

GUIDELINES



Provincial Dental Board of Nova Scotia

Use of Sedation in Dental Practice

Adopted January 2010

Introduction

The following guidelines are the minimum standards for the utilization of sedation in dentistry. For the purposes of this document, these *Guidelines* are divided into the following sections:

Contents

- General Guidelines for all Modalities of Sedation
- Specific Guidelines for Particular Modalities
 - Part I – Conscious Sedation
 - Part II – Deep Sedation and General Anaesthesia

Appendices

Contravention of these *Guidelines* may be considered professional misconduct. Dentists employing any modality of drug induced sedation must be familiar with the Guidelines content, be appropriately trained, and regulate their practices accordingly.

General Guidelines for all Modalities of Sedation

Sedation may be indicated to treat patient anxiety associated with dental treatment, to enable treatment for patients who have cognitive impairment or motor dysfunction which prevents adequate dental treatment, to treat patients below the age of reason, or for traumatic or extensive dental procedures. These techniques are to be used only when indicated, as an adjunct to appropriate non-pharmacological means of patient management.

Professional Responsibilities

The following Professional Responsibilities apply to all modalities of sedation.

1. Successful completion of a training program designed to produce competency in the specific modality of sedation utilized is mandatory.

2. The dental facility must be suitably staffed and equipped for the specific modality (ies) practices as prescribed by these *Guidelines*.
3. An adequate, clearly recorded current medical history, including present and past illnesses, hospital admissions, current medications and dose, allergies (in particular to drugs), and a functional inquiry, along with an appropriate physical examination must be completed for each patient prior to the administration of any form of sedation. This must form a permanent part of each patient's record, consistent in content with Appendix I.
4. A determination of the patient's American Society of Anesthesiologists (ASA) Physical Status Classification (see Appendix II), as well as careful evaluation of any other factors which may affect his / her suitability for sedation must be made prior to its administration. These findings will be used as a guide in determining the appropriate facility and technique used.
5. Only the following persons may administer a sedative agent in the dental setting:
 - A dentist currently licensed in Nova Scotia
 - A physician currently licensed in Nova Scotia
 - A nurse, currently licensed in Nova Scotia acting under the required order and the direct control and supervision of a dentist or a physician, currently registered in Nova Scotia.
6. The dentist and staff must be prepared to recognize and treat adverse responses utilizing appropriate emergency equipment and drugs when necessary. Dentists and all clinical staff must have the training and ability to perform basic cardiac life support techniques. Dentists should establish protocols for emergency procedures and review them with their staff regularly.
7. Dentists using any of the sedation techniques described in these *Guidelines* for their patients, including oral sedation and / or nitrous oxide / oxygen conscious sedation, are expected to include courses and / or other education programs related to these modalities in their personal continuing dental education planning.

Specific Guidelines for Particular Modalities

Part I – Conscious Sedation

Definition Conscious sedation is a minimally depressed level of consciousness that retains the patient's ability to independently and continuously maintain an airway and respond appropriately to physical stimulation and verbal command.

It is produced by a pharmacological or non-pharmacological method or a combination thereof. In dentistry, it is used to reinforce positive suggestion and reassurance in a way which allows dental treatment to be performed with minimal physiological and psychological stress, and enhanced physical comfort.

The technique must carry a margin of safety wide enough to render loss of consciousness highly unlikely.

Conscious sedation may be induced by any one of the following modalities:

1. oral administration of a single sedative drug
2. nitrous oxide and oxygen
3. Combination of oral sedative drugs or nitrous oxide and oxygen with an oral sedative drug.
4. parenteral administration of sedative drugs (intravenous, intramuscular, subcutaneous or submucosal)

Professional Responsibilities for all Modalities of Conscious Sedation

In addition to the General Guidelines listed previously, the following professional responsibilities apply to all modalities of conscious sedation.

i) Successful completion of a training program designed to produce competency in the use of the specific modality of conscious sedation, including indications, contraindications, patient evaluation, patient selection, pharmacology of relevant drugs, and management of potential adverse reactions, is mandatory. The training program must be obtained from one or more of the following sources.

