London Ambulance Service NHS
NHS Trust

Advanced Paramedic Practitioners

ADVANCED CLINICAL OPERATING PROCEDURE

TITLE	Emergency Sedation		
AUTHOR	Dr Neil Thomson, Assistant Medical Director East		
PRINCIPLE REVIEWERS	Dr Fionna Moore, Medical Director Mark Whitbread, Director of Paramedic Education & Development Jaqualine Lindridge, Consultant Paramedic (v1.3)		
AUTHORISED BY	Dr Fionna Moore, Medical Director		
REVISION AUTHORISED BY	Dr Fenella Wrigley Interim Medical Director		
APPLICATION	Advanced Paramedic Practitioners Consultant Paramedics Named Paramedics		
THIS DOCUMENT REPLACES	ACOP 002 V1.0		
ISSUE DATE	6th July 2015		
REVIEW DATE	May 2016		
REFERENCE	ACOP 002	**VERSION**	1.6
FURTHER READING	• Smith, Scarth and Sasada: Drugs used in Anaesthesia and Critical Care, 4th Edition, 2011 • LAS PGDs: Midazolam & Haloperidol • Calver L *et al* **Droperidol v Haloperidol for sedation of aggressive behaviour in acute mental health: randomised controlled trial** BR J Psychiatry 2015 Mar 206 (3) 223-8		

	• Ibister GK *et al* **Randomised controlled trial of IM droperidol v midazolam for violence and acute behavioural disturbance: the DORM study** Ann Emerg Med 2010 Oct 56(4) 392-401 • Mental Capacity Act, (2005) & Mental Capacity Act Deprivation of Liberty Safeguards (2009)

Version Number	Revisions
0.1	1st April 2014 NT Initial Draft
0.2	15th April 2014 NT Minor amendments following comments from reviewers
0.3	24th April 2014 NT Minor amendments following review with APP Group
1.0	1st May 2015 Final Version
1.1	29 April 2015 Reviewed and updated Fenella Wrigley; Neil Thomson; Peter Dalton; Ian Wilmer; Mark Faulkner
1.2	15th May 2015 Detail on haloperidol and case examples added
1.3	19th May 2015 NT, FW: Additional detail on case examples; Deprivation of Liberty Safeguards
1.4	17th June 2015 JL: Wording on Deprivation and Restriction of Liberty adjusted Final Review & Release
1.5	29th June 2015 Removal of reference to Intranasal Midazolam
1.6	6th July 2015 Review of Cases and reference to Haloperidol

INTRODUCTION

The agitated, restless or combative patient is relatively rare in prehospital care. However in the APP system (with targeted dispatch) they are not uncommon. These patients can be immensely challenging to manage, not least because an altered level of consciousness is often a sign of very serious underlying illness or injury.

These are also complex and challenging scenes to manage, and often involve a variety of clinical and non-clinical resources. Non-clinical resources such as the police and in particular security staff may have little understanding of the medical implications of these incidents, or of the serious risk to life that may threaten these patients.

Regardless of the circumstances, a person with altered mental state must be considered to be a 'patient' with medical needs, rather than a 'prisoner'. They are unwell, and need urgent hospital assessment. The clinician is responsible for patient care, and not the police. A custody suite is not a place of safety for an unwell person.

In all cases consideration needs to be given to whether or not the patient has capacity. It must be believed that based on the information available to the clinician at the time, sedation is both in the patient's best interests and the least restrictive option. Consideration must also be given as to whether a patient is already subject to a Deprivation of Liberty order, and where possible, seek documentary evidence of this. The act of sedation in the emergency situation, as a therapeutic intervention and in the least restrictive, best interests of the patient, is not in itself a Deprivation of Liberty. Sedation in this context will constitute restraint as a minimum, and may constitute a restriction of liberty. As such, the minimum amount of restraint should be applied for the shortest period of time and must be justified, and the rationale fully documented.

This ACOP does not cover sedation to facilitate placement of an advanced airway. Sedation to maintain and airway that is already in place is covered in the ACOP for ROSC.

LICENSING & RESTRICTIONS

- Only paramedics who have been appropriately trained and who are authorised by the Medical Director may work to these guidelines.
- Autonomous use of a medicine not listed in the in the UK Ambulance Service Clinical Practice Guidelines is restricted to paramedics who are authorised under an appropriate Patient Group Direction.

