STANDING DENTAL ADVISORY COMMITTEE

Conscious Sedation In The Provision of Dental Care

Report of an Expert Group on Sedation for Dentistry

Commissioned by the Department of Health

2003

A copy of this document can be found on:

www.doh.gov.uk/sdac and www.doh.gov.uk/dental

If you do not have access to the Internet, further copies of this document can be obtained from:

Gillian Farnfield
Department of Health
Room G10
Wellington House
133-155 Waterloo Road
London SE1 8UG

CONTENTS

		Page
Foreword		**7**
Executive Summary		**9**
1.	**Preface**	**13**
2.	**Introduction**	**13**
3.	**Background**	**14**
4.	**Definition of *Conscious Sedation***	**15**
5.	**Educational and Training Standards**	16
	5.1 Theory	**17**
	5.2 Practical skills	**17**
	5.2.1 Drugs and equipment	
	5.2.2 Complications	
6.	**Clinical Training**	**17**
7.	**Provision of Education and Training**	**18**

8. Environment for Sedation 18

9. Equipment for Nitrous oxide/oxygen Inhalation Sedation 19

10. Equipment for Intravenous Sedation 19

11. Indications for Conscious Sedation 20

12. Responsibilities of a referring dentist 20

13. Patient Assessment and Selection 20

13.1 History **20**
13.2 Examination **20**

14. Contraindications 21

15. Preparation of patients 21

16. The Consent Process 23

17. Records and Documentation 24

18. Aftercare 25

18.1 Recovery **25**
18.2 Discharge **26**

18.3 Aftercare Instructions **26**

19. *Conscious Sedation* Techniques 26

19.1 Introduction 26
19.2 Monitoring 27
19.3 Inhalation sedation 27
19.4 Intravenous sedation 28
19.5 Oral/Intranasal/Transmucosal Sedation 28

20. *Conscious Sedation* for Children 28

20.1 Inhalation Sedation 29
20.2 Intravenous Sedation 29
20.3 Oral/Intranasal/Transmucosal Sedation 29

21. Complications 30

22. Clinical Governance 30

References 31

Members of Working Party 35

Appendix 1 (Contact details of supporting organisations) 36

FOREWORD

A Conscious Decision, the report of an expert group, chaired by the Chief Medical Officer and my predecessor as Chief Dental Officer, was published in 2000. This built on the recommendations of a number of previous working groups which emphasised that general anaesthesia for dental treatment should only be used when there is no other method of pain and anxiety management appropriate for that patient. That report recommended that when a general anaesthetic is considered necessary it should be provided in the safest way possible. This led to general anaesthesia for dentistry being confined to a hospital setting where there is the immediate availability of a critical care facility.

This change has resulted in a considerable reduction in the number of general anaesthetics being undertaken and a growing use of conscious sedation in both primary care and hospital settings. It is essential that where conscious sedation is carried out it is provided to the highest possible standards. Recognising the need for clarity about the appropriate standards for conscious sedation the Standing Dental Advisory Committee established an expert group to make recommendations on good practice. This report provides recommendations for all practitioners providing conscious sedation whether in primary care or in hospitals. It underlines:

- 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.

- 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

- the necessity of having the appropriate equipment and drugs and ensuring that that the equipment is properly maintained.

I am most grateful to John Lowry and all of the members of the Working Party for providing this report. The recommendations should be noted and implemented by all dentists, especially those who provide conscious sedation. It will be important to monitor the way in which conscious sedation is carried out and to undertake research into possible further improvements in materials and techniques. In this way conscious sedation will continue to provide a safe and effective method of pain and anxiety management.

Professor Raman Bedi
Chief Dental Officer for England
October 2003

EXECUTIVE SUMMARY

- Despite the publication of a number of authoritative documents on pain and anxiety control for dentistry it has become evident that there remain areas of confusion and lack of consensus. [1]

- This document is designed to lay down specific recommendations to all practitioners providing *Conscious Sedation* for the provision of dental care in general dental practice, community and hospital settings. [2]

- The effective management of pain and anxiety is of paramount importance for patients requiring dental care and *Conscious Sedation* is a fundamental component of this. [2]

- Competently provided *Conscious Sedation* is safe, valuable and effective. [2]

