Chapter 19
Guidelines for the Provision of Anaesthesia Services (GPAS)
Guidance on the Provision of Sedation Services 2016

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When considering the provision of anaesthesia, the Royal College of Anaesthetists recommends that the following areas should be addressed. The goal is to ensure a comprehensive, quality service dedicated to the care of patients and to the education and professional development of staff. The provision of adequate funding to provide the services described should be considered. These recommendations form the basis of the standard expected for departmental accreditation.
Summary

- National guidance on procedural sedation has recently been published.\(^1\) This defines fundamental and minimum standards for all areas and all specialties and provides a universal baseline. The guidance below relates to sedation, including circumstances where anaesthesia support has been requested, there is a possibility of deep sedation or progression to general anaesthesia, or where patients have material co-morbidities. Accordingly, some of this guidance recommends staffing, equipment or processes that are more rigorous that those defined as the national baseline.

- This chapter is primarily about the provision of sedation by anaesthetists. However, because sedation by non-anaesthetists has long been an area of concern, it addresses standards relating to that in each section and references this to existing documents on the subject published by individual royal colleges.

- Practitioners administering sedation should have received appropriate training in sedation and be competent with airway management and resuscitation. This also applies to physicians’ assistants (anaesthesia), who must work at all times under the supervision of a consultant anaesthetist who is available to attend within two minutes if requested.\(^2\)

- The recommended standards of pre-assessment, monitoring, trained assistance and post-sedation recovery must be met for every patient undergoing sedation. These must be the same as those required for the provision of anaesthesia, where sedation goes beyond conscious sedation.

- Sedation is frequently provided outside the theatre environment. The same standards of care must be provided as those required for sedation within the theatre environment. This applies to pre-, intra- and post-procedural care.\(^3\)

- Training in sedation techniques is essential. Safe sedation practice forms part of the necessary competencies for obtaining the Certificate of Completion of Training (CCT) in anaesthesia.\(^4\)

- Where sedation is practised by non-anaesthetists in areas of the hospital outside the theatre environment, consideration must be given by the operating team to the requirement for anaesthetic support for patients undergoing complex procedures.\(^5\) Anaesthetic support should also be sought for patients at the extremes of age and those with significant co-morbidities.

- Anaesthetic departments should facilitate the provision of planned and emergency sedation services in other departments in the hospital.\(^6,6\)

- A named consultant anaesthetist should be responsible for liaising with consultants in other departments with responsibility for sedation, to establish local guidelines and training for the provision of safe sedation by non-anaesthetists.\(^6,7\)

- It is essential that wherever there is an ‘operator-sedationist’ (where the individual performing the procedure also administers sedation), e.g. for central line insertion, an appropriately trained second individual, ideally with no other role during the procedure, must be responsible for monitoring the sedated patient.\(^6,1\)

- Wherever sedation is practised, effective audit is essential.

- It has been recommended\(^1\) that all institutions where sedation is practised should have a sedation committee. This committee should include key clinical teams using procedural sedation and there should be a nominated clinical lead for sedation. In most institutions, the sedation committee should include an anaesthetist, at least in an advisory capacity.

- It has also been proposed\(^1\) that hospitals should consider developing sedation teams analogous to pain teams. The role of the sedation team would be to support multidisciplinary staff with continuing education and ‘hands-on’ clinical expertise in sedation.
Introduction: the importance of sedation services

1.1 Sedation is often employed to facilitate comfort during diagnostic and therapeutic procedures. It may only be necessary to provide anxiolysis but most painful procedures will also require local or systemic analgesia.

1.2 Sedation is a continuum of a depressed conscious state with unpredictable inter-individual dose responses to the drugs used, which may result in unconsciousness. The unconscious patient is unrousable, even by painful stimulation. Deeper levels of sedation are indistinguishable from general anaesthesia.

1.3 ‘Conscious sedation’ refers to a state of sedation where verbal contact is maintained throughout the period of sedation. Cardiovascular stability and good respiratory function are usually maintained, as are airway reflexes. Conscious sedation is therefore considered to be a safe target state.\\n
1.4 Deeper levels of sedation, where verbal contact is lost, have the potential to cause cardiovascular and/or respiratory depression, as well as the loss of airway reflexes. This may result in significant morbidity and mortality.

1.5 Because sedation is a continuum, it is not always possible to predict how an individual patient will respond. Hence, all practitioners intending to produce a certain level of sedation should be able to rescue patients whose level of sedation becomes deeper than originally intended.\(^9\) Practitioners therefore require skills to recognise and manage airway, respiratory and cardiovascular problems caused by over-sedation.

