

Conscious sedation



All patients deserve, and have a right to expect safe, appropriate pain and anxiety control whilst undergoing dental treatment. Competently provided conscious sedation is a safe, effective and valuable tool in the management of patient anxiety.

This guidance provides information to help support dental practitioners and the wider dental team in the safe use of conscious sedation techniques. The information contained represents a synthesis of conscious sedation guidance currently available from other healthcare advisory sources, such as the Department of Health and the Scottish Dental Clinical Effectiveness Programme. It should not be seen as a definitive, stand-alone guideline in conscious sedation and we strongly encourage readers to consult these other sources of information. Links to these sources and other relevant information is provided throughout this document by clicking on the *blue highlighted text*.

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Definition of conscious sedation

This is defined as;

"A technique in which the use of a drug or drugs produces a state of depression of the nervous system enabling treatment to be carried out, but during which verbal contact with the patient is maintained throughout the period of sedation. The drugs and techniques used to provide conscious sedation for dental treatment should carry a margin of safety wide enough to render loss of consciousness unlikely"

The definition of conscious sedation given above describes the state of sedation, and does not attempt to prescribe how that state is achieved. There are a number of techniques involving the use of one or more drugs administered via different routes that will fulfil this definition provided that there is an adequate margin of safety.

Whatever the sedation method used, it is of fundamental importance that the level of sedation must be such that the patient remains conscious and is able to both understand and respond to verbal commands during the entire sedation treatment session. Where patients are unable to communicate verbally in their normal, pre-sedated state (for example, deaf patients who use sign language to communicate); then their usual method of communication must be maintained throughout the entire sedation treatment session, from first administering the sedation agent through to patient discharge.

It is absolutely essential that a wide margin of safety be maintained between conscious sedation and the unconscious state of general anaesthesia where verbal communication with the patient and protective reflexes are lost. Any technique that results in the loss of consciousness is defined as general anaesthesia and in the UK, and the term "deep sedation" is considered within this category. It is important that there is a clear understanding by the patient (or where appropriate the parent or carer), the sedationist and all the dental team that conscious sedation must under no circumstances be interpreted as light general anaesthesia. The practice of general anaesthesia under the guise of conscious sedation is totally unacceptable and represents an extremely serious risk to patient safety.

General anaesthesia

The Department of Health report *A Conscious Decision*, published in 2000, led to the confinement of general anaesthesia for dentistry to within a hospital setting which has critical care facilities. This means that general anaesthesia cannot be provided within the primary care setting and must only be provided by someone who is:

- On the specialist register of the General Medical Council as an anaesthetist
- A trainee working under supervision as part of a Royal College of Anaesthetists' approved training programme, or
- A non-consultant career-grade anaesthetist with an NHS appointment under the supervision of a named consultant anaesthetist, who must be a member of the same NHS anaesthetic department where the non-consultant career grade anaesthetist is employed.

The anaesthetist should be supported by a health professional who is specifically trained and experienced in the necessary skills to help monitor the patient's condition and to assist in an emergency.

For settings which do provide general anaesthesia the recommendations set out in the Department of Health (England) publication *A Conscious Decision – a review of the use of general anaesthesia and conscious sedation in primary dental care* (July 2000) and associated letters of advice from Chief Dental Officers in England, Northern Ireland, Scotland and Wales must be adopted.

The Department of Health (England) guidance document *Conscious sedation in the provision of dental care* was published in 2003 and lays down specific recommendations for all practitioners providing conscious sedation in general dental practice, community and hospital settings. It is a Standing Dental Advisory Committee (SDAC) report of an expert group on sedation for dentistry and is endorsed by the GDC's Standards for dental professionals. It underlines:

1. The importance of the referring dentist and the sedationist considering alternative methods of pain and anxiety control and discussing these with the patient before deciding that conscious sedation is appropriate
2. The need for both theoretical and practical training, continuing updating and clinical audit for the whole dental team is stressed as part of the clinical governance framework for ensuring the delivery of a high quality service, and
3. The necessity of having the appropriate equipment and drugs and ensuring that the equipment is properly maintained.

The Scottish Dental Clinical Effectiveness Programme (SDCEP) has produced specific guidance on the provision of sedation in Scotland. *Conscious sedation in dentistry – dental clinical guidance* was published in May 2006 and evolved from the report by the English Department of Health summarised above.