- It is absolutely essential that a wide margin of safety be maintained between *Conscious Sedation* and the unconscious state of general anaesthesia. *Conscious Sedation* must **under no circumstances** be interpreted as light general anaesthesia. [2]

- A high level of competence based on a solid foundation of theoretical and practical supervised training, progressive updating of skills and continuing experience is the key to safe practice. [2]

- Education and training must ensure that ALL members of the dental team providing treatment under *Conscious Sedation* have received appropriate supervised theoretical, practical and clinical training. [5]

- Training in the management of complications in addition to regularly rehearsed proficiency in life support techniques is essential for all clinical staff. Retention and improvement of knowledge and skills relies upon regular updating. [5.2.2]

- Operating chairs and patient trolleys must be capable of being placed in the head-down tilt position and equipment for resuscitation from respiratory and cardiac arrest must be readily available. [8]

- Dedicated purpose-designed machines for inhalational sedation should be used. [9]

- It is essential to ensure that hypoxic mixtures cannot be delivered. [9]

- There should be adequate active scavenging of waste gases. [9]

- All equipment for the administration of intravenous sedation including appropriate antagonist drugs must be available in the treatment area and appropriately maintained. [10]

- Supplemental oxygen delivered under intermittent positive pressure together with back up must be immediately available. [10]

- It is important to ensure that each exposure to *Conscious Sedation* is justified. Careful and thorough assessment of the patient ensures that correct decisions are made regarding the planning of treatment. [11.3]

- A thorough medical, dental and social history should be taken and recorded prior to each course of treatment for every patient. [13]

- There are few absolute contraindications for *Conscious Sedation* however special care is required in the assessment and treatment of children and elderly patients. [14]

- Patients must receive careful instructions and written valid consent must be obtained. [15]

- Fasting for *Conscious Sedation* is not normally required however some authorities recommend the same fasting requirements as for general anaesthesia. [15]

- Recovery from sedation is a progressive step-down from completion of treatment through to discharge. A member of the dental team must supervise and monitor the patient throughout this period. [18]

- The decision to discharge a patient into the care of the escort following any type of sedation must be the responsibility of the sedationist. [18.2]

- The patient and escort should be provided with details of potential complications, aftercare and adequate information regarding emergency contact. [15]

- The three standard techniques of inhalation, oral and intravenous sedation employed in dentistry are effective and adequate for the vast majority of patients. The simplest technique to match the requirements should be used. [19.1]

    - The only currently recommended technique for inhalation sedation is a titrated dose of nitrous oxide with oxygen and it is absolutely essential to ensure that a hypoxic mixture cannot be administered. [19.3]

    - The standard technique for intravenous sedation is the use of a titrated dose of a **single** drug; for example the current use of a benzodiazepine. [19.4]

    - Oral premedication with an effective low dose of a sedative agent may be prescribed. [19.5]

    - No single technique will be successful for all patients. [19.1]

- All drugs and all syringes in use in the treatment area must be clearly labelled and each drug should be given according to accepted recommendations. [19.1]

- Stringent clinical monitoring during the procedure is of particular importance and all members of the clinical team must be capable of undertaking this. [19.2]

- *Conscious Sedation* for children must only be undertaken by teams which have adequate training and experience. [20]

    - Nitrous oxide / oxygen should be the first choice for paediatric dental patients. [20.1]

    - Intravenous sedation for children is only appropriate in a minority of cases. [20.2]

- The management of any complication including loss of consciousness requires the **whole** dental team to be aware of the risks, appropriately trained and fully equipped. It is vitally important for the whole team to be prepared and regularly rehearsed. [21]

- Attention must be given to risk awareness, risk control and risk containment. [21]

- Evidence of active participation in continuing professional development (CPD) and personal clinical audit is an essential feature of clinical governance. [22]

1. Preface

Despite the publication of a number of authoritative guidelines and reports on pain and anxiety control for dentistry it has become evident that there remain some areas where there is an element of confusion or lack of consensus.

An Intercollegiate Working Party established under the auspices of the Academy of Medical Royal Colleges (AoMRC) and chaired by the Royal College of Anaesthetists considered standards of sedation in medical and dental practice and developed in November 2001 generic guidelines entitled *Implementing and Ensuring Safe Sedation Practice for Healthcare Procedures in Adults*[1]. The Working Party acknowledged that the dental profession had been much more effective in producing and following appropriate guidelines on sedation techniques than had medicine in general. Nevertheless concern remained that sedative drugs were in some circumstances being used inappropriately or contrary to published recommendations.

