



CG025 Procedural Sedation

1. Key Recommendations for operational use

For use by: All teams Internet: Yes

1	Assessment	<ul style="list-style-type: none">• Consider the rationale for sedation.• Consider suitable alternatives: eg Entonox or Pentrox.• Consider patient recovery, transfer or discharge.• Where practicable: undertake a patient assessment, explain the procedure and obtain required consent.
2	Preparation	<ul style="list-style-type: none">• Face mask oxygen: ensure several minutes of oxygen therapy to optimise oxygenation.• Basic monitoring: SpO₂, NIBP, 4 Lead ECG.• Waveform capnography (nasal ETCO₂).• Standard ABC management as required.• IV or IO access; IV if at all feasible.• Consider if sedative reversal agents are available.• Where possible, create and maintain a calm, quiet and controlled environment.
3	Equipment	<ul style="list-style-type: none">• Aim to achieve 360-degree access to the patient.• Suction: check it is tested and ready with an appropriate size of Yankauer catheter.<ul style="list-style-type: none">- refer to EG005 Laerdal suction unit.• Oxygen: check sufficient supply.• Resuscitation and airway equipment: check immediately available.
4	Children	<ul style="list-style-type: none">• Consider analgesia only, with associated distraction techniques, to facilitate the procedure.• Consider seeking a second opinion prior to sedating children.<ul style="list-style-type: none">- if required, access the ScotSTAR Paediatric consultant via SSD.
5	Team briefing	<ul style="list-style-type: none">• Use a challenge and response checklist.• Allocate an appropriate clinician to be responsible for patient observation and monitoring.• Allocate roles and provide briefing appropriate to all team members.• Plan for rescue techniques due to any complications.
6	Procedure	<ul style="list-style-type: none">• Titrate drugs to achieve the desired sedative +/- analgesic effect.• Confirm the required level of sedation:<ul style="list-style-type: none">- responds to voice is appropriate.• Perform the procedure for which sedation +/- analgesia was administered.• Consider any ongoing analgesia requirements.
7	Post sedation	<ul style="list-style-type: none">• Arrange suitable onward transfer as appropriate.• Keep a contemporaneous patient record.• If applicable, discharge following sedation should be consistent with agreed guidelines.<ul style="list-style-type: none">- convey children to hospital.



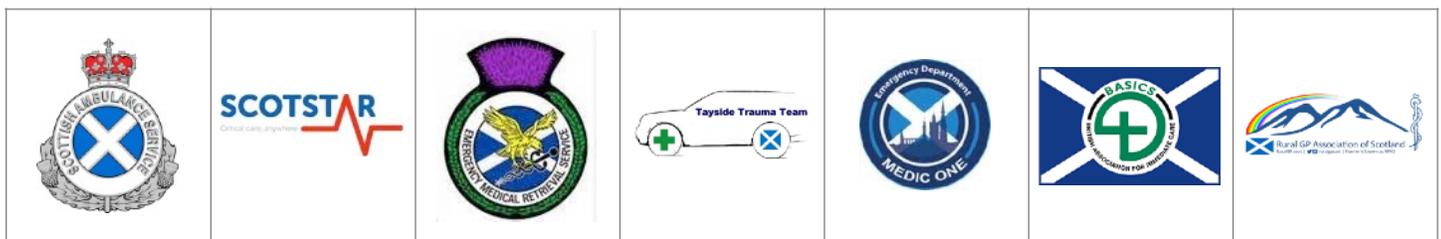
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Potential drug regimens		
8	Non painful procedures	<ul style="list-style-type: none"> • For non-painful procedures: sedation without analgesia may be sufficient. • Titrate only the minimum amount of drug required to carry out the procedure. • Midazolam: <ul style="list-style-type: none"> - Children: 25 to 50mcg/kg over 2 to 3 minutes, 5 to 10 minutes prior to procedure; max 6mg. - Adults: consider 2 to 2.5mg, 5 to 10 mins prior to procedure, increase in 1mg aliquots; max 7.5mg. - Elderly patients: consider 0.5 to 1mg 5 to 10 mins prior to procedure, increase in 0.5 to 1mg aliquots; max 3.5mg. • Propofol 1%: <ul style="list-style-type: none"> - Children: only consider in older children under specific circumstances, ideally after seeking expert consensus. - Adults: consider 0.5 to 1mg/kg over 1 to 5 mins. - Elderly patients: consider 10 to 20mg given slowly; repeat dose slowly if required.
9	Painful procedures	<ul style="list-style-type: none"> • For painful procedures: sedation and analgesia are required. • Titrate only the minimum amount of drug required to carry out the procedure. • Use Midazolam or Propofol as box 8; in addition use Morphine or Fentanyl. • Morphine: <ul style="list-style-type: none"> - Adults and Children: 0.1mg/kg (50mcg/kg for <1 month), administer over at least 5 minutes, 10 to 20 mins prior to procedure. - Elderly patients: consider smaller dosages. • Fentanyl: <ul style="list-style-type: none"> - Adults and Children: 1mcg/kg. - Elderly patients: consider smaller dosages. <hr/> <ul style="list-style-type: none"> • Alternatively, use Ketamine as a single agent. • Seek specialist advice prior to use in infants and neonates. • Ketamine: <ul style="list-style-type: none"> - Adults, children, infants and neonates: 0.5 to 1 mg/kg (administer over 60 seconds). - Elderly patients: consider 10 to 30mg.