Conscious sedation techniques

A range of techniques are available to produce the defined conscious sedation state. The most commonly used method are inhalational sedation, using nitrous oxide and oxygen and intravenous sedation using a single benzodiazepine drug, usually Midazolam. These methods are safe and effective for the majority of patients who require sedation, however it is recognised that there is no "one size fits all" sedation technique and for many patients, these standard conscious sedation techniques will not be effective and alternative (advanced) sedation techniques will need to be considered. The Royal College of Surgeons of England-Faculty of Dental Surgery and the Royal College of Anaesthetists produced guidance in 2007, encompassing the use of alternative conscious sedation techniques, entitled "*Standards for Conscious Sedation in Dentistry: Alternative techniques-A Report from the Standing Committee on Sedation for Dentistry*". Such alternative techniques include:

- Any form of conscious sedation for patients under the age of 12 years (or where physical and mental development of the individual does not correlate with their chronological age), other than nitrous oxide/oxygen inhalation sedation.
- Use of a benzodiazepine together with any other intravenous agent, e.g. opioids, propofol, ketamine
- Propofol either alone or with any other agent, e.g. benzodiazepine, opioid, ketamine

- Inhalational sedation using any other agent other than nitrous oxide/oxygen alone
- Combined (non-sequential) routes e.g: intravenous plus inhalational agent (except for the use of nitrous oxide/oxygen during IV cannulation only)
- Oral and trans-mucosal (e.g. intranasal) non-titratable techniques

Standard techniques, using either nitrous oxide/oxygen or IV midazolam alone, are taught at undergraduate dental school level and are suitable for dentists to perform in primary care provided they are working within their competencies and keep their knowledge, experience and training in such techniques regularly up to date.

The alternative (advanced) sedation techniques described above must only be performed by dentist/sedationists with advance postgraduate training and experience in these techniques. Further information on training and education standards in conscious sedation for the dental team is given at the end of this document.

Indications for conscious sedation

Conscious sedation may be indicated in the following circumstances:

- In anxious or phobic patients or those with movement disorder or with physical and/or mental disability who are unlikely to otherwise allow safe completion of treatment and who would thus be denied access to dental care
- For patients with a severe gag-reflex
- To enable an unpleasant or prolonged procedure to be carried out without distress to the patient, for example, surgical extraction of third molars or extirpation of an acutely inflamed dental pulp. It should be noted that intravenous sedation should never be used as a substitute for adequate pain relief using local anaesthesia in such cases.
- To avoid general anaesthesia. The long term aim for patients in whom long term dental phobia could otherwise be induced or prolonged should be a graduated introduction of treatment under local anaesthesia if necessary using conscious sedation as an intermediate stage.

It is important to ensure that each exposure to conscious sedation is justified on every occasion that its use is considered.

Responsibilities of the referring dentist

Before referring any patient for treatment under conscious sedation, the referring dentist must discuss alternative methods of pain and anxiety management with the patient, such as the use of behavioural management techniques and the use of topical anaesthetic prior to giving local anaesthetics for patients who may seek sedation because of needle phobia. A description of the different types of conscious sedation and how sedation is achieved will help the patient to understand what is available.

Referring practitioners must satisfy themselves that the care ultimately offered on referral is conscious sedation according to the agreed definition. Such assurance should be gained prior to the referral. This may involve local enquiries or even a visit to the practitioner to inspect facilities.

It is the duty of both the referring practitioner and the dentist providing treatment with sedation to encourage the patient to seek continuing dental care. Conscious sedation techniques for children are limited and for them this assurance takes on an even greater importance. The referral letter should include:

- Reasons and justification for the use of conscious sedation, after consideration of alternative methods of pain and anxiety control.
- A full medical history which must be up to date. This can be a copy of notes made.

- Outline of dental treatment required.
- Relevant dental history
- Indication as to whether referral is for single procedure or whether the patient is being referred for all further treatment.

Careful note taking should include details of discussion with the patient. A copy of the referral letter must be kept. Further information on referring patients for conscious sedation is given in the Dental Sedation Teachers Group guide, "[A Referral Guide for Dental Practitioners](#)"

Responsibilities of the treating dentist

The dentist providing treatment with sedation should keep the referring practitioner informed of treatment plans and treatment provided. It is important that the referring dentist, as well as the treating dentist, obtains the patient's agreement to the referral following a thorough and clear explanation of the risks involved and the alternative methods available.