The following recommendations are designed to fully endorse and build upon the generic guidance and lay down specific guidance for the practice of *Conscious Sedation* in the provision of dental care.

2. Introduction

The effective management of pain and anxiety is of paramount importance for patients requiring dental care and *Conscious Sedation* is a fundamental component of this. Competently provided *Conscious Sedation* is safe, valuable and effective.

It is absolutely essential that a wide margin of safety is maintained between *Conscious Sedation* and the unconscious state of general anaesthesia where verbal communication with the patient and protective reflexes are lost. In the case of patients who are unable to respond to verbal contact even when conscious the normal method of communicating with them must be maintained. A high level of competence based on a solid foundation of theoretical and practical supervised training, progressive updating of skills and continuing experience is the key to safe practice. It is important that there is a clear understanding by the patient (or where appropriate the parent or carer), the

sedationist and all the team that *Conscious Sedation* must **under no circumstances** be interpreted as light general anaesthesia.

These recommendations are directed to all practitioners providing *Conscious Sedation* for the provision of dental care in general dental practice, community and hospital settings. They aim to promote good clinical practice with the techniques referred to being appropriate for use by an operator-sedationist where the practitioner carrying out the dental treatment also administers the *Conscious Sedation* supported at all times by an appropriately trained assistant. Their purpose is to ensure that the various techniques utilised continue to have a high level of safety and effectiveness. It is hoped that they will assist colleagues to attain and maintain the high clinical standards which all patients rightly expect.

3. Background

In 1990 the 'Poswillo Report' entitled *General Anaesthesia, Sedation and Resuscitation in Dentistry* prepared for the Standing Dental Advisory Committee (SDAC) heralded considerable change in the provision of these services for dentistry[3]. In 1995 a report by the Clinical Standards Advisory Group (CSAG) *Dental General Anaesthesia* recommended standards for patient care, safety facilities and training for dentists, anaesthetists and supporting staff[4]. During this time the Society for the Advancement of Anaesthesia in Dentistry (SAAD) and the Association of Dental Anaesthetists (ADA) published guidelines in relation to contemporary clinical practice in both general anaesthesia and conscious sedation[5 6]. In 1993 the Royal College of Surgeons of England issued guidance on sedation by non-anaesthetists while in 1996 a Joint Faculties report was specifically directed towards its use in dentistry[7 8]. More recently The Dental Sedation Teachers Group (DSTG) has published curriculum guidance for undergraduates and recommendations for training of *The Competent Graduate* [9 10].

During 1998 the General Dental Council (GDC)[12 in] acknowledgement of concerns raised by Royal Colleges, their Faculties, the British Dental Association (BDA), specialist societies and the media introduced wide reaching amendments to its ethical guidance *Maintaining Standards*. It endorsed the need for the provision of conscious sedation and crucially placed an immediate embargo on the continuing provision of general anaesthesia by non-specialist anaesthetists. This suddenly reduced the use of general anaesthesia as a demand led service in primary dental care.

In July 2000 the report of an expert group chaired by the Chief Medical Officer and Chief Dental Officer of the Department of Health (DH) in England *A Conscious Decision* finally led to the confinement of general anaesthesia for dentistry within a hospital setting where there was immediate availability of a critical care facility[11]. This report also made a number of recommendations concerning conscious sedation specifically endorsing its provision by a trained operator-sedationist supported by an appropriately trained assistant.

Concurrently, an Independent Expert Group representative of all branches of dentistry was convened by the SAAD to consider *Standards for Conscious Sedation in Dentistry*. This document relies heavily on that report [2] and aims to provide specialty specific guidance for dentistry to complement the recommendations in *Implementing and Ensuring Safe Sedation Practice for Healthcare Procedures in Adults* [1].

4. *Conscious Sedation* is defined as:

> *A technique in which the use of a drug or drugs produces a state of depression of the central 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.*

- **It is of fundamental importance that the level of sedation must be such that the patient remains conscious, and is able both to understand and respond to verbal commands**.