- Faculties of Dentistry undergraduate and postgraduate programs, approved by the Provincial Dental Board of Nova Scotia.
- Continuing education courses approved by the Provincial Dental Board of Nova Scotia which follow the general principle that they shall be:
 - Organized and taught by clinicians certified to administer anesthesia and sedation as they apply to dentistry, supplemented as necessary by persons experienced in the technique being taught.
 - Held in properly equipped dental environment which will permit the candidates to utilize the techniques being taught on patients during dental treatment.
 - Followed by a recorded assessment of the competence of the candidates.

ii) Dentists whose training does not exceed that described as necessary for the administration of conscious sedation are cautioned not to exceed that level of depression defined above. Single drug choice in a carefully considered dose is a prudent approach to a conscious sedation. Significant approved additional training, as outlined elsewhere in these *Guidelines*, is required if more than one drug is to be used.

iii) Should the administration of any drug produce depression beyond that of conscious sedation, the dental procedures should be halted. Appropriate support procedures must be administered until the level of depression is no longer beyond that of conscious sedation, or until additional emergency assistance is effected.

iv) Conscious sedation techniques require the patient to be discharged to the care of a responsible adult. The only situation in which a dentist may exercise discretion as to whether a patient may be discharged unaccompanied is that in which nitrous oxide / oxygen sedation alone is the technique used. All patients must be specifically assessed for fitness for discharge as described elsewhere in these *Guidelines*.

1. Oral Administration of a Single Sedative Drug

The General Guidelines and professional responsibilities listed previously apply to this route of administration, when used to induce conscious sedation. For the purposes of this document, these also apply to the sublingual route of administration.

i) A dose of an oral sedative used to induce conscious sedation should be administered to the patient in the dental office, taking into account the time required for drug absorption. Patients must be monitored by clinical observation of the level of consciousness and assessment of vital signs which may include heart rate, blood pressure, and respiration. Patients may be discharged to the care of a responsible adult when they are oriented i.e. to time, place and person relative to the pre-anesthetic condition, ambulatory, with stable vital signs, and showing signs of increasing alertness. The patient must be instructed to not drive a vehicle, operate hazardous machinery or consume alcohol for a minimum of 18 hours, or longer if drowsiness, or dizziness persists.

Children, the elderly, and the medically compromised including patients who are taking prescribed medication with sedative properties require appropriate adjustment of the dose of the oral sedative agent to ensure that the intended level of conscious sedation is not exceeded.

ii) There are two possible exceptions to the recommendation that the oral sedative be administered in the dental office. One indication is if the practitioner has determined that the patient requires an oral sedative to facilitate sleep the night prior to the dental procedure. The second indication is when the patient's anxiety is such that sedation is required to permit arrival to the dental office. In addition to the requirements in paragraph (i) above, the following additional requirements apply in these two situations:

- Each patient must be screened by the dentist at a prior appointment, with an appropriate medical history, as described in the General Guidelines in this document.
- Only one sedative drug should be prescribed at any one time. Neither chloral hydrate or an opioid should be used for sedation prior to presentation to the dental office.

- The patient must be instructed not to drive a vehicle and must be accompanied to and from the dental office.
- In each case, clear written instructions must be given to the patient or guardian explaining how to take the medication, the need for accompaniment and listing the expected effects from this drug.

2. Nitrous Oxide and Oxygen Conscious Sedation

In addition to the General Guidelines and professional responsibilities listed above, the following professional responsibilities apply when nitrous oxide and oxygen conscious sedation is being administered.

i) Legal Responsibilities

Appropriate training in the use of nitrous oxide and oxygen conscious sedation is mandatory.

ii) Course Requirements

An intensive course in conscious sedation is a program designed to meet the needs of dentists who must become knowledgeable and proficient in the safe and effective use of nitrous oxide and oxygen inhalation.