Patient assessment and selection

Careful and thorough assessment of the patient is necessary to ensure correct decisions are made regarding the planning of treatment. Preferably, assessment should be done at a separate pre-treatment visit prior to the treatment session under sedation to allow the patient time to consider other treatment options available to them.

All relevant anxiety management techniques including, where necessary, general anaesthesia must be explored with the patient to ensure that when conscious sedation is required, the most suitable form is selected on each occasion and administered in the correct environment by the appropriate practitioner. It is not a requirement for one conscious sedation technique to have been tried and failed before advancing to an alternative technique- a properly conducted patient assessment should aim to help inform what method of sedation, or otherwise, is most appropriate for the individual patient on each particular occasion.

Patient History

A thorough medical, dental and social history must be taken and recorded to ensure that the conscious sedation technique chosen is the most appropriate to enable successful treatment outcomes for each individual, taking into account factors such as the patient's age, state of health, social circumstances and any special needs they may have.

Examination

Oral examination and treatment planning should be undertaken as part of the assessment. The practitioner should also assess the patient's general appearance, skin colour, pulse and respiration. Recording of blood pressure is an essential part of the risk-assessment process for all patients having intravenous, oral or trans-mucosal sedation. The American Society of Anaesthesiologists (ASA) Physical Status classification should be determined and recorded.

ASA Pre-surgery classification system I-IV

- Class I- A normal health patient
- Class II-A patient with mild systemic disease
- Class III-A patient with severe systemic disease
- Class IV-A patient with severe systemic disease that is a constant threat to life

Contraindications

There are few absolute contraindication for conscious sedation however, relative contra-indications are important and can only be considered following a full assessment. Special care is required in the assessment and choice of sedation technique for children and elderly patients. Only patients in ASA classes I and II should normally be considered suitable for sedation in the primary care dental setting. Patients in ASA class III or IV should be referred to an appropriate secondary care (i.e. hospital) establishment which has critical care facilities.

Consent

A dentist has a legal obligation to obtain the valid and voluntary consent of the patient to the treatment proposed. Consent is a continuous communication process and not just a single one-off event-it should be established and reaffirmed verbally with the patient at all stages of treatment. The General Dental Council currently requires that where sedation is provided then the patient should also provide written consent. It is important to remember that a signature on a form can be misleading and the mere presence of such a signature does not guarantee that the consent obtained is valid.

"Consent is the voluntary and continuing permission of a patient to receive a particular treatment. It must be based upon adequate knowledge of the purpose, nature and likely effects and risks of that treatment, including the likelihood of its success and any alternative to it."
(GDC-Standards for Dental Professionals)

The law provides for all persons ages 16 and over to consent to dental treatment. In order to provide valid consent a patient must be able to comprehend the information provided, retain it and assimilate the same information so as to be able to make a decision. These are the essential elements in the validity of informed consent and not simply the presence of a signature on a consent form. The onus is on the dentist to satisfy him or herself that the patient has the capacity to understand and retain information about the treatment to be carried out, what alternatives are available and the material risks associated with each option.

Children under the age of 16 who are deemed to be '*Gillick competent*' (that is, are considered mature enough to be able to satisfy the requirements of informed consent) can, by law, provide their individual consent without the need for parental consent.

However, it is always preferable to involve the parents/guardian in the consent process for a Gillick competent child under the age of 16.

Patients who are already sedated are unlikely to be competent to make decisions regarding consent for treatment due to the effect of the sedation drug on their memory and ability to retain information given to them under the sedation. It is therefore inappropriate to try to seek consent for dental treatment from a patient who is sedated.

If treatment plans cannot be pre-determined this should be discussed with patients with an explanation, in clear terms, of the possible treatment outcomes. For instance, if a tooth extraction is anticipated as being simple, the possibility of root fracture necessitating surgical extraction involving raising a surgical flap and subsequent suturing whilst under sedation needs to be discussed fully with the patient (and any other possible departures from the planned treatment, e.g. a planned root treatment then becoming an extraction) before sedation is administered and the patient's valid and informed consent must be obtained in writing for this. If consent has not been given for any particular treatment then it must not be performed even if this means that the patient will then require this treatment to be carried out on a subsequent sedation visit.

