general anaesthesia, and may require an equivalent level of care.

1.3 General Anaesthesia is a drug-induced state characterised by absence of response to any stimulus, loss of protective airway reflexes, depression of respiration and disturbance of circulatory reflexes.

General principles of sedation practice:

1. The sedation provider must have the necessary resuscitation skills and pharmacologic knowledge to rescue a patient from sedation that is causing airway obstruction and /or cardiorespiratory deterioration.

2. All sedation should be undertaken with a targeted sedation level goal with concomitant reduction in agitation level. A standardized sedation/agitation score should be used to maintain consistent and reliable sedation practice for a targeted effect.

3. As much as is practically possible, retrieval sedation should be conducted in a planned and properly timed manner with proper airway and medical assessment, establishment of IV access and monitoring, informed consent and standardized sedation/agitation scoring. The recommended location to initiate retrieval sedation is in a hospital/facility setting. It is important to initiate primary sedation well before the aircraft is tasked, that is, the patient should be pre-dosed with sedating antipsychotics until sedate and drowsy prior to RFDS aircraft tasking. This may require repeated telephone assessments via the treating doctor and much encouragement to titrate doses of antipsychotics and benzodiazepines up until the desired sedation has occurred (refer to elective sedation section below).

4. Sedation should never be regarded as the mainstay of risk management for the disturbed patient. Physical security in the form of restraints and trained escorts must be utilized. Sedation allows better tolerance of mechanical restraint.

5. Planned retrieval sedation should be monitored using similar levels of charting, observation and nursing care as accorded for a ventilated anaesthetic patient.

6. When dealing 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.

7. Consideration of taking a family or close friend escort who is trusted by the patient should be a part of good retrieval planning particularly if this will assist with communication and language issues.

Retrieval sedation assessment/planning and monitoring:

1. Prior to any retrieval sedation the following assessments are recommended if practical and feasible to perform:

Airway assessment:
A Mallampati score should be documented. Ideally patient is sitting up and voluntarily opening the mouth to the examiner. See Figure 1 below. Class 3-4 Mallampati should be considered high risk for problems of hypoxia, airway obstruction and difficult airway management during sedation. Problems with bag /mask ventilation can be predicted with one or more of the following patient factors:

- Beard
- Male
- Obesity
- Past radiotherapy to airway
- Elderly
- Suspected or known obstructive sleep apnoea

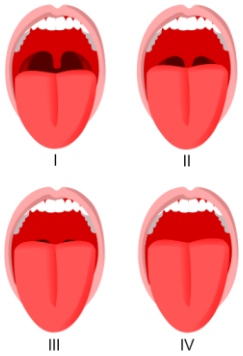

Figure 1 Mallampati classification "Mallampati" by Jmarchn - Own work. Licensed under Creative Commons Attribution-Share Alike 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Mallampati.svg#mediaviewer/File:Mallampati.svg

Medical assessment:

- Fasting status
- Recent respiratory tract infection
- An ASA class and allergies should be documented. See description below.
  In general ASA class I – 2 are suitable candidates for elective sedation

ASA Classification (American Society of Anaesthesiologists)

Class 1	Healthy patient, no medical problems
Class 2	Mild systemic disease (No functional limitations; has a well-controlled disease of one body system; controlled hypertension or diabetes without systemic effects, cigarette smoking without chronic obstructive pulmonary disease (COPD); mild obesity, pregnancy)
Class 3	Severe systemic disease, but not incapacitating (Some functional limitation; has a controlled disease of more than one body system or one major system; no immediate danger of death; controlled congestive heart failure (CHF), stable angina, old heart attack, poorly controlled hypertension, morbid obesity, chronic renal failure; bronchospastic disease with intermittent symptoms)
Class 4	Severe systemic disease that is a constant threat to life(Has at least one severe disease that is poorly controlled or at end stage; possible risk of death; unstable angina, symptomatic COPD, symptomatic CHF, hepatorenal failure)
Class 5	Moribund, not expected to live 24 hours irrespective of operation
An **e** is added to the status number to designate an emergency operation. An organ donor is usually designated as Class 6	

2. The Richmond agitation-sedation scale is a validated scoring system in the ICU setting and is recommended to be used to assess agitation and target a sedation level appropriate for the disturbed transport patient. A RASS score should be documented prior to any sedation administration and a target RASS score should be clearly documented or communicated to other retrieval team members as a major goal of the sedation plan. The recommended target RASS score for retrieval sedation is between 0 to -3. At times during a retrieval, periods of brief but intense environmental stimuli (engine startup, helicopter phase) may necessitate a deeper level of sedation, a RASS score to -4 maybe appropriate. It is considered inappropriate to target a RASS score of -5 at anytime for planned retrieval sedation unless the decision to intubate and ventilate has been made. The RASS score should be documented regularly throughout the retrieval as frequently as the vital sign observations are recorded.