1. The course is to be taught by dentists or physicians with formal training and experience in anesthesia and sedation as they apply to dentistry.
2. The course is to be held in a properly equipped dental office or institution in order to permit a significant portion of such a course to deal with candidate participation and utilization of the techniques on patients. The course director(s) must assess the individual's competency upon successful completion of such training by a meaningful examination.

iii) Professional Responsibilities

Dentists administering nitrous oxide and oxygen must:

1. have taken sufficient recognized instruction:
 - conduct proper evaluation of patient medical status as determinant of ability to tolerate the drug administration (a recorded evaluation is mandatory);
 - understand the pharmacology (including contraindications, dosage, adverse response, and must be prepared to deal with adverse reactions);
 - be familiar with the equipment.
2. Accept the responsibility of ensuring the proper installation, subsequent functioning, regular disinfecting and periodic monitoring of the equipment system.
3. Adhere to the policy that nitrous oxide and oxygen must be administered by a licensed dentist who should be in the room at all times during its administration. An auxiliary must be present to assist in the treatment room during the administration of nitrous oxide and oxygen if the dentist is also performing the dental procedure.
4. Ensure that the drug is administered only to those who have legitimate indication for its use and who understand its purpose, its effects, and who consent to its use.
5. Ensure that the patient received an adequate recovery period in a supervised recovery area following the administration before being allowed to leave the office.

iv) Equipment

1. Equipment for nitrous oxide and oxygen conscious sedation must:
 - deliver a minimum of 30 % oxygen;
 - not function unless this minimum flow of 30 % oxygen is present in the system;
 - be equipped with connectors which will allow adaptation of a full face mask for possible resuscitative procedures;
 - be equipped with an acceptable scavenging system;
 - include a pulse oximeter

v) Safety Recommendations

1. The installation of the system plus maintenance and upkeep require regular monitoring by trained technicians.
2. Nitrous oxide levels in the dental operatory should also be periodically monitored by an appropriate means.
3. Use of a pulse oximeter is mandatory to monitor hemoglobin oxygen sedation levels during nitrous oxide administration.

3. Combination of Oral Sedative Drugs or Nitrous Oxide / Oxygen with an Oral Sedative Drug

Administration of combinations of oral sedative drugs or the combination of an oral sedative with nitrous oxide and oxygen should not be used unless the dentist has had the following additional training:

- dentists who qualify for the administration of deep sedation, as outlined in Part II of these Guidelines or
- dentists who qualify for the administration of parenteral conscious sedation, as outlined later in these *Guidelines* or
- dentists who have completed the course requirements for N₂O / conscious sedation as outlined in these *Guidelines* or
- dentists with training that has specifically incorporated the teaching of techniques utilizing more than one sedative agent, and the program has evaluated and attested to the competency of the candidate.

If an oral sedative has been administered, nitrous oxide / oxygen must be slowly titrated to achieve the signs and symptoms of conscious sedation, with vigilant assessment of the level of consciousness

Children, the elderly and the medically compromised including patients who are taking prescribed medication with sedative properties require appropriated adjustment of the dose of the oral sedative agent to ensure that the intended level of conscious sedation is not exceeded.

Sedation Protocol

1. The medical history must be reviewed for any changes, at each sedation appointment. Such a review must be documented in the permanent record.
2. The patient must have had nothing to eat for 6 hours or drink for 2 hours. Possible exceptions to this are usual medications or preoperative medications which may be taken as deemed necessary by the dentist.
3. Clinical observation must be supplemented by the following means of monitoring throughout the sedation administration:
 - continuous pulse oximeter monitoring of hemoglobin oxygen saturation, recorded at a minimum 5 minute intervals.
 - blood pressure, and pulse, and respiratory rate must be taken and recorded preoperatively and throughout the sedation period at appropriate intervals.
4. A sedation record must be kept which includes the recording of vital signs as listed above.
5. Alarm settings and their audio component on monitoring equipment must be utilized at all times.
6. The patient may be discharged once he / she shows signs of progressively increasing alertness and has met the following criteria:
 - conscious and oriented
 - vital signs are stable
 - ambulatory
7. The patient must be discharged to the care of a responsible adult.

8. Written post-sedation instructions must be given. The patient must be instructed to not drive a vehicle, operate hazardous machinery or consume alcohol for a minimum of 18 hours, or longer if drowsiness, or dizziness persists.

4. PARENTERAL CONSCIOUS SEDATION

Parenteral conscious sedation may be accomplished utilizing any one of the following routes of administration: intravenous, intramuscular, subcutaneous or submucosal. For the purposes of this document, these *Guidelines* also apply when the rectal route of administration is utilized. In addition to the General Guidelines, this section outlines *Guidelines* specific to parenteral conscious sedation techniques.