All decisions made by patients in respect of sedation should be voluntary. Patients should not be coerced in any way to accept sedation techniques if they do not wish to do so. Sedation should be presented as an option in anxiety control with other options being pointed out to the patient.

Patients should be given an opportunity to ask about all aspects of their treatment with all questions answered fully. For patients that lack the capacity to give informed consent, the relevant guidance is given in the Mental Capacity Act 2005 and the Adults with Incapacity Act (Scotland) 2000.

Consent to treatment is an evolving area of medical law and ethics and it is therefore important to keep up to date with development. Members of the dental team are advised to contact their defence organisations or the BDA for further advice.

Preparation of patients

Prior to the sedation visit, patients must receive careful verbal and written instructions regarding the effects of sedation and their responsibilities both before and after treatment. Sample pre- and post-operative instructions are provided in the appendix to the SDCEP guidelines *Conscious sedation in dentistry – dental clinical guidance*. It is important there is a clear understanding that conscious sedation must under no circumstances be interpreted as light general anaesthesia. Fasting prior to receiving conscious sedation is not normally required unless there is a specific indication (a possible indication may be in patients who have a marked gag reflex where there may be a risk of vomiting during treatment). Patients should generally be advised to eat normally on the day of their appointment and to avoid alcoholic drinks and large meals.

Escort

A responsible adult escort must accompany the patient home or to a suitable place of care after treatment under conscious sedation and remain with them, taking responsibility for their post-sedation care for the rest of the day. The provision of conscious sedation may therefore be unsuitable for a patient who lives alone or who solely cares for children, elderly and/or dependant relatives and is unable to arrange for a suitable escort to fulfil these requirements. Practitioners should discuss this aspect fully with their patients for whom sedation is planned. Both patient and escort must understand and accept that the responsibility of post-sedation care at

home is delegated to the escort and both must agree to comply with this. It is therefore essential that each of these individuals clearly understand the effects of sedation agents before arriving for the procedure and the possible risk of harm to the patient and others of failing to follow all post-sedation instructions.

Wherever possible there should be arrangements in place for the patient and escort to travel home by private car or taxi rather than public transport. If this is not possible the escort must be made fully aware of the added responsibilities of caring for the patient during the journey home. If either the patient or the escort appear to be unwilling or unable to comply with these requirements then conscious sedation should not be administered.

For adults who receive only inhalational sedation using nitrous oxide/oxygen on its own, then there is normally no requirement for them to be accompanied home by an escort, although patients should be assessed individually by the practitioner before discharge.

Facilities and equipment for sedation

Providers of conscious sedation should have adequate facilities and an environment to ensure patient safety. It must be carried out in an environment that is fit for purpose. Such an environment should include staff, facilities and equipment that are appropriate to the form(s) of conscious sedation practiced. Contemporaneous records of all related standard operational procedures must be kept and reviewed regularly, including those for the intravenous sedation agent used, COSHH assessments, risk assessments and maintenance records and/or agreements.

Treatment and recovery areas must be large enough to allow adequate access to the dental care team and there should be unimpeded access to the premises and to the treatment and recovery room by the emergency services. The recovery facility may be a dedicated recovery area or the treatment area. All equipment and drugs recommended for treating medical emergencies and any sedation-related complications must be immediately available. The equipment must be in working order and the drugs must be within their expiry date.

The operating chair and all patient trolleys must be capable of being placed in the head-down tilt position to allow artificial respiration and intubation if needed and equipment for resuscitation from respiratory and cardiac arrest must be readily available. Dedicated, purpose-designed machines for the administration of inhalation sedation (formerly termed relative analgesia) for dentistry should be used. Such machines should conform to British Standards and be maintained according to manufacturers' guidance with regular, documented servicing.

Gas supply lines for inhalation sedation machines must be connected by non-interchangeable colour coded pipelines and it is essential that the whole system complies with the contemporary standards. On installed pipe work there should be a low pressure warning device and an audible alarm. It is essential that failsafe mechanisms be in place to ensure that hypoxic mixtures cannot be delivered. Nitrous oxide and oxygen cylinders must be stored safely with regard to current regulations. Cylinders must be secured safely to prevent injury.