- This definition was originally proposed in the Wylie Report (1978,) [13] and has been adopted by the GDC, DH, SAAD, DSTG and the National Dental Advisory Committee in Scotland [14]. However a subsequent document published by the Scottish Intercollegiate Guidelines Network (SIGN)[33] extends the definition by including no *interventions are required to maintain a patent airway, spontaneous ventilation is adequate and cardiovascular function usually maintained.*

- European and international definitions of sedation for dentistry and guidelines are being developed.

- The definition describes the **state** of *Conscious Sedation*, and does not attempt to prescribe **how** it is achieved. Specifically it is acknowledged that a number of techniques involving the use of one or more drugs administered via different routes will fulfil this definition provided that there is an adequate margin of safety.

- Any technique resulting in the loss of consciousness is defined as general anaesthesia and in the UK 'deep sedation' is considered within this category.

- The practise of general anaesthesia under the guise of *Conscious Sedation* is totally unacceptable and must be strongly deprecated in view of the risk of jeopardising patient safety.

5. Educational & Training Standards

Education and training standards must ensure that ALL members of the dental team providing treatment under *Conscious Sedation* have received appropriate supervised theoretical, practical and clinical training before undertaking independent practice.

5.1 Theory

All the topics referred to throughout this document must be included within any training programme for *Conscious Sedation.*

5.2 Practical Skills

5.2.1 Drugs and Equipment

Practical training for both dentists and their assistants in the use of drugs and equipment used to provide *Conscious Sedation* and for the monitoring of patients should be completed prior to clinical training.

5.2.2 Complications

Training in the management of complications related to *Conscious Sedation* in addition to the standard requirement for regularly rehearsed proficiency in life support techniques in the working location is essential for all dentists and their assistants and is desirable for non-clinical support staff. Practitioners and their teams have an obligation to be conversant with current authoritative guidelines such as those issued by the Resuscitation Council (UK)[15].

6. Clinical Training

Supervised hands-on education, training and experience must be acquired by practitioners administering sedation and by their assistants for EACH *Conscious Sedation* technique used. This may be provided in a variety of settings.

The method and timespan allowed for acquisition of this supervised practice may vary depending upon local and individual circumstances. An appropriate number of documented and supervised cases must be competently completed according to the recommendations specified by the relevant authorities and updated in line with changes in contemporary practice. For example *The Competent Graduate* published by

the Dental Sedation Teachers Group provides guidance for undergraduate dental students [9] while sedation assistants / nurses may follow the requirements of the *Log of Practical Experience* for entry to the examination for the Certificate in Dental Sedation Nursing of the National Examination Board for Dental Nurses [39].

7. Provision of Education and Training

This may be provided in-house in clinical areas where conscious sedation is practised and/or in more formal courses such as the Standard Course on Conscious Sedation (England & Wales) [36]. Those arranging such training for their staff have a duty to ensure that the quality of training and trainers is appropriate and that all theoretical and practical training is documented.

Retention and improvement of knowledge and skills relies upon regular updating by means of appropriate refresher courses and a programme of continuing peer-reviewed assessment as a routine practice activity. The interval at which updated training is required will depend upon local circumstances but must be documented. Peer-reviewed assessment should occur at least once a year.

All Education and Training programmes must be regularly reviewed and updated to take account of contemporary accepted standards as promulgated by appropriate authorities. Examples of bodies who currently publish these are listed as Appendix 1.

8. Environment for Sedation

There should be unimpeded ambulance access to the building. The treatment and recovery areas must be large enough to allow adequate access for the dental care team. As with all dental techniques the operating chair and all patient trolleys must be capable of being placed in the head-down tilt position and equipment for resuscitation from respiratory and cardiac arrest must be readily available.

9. Equipment for Nitrous oxide/oxygen Inhalation Sedation

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[16] 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 pipework 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[16 17]. Breathing systems should have a separate inspiratory and expiratory limb to allow proper scavenging [18]. Nasal masks should be close fitting providing a good seal without air entrainment valves.

10. Equipment for Intravenous Sedation

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. All equipment must be regularly maintained and appropriate records kept.

11. Indications for Conscious Sedation

11.1 Anxious or phobic patients, 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[20].

11.2 To enable an unpleasant procedure to be carried out without distress to the patient.

11.3 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 utilising conscious sedation as an intermediate stage. It is important to ensure that each exposure to *Conscious Sedation* is justified.