Additional Professional Responsibilities

1. All licensed dentists administering parenteral conscious sedation must notify and be registered with the Provincial Dental Board of Nova Scotia.
2. The following training is required:
 - Dentists who qualify for the administration of deep sedation as outlined in Part II.
 - If not qualified for the administration of deep sedation then the following training is required: Successful completion of a course of instruction in parenteral conscious sedation that must be affiliated with an accredited educational institution and meeting the clinical requirements outlined below. A certificate or other evidence of satisfactory completion of the course and a description of the program signed by the course director must be submitted to the Provincial Dental Board of Nova Scotia for consideration. Completion of such a course will be entered onto the dentist's record.
 - evidence of successful completion of a provider course in Advanced Cardiac Life Support (ACLS)

Clinical requirement: The training shall include supervised application of parenteral conscious sedation concurrent with dental treatment, performed on a minimum of 20 patients. Active participation in the above is required. Observation alone is not sufficient.

THOSE DENTISTS WHOSE PRIOR TRAINING IS NOT DESCRIBED HEREIN, WHO HAVE BEEN PRACTISING THIS MODALITY, MAY SUBMIT THEIR QUALIFICATIONS TO THE PROVINCIAL DENTAL BOARD OF NOVA SCOTIA FOR CONSIDERATION.

3. Preoperative instructions must be given in writing to the patient or responsible adult. Patients should be given instructions not to eat solid food for a minimum of six hours prior to the appointment. Clear fluids may be taken up to two hours prior to the appointment. Possible exceptions to this are usual medications or preoperative medications which may be taken as deemed necessary by the dentist.
4. Consent must be obtained prior to the administration of any parental sedative.
5. During the assessment and treatment of female patients by a male dentist, the presence of a female staff member is required.
6. The patient must never be left unattended following administration of the sedative until fit for discharge.
7. Monitoring equipment must conform to current appropriate standards for functional safety.
8. A dentist qualified for this sedative technique and responsible for the patient must not leave the facility until that patient is fit for discharge.

The Sedation Team

Qualified dentist administering parenteral sedation must have an appropriately trained assistant in attendance who is able to monitor and record the following vital signs of the patient:

- blood pressure
- respiration rate
- pulse

and should be capable of implementing BLS in an emergency situation.

Also if a separate recovery area is used, another appropriately trained assistant in BLS is required to act as a recovery supervisor.

Finally an office assistant to attend to office duties must be employed so that the sedation team is not disturbed.

Office Protocol and Facilities

1. Patient Selection

An adequate, clearly recorded current medical history, including present and past illnesses, hospital admissions, current medications and dose, allergies (in particular to drugs), and a functional inquiry, along with an appropriate physical examination must be completed for each patient and must form a permanent part of each patient's record. This assessment should be consistent in content with Appendix I.

The patient's ASA Classification (see Appendix II) and risk assessment must then be determined. These findings will be used to determine the appropriate facility and technique used.

2. Sedation Protocol

1. The medical history must be reviewed for any changes, at each sedation appointment. Such review must be documented in the permanent record.
2. The patient must not have had solid food for a minimum of six hours prior to the appointment. Clear fluids may have been taken up to two hours prior to the appointment. Possible exceptions to this are usual medications or preoperative medications which may be taken as deemed necessary by the dentists.
3. Laboratory investigations may be used at the discretion of the dentist.
4. Clinical observation must be supplemented by the following means of monitoring throughout the sedation administration:
 - continuous pulse oximeter monitoring of hemoglobin oxygen saturation recorded at a minimum of 5 minute intervals;
 - blood pressure and pulse must be taken and recorded preoperatively and throughout the sedation period at appropriate intervals.
 - respiration rate.
5. A sedation record must be kept consistent with Appendix III.
6. When intravenous sedation is used, an intravenous needle or indwelling catheter must be *in situ* and patent at all times during the procedure. An intermittent or continuous fluid administration must be used to ensure patency.
7. Alarm settings and their audio component on monitoring equipment must be utilized at all times.

3. Recovery Protocol

1. As described below, recovery accommodation and supervision is mandatory when parental sedation is administered.
2. The recovery area or room shall be utilized to accommodate the post-sedation patient from the completion of the procedure until the patient meets the criteria for discharge. Oxygen and appropriate suction and lighting must be readily available. The operatory can act as a recovery room.