Scavenging of waste gases must be active and sufficient to fully conform to current COSHH standards. Breathing systems should have a separate inspiratory and expiratory limb to allow proper scavenging. Nasal masks should be close fitting providing a good seal without air entrainment valves. Pulse oximetry is not routinely required for inhalational sedation with Nitrous Oxide/Oxygen

All the appropriate equipment for the administration of intravenous sedation must be available in the treatment area including in-date sedation and appropriate antagonist drugs, syringes, needles, cannulae, surgical wipes / tapes / dressings, tourniquets and labels.

Purpose-designed, calibrated and appropriately maintained equipment is required for all infusion techniques. Supplemental oxygen and the equipment and skills to deliver it to the patient by intermittent positive pressure ventilation must be immediately available together with back-up supply should the need arise.

Calibrated and appropriately maintained pulse oximeter and blood-pressure monitors must be available for use. All equipment must be regularly maintained and appropriate records kept.

Records and Documentation

Accurate and contemporaneous entries on the clinical records of and contemporaneous entries on the clinical records of every patient are the hallmark of a conscientious practitioner and provide evidence to support the formal consent process. It is recommended that the documentation for each patient includes details of:

The Pre-sedation Assessment

- A fully recorded medical history.
- Blood pressure.
- Weight, if recorded.
- ASA status.
- A dental history.
- A conscious sedation and general anaesthetic history.
- Dental treatment plan.
- The selected conscious sedation technique.
- Any individual patient requirements.
- Provision of pre- and post-operative written instructions provided before treatment.
- Written consent for conscious sedation and dental treatment.

The Visit for Dental Treatment under Conscious Sedation

- The presence of an accompanying responsible adult escort (if required).
- Arrangements for suitable post-operative transport and supervision (if required).
- Compliance with the pre-treatment instructions.
- Presence of written consent for the procedure.
- Any changes in the recorded medical history or medication.

The Treatment Procedure

- Dose, route and time(s) of administration of drugs.
- Comprehensive details of clinical and electromechanical monitoring.
- Personnel present in surgery.
- Patient reaction and success of sedation.
- Dental treatment provided.
- Recovery
- Monitoring – appropriate details of all observations and measurements throughout.
- Pre-discharge assessment by sedationist – appropriate discharge criteria met.
- Written post-operative instructions given and explained to patient and escort.
- Time of discharge.

Aftercare

Recovery from sedation is a progressive step-down from completion of treatment through to discharge into the care of a responsible adult escort. Following the first stage normally in the dental chair or on the operating trolley the patient, when adequately recovered to move to a recovery area, should be carefully guided and supported. This should be separate from a main waiting area and suitably equipped and furnished for patient comfort and well-being. If no dedicated recovery area is available then the patient may recover in the treatment area, but recovery must be adequate before moving the patient out of the treatment area.

A member of the dental team must supervise and monitor the patient throughout this period and both equipment and drugs for dealing with medical emergencies must be immediately to hand. The practitioner must be available to see the patient urgently in the event of any problems arising.

The decision to discharge a patient into the care of the escort following any type of sedation must be the responsibility of the sedationist. After assessment the patient must be discharged to the care of a competent adult. The patient should be able to walk unaided (if able-bodied) without stumbling or feeling unstable before being allowed to leave professional supervision. They should have returned to a normal level of responsiveness and orientation for their age and mental status. Where a cannula has been inserted for the administration of intravenous sedation it is preferable that it be removed at this stage. It should be left in-situ until the patient is assessed as fit for discharge.

Adult patients who have received nitrous oxide and oxygen inhalation sedation may leave unaccompanied at the discretion of the sedationist.

Aftercare instructions

The patient and escort should be provided with details of postoperative risks, pain control and management of possible complications. Adequate information regarding aftercare arrangements and emergency contact must also be provided.

Conscious sedation techniques

The two standard techniques of inhalational and intravenous sedation used in dentistry are effective and adequate for the majority of patients. The technique used must be selected to provide the most appropriate and least interventional means of anxiety control for each individual patient. The simplest technique to match the requirements should be used. It is important to recognise that there is no "one size fits all" sedation technique and no single technique will be successful for all patients. In certain situations two or more techniques may be employed; for example, in a patient with needle phobia, inhalational sedation may be used to facilitate intravenous cannulation. In such cases, it is important to be aware of synergistic drug combinations.