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2. Document History			
Reference Number	CG025		
Version	1		
Writing group (Lead author in bold)	John Paul Loughrey	Emergency Physician	EMRS West
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	Medic 1		✓
	Referring centres via service websites		✓
	Rural GPs Association of Scotland		✓
	SAS	Air Ambulance	for information
		Specialist Services Desk	X
	ScotSTAR	EMRS West	✓
		EMRS North	✓
		Paediatric	✓
		Neonatal	X
Tayside Trauma Team		✓	





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3. Scope and purpose

- Overall objectives:

Providing safe sedation for patients may allow for relief from pain and anxiety in the pre-hospital, remote and rural setting. It is important to understand both the benefits and risks associated with sedation. Royal Colleges' guidelines advocate appropriate training, competencies and organisational responsibility regarding sedation of patients in any clinical environment.

The remit of this guide is broadly aimed at moderate/conscious sedation. Although not an exhaustive list, the main indicators for moderate sedation in the pre-hospital, remote and rural setting may include; orthopaedic injury (eg reduction and splinting), DC cardioversion or transcutaneous pacing and to facilitate otherwise painful extrication. Deeper sedation should be considered as general anaesthesia.

- Statement of intent:

This guideline is not intended to be construed or to serve as a standard of care. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. Clinicians using this guideline should work within their skill sets and usual scope of practice.

- Feedback:

Comments on this guideline can be sent to: sas.CPG@nhs.scot

- Equality Impact Assessment:

Applied to the ScotSTAR Clinical Standards group processes.

- Guideline process endorsed by the Scottish Trauma Network Prehospital, Transfer and Retrieval group.





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4. Explanatory Statements		
4.1 Assessment	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"> Consider the rationale for sedation. Consider suitable alternatives: eg Entonox or Pentrox Consider patient recovery, transfer or discharge. Where practicable: undertake a patient assessment, explain the procedure and obtain required consent. <p>In certain behavioural or medical cases, treating an underlying cause may improve patient physiology, comfort, safety and co-operation. Consider alternatives such as distraction techniques or analgesia alone. Some published literature exists advocating Pentrox as a suitable analgesic agent where otherwise sedation may be required. Either which way, consider any limitations within the specific clinical setting and seek early expert advice as required. Patient assessment is encouraged prior to sedation; elderly patients and those with pre-existing co-morbidities are at increased risk of complications.</p>	Strong	Guidelines [1,2,3] 3 [4] 4 [5]
4.2 Preparation		
<ul style="list-style-type: none"> Face mask oxygen: ensure several minutes of oxygen therapy to optimise oxygenation. Basic Monitoring: SpO₂, NIBP, 4 Lead ECG. Waveform capnography (nasal ETCO₂). Standard ABC management as required. IV or IO access; IV if at all feasible. Consider if sedative reversal agents are available. Create and maintain a calm, quiet and controlled environment where possible. 	Strong	Guidelines [1,2]
4.3 Equipment		
<ul style="list-style-type: none"> Aim to achieve 360-degree access to the patient. Suction: check it is tested and ready with an appropriate size of Yankauer catheter. <ul style="list-style-type: none"> refer to EG005 Laerdal suction unit. Oxygen: check sufficient supply. Resuscitation and airway equipment: check immediately available. 	Strong	Guideline [1]
<p>Portable suction can quickly suffer from battery failure. Connect to a mains supply or have a second suction unit ready if possible (with full battery and functioning).</p>	GPP	