3. A sufficient number of such recovery areas must be available to provide adequate recovery time for each case. Caseload must be governed accordingly.
4. Supervision and appropriately recorded monitoring by the recovery supervisor must occur throughout the recovery period, until the patient meets the criteria for discharge.
5. The patient may be discharged once he / she shows signs of progressively increasing alertness and has met the following criteria:
 - conscious and oriented
 - vital signs are stable
 - ambulatory
6. The patient must be discharged under the care of a responsible adult.
7. Written post-sedation instructions must be given and explained to both the patient and accompanying adult. The patient must be instructed to not drive a vehicle, operate hazardous machinery or consume alcohol for a minimum of 18 hours, or longer if drowsiness or dizziness persists.

4. Sedation Equipment

All monitoring equipment must receive regular documented service and maintenance by qualified personnel according to the manufacturer's specifications, or annually, whichever is more frequent.

It is the dentist's responsibility to ensure that the dental office in which sedation is being performed is equipped with the following:

- reserve source of oxygen (as a minimum, an E-size tank is required)
- portable apparatus for intermittent positive pressure resuscitation
- pulse oximeter
- sphygmomanometers and stethoscopes of appropriate sizes
- tonsil suction (Yankauer) adaptable to the suction outlet
- full face masks of appropriate sizes and connectors
- adequate selection of endotracheal tubes, appropriate connectors and introducer (BOUGIE)
- laryngoscope with an adequate selection of blades, spare batteries and bulbs
- Magill forceps
- adequate selection of oral airways
- portable auxiliary systems for light, suction, and oxygen
- apparatus for emergency tracheotomy or cricothyroid membrane puncture
- needles – IV
- drugs for management of emergencies, including:
 - oxygen
 - epinephrine
 - nitroglycerin
 - parenteral antihistamine (e.g. diphenhydramine)
 - bronchodilator (salbutamol)
 - parenteral vasopressor (e.g. ephedrine)
 - parenteral atropine
 - parenteral corticosteroid
 - intravenous lidocaine
 - flumazenil (if benzodiazepines are administered)
 - naloxone (if opioids are administered)
 - intravenous fluids
 - acetylsalicylic acid (ASA)

PART II DEEP SEDATION AND GENERAL ANAESTHESIA

Definition: Deep sedation is a controlled state of depressed consciousness, accompanied by partial loss of protective reflexes, including inability to respond purposefully to verbal command.

General Anaesthesia is a controlled state of unconsciousness accompanied by partial or complete loss of protective reflexes including inability to maintain an airway independently and respond purposefully to physical stimulation or verbal command.

These states therefore apply to any technique that has depressed the patient beyond conscious sedation, as defined in Part I. Any technique leading to these conditions in a patient, including neurolept analgesia / anaesthesia or dissociative anaesthesia, regardless of route of administration, would fall within the following Guidelines.

The Provincial Dental Board of Nova Scotia Policy Statement on the Provision of General Anaesthesia in the Dental Office (January 25, 2008) states that;

“The provider of the general anaesthesia must not also be the provider of dental treatment.”

Additional Professional Responsibilities

In addition to the General Guidelines listed in Part I, the following responsibilities apply:

1. All licensed dentists administering deep sedation or general anaesthesia must be registered with the Provincial Dental Board of Nova Scotia.
2. All facilities where deep sedation or general anaesthesia is administered must have a permit from the Provincial Dental Board of Nova Scotia. Such permit will be granted subject to training and conformance with all aspects of these *Guidelines* and subject to satisfactory onsite inspections and evaluation as determined by the Provincial Dental Board of Nova Scotia.
3. Deep Sedation must only be performed in the dental office by a professional qualified according to the following *Guidelines*.
 - the equivalent of a 4- week rotation in the anesthesia department of a teaching hospital, with active participation in the administration of general anesthesia, including venipuncture, airway maintenance and endotracheal intubation, must also be included in the training;
4. General anaesthesia must only be performed in the dental office by a professional qualified according to the following *Guidelines*.
 - Dentists who have successfully completed a post-graduate program in a university and / or teaching hospital over a minimum of 24 consecutive months. The program must have specifically evaluated and attested to the competency of the individual.
 - Dentists who had successfully completed a post-graduate anaesthesia program in a university and / or teaching hospital over a minimum of 12 consecutive months prior to 1993 and have continued to practice these modalities since that time. The program must have specifically evaluated and attested to the competency of the individuals.
 - Dentists who have successfully completed a formal post-graduate program in oral and maxillofacial surgery suitable for certification in the province of Nova Scotia, incorporating adequate training in anesthesia, such that the individual competence has been specifically evaluated and attested to.
5. Physicians registered to practice in Nova Scotia who hold fellowship in the Royal College of Physicians and Surgeons of Canada in anaesthesiology, or who can provide evidence satisfactory to the Board that they have been approved to provide anesthesia services by the College of Physicians and Surgeons of Nova Scotia
6. While the operating dentist is not permitted to administer the anaesthetic, he / she shares the responsibility to ensure that these *Guidelines* are followed.