1.6 As a general rule, single drugs are less likely to result in inadvertent over-sedation. The combination of an opioid and benzodiazepine results in pronounced synergism and, with it, an increased risk of over-sedation.\(^9\)

1.7 Loss of verbal contact with a patient requires the same level of care as that needed for general anaesthesia. In the UK, this means that the patient should be cared for by an anaesthetist or a physicians’ assistant (anaesthesia).\(^8\)

1.8 Concerns have long been raised about the failure of safe sedation practice in all specialties. This has been addressed by the RCoA by making sedation training a requirement for obtaining a CCT in anaesthesia. Despite continued efforts to improve safety, through publication of cross-specialty guidelines and improvements in training, there are still occasional sedation-related adverse events resulting in morbidity and death.\(^10,11,12,13,14\)

1.9 A recently published document\(^1\) has recommended competency-based formal training for all healthcare professionals involved in sedation, to a clearly defined national standard.

1.10 Anaesthetists can play a key leadership role in providing educational support and practical hands-on experience to non-anaesthetist sedation practitioners, to help acquire and maintain airway and resuscitation skills.

1.11 There is currently no complete dataset on the safety of sedation in UK practice. Wherever sedation is practised, there should be continuous audit and incident reporting. Clinical incidents such as sustained drop in oxygen saturation <90%, midazolam over-sedation or unplanned airway intervention should be reported and investigated, to ensure that processes are introduced to prevent recurrence. It is recommended that practitioners using sedation should audit the number of cases performed by each practitioner and collect data on complications.
Levels of provision of service

1 Staffing requirements
1.1 All patients undergoing sedation should be pre-assessed by an appropriately trained healthcare professional, prior to their procedure. Ideally, this should be in pre-admission clinic, so that medical problems can be identified and, if possible, resolved before admission for the procedure.

1.2 All patients due to receive sedation by an anaesthetist must be seen by an anaesthetist on the day of the procedure, ideally by the anaesthetist who will administer the sedation.

1.3 The involvement of an anaesthetist in patient sedation commonly reflects expectation that deep sedation may be used or that there is a possibility of progression to general anaesthesia, or that the patient has material comorbidities. Mindful of this, dedicated trained anaesthetic assistants should be available to anaesthetists at all sites in the hospital where sedation by an anaesthetist is required.

1.4 Following sedation, patients must be recovered in a ‘post-anaesthesia care unit’ staffed by healthcare professionals specially trained and competent in recovery procedures.

1.5 Patients meeting discharge criteria following sedation who are to be discharged home should be discharged into the care of a responsible third party. Verbal and written instructions for post-procedural care should be given if a procedure has been performed.

2 Equipment, support services and facilities

General equipment
2.1 Facilities for monitoring, ventilation of patients’ lungs and resuscitation, including defibrillation, must be available at all sites where patients are sedated.

2.2 All equipment used should comply with the recommendations of the AAGBI and be the same as that required for patients receiving general anaesthesia.

2.3 All anaesthetic equipment must be checked before use, according to the AAGBI published guidelines.

Monitoring and oxygen administration
2.4 Regular communication with the patient allows monitoring of the level of sedation. Additionally, facilities for monitoring must be available at all sites where patients receive sedation. For patients receiving conscious sedation, this must include pulse oximetry. Clinical and instrumental monitoring to a degree relevant to the patient’s medical status and the sedation method must be used.

Monitoring of electrocardiography (ECG) may not be necessary in young healthy patients but is essential in older patients. Capnography is not mandatory for conscious sedation but is desirable, and should be considered a developmental standard. Deeper levels of sedation require the same level of monitoring as used for patients receiving general anaesthesia.

2.5 Oxygen should be given to sedated patients. Low-flow oxygen via nasal cannulae is less likely to mask significant underventilation.

Support services
2.6 Local standards and guidelines for patient care should be developed in line with national guidelines.

2.7 Guidelines for the management of rare emergencies must be prominently displayed at all sites where sedation is administered.

2.8 A contemporary record of drugs administered during sedation, with times and doses, together with vital signs, must be recorded and stored in the patient notes whenever patients receive sedation.
Facilities

2.9 An area must be provided where patients can change in privacy.

2.10 A suitably quiet and private area must be provided for patients to wait in before their procedure.

2.11 Procedure rooms must be large enough to accommodate equipment and personnel, with enough space to move about safely and to enable easy access to the patient at all times.