Disclaimer:
Whilst the RASS is to be used as a tool to guide sedation targets it does not replace clinical judgment on a case by case basis as to the level of sedation required for a given patient and situation.

Richmond Agitation-Sedation scale	Term	Description
+4	Combative	Overtly combative, violent, immediate danger to staff
+3	Very Agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent non-purposeful movement
+1	Restless	Anxious but movements not aggressive
0	Alert & Calm	
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (>10 seconds)
-2	Light sedation	Briefly awakens with eye contact to voice (<10 seconds)
-3	Moderate sedation	Movement or eye opening to voice (but no eye contact)
-4	Deep sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation

(reproduced with permission from http://www.icudelirium.org/docs/RASS.pdf)

* Sessler CN, Gosnell M, Grap MJ, Brophy GT, O'Neal PV, Keane KA et al. The Richmond Agitation-Sedation Scale: validity and reliability in adult intensive care patients. Am J Respir Crit Care Med 2002; 166:1338-1344.
* Ely EW, Truman B, Shintani A, Thomason JWW, Wheeler AP, Gordon S et al. Monitoring sedation status over time in ICU patients: the reliability and validity of the Richmond Agitation Sedation Scale (RASS). JAMA 2003; 289:2983-2991.

3. Sedation monitoring: The minimum set of monitoring for any retrieval sedation must include:

- continuous pulse oximetry of oxygen saturation
- continuous ETCO2 monitoring
- regular non invasive blood pressure measurement
- continuous cardiac rhythm monitoring
- a sedation provider who is skilled in airway management and BVM rescue ventilation
- use of the RASS scoring for sedation/agitation level

Additional sedation monitoring with CO2 monitoring (waveform capnography) may be helpful to detect early respiratory depression , airway obstruction and apnoea in the aeromedical environment. The use of waveform capnographic monitoring is recommended when maintenance sedation infusions are utilised in the unintubated patient and when RASS scores of -3 to -4 are targeted. Whenever parenteral sedation is given, regular sedation level assessment is advised, at least as often as normal vital signs measurements. This is important to regularly check the sedation level even if the patient appears naturally asleep, especially when parenteral sedation (IV or IMI) has been administered.

4. Sedation equipment setup: Locate and prepare for use the following:

- Oral suction
- Oral and nasal airways of appropriate size
- Oxygen with mask or nasal cannulae
- Functioning bag/valve mask
- advanced airway bag
- Sedative agents drawn up in labelled syringes
- Anaesthetic drugs necessary for rapid sequence induction and intubation

Emergency sedation (unplanned):

Goals:

1. Rapid control of agitation/dangerous behavior(RASS score +3 to +4)

2. Allow safe assessment and treatment of a patient

Legal context of emergency sedation:
If there is an urgent need to use chemical sedation for the purposes of reducing the risk of serious injury to the patient or others involved in their care OR to facilitate urgent medical procedures required to preserve life or prevent significant disability then such use constitutes action taken by a health care provider under medical duty of care principle. It should be used for emergencies only.

Common retrieval scenarios:
- Acute delirium, organic brain syndrome
- Behavioural disorder secondary to dementia process
- Mental illness with acute agitation during handover

(these conditions may be caused, precipitated by or compounded by alcohol or illicit substance use)

Key principles of emergency sedation:

1. Be safe. Better to decline a transport than try rapid sedation over a short time frame and have it fail during take off.

2. Seek a second provider/assistant to help administer sedation and care to the agitated patient. Care does not end once the sedative is administered and taking effect. You will require help to secure restraints, do a proper medical assessment and establish monitoring and most importantly decide what to do next on the retrieval!

3. Talk to your retrieval team. Acute agitation is high risk to all on the retrieval. As a sedation provider your colleagues must be aware of your sedation goals, likely effects, expected problems and your contingency plans. Involve them in your sedation decisions.