All drugs and syringes to be used, or in use, in the treatment area must be clearly labelled with the name of the drug so that those containing dental materials, local anaesthetics and sedation agents can be readily identified and distinguished from each other. This is essential where a number of syringes are loaded, where containers have labels of a similar colour and layout or where a drug is available in a variety of concentrations

Oral and trans-mucosal sedation

Sedation may be achieved through the oral or trans-mucosal (e.g. intra-nasally) administration of a benzodiazepine, usually Midazolam. These techniques are used when the titratable techniques (standard inhalational and intravenous) are deemed to be inappropriate. The state of conscious sedation that is produced by these techniques can be as deep as that produced by the intravenous administration of drugs, but because oral and trans-mucosal delivery cannot be titrated and is given as a bolus dose, the level of sedation produced is less controlled and predictable than titrated methods. Therefore, practitioners who use these techniques of sedation must have received advanced level postgraduate training in this and all other techniques of conscious sedation and intravenous cannulation.

Conscious sedation for children

This section of the guidance must be considered in conjunction with the preceding sections and is generally applicable to children under the age of 16 years of age, or normal physical and mental development.

Conscious sedation for children must be provided only by those who are trained and experienced in sedating children and where the appropriate equipment and facilities available. The child's response to their environment and to interventions may vary and corresponding adaptations in treatment protocols may be required, e.g. pre-operative recording of

physiological data (such as blood pressure) or an intra-oral examination may not be possible. In such cases, the reasons for any deviations from standard practice should be recorded.

Conscious sedation should be an adjunct to, rather than a substitute for, good behaviour management techniques. A child of any age who appears unwilling or incapable of co-operation may well be unsuitable for conscious sedation. Clearly there are circumstances where conscious sedation is inappropriate and where referral for general anaesthesia should be considered.

Inhalation sedation for children

Nitrous oxide / oxygen should be the first choice for paediatric dental patients who are unable to tolerate treatment with local anaesthesia alone and who have a sufficient level of understanding to accept the procedure. It may be offered to children with mild to moderate anxiety to enable them to better accept treatment which may require a series of visits. It can also facilitate the provision of more complex time consuming procedures and dental extractions particularly for young children or anxious patients undergoing elective orthodontic extractions

Intravenous sedation for children

Intravenous sedation for children is only appropriate in a minority of cases and should only be provided by those who are trained and experienced in sedation for children and in the administration of intravenous drugs. Its use may be indicated in older children for whom inhalational sedation has been unsuccessful. Topical anaesthetic should be used prior to the intraoral injection of local anaesthetic and if practicable at the cannulation site.

In December 2010 the National Institute for Health and Clinical Excellence (NICE) issued new guidance on sedation for therapeutic and diagnostic procedures in patients under the age of 19. The document provides evidence-based advice for healthcare professionals on the care and treatment of children and young people requiring sedation. Topics covered include training of staff, choice of the appropriate sedation technique, preparation of the patient and monitoring during and after sedation. Information on specific sedative agents and their indications is also included. Consultation on a draft version of the guidance took place during the summer of 2010. The guidance can be downloaded at: <http://guidance.nice.org.uk/CG12>. An information booklet for parents and carers of young patients receiving sedation is also available.

Conscious sedation for adults and children with special needs

This section of the guidance must be considered in conjunction with the preceding sections and is generally applicable to adults and children whose disabilities affect the provision of their dental care. Conscious sedation for such patients must be provided only by those who are experienced in sedating people with special needs and where the appropriate equipment and facilities are available. The patient's response to their environment and to interventions may vary, influenced by such factors as their degree of cognitive ability and cooperation and the influence of their medical history on the proposed treatment. Corresponding adaptations in treatment protocols may be required: for example, pre-operative recording of physiological data or intra-oral examination may not be possible. In such cases, reasons for deviations from standard practice should be recorded.

It can be difficult to judge the level of sedation in patients who are unable to respond well to verbal communication. This is not a reason to deepen the sedation to an unacceptable level. In the case of patients who are unable to respond to verbal contact when fully conscious, the normal method of communicating with them must be maintained.

Management of complications

The management of any complications or medical emergency during sedation requires the whole dental team to be:

- Fully trained in the appropriate procedure to take in the event of the patient losing consciousness
- Aware of the risk of complications
- Appropriately trained and regularly rehearsed in emergency procedures including the use of a defibrillator.
- Fully equipped with appropriate means of airway protection, oxygen delivery and drugs for emergency use. It is essential that these are carefully checked, that the oxygen supply is secure and adequate and the drugs are in-date with all requisite means for their immediate administration at all times.