12. Responsibilities of a referring dentist

Having discussed alternative methods of pain and anxiety control with the patient referring practitioners must satisfy themselves that the care ultimately offered on referral is *Conscious Sedation* according to the agreed definition. *Conscious Sedation* techniques for children are limited and for them this assurance takes on even greater importance.

13. Patient Assessment and Selection

Careful and thorough assessment of the patient ensures that correct decisions are made regarding the planning of treatment. All appropriate techniques including, where necessary general anaesthesia should be explored with the patient to ensure that when required the most appropriate type of *Conscious Sedation* is selected on each occasion and administered in the correct environment by an appropriate practitioner.

13.1 History

A thorough medical, dental and social history should be taken and recorded prior to each course of treatment for every patient. This is directed to ensuring that the method and nature of the *Conscious Sedation* technique chosen is the most appropriate to enable treatment to be carried out for the patient as an individual, taking into account specific factors such as age, state of health, social circumstances and special needs.

13.2 Examination

A provisional treatment plan should be formulated following the taking of a history, dental examination and assessment of the patient's general fitness. Assessment of general appearance, skin colour, pulse and respiration is important in the selection of appropriate treatment for each patient. Accurate measurement of blood pressure is an essential part of risk assessment for intravenous sedation. The American Society of Anesthesiologists (ASA) Physical Status classification should be determined and recorded [21].

14. Contraindications

There are few absolute contraindications for *Conscious Sedation*. However relative contraindications are important and can only be considered following a thorough assessment of the patient which only thorough assessment provides. Especial care is required in the assessment and treatment modality selection for children and elderly patients. Only patients in ASA classes I and II should normally be considered suitable for sedation as outpatients [21]. Patients in ASA class III should be referred to an appropriate secondary care unit.

15. Preparation of Patients

Patients during preparation for *Conscious Sedation* must receive careful verbal and written instructions regarding its effects and their responsibilities both before and immediately after it.

Fasting for *Conscious Sedation* is not normally required. Patients should generally be advised to take only light food and clear non-alcoholic fluids prior to an appointment for *Conscious Sedation*. However some authorities recommend the same fasting requirements as for general anaesthesia in view of the potential for depression of upper airways reflex sensitivity [37].

It is important there is a clear understanding that *Conscious Sedation* must **under no circumstances** be interpreted as light general anaesthesia.

Specific written valid consent must be obtained for all patients who are to receive treatment under sedation.

A responsible adult escort must accompany the patient home or to a suitable place of care after treatment under *Conscious Sedation* and assume responsibility for the 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 dependent relatives. Both patient and escort must understand and accept that this responsibility 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 sedative agents before arriving for the procedure and the consequences 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 escort appear to be unwilling or unable to comply with these requirements *Conscious Sedation* should not be administered. For an adult receiving nitrous oxide / oxygen inhalation sedation this requirement is less rigid and each patient must be assessed individually.

16. The Consent Process

Consent should follow the principles set out in *a Reference Guide to Consent for Examination or Treatment* published by the Department of Health [22] [23].

In advance of the procedure the patient must be given clear and comprehensive pre- and post-operative instructions in writing and written informed consent must be obtained. It is important to remember that the mere presence of a signature does not guarantee that the consent obtained is valid.

For consent to be valid it must be given voluntarily by an appropriately informed person (the patient or where relevant someone with parental responsibility for a patient under the age of 18 years) who has the capacity to consent to the intervention in question. Mere acquiescence where the person does not know what the intervention entails is not 'informed consent'. In the case of all adults who are unable to fully understand the nature and implications of the proposed treatment because of mental or sensory disability the appropriate consent or agreement to treat process must be followed.

Young people aged 16 years and over are presumed to have the competence to give consent for themselves. Younger children who fully understand what is involved in the proposed procedure can also give consent although their parents must wherever possible be involved. In order to provide valid consent a patient must be able to comprehend the information provided, retain and assimilate it so as to be able to make a decision [24] [25] [26] [27] [28].

Patients who are already sedated can not be regarded as competent to take decisions regarding informed consent for treatment. Consent for dental treatment taken under these circumstances is therefore invalid.

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

If a treatment plan cannot be pre-determined this should be explained to the patient with a description in broad terms of the possible treatment.