4. Take extreme caution when the patient is in an obviously intoxicated state. Acute sedation with any agent carries significant risks of aspiration and unpredictable levels of sedation achieved

EMERGENCY SEDATION PROTOCOL:

Pre-retrieval sedation assessment:

Prior to emergency sedation being initiated by the retrieval team, there should be a review and assessment of the preceding sedation agents and dosages used in the last 24hrs. This may help predict those patients who maybe tolerant to benzodiazepines and may require second line sedatives such as ketamine.

IV Access not obtained yet:

- **Always offer oral sedation initially**. Dose = 10-20 mg olanzapine wafer PO stat dose. Does not require a drink for administration as will dissolve in mouth.

  - AND /OR
  - Oral diazepam 5-20mg, repeat 1hrly prn (maximum daily dose 120mg)
  - OR

  Oral lorazepam 2-4mg, repeat 1hrly prn (maximum daily dose 8mg)

  Rationale for oral dosing: Asking the patient if they would like to take a tablet orally allows a provider to determine the need for further escalation in the response to the agitation and to determine the next sedative agent most appropriate. It allows for patient compliance and gives the patient the ability to have some control of their treatment options (and potential for further cooperation) to be tested and if the oral dose is accepted will establish a degree of sedation for a short period of time as well as initiate antipsychotic therapy during the pre-hospital phase of patient care (if not already done prior to retrieval)
  In the event an antipsychotic has already been administered during the prior 24hrs of patient care, olanzapine wafer is still recommended as an initial sedative dose

- **Oral dosing refused:** Patient compliance is unlikely to allow IMI or IV access. This is a high risk scenario and requires immediate sedative control of behaviour that is posing a serious risk to safety of all. Physical and mechanical restraints should be utilized in preparation for an aeromedical transfer. If on the ground, ambulance and/or police assistance should be requested as soon as possible. Medication administration should not be attempted until there is adequate physical security/control of the situation. The optimal number of persons required for safe physical restraint is 5.

Rapidly acting IMI sedatives recommended are:

- IMI Midazolam 5-10 mg
- IMI haloperidol or droperidol (Warning : these agents can cause dystonic reactions and prolong QT interval) or olanzapine 5-10mg

- IMI ketamine 4mg/kg (preferred agent for paediatric cases and alternative when solo sedation provider)
- (Warning : this agent can cause hypertonicity which may require midazolam treatment ; it can cause hypersalivation which may require atropine treatment; it can cause delirium and hallucinations –see notes below in IV sedation section)
- IV ACCESS SHOULD BE OBTAINED AS A PRIORITY AFTER IMI SEDATION HAS TAKEN EFFECT

Antidotes

- Benztropine 1-2 mg IVI/IMI(adult dose) should be available when giving haloperidol to treat possible acute dystonia
- Flumazenil 0.2-0.5mg IVI(adult dose) should be available when giving midazolam if acute reversal is required

Warning: It is beyond the scope of this guideline to detail/describe a safe procedure for the involuntary physical restraint and administration of a sedative injection (IMI or IVI). It is highly recommended that such techniques and strategies to do so be taught and rehearsed during formal training sessions conducted by experienced staff.

IV Access obtained:

Recommended emergency IV sedation agents (first line) –

- IVI midazolam 2-5mg (Warning : Midazolam is most likely agent to cause airway compromise when given as IV bolus)
- IVI haloperidol or droperidol 5-10mg
- Initial bolus of agent every 5-10 min till RASS score +1 or less achieved
- Maintenance infusion is then recommended if aeromedical transport is still warranted. Refer to Elective sedation section below.

Recommended emergency IV sedation agents (second line):

- IVI ketamine 1-1.5mg/kg (preferred agent for paediatric cases and if solo sedation provider)
- It is important to ensure ketamine is used as a second line agent after appropriate doses of an antipsychotic or benzodiazepine have been trialled. This practice minimizes the risks of ketamine induced dysphoria, delirium and psychosis.
- Initial bolus of agent every 5-10 min till RASS score +1 or less achieved

- Maintenance infusion is then recommended if aeromedical transport is still warranted. Refer to Elective sedation section below. The calculated starting infusion rate is only an estimate as there can be considerable patient variability in responding to a given sedative infusion and confounding factors such as other agents already administered that may have a prolonged duration of action. The goal of a maintenance sedative infusion is to achieve a steady blood concentration for the duration of the retrieval and avoid the need for repeated bolusing of medications.