ASSESSMENT

It is important to rapidly establish the most likely cause of altered behaviour and to exclude treatable or reversible causes as quickly as possible.

Agitation, irritability, restlessness and combativeness are terms that are sometimes used interchangeably, although it is possible to distinguish between them, and to start to consider possible causes based on how the patient is behaving, and based on the history, mechanism or triggers leading to the incident. Obtaining this information often requires interviewing multiple witnesses.

Possible Causes can include (but are not limited to):

- Hypoxia
- Hypovolaemia
- Sepsis
- Hypoglycaemia and other metabolic abnormalities
- Head injury, and neurological emergencies (post-ictal state, sub-arachnoid haemorrhage, expanding mass, meningitis and other infections etc.)
- Pain – especially in the context of patients who are unable to communicate
- Full bladder
- Mental illness
- Learning difficulties
- Fear
- Dementia
- Drugs and / or alcohol use

Note that it is important to exclude other causes before assuming that alcohol or drugs are the reason behind altered behaviour, even though these are the most common causes.

In the context of severe injury (without significant head injury), restlessness is an ominous sign. Ensure that all possible causes of bleeding have been addressed (wounds managed, pelvis and long bones splinted, femurs in traction etc.), and minimise time on scene. In the profoundly shocked patient, cautious administration of small boluses of fluid may be more effective.

RISKS OF SEDATION

Sedation of a patient about whom little may be known is not without considerable risk.

Inexperienced Crews, who may have been faced with a challenging patient for some time, may not fully appreciate the risks involved, or the need to titrate medicines to effect. Managing their expectations can add a further level of complexity

Risks include

1. Failure, or delay in achieving the desired level of sedation
2. Airway loss
3. Respiratory depression
4. Reduced cardiac output
5. Injury (to patient or crew)
6. Positional asphyxia
7. Cardiac arrest
8. Further disinhibition of the patient

STRATEGY

- Assess the situation and the patient, taking control if needed; identify and where possible address the underlying cause.
- Consider consent implications – whilst the patient will almost certainly not be able to demonstrate capacity, it is often useful to verbalise this with the crew, and if appropriate, log the decision with EOC. If using powers under the Mental Capacity Act (2005), ensure that the assessment is documented and sedation is the least restrictive option.

- Discuss options for management with the crew, police and other services. It may be appropriate to involve close family members in the discussion so that they understand the risks and benefits, and the need to gain control.
- "Doing nothing" is an option. If left alone, patients often settle into a position of comfort, and can be moved in this position, even if a traumatic mechanism of injury suggests that spinal immobilisation might be indicated.
- If physical restraint is required by police officers, the patient must be placed in a lateral position, to reduce the risk of positional asphyxia.
- Where appropriate, wrapping a patient in a blanket may be sufficient restraint.
- Regardless of the method of restraint, the patient must be closely monitored throughout the procedure, and the APP must remain in control of patient care.
- Plan an extrication strategy (including any contingency plan) PRIOR to sedation. The plan must be understood by everyone on scene (including police if applicable). Equipment must be prepared to move the patient before sedation.
- Consider where the patient is. It may be possible to move, or persuade the patient to move to a place or room that affords better access.
- Use the minimum amount of sedation and restraint needed to achieve the desired effect
- The APP MUST travel with the patient.

PREPARATION

- Assign roles to the team. This includes airway monitoring and management, IV access and monitoring of cardio-respiratory status. There should ideally be at least one other paramedic on scene.
- Prepare airway management and resuscitation equipment. Note that unlike rapid sequence induction (RSI), it may not be possible to set up a formal 'kit-dump' as the scene may move with the patient.
  The following equipment must be immediately available:
    - Bag-Valve-Mask-Reservoir (BVMR), including the appropriate sized mask
    - Suction (tested and functional) with a range of rigid and flexible catheters
    - Essential and advanced airway management equipment
    - Oxygen and a spare oxygen cylinder
- The patient must be fully monitored, including $EtCO_2$, as soon as possible. It is accepted that this may not be possible to achieve prior to sedation.

All drugs should be checked by two clinicians.
When cross checking ask the question "what is this?" which prompts the checker to stop and read the vial or ampoule, rather than tell the checker what the drug is, which may illicit a positive or confirmatory response without a proper check.