Patients should be given an opportunity to seek more information about all aspects of their treatment and their questions answered truthfully with the option for a second opinion.

Consent to treatment is an evolving area and it is therefore important to keep up to date with developments.

17. Records and Documentation

Accurate 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 includes:

- A fully recorded medical history including prescribed and self prescribed medication [alcohol / tobacco / drugs]
- A previous dental history
- A previous conscious sedation / general anaesthetic history
- The reason for selection of conscious sedation on each occasion that it is planned
- A pre-sedation assessment.
- Any individual patient requirements
- Written instructions provided pre- and post-operatively
- The presence of an accompanying responsible adult

- Arrangements for suitable post-operative transport and supervision
- Compliance with the pre-treatment instructions
- Written consent for conscious sedation
- Written consent for the planned dental treatment
- Any changes in the recorded medical history or medication
- The treatment procedure
  - Monitoring
  - Dose, route and time/s of administration of sedation agents
  - Dental treatment details
- Post-sedation assessment and time of discharge home

18. Aftercare

18.1 **Recovery**

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.

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.

18.2 Discharge

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 without stumbling or feeling unstable before being allowed to leave professional supervision. Where a cannula has been inserted for the administration of intravenous sedation it is preferable that it be removed at this stage. Adult patients who have received nitrous oxide and oxygen inhalation sedation may leave unaccompanied at the discretion of the sedationist.

18.2 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.

19. *Conscious Sedation* Techniques

19.1 Introduction

The three standard techniques of inhalation, oral and intravenous sedation employed in dentistry are effective and adequate for the vast majority of patients. The technique used must be selected to provide the most appropriate and least interventional means of anxiety relief for the individual patient. As a general rule the simplest technique to match the requirements should be used.

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 inhalation sedation may be used to facilitate intravenous cannulation. However it is important to be aware of synergistic drug combinations.

All drugs and all syringes in use in the treatment area must be clearly labelled so that those containing dental materials, local anaesthetics and drugs can be readily identified. 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.

Each drug should be given according to accepted recommendations for administration and titration.

19.2 Monitoring

Stringent clinical monitoring and appropriate recording of the level of responsiveness, airway, respiration, pulse and colour is of particular importance throughout *Conscious Sedation* procedures of all types and for each patient. All members of the clinical team must be capable of monitoring the condition of the patient. For intravenous sedation this must include the appropriate use of pulse oximetry and blood pressure monitoring.

During inhalation sedation clinical monitoring of the patient without additional electronic devices is generally adequate.

19.3 Inhalation sedation

The only currently recommended technique for inhalation sedation is the use of a titrated dose of nitrous oxide with oxygen. It is absolutely essential that safeguards be in place to ensure that a hypoxic mixture cannot be administered.

19.4 Intravenous sedation

The standard technique for intravenous sedation is the use of a titrated dose of a **single** drug; for example the current use of a benzodiazepine. Continuous infusion of a drug or drugs used in combination may be appropriate in specially selected circumstances. However it is particularly emphasised that their administration **must be restricted** to an experienced practitioner and team fully trained in their use working in an appropriate environment.

The use of fixed doses or bolus techniques is unacceptable in both inhalation and intravenous conscious sedation as success is directly related to titration of the dose according to the individual patient's needs.

19.5 Oral / Intranasal / Transmucosal Sedation

Oral premedication with an effective low dose of a sedative agent may be prescribed to assist with sleep the night before or to aid an anxious patient's journey under strict supervision for treatment. This must be clearly differentiated from oral, transmucosal and intranasal techniques of *Conscious Sedation* which require special training and experience and should only be administered under appropriate circumstances by a practitioner experienced in their use.

Special procedures must be followed for agents not licensed for oral, intranasal or transmucosal use.[29 30]

20. Conscious Sedation for Children

This guideline is generally applicable to children under 16 years of age, of normal physical and mental development being considered for dental treatment in the dental practice, community or hospital setting [33]. It should be understood that age of maturity is variable and due discretion should be exercised.

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.

Conscious Sedation must only be undertaken by teams that have adequate training and experience in case selection, behavioural management and administration of sedation for children and only in an appropriate environment. It should be an adjunct to rather than a substitute for good behaviour management techniques.