Target Sedation Goal:

A RASS score of between 0 - 3 is the recommended sedation goal for aeromedical transport. During engine startup, ascent and descent a deeper level of sedation maybe considered to ameliorate the added stressors of noise, vibration and movement. A RASS score of -4 for a short period of time is then appropriate.

Post Emergency Sedation Care:

1. Minimum sedation monitoring set should be established (SaO2, cardiac rhythm, NIBP)
2. Supplemental oxygen 2-4 L/min via nasal cannulae or mask to maintain SaO2 >94% at all times
3. Approved mechanical restraints to be placed if not already and secured to stretcher
4. Position patient in 45deg head up if possible to maximize spontaneous ventilation and minimize risk of aspiration
5. Perform rapid patient assessment for causes of acute agitation

ELECTIVE SEDATION PROTOCOL **Elective sedation (planned):**

This use of sedation is for planned agitation/behavioural management during aeromedical transport. The patient is usually under the Mental Health Act as an involuntary status but may not be.

Common scenarios:

- Hospitalized patient awaiting transport
- Clinic patient awaiting MO assessment and/or transport
- Cooperative patient with history of recent emotional or behavioural liability
- May or may not be already sedated
- Fear of flying expressed
- If considering intubation/ventilation due to predicted high risk, a trial of elective sedation is appropriate initially.

Warning: Elective sedation should be avoided in an intoxicated patient. There are two recommended strategies in this circumstance. Delay transport till intoxication has reduced/resolved OR if urgency to transport, then rapid sequence intubation and ventilation be undertaken to secure airway for transport

Pre-Handover Sedation:

1. The following oral sedatives are recommended as appropriate first line agents to trial during this pre-handover phase of a psychiatric aeromedical retrieval:

   - Oral olanzapine 5-20mg, repeat 1hrly prn (maximum daily dose 30mg)
   - AND /OR
   - Oral diazepam 5-20mg, repeat 1hrly prn (maximum daily dose 120mg)
   - OR
   - Oral lorazepam 2-4mg, repeat 1hrly prn (maximum daily dose 8mg)
   - Target RASS score = 0 to -1
   - Nursing care should be 1:1 with sedated patient in remote setting until retrieval team handover
   - Police attendance is recommended if there is any risk of physical injury or absconding

2. The EMERGENCY SEDATION protocol may need to be used as a guide to management of the agitated patient if oral sedatives are refused or ineffective to help reduce agitation levels. IV access should be a priority goal in the pre-handover phase.

Handover:

1. This should be done at the facility where the patient is currently situated. Elective retrieval sedation and/or intubation if warranted should be initiated ideally in a resuscitation or procedural room.

2. A primary survey (ABC) should be performed and IV access x 2 checked and secured. Readily manageable causes of agitation such as low BSL, full bladder and fear of flying should be sought.

3. A RASS score should be determined and charted. Significant agitation (RASS +2 to +4) should be managed using the EMERGENCY SEDATION PROTOCOL above.

4. If the RASS score cannot be reduced to below +2 within 45 min of use of the EMERGENCY SEDATION PROTOCOL then consideration for intubation and ventilation. If RASS score reduced to 0 to -3 within 45 min of emergency sedation the proceed to step 5.

5. If at handover the RASS score is 0 to-3. The retrieval goal at this point is to maintain the patient in a calm state despite the added external stressors of the aeromedical transport. Therefore one of two courses of action are recommended:

Plan A (wait and see if patient needs further sedation)

- Perform airway and medical assessments and document
- Explain to patient the purposes of transport and the expected retrieval course of events
- Explain the use of mechanical restraints and move the patient over onto the transport stretcher. Apply restraints and observe patient reaction. If further agitation and need for sedation occurs it is recommended to resort to Plan B (see below)
- Ensure IV access X2 is secured and at least one IV access point has a long extension tube set attached so that drugs can be bolused via this from behind stretcher. Ensure tubing taped at several fixation points along arm.
- Apply minimum set of sedation monitoring and explain use to patient
- Ensure at least midazolam, haloperidol or droperidol and saline flush are drawn up in labelled syringes
- Prepare basic airway gear and bag/valve mask
- Transport to aircraft, constantly observing patient reaction and behaviour
- Unless the RASS score is already between -3 to -4 it is recommended to give an IV bolus of midazolam 2-5mg and haloperidol or droperidol 2-5mg prior to loading of patient and engine startup
- Nurse in 45 deg head up position
- Apply supplemental oxygen 2-4L/min
- Observe behaviour and administer IV midazolam and/or haloperidol or droperidol as needed to maintain target RASS score range between 0 to -3. If multiple boluses (>2) are required then it is recommended to convert the sedation to Plan B (see below)