Drugs must only be drawn up in the stipulated concentrations and syringe sizes. This greatly reduces the risk of error. Drug preparation must only be done by the APP.

All syringes must be labelled with an approved colour-coded label, with the concentration clearly marked.

Ensure that there is no restriction (handcuffs etc.) to blood flow from the cannula site

"TALK THROUGH" & CHECKLIST

1. Make sure that the crew have agreed on the indication and risk assessment

2. One clinician must have the sole responsibility of monitoring and maintaining the patient's airway.

3. Make sure that this plan is communicated to all present, and that specific tasks have been allocated and understood. This brief should include alternative / 'Plan B' options.

Preferred Drug Route

The ideal drug route is dependent upon the clinical condition being treated and a number of patient factors including size, pre- and co-morbid conditions and the likelihood and safety of obtaining IV access on the first attempt.

Although the IV route may allow medication to be titrated to effect more closely, and absorbtion through the IM route is slower, the IM route has the advantage of more gradual absorption and therefore more gradual sedation with less fluctuation in response. Allow at least 15 minutes before repeating an IM dose.

Haloperidol should be administered by the IM route only.
Midazolam can be given via either route.

Both routes may require a degree of physical restraint. If this is the case it should be measured, justifiable, and carried out in the least restrictive manner, by people trained to provide restraint. If restraint is used it is imperative that the patient is closely observed and their airway and ventilation are unimpeded.

IV access should be obtained as soon as it is safe to do so. This should ideally be away from a joint and firmly secured in place. Using a t-piece or extension and covering the cannula site with a bandage may aid security.

IO access should not be used in the conscious, semi-conscious or agitated patient

Examples

28 year old male behaving bizarrely following a night out with friends.
He is agitated and angry, shouting at random people and objects, and has removed most of his clothes. IV access is likely to prove impossible due to his size and apparent strength.

1. Ascertain that there is no history of trauma, head injury or pre-existing neurological condition
2. Determine that the patient lacks capacity and that you are acting in his best interests
3. Cautiously restrain the patient and administer (by separate injections):
    - 5mg Haloperidol IM
    - 2mg Midazolam IM
4. Allow 10-15 minutes for the drugs to take effect, during which time the patient should be monitored from a distance to ensure his safety.
5. If there is no sustained response, the same dose of both drugs can be repeated IM.
6. Once IV access can be obtained IV Midazolam alone should be used to maintain sedation
7. As soon as the patent becomes compliant commence transport to the nearest ED

Maximum total dose without advice from the on-call clinician:

- Haloperidol 10mg
- Midazolam 10mg

75 year old lady with an acute confusional state secondary to sepsis from a presumed urinary tract infection
She is confused and irritable, pushing you away every time you try and move her from her chair to a carry chair. She has a temperature of 39^{O}C is tachycardic and clearly lacks capacity.

1. This represents a significant risk, in that little is known about her background and she is clearly physiologically compromised. Sedation in this group of patients should be discussed with the on-call clinician.
2. Consider simple measures – oral paracetamol and fluids, less aggressive persuasion and involvement of family members to create a calm environment. Minimise the number of people talking to the patient.
3. Very gentle restraint to allow IV access may be appropriate
4. Administer IV fluid boluses
5. Administer 0.5 – 1mg boluses repeated every 2-5 minutes to a maximum of 5mg
6. If IV access is not easily obtained or appropriate a small dose (1-2mg) of IM midazolam would be appropriate, followed by IV access at the earliest opportunity.

19 year old boy with significant learning difficulties, a fear of hospitals and a possible abdominal obstruction
He settles nicely with his family and carers, but has resisted any attempts by the crew to obtain observations or move him to the ambulance.

1. Adopt a slow and friendly approach to the patient and avoid any unnecessary monitoring or interventions.
2. Consider whether oral analgesia may be of benefit – paracetamol or oramorph
3. Involve the family and carers in moving him out of the house, and consider whether a more familiar means of transport may be more appropriate than an ambulance.
4. Only if these methods fail should consideration be given to the use of sedatives.
5. If at all possible, IV access should be obtained. Titrate midazolam IV slowly to a level that the patient cooperates but is not overly sedated.
6. Ensure that the ED is aware of his impending arrival so that arrangements can be made for a suitable area and prompt senior assessment.