20.1 Inhalation Sedation

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[31 32].

20.2 Intravenous Sedation

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[33 35]. 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.

20.3 Oral / Intranasal / Transmucosal Sedation

These techniques are not in general use for dentistry at present. As for adults they should only be administered under appropriate circumstances by a practitioner experienced in their use.

21. Complications

The management of any complication requires the **whole** dental team to be:

- fully trained in the appropriate procedure to take in the event of the patient losing consciousness [38].
- aware of the risk of complications.
- appropriately trained and regularly rehearsed in emergency procedures including defibrillation where advanced conscious sedation techniques are used.

.

- 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 that the drugs are in-date with all requisite means for their immediate administration at all times.

It is vitally important for the whole team to be prepared and that it rehearses the routine regularly.

22. Clinical Governance

It is a requirement of good practice that all professional clinicians work with colleagues to monitor and maintain awareness of the quality of the care that they provide for their patients. This is a basic principle of clinical governance and risk management.

Attention must be given to risk awareness, risk control and risk containment..

Evidence of active participation in continuing professional development and personal clinical audit is an essential feature of clinical governance while CPD is a statutory requirement [34].

REFERENCES

1. *Implementing and ensuring safe sedation practice for healthcare procedures in adults*. Academy of Medical Royal Colleges. November 2001

2. *Standards for conscious sedation*. Report of an independent expert working group convened by the Society for the Advancement of Anaesthesia in Dentistry. October 2000

3. *General anaesthesia, sedation and resuscitation in dentistry*; Report of an expert working party prepared for the Standing Dental Advisory Committee. March 1990

4. *Dental general anaesthesia*. Clinical Standards Advisory Group. HMSO, London. July 1995

5. *Guidelines for physiological monitoring of patients during dental anaesthesia or sedation*. Society for the Advancement of Anaesthesia in Dentistry. London. March 1990

6. *Monitoring of patients during dental anaesthesia or sedation*. Association of Dental Anaesthetists.1990

7. *Guidelines for sedation by non-anaesthetists*. Report of a Commission on the Provision of Surgical Services working party. The Royal College of Surgeons of England, London. June 1993

8. *Report of the joint faculties working party on seda*tion. Faculties of Dental Surgery and General Dental Practitioners. Royal College of Surgeons of England, London. 1996

9. *Sedation in dentistry*; The competent graduate. Dental Sedation Teachers Group. 2000

10. *Sedation in dentistry*. Undergraduate training. Dental Sedation Teachers Group. May 1999

11. *A Conscious decision*; Report of an expert group chaired by the Chief Medical and Dental Officer. Department of Health. July 2000

12. *Maintaining standards*, General Dental Council. November 1997; Revised November 2001

13. *Report of the working party on training in dental anaesthesia*. British Dental Journal 1981, 151: 385 – 388

14. *Emergency Dental Drugs National Advisory Dental Committee*. The Scottish Office. Department of Health. February 1999

15. *Resuscitation guidelines for use in the United Kingdom*: Resuscitation Council (UK). 2000

16. *Anaesthetic and analgesic machines*. BS4273: 1997. British Standards Institution

17. *Anaesthetic agents: Controlling exposure under COSSH*. Health Services Advisory Committee. HMSO. 1995

18. Witcher CE, Zimmerman DC, Tonn EM, Piziali RL. *Control of occupational exposure in the dental operatory*. Journal of the American Dental Association 1977, 95: 763-776.

19. *Medical gas cylinders, valves and yoke connections*. BS EN 850. 1997. British Standards Institute

20. *Conscious sedation. A referral guide for dental practitioners*. Society for the Advancement of Anaesthesia in Dentistry and Dental Sedation Teachers Group. September 2001

21. American Society of Anaesthesiologists; *New classification of physical status*. Anaesthesiology 1963; 24:111

22. *Reference guide to consent for examination or treatment*. Department of Health. March 2001

23. Health Service Circular (HSC) 2001/023. *Good practice in consent*. Department of Health November 2001

24. *Information and consent for anaesthesia*. The Association of Anaesthetists of Great Britain and Ireland. July 1999

25. *Seeking patients' consent: the ethical considerations*. General Medical Council. November 1998

26. *Report of the Consent Working Party incorporating Consent Toolkit*. British Medical Association 2001