Plan B (initiate maintenance sedative infusion)

- Apply minimum set of sedation monitoring and explain use to patient
- Ensure at least midazolam,haloperidol or droperidol and saline flush are drawn up in labelled syringes
- Perform airway and medical assessments and document
- Explain to patient the purposes of transport and the expected retrieval course of events
- Explain the use of mechanical restraints
- Ensure IV access X2 is secured and at least one IV access point has a long extension tube set attached so that drugs can be bolused via this from behind the transport stretcher where the flight nurse normally sits. Ensure extension tubing is secured at multiple sites along limb to ensure that it is secure
- Prepare basic airway gear and bag/valve mask:

  In adults, <u>recommended first line sedative infusion is</u>:
  - Ketamine at initial rate of 1.5mg /kg /hr
  - Observe effect over 40min from start of infusion and assess vital signs and RASS score at least 10 minutely. If RASS score -4 then should halve infusion rate or momentarily cease infusion (if RASS score -5). If RASS score +2 or higher then boluses of IV ketamine 0.5mg/kg and/or haloperidol 2-5mg should be used to acutely reduce agitation initially rather than increasing the infusion rate.
  - Nurse in 45 deg head up position
  - Apply supplemental oxygen 2-4L/min
  - Move patient onto stretcher and apply restraints
  - RFDS Queensland retrieval sedation registry has shown that ketamine infusion is effective with low complication rates across a wide age range and patient population.
  - Growing evidence in psychiatric and prehospital literature of the benefit of ketamine sedation in acute suicidal states, excited delirium and major depressive disorders

- If after 40 min of sedative infusion the RASS score is between 0 to -3, vital signs are satisfactory, patient is on RFDS stretcher and has restraints secured, then transport to aircraft can occur

- Unless the RASS score is already between -3 to -4 it is recommended to give an IV bolus of midazolam 2-5mg and/or haloperidol 2-5mg prior to loading of patient and engine startup

- Observe behavior and administer IV midazolam and/or haloperidol as needed to maintain target RASS score range between 0 to -3 during transport

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APPENDIX B

TRANSFER OF DISTURBED PATIENTS INCLUDING PATIENTS WITH A MENTAL ILLNESS
Risk Assessment Tool

Patient's Name: _____

Gender: _____ DOB: _____

Day/Night Flight: _____

SUBJECT AREA	Y/N	Score	Rationale / Comments
Any known medical or criminal history of violence to persons or property?		10	This history is not time frame limited
Any expressions of anger, frustration or agitation during course of hospital admission or preceding 24hrs?		5	
Multiple expressions of anger, frustration or agitation during current care, requiring special nursing or security measures or chemical restraint/sedation		20	
Signs of intoxication/withdrawal from drugs or alcohol during course of hospital admission or preceding 24hrs?		10	Alcohol Withdrawal Scale (AWS)[6]
Known history of substance abuse (Alcohol, opioids, amphetamines, marijuana)?		5	
Known environmental stressors in last 7 days (personal loss, relationship crisis, financial crisis etc but excluding hospital admission.)		5	
History within the last 6 months of organic or traumatic brain pathophysiology affecting behaviour and/or requiring interventions or treatment		5	

THE RISK ASSESSMENT RESULT IS (Circle one) (FN=Flight Nurse, MO =Medical Officer)

HIGH RISK (>25) FN, MO, 1 patient per flight, IV access, patient sedated and restrained, recommended Police or trained attendant, consider intubation and ventilation if failed adequate trial of pre-flight sedation

MEDIUM RISK (10-25) FN, MO, 1 patient per flight, patient sedated and restrained, IV access, may have Police or trained attendant.

LOW RISK (5) FN, may require any of the following: sedation, restraint, IV access, MO or another attendant. This category may be carried with another patient with a dedicated attendant for the disturbed/mentally ill patient.

This risk assessment tool is a dynamic instrument and does not replace clinical judgement for a given clinical situation. The risk may change as a result of medical intervention/management prior to transfer. Night flights are to be avoided due to the limited available aviation options should a problem develop and the disorientating effect of night flying in some disturbed patients.

Additional Remarks:

_____

Signature: _____

Position/Title: _____ **Date/Time:** _____

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