45 year old female with a closed head injury following a fall down stairs in a pub.
She has a fluctuant level of consciousness, intermittently becoming very agitated. There is blood in one of her ears.

1. Assume that her behaviour is related to a significant brain injury and not alcohol or drugs
2. Request assistance (if available) from an Enhanced Care Team / London's Air Ambulance
3. Monitor the patient fully and establish IV access
4. Administer 1-2mg boluses of Midazolam IV and 1-2mg boluses of morphine taking care to monitor her airway and respiration closely.
5. Package and extricate her as soon as possible, and convey to the nearest Major Trauma Centre with an appropriate priority call.

MEDICATIONS

Midazolam	
Presentation	Ampoules containing either 1mg/ml midazolam (for IV use) or 5mg /ml (for IM use). This is a potential source of drug error; be sure to check the concentration that you have on hand.
Mode of action	Midazolam causes hypnosis, sedation and anxiolysis. It is also an anticonvulsant. It is water soluble
Indications	Management of agitation
Contraindications	Known severe allergic reaction
Cautions	It leads to a fall in SVR of 15-33% → drop in cardiac output and BP. Hypotension is more noticeable in a shocked patient. It can cause loss of airway reflexes (if not intubated) and respiratory depression. t has very unpredictable dose requirements and incidence of side effects
Preparation	Midazolam should be prepared for IV use as a 1mg/ml solution For IM use, the 5mg/ml solution should be used, un-diluted Syringes must be labelled with an appropriate colour-coded label
Dose (adult)	1 – 2.5 mg boluses IV followed by a 10-20ml flush. Further doses can be given at intervals not less than 2 minutes apart to a maximum of 10mg. Response to midazolam cannot always be predicted by age, size or level of agitation. Use smaller doses and longer intervals if there is any possibility of cardiovascular instability. If IV access cannot be achieved (or is not expected to be successful), consideration should be given to administering boluses of 1 – 2.5mg IM (use the 5mg/ml concentration) with a five minute interval between doses
Dose (children)	Up to 0.1 mg / kg, titrated to effect, IV after discussion with an on-call clinician.
Notes	Intraosseous Access This should be avoided in the acutely agitated (acute behavioural disturbance) patient • Injection of drugs into the IO space is painful and may worsen agitation • Potential for injury if the patient tries to remove the needle themselves, or if the needle is inadvertently caught on furniture etc.

Haloperidol	
Presentation	1 ml ampoules containing 5mg of a clear colourless solution
Mode of action	Halopridol is a neuroleptic – it induces a state of diminshed motor activity anxiolysis an indifference to the external environment
Indications	Acute Behavioural Disturbance including drug-related behavioural disturbance in adults aged 18 and over
Contraindications	• Children aged under 18 • Suspected head injury, sub-arachnid bleed or any other intracranial pathology • Known prolonged QT syndrome
Cautions	• Metabolic disturbances: Hypokalaemia, hypocalcaemia or hypomagnesaemia • Thyrotoxicosis

Dose (adult)	• 2.5 mg by IV injection or 5mg by IM injection • Repeat Dose after at least 10 minutes 2.5 mg by IV injection or 5mg by IM injection • Maximum total dose regardless of route is 15mg
Dose (children)	Not Indicated
Notes	• Can cause extrapyramidal side effects including tremor and dystonia

HANDOVER

1. The patient must be conveyed to an appropriate Emergency Department
2. The Practitioner must accompany the patient,
3. The practitioner should lead the handover, which should be to a senior clinician and must include a clear description of the patient's condition prior to sedation, the reason for sedation, the course (including maximal depth of sedation and any complications), and the total doses of medicines administered.
4. This information must also be captured on the Patient Report Form

NOTES

The end point of sedation is compliance – getting the patient into a state where they can safely be extricated and moved to the ambulance. Do not aim to make the patient comatose.

In severely agitated patients it is easy to assume that large doses of midazolam will be needed. This is often not the case; relatively small doses may achieve compliance. In the absence of significant injury it is perfectly acceptable to administer enough midazolam to get the patient into a state where they are able to walk to the ambulance with assistance.

Flumazenil (which can be used to reverse the effects of iatrogenic pure benzodiazepine overdose) is contraindicated in this group of patients, as it is very possible that the patient may have taken unknown amounts of either illicit or prescribed medication.