2.12 The procedure room should be easily accessible to the resuscitation team and large enough to accommodate them and appropriate equipment if required. It should also be possible to arrange transfer of a patient from the procedure room to other areas within the institution if necessary.

2.13 The procedure room must be close to the post-anaesthetic care unit.

3 Areas of special requirement

Paediatric sedation

3.1 Many children are intolerant of investigations/procedures and sedation is therefore commonly required. Sedation also helps minimise patient movement during procedures. Anaesthesia may be more appropriate, depending on the child and the intended procedure.

3.2 All standards required for general anaesthesia in children should be met in children undergoing sedation. Special note should be taken of the psychological preparation of the child.

3.3 Practitioners administering sedation to children must be familiar with paediatric drug dosage and handling. They must be aware of the differences between adult and paediatric physiology and the relevance of this to sedation.

3.4 Practitioners must be able to recognise and manage complications resulting from over-sedation in children. They must be competent with paediatric life support.

3.5 It is generally accepted that anaesthetists who administer intravenous sedation to children must be trained in, and have a continuing commitment to, paediatric anaesthesia.

The emergency department

3.6 Sedation is often required for painful procedures in the emergency department.

3.7 All patients need to be assessed before sedation.

3.8 The procedure must be carried out where full resuscitation facilities are available, which usually means a dedicated area in the resuscitation area.

3.9 The patient should be fasted for any sedation, as for anaesthesia. In urgent situations, consideration should be given to rapid sequence induction of anaesthesia and intubation in non-fasted patients if the patient is considered to be at risk of aspiration.

3.10 Recommendations for safe sedation in the emergency department require a trained assistant to assist the anaesthetist.17

3.11 Patient monitoring must be to the same standard as that for sedation in a theatre environment.

3.12 Equipment requirements are the same as for sedation in a theatre environment.

3.13 Recovery must take place with full monitoring and be supervised by staff trained in recovering sedated patients. Resuscitation equipment must be immediately available.

3.14 The patient must not be discharged from the emergency department until the level of consciousness and vital signs have returned to pre-procedural baseline levels.17

3.15 Practitioners should be aware that the RCoA and the Royal College of Emergency Medicine have published guidelines on safe sedation.17 Emergency department physicians holding an RCoA initial assessment of competence are considered competent to provide deep sedation. Departments of anaesthesia may have a role supporting these physicians in the maintenance of these competencies.
The radiology department

3.16 Radiology departments are often in remote areas of the hospital and are unfamiliar environments to many personnel.

3.17 Induction training for new doctors should include familiarisation with these areas of the hospital.

3.18 All standards pertaining to safe sedation in the theatre environment need to be applied to sedation in departments of radiology.

3.19 The procedural room needs to be large enough to accommodate additional personnel, an anaesthetic machine and resuscitation equipment. Easy access to the patient needs to be assured at all times.

3.20 Practitioners working in the radiology department need to be aware of many of the additional hazards posed by working in this environment, including ionising radiation and strong magnetic fields. They should be aware of the extra safety measures to be taken to ensure the safety of the patient and healthcare professionals.

3.21 All patients need to be assessed prior to sedation. Urgent and emergency cases may require prior optimisation in a ward environment.

3.22 Some patients will require sedation for imaging, owing to an inability to keep still, claustrophobia or mental disability.

3.23 Departments of anaesthesia should have a named consultant who liaises with a named consultant radiologist to oversee safe sedation practice by establishing local guidelines for sedation. Many interventional radiological procedures are painful and require a deeper level of sedation with strong analgesia.

3.24 Anaesthetic departments should assist in inter-departmental planning of service needs throughout the hospital. Good relationships between departments are key to providing the best environment for good working practice and facilitating the provision of complex sedation and anaesthesia by anaesthetists.

Gastroenterological procedures

3.25 The complexity of procedures carried out endoscopically has increased in recent years. Additionally, many patients presenting for these procedures have significant co-morbidity. In 2004, the National Confidential Enquiry into Patient Outcome and Death published Scoping our practice. This document highlighted inadequate monitoring and sedation overdose as contributory causes of mortality in patients undergoing interventional gastrointestinal procedures. It also highlighted the poor provision of out-of-hours care. Following publication of this document, anaesthetic departments may be called upon more frequently to provide sedation for this group of patients.