27. *The Children Act*. HMSO. 1989

28. *Good practice in the dental specialties*. Senate of Dental Specialties. November 2001

29. Editorial. *Unlicensed drug administration*. Anaesthesia 1995; 50:189-190

30. Pickles H. *The use of unlicensed drugs*. British Journal of Health Care Management 1996; 2:656-658

31. Crawford AN. *The use of nitrous oxide-oxygen inhalation sedation with local anaesthesia as an alternative to general anaesthesia for dental extractions in children* [see comments]. British Dental Journal 1990;168 :395-398

32. Shaw AJ, Meechan JG, Kilpatrick NM, , Welbury RR. *The use of inhalation sedation and local anaesthesia instead of general anaesthesia for extractions and minor oral surgery in children: a prospective study. International Journal of Paediatric Dentistry* 1996 Mar 6 :7-11

33. *Safe sedation of children undergoing diagnostic and therapeutic procedures*. A national clinical guideline. Scottish Intercollegiate Guidelines Network. February 2002

34. *Section 60 Order amending the Dentists Act (1984)*. General Dental Council. January 2002

35. Hosey M-T. *Managing anxious children: the use of conscious sedation in paediatric dentistry*. Clinical Effectiveness Committee. Faculty of Dental Surgery RCS(Eng) 2001

36. *Standard Course on conscious sedation (England & Wales*). National Centre for Continuing Postgraduate Education in Dentistry. 2001; available from the Faculty of Dental Surgery, The Royal College of Surgeons of England (See Appendix I)

37. Murphy PJ, Erskine R, Langton JA. *The effect of intravenously administered diazepam, midazolam and flumazenil on the sensitivity of upper airway reflexes*. Anaesthesia 1994; 49: 105-110

38. Department of Health. *Conscious sedation in the termination of pregnancy*. Report of Expert Group. September 2002

39. National Examining Board for Dental Nurses. (See Appendix I)
j.wlnedn@msn.com

Members of Working Party

Dr David Craig
Dr Christopher Holden
Mr John Lowry, Chairman/Editor
Mr Hew Mathewson
Dr Douglas Pike
Dr John Renshaw
Mr DG Smith
Professor JA Wildsmith
Professor Nairn Wilson

In attendance at the first plenary meeting:

Mr John Langford	Department of Health
Mr Peter Martin	Department of Health

Written comments were also received from:

Professor Elizabeth Kay
Dr Nicholas Girdler
Hearings Directorate General Dental Council
Dame Margaret Seward
Professor Elizabeth Treasure

APPENDIX 1

Contact details of supporting organisations

Association of Dental Anaesthetists
C/o Honorary Secretary
Dept of Anaesthesia
Royal Victoria Infirmary
Queen Victoria Road
Newcastle-upon-Tyne NE1 4LP
Tel No: 0191 282 4386

British Dental Association
64 Wimpole Street
Tel No: 020 7935 0875
Fax No: 020 7487 5232
E-mail: Enquiries@bda-dentistry.org.uk
Website: www.bda-dentistry.org.uk

Dental Sedation Teachers Group
c/o Honorary Secretary
Dept. of Sedation & Special Care Dentistry
Guy's Hospital
London
SE1 9RT
Website: www.dstg.co.uk

National Examining Board for Dental Nurses
110 London Street
Fleetwood
Lancashire
Tel No: 01253 778417
Fax No: 01253 777268

Society for the Advancement of Anaesthesia
In Dentistry
21 Portland Place
London
W1B 1PY
Tel No: 020 7631 8890
Fax No: 01246 208729
E-mail: saad@aagbi.org.uk
Website: www.saaduk.org

The Faculty of Dental Surgery
Royal College of Surgeons of England
35-43 Lincoln's Inn Fields
London
WC2A 3PE
Tel: 020 7869 6800
Fax: 020 7869 6816
Website: www.rcseng.ac.uk

General Dental Council
37 Wimpole Street
London
WC1A 8DQ
Tel No: 020 7955 5000
Fax No: 020 7955 2627
Website: www.gdc-uk.org

Resuscitation Council (UK)
5th Floor
Tavistock House North
Tavistock Square
London
WC1H 9JP
Tel No: 020 7388 4678
Fax No: 020 7383 0773
Website: www.resus.co.uk