7. Preoperative instructions must be given in writing to the patient or responsible adult. Patients should be given instructions regarding the minimum duration of fasting prior to appointments that is consistent with the following minimum requirements.

- 8 hours after a meal that includes meat, fried or fatty foods.
- 6 hours after a light meal (such as toast and a clear fluid), or after ingestion of infant formula or nonhuman milk.
- 4 hours after ingestion of breast milk; and
- 2 hours after clear fluids (such as water, fruit juices without pulp, carbonated beverages, clear tea, and black coffee, but NOT alcohol).

Possible exceptions to this are usual medications or preoperative medications which may be taken as deemed necessary by the dentist.

To avoid confusion, some dentists may wish to simplify their preoperative instructions to patients regarding fasting requirements. For example, patients might be instructed not to have any solid food for a minimum of 8 hours, and not to have any fluids for a minimum of 2 hours, prior to the appointment. Such instructions would be consistent with the minimum fasting requirements.

8. Consent must be obtained prior to the administration of any parenteral sedative or general anaesthetic.

9. Anaesthetic and monitoring equipment must conform to current appropriate standards for functional safety.

10. The patient must never be left unattended by a dentist qualified for this sedative / anaesthetic technique during the administration of the sedative or general anaesthetic.

11. A dentist qualified for this sedative / anaesthetic technique and responsible for the patient must not leave the facility until that patient is fit for discharge.

The Anaesthetic Team

General Anaesthesia or deep sedation for ambulatory dental patients must be administered through the combined efforts of the anaesthetic team. The anaesthetic team shall consist of the following individuals.

The **dentist / physician** who is directly responsible for the anesthesia and the anaesthesia team.

The **operative assistant** licensed in Nova Scotia, whose primary function is to keep the operative field free of blood, mucous and debris.

The **recovery supervisor** who, under the dentist's supervision, has the primary function of supervising and monitoring patients in the recovery area, as well as determining, under the direction and responsibility of the dentist, if the patient meets the criteria for discharge, as outlined below.

This person must be a licensed nurse currently registered in Nova Scotia.

Office Protocol and Facilities

The facility must permit adequate access for emergency stretchers and have auxiliary powered backup for suction and lighting, for use in the event of a power or system failure.

1. Patient Selection

An adequate, clearly recorded current medical history, including present and past illnesses, hospital admissions, current medications and dose, allergies (in particular to drugs), and a functional inquiry, along with an appropriate physical examination must be completed for each patient and must form a permanent part of each patient's record, prior to the administration of deep sedation. This assessment should be consistent in content with Appendix I.

The patient's ASA Classification (see Appendix II) and risk assessment must be determined. These findings will be used to determine the appropriate facility and technique to be used.

2. Anaesthesia Protocol

1. The medical history must be reviewed for any changes at each deep sedation or general anaesthesia appointment. Such review must be documented in the permanent record

2. The patient must have complied with the minimum duration of fasting prior to appointments that is consistent with the following minimum requirements:

- 8 hours after a meal that includes meat, fried or fatty foods;
- 6 hours after a light meal (such as toast and a clear fluid), or after ingestion of infant formula or nonhuman milk;
- 4 hours after ingestion of breast milk; and
- 2 hours after clear fluids (such as water, fruit juices without pulp, carbonated beverages, clear tea, and black coffee, but NOT alcohol).