3.26 If sedation is required for a patient undergoing a gastroenterological procedure, the standards for equipment and monitoring should be the same as for the provision of sedation in a theatre environment. This also applies to pre-, intra- and post-procedural care.

3.27 The procedural room needs to be large enough to accommodate additional personnel, an anaesthetic machine and resuscitation equipment. Easy access to the patient needs to be assured at all times. The need for dimmed lighting may impair observation of the patient.

3.28 Many endoscopic gastrointestinal procedures are painful and are unsuitable for conscious sedation. The Joint RCoA and British Society of Gastroenterology Working Party published guidance in 2011 on the use of propofol sedation for patients undergoing complex upper gastrointestinal endoscopic procedures. The document states that propofol should be administered and monitored by an anaesthetist with at least ‘intermediate level’ sedation training, or an appropriately trained physician’s assistant (anaesthesia) working under the supervision of a trained consultant anaesthetist who is available to attend within two minutes if requested.

3.29 Sedation committees and a hospital sedation team, as recommended in ‘Safe sedation practice for healthcare procedures’, may have an important role in the provision of safe sedation for gastroenterological procedures.
Cardiological procedures

3.30 Sedation is used widely for cardiological procedures. Problems of over-sedation have been reported.\textsuperscript{15}

3.31 If sedation is required for a patient undergoing a cardiological procedure, the standards for equipment and monitoring are the same as for the provision of sedation in a theatre environment. This also applies to pre-, intra- and post-procedural care.

3.32 Many patients will have significant cardiovascular compromise, which will affect drug pharmacodynamics.

4 Training and education

4.1 Few anaesthetists in the UK have received formal training in the use of sedation techniques.\textsuperscript{22} However, sedation was added to the anaesthetic curriculum in 2010 and is now regarded as a core competency for anaesthetic practice. Training and exposure must be provided to current standards at basic, intermediate and higher levels.\textsuperscript{5}

4.2 Training should emphasise:

- pre-assessment to identify significant co-morbidity that may adversely affect drug handling
- fasting status
- understanding of the procedure to be undertaken: painful/non-painful, duration, requirement for immobilisation
- choice of technique
- the pharmacology of drugs used in sedation, and reversal agents including flumazenil and naloxone
- monitoring and recovery standards
- emergency airway rescue manoeuvres.

4.3 Better training should mean that anaesthetists provide safer sedation for patients under their care. It will also enable anaesthetists to be better at educating non-anaesthetists in the provision of safe sedation.

4.4 Continuing professional development is a requirement of revalidation for those who administer sedation.

4.5 It is recommended that there should be a national standard in the education of, and competencies required by, all practitioners of sedation.\textsuperscript{1}

4.6 It is recommended\textsuperscript{1} that royal colleges should define safe sedation techniques for each specialty. Trainees who will be expected to use conscious sedation on obtaining their CCT must demonstrate acquisition of the necessary competencies at their annual review of competency progression.

4.7 Anaesthetic departments can assist in providing teaching opportunities to other specialties in the practice of sedation of patients and simulated scenarios. Anaesthetic departments may have an important role in the newly proposed sedation team.\textsuperscript{1}

5 Research, audit and quality improvement

5.1 All clinical incidents where sedation is a factor should be reported.

5.2 Midazolam over-sedation and failure to monitor oxygen saturation during sedation are both defined as ‘never events’ by the Department of Health.\textsuperscript{20} Reporting these incidents to the National Reporting and Learning System is mandatory.

5.3 Each clinical team using sedation within an institution should audit the number of cases performed by each sedation practitioner, and their rate of complications.\textsuperscript{1}

5.4 Audit should be under regular review by a clinical lead and co-ordinated by a hospital sedation committee.\textsuperscript{1}

5.5 Clinical audit of sedation practice should involve all staff and provide regular feedback and improvement of standards where necessary.
6 Organisation and administration

6.1 Recent recommendations may call for extra resources to be made available to support safe sedation, especially where sedation is required outside the theatre environment.

7 Patient information

7.1 Information regarding the planned procedure and requirement for sedation should be given to the patient in advance of their admission. Details on fasting times and medications to continue or omit should be included. The patient needs to be aware that they require a competent adult to escort them home after receiving sedation.

References

4 Curriculum for a CCT in Anaesthetics. RCoA, London 2010 [www.rcoa.ac.uk/node/230].
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14 Sutaria N, Northridge D, Dervr M. A survey of sedation and monitoring practices during transoesophageal echocardiography in the UK: are recommended guidelines being followed? Heart 2000; 84:19.