All staff need to update their medical emergency training at part of their CPD commitments and must have continuous, annual hands-on training in the management of medical emergencies.

Safe Use of Midazolam

In 2008 the National Patient Safety Agency (NPSA) has issued a Rapid Response Report in relation to the use of midazolam injection when used in conscious sedation. The report stated that some adult patients are being overdosed with midazolam injection when used for conscious sedation because the presentation of high strength midazolam as 5mg/ml (2ml and 10ml ampoules) or 2mg/ml (5ml ampoule) exceeds the dose required for most patients. There is a risk that the entire contents of high strength ampoules are administered to the patient when only a fraction of this dose is required. Doses often exceed the amount required, are not titrated to the patient's individual needs, do not take into account concurrent medication (e.g. opioids) and may involve high risk groups - for example, the frail or the elderly.

Although the safety report is not specifically directed at dental settings, it is recommended that where midazolam is used for conscious sedation, practices should:

- Ensure that storage and use of high strength midazolam, is replaced with low strength midazolam (1mg/ml in 2ml or 5ml ampoules).
- Review therapeutic protocols to ensure that guidance on use of midazolam are clear and that the risks, particularly for the elderly or frail, are fully assessed.

- Ensure that all healthcare practitioners involved directly or participating in sedation techniques have the necessary knowledge, skills and competences required.
- Ensure that stocks of flumazenil are available where midazolam is used and that the use of flumazenil is regularly audited as a marker of excessive dosing of midazolam.
- Ensure that sedation is covered by organisational policy (governed by a documented Standard Operating Procedure) and that overall responsibility is assigned to a senior clinician. In primary care dental practice, this should be the principal dentist.

Supporting information is available at National Patient Safety Agency including harm evidence and links to relevant guidelines / resources.

Training for conscious sedation

Sedation training for dentists

The standards for training in conscious sedation can be found in 'Training in Conscious Sedation for Dentistry' contained in the [Dental Sedation Teachers Group website](#). This document details the training required for a dentist to practise intravenous sedation with midazolam and inhalation sedation with nitrous oxide/oxygen. The training includes supervised clinical practice in the techniques. All those who provide sedation using these techniques must be trained in accordance with these standards.

The training of sedationists to use techniques other than intravenous administration of midazolam and inhalation using nitrous oxide/oxygen is less well established.

Oral and intranasal sedation

The recommendations of the Dental Sedation Teachers Group (DSTG) state 'that the use of oral and intranasal sedation techniques by practitioners who are already competent in intravenous sedation requires very little additional training'. Although that training has not been detailed, it must include supervised clinical practice.

Alternative (advanced) sedation techniques

Postgraduate courses will vary in the range of conscious sedation techniques covered. Any course should include revision of the core sedation curriculum in addition to covering any additional pharmacology and clinical techniques. There are several postgraduate dental schools in the UK that offer diploma and masters level qualifications in conscious sedation and attainment of such qualifications would be evidence of advanced training in this area.

Supervised clinical practice involving the whole dental team is an integral part of all training in conscious sedation. Such supervised practice should be assessed by those providing the course or appropriately trained and experienced assessors.

Training for other sedationists

Any other healthcare professional (i.e. medics) providing conscious sedation for dentistry should be trained to the same standards as dental practitioners who provide conscious sedation for dentistry. The professional background of the sedationist cannot be used as a reason to avoid training.

Sedation training for Dental Care Professionals

Dental nurses who assist with conscious sedation for dentistry should be trained to the standards of the [Certificate on Dental Sedation Nursing](#) as awarded by the National Examining Board for Dental Nurses. The holding of the certificate is the ideal, but a dental nurse may be an appropriate assistant provided she/he has undergone a course of training that covers the syllabus.

Dental hygienists and therapists may provide treatment for sedated patients provided that they have undergone adequate training, including supervised clinical practice. The General Dental Council's guidance on the presence of other members of the dental team must be followed.

Continuing professional development

Evidence of active participation in continuing professional development (CPD) is a statutory requirement for all registered dentists and dental care professionals (DCPs). For those involved in sedation, part of their annual CPD should relate to this aspect of their practice and should include all of the patient groups that they manage. CPD courses in sedation should be run by local dental deaneries. [The Society of the Advancement of Anaesthesia in Dentistry](#) (SAAD) offers an on-going programme of courses on conscious sedation for the whole dental team.