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4.4 Children	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"> • Consider analgesia only, with associated distraction techniques, to facilitate procedure. • Consider seeking a second opinion prior to sedating children. <ul style="list-style-type: none"> - if required, access the ScotSTAR Paediatric consultant via SSD. <p>Emphasis should be placed on appropriate analgesia and distraction strategies in the first instance. It is advantageous to encourage parental involvement to support distraction techniques and for explaining procedures to the patient.</p>	Strong	Guidelines [6,7]
4.5 Team briefing		
<ul style="list-style-type: none"> • Use a challenge and response checklist. • Allocate an appropriate clinician to be responsible for patient observation and monitoring. • Allocate roles and provide briefing appropriate to all team members. • Plan for rescue techniques due to any complications. <p>Consider the personnel available. Consider at least two, but ideally three, team members to facilitate safe sedation. One of the clinical team should be given sole responsibility of monitoring the patient's status and alerting the team to any complications. Other team member roles required may include airway management, administering sedation and carrying out the procedure itself.</p>	Strong	Guidelines [1,6]
4.6 Procedure		
<ul style="list-style-type: none"> • Titrate drugs to achieve the desired sedative +/- analgesic effect. • Confirm the required level of sedation <ul style="list-style-type: none"> - responds to voice is appropriate. • Perform the procedure for which sedation +/- analgesia was administered. • Consider any ongoing analgesia requirements. <p>Sedation is an evolving process and often described as a continuum. Patients will vary in their responsiveness and levels of consciousness during the procedure. The desired level of sedation in this setting will most likely be "Moderate/Conscious", with the patient being able to respond to voice commands or tactile stimulus. Airway, ventilation and cardiovascular complications are less likely.</p> <p>Deeper sedation increases risk of airway, ventilation and cardiovascular complications along with inadvertent anaesthesia of the patient.</p>	Strong	Guidelines [1,2,8]



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4.7 Post sedation	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"> • <i>Arrange suitable onward transfer as appropriate.</i> • <i>Keep a contemporaneous patient record.</i> 	Strong	Guidelines [1,2]
<ul style="list-style-type: none"> • <i>If applicable, discharge following sedation should be consistent with agreed guidelines. Patient's suitability for discharge from a clinical setting must follow predetermined criteria. The following are derived from RCEM [2]:</i> <ul style="list-style-type: none"> - The patient has returned to their baseline level of consciousness. - Vital signs are within normal limits for that patient. - Respiratory status is not compromised. - Pain and discomfort have been addressed. - Patients should be discharged into the care of a responsible third party. - Verbal and written instructions should be given. 	Strong	Guidelines [1,2,6]
4.8 and 4.9 Potential drug regimens		
<ul style="list-style-type: none"> • <i>For non-painful procedures – sedation without analgesia may be sufficient.</i> • <i>Titrate only the minimum amount of drug required to carry out the procedure.</i> • Midazolam: <ul style="list-style-type: none"> - <i>Children: 25 to 50mcg/kg over 2 to 3 minutes, 5 to 10 minutes prior to procedure; max 6mg.</i> - <i>Adults: consider 2 to 2.5mg, 5 to 10 mins prior to procedure, increase in 1mg aliquots; max 7.5mg.</i> - <i>Elderly patients: consider 0.5 to 1mg 5 to 10 mins prior to procedure, increase in 0.5 to 1mg aliquots; max 3.5mg.</i> • Propofol 1%: <ul style="list-style-type: none"> - <i>Children: only consider in older children under specific circumstances, ideally after seeking expert consensus.</i> - <i>Adults: consider 0.5 to 1mg/kg over 1 to 5 mins.</i> - <i>Elderly patients: consider 10 to 20mg given slowly; repeat dose slowly if required.</i> 	Conditional	Guidelines [9,10]
<p>Use propofol only with considerable caution in the unwell small child as they can mount a better sympathetic response to hypovolaemia than adults and removing this with propofol can unmask the hypovolaemia leading to significant cardiovascular instability.</p>	GPP	



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<ul style="list-style-type: none"> • For painful procedures, sedation and analgesia are required. • Titrate only the minimum amount of drug required to carry out the procedure. • Use Midazolam or Propofol as box 8; in addition use Morphine or Fentanyl. • Morphine: <ul style="list-style-type: none"> - Adults and Children: 0.1mg/kg (50mcg/kg for <1 month), administer over at least 5 minutes, 10 to 20 mins prior to procedure. - Elderly patients: consider smaller dosages. • Fentanyl: <ul style="list-style-type: none"> - Adults and Children: 1mcg/kg. - Elderly patients: consider smaller dosages. 	Conditional	Guidelines [9,10]
<ul style="list-style-type: none"> • Alternatively, use Ketamine as a single agent. • Seek specialist advice prior to use in infants and neonates. • Ketamine: <ul style="list-style-type: none"> - Adults, children, infants and neonates: 0.5 to 1 mg/kg (administer over 60 seconds). - Elderly patients: consider 10 to 30mg. <p>The RCEM guideline [7] advises against use of ketamine in infants (<1 year) in the emergency department due to increased risk of airway complications.</p>	Conditional	Guideline [7] GPP
<p>These dosing regimens are a guide. Use familiar drugs. A benzodiazepine is often cited as appropriate for moderate sedation. An opioid analgesic may also be required for painful procedures. Typically these two drugs will include Midazolam and Morphine.</p> <p>It is recommended that antagonist agents such as Naloxone and Flumazenil are available should emergency reversal of sedation or analgesia be required. Their use should be only in extremis and with expert decision support and guidance.</p>	Strong	Guidelines [1,2]



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5. References

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