Possible exceptions to this are usual medications or preoperative medications which may be taken as deemed necessary by the dentist responsible for the administration of the sedation or general anaesthesia.

To avoid confusion, some dentists may wish to simplify their preoperative instructions to patients regarding fasting requirements. For example, patients might be instructed not to have any solid food for a minimum of 8 hours, and not to have any fluids for a minimum of 2 hours, prior to the appointment. Such instructions would be consistent with the minimum fasting requirements.

3. Laboratory investigations may be used at the discretion of the dentist.

4. Clinical observation must be supplemented by the following means of monitoring performed at appropriate intervals, usually every 5 minutes throughout the deep sedation or general anaesthesia administration:

- continuous pulse oximeter monitoring of hemoglobin oxygen saturation
- blood pressure and pulse
- respiration
- continuous electrocardioscope monitoring
- if intubated or a laryngeal mask airway is used, monitoring by capnometry / capnography is required
- If intubated or a laryngeal mask airway is used, monitoring by oxygen analyzer is required
- If a volatile inhalational anaesthetic agent is used to maintain anaesthesia (e.g. isoflurane, sevoflurane, desflurane), an anaesthetic agent analyzer is required

5. If triggering agents for malignant hyperthermia are being used (volatile inhalational general anaesthetics or succinylcholine), measurement of temperature and appropriate emergency drugs, as outlined below, must be readily available.

6. Sedation record must be kept consistent with Appendix III.

7. An indwelling catheter must be *in situ* and patent at all time during the procedure. An intermittent or continuous fluid administration must be used to ensure patency.

8. Alarm settings and their audio component on monitoring equipment must be utilized at all times.

3. RECOVERY PROTOCOL

1. As described below, recovery accommodation and supervision is mandatory where deep sedation or general anaesthesia is administered.
2. The recovery area or room shall be utilized to accommodate the patient from the completion of the procedure until the patient meets the criteria for discharge. Oxygen and appropriate suction and lighting must be readily available. The operatory can act as a recovery room.
3. A sufficient number of such recovery areas must be available to provide adequate recovery time for each case. Caseload must be governed accordingly.
4. Supervision and appropriately recorded monitoring by the recovery supervisor should occur throughout the recovery period, until the patient meets the criteria for discharge. Monitors must be immediately available for recovery use, including pulse oximeter, sphygmomanometer, and electrocardioscope.
5. The patient may be discharge once he / she shows signs of progressively increasing alertness and has met the following criteria:
 - conscious and oriented
 - vital signs are stable
 - ambulatory
6. The patient must be discharge to the care of a responsible adult.
7. Written post-sedation / anaesthesia instructions must be given. The patient must be instructed to not drive a vehicle, operate hazardous machinery or consume alcohol for a minimum of 18 hours, or longer if drowsiness or dizziness persists.
8. If a reversal agent is administered before discharge criteria have been met, the patient must be monitored until recovery is assured.

4. DEEP SEDATION / GENERAL ANAESTHESIA EQUIPMENT

Emergency equipment and drugs must be available at all times. Drugs must be current and stored in readily identifiable and organized fashion (i.e. labeled trays or bags). All anaesthetic and monitoring equipment must receive regular service and maintenance by qualified personnel according to the manufacturer's specifications, or annually, whichever is more frequent. A written record of this annual maintenance / servicing must be kept on file or review by the PDBNS as required.

1. Gas delivery systems used for administration of nitrous oxide and oxygen must meet the following requirements:
 - a nitrous oxide and oxygen gas delivery system that meets the requirements for such equipment as described in the previous section of this document.
 - a general anaesthesia gas delivery system that is CSA approved and:
 - must be equipped with connectors and tubing which allow use of a full face mask for resuscitative ventilation with 100% oxygen;
 - must have readily available a reserve supply of oxygen ready for immediate use. This should be portable, an "E" size cylinder as a minimum and attached with appropriate regulator, flowmeter and connectors as described previously;
 - must be equipped with a scavenging system installed per manufacturer's specifications.
2. If a vaporizer is fitted to the gas delivery system, then:
 - it shall have an agent-specific keyed filling device.
 - the connection of the inlet and outlet ports of the vaporizer to the gas machine shall be such that an inadvertent incorrect attachment cannot be made.
 - All vaporizer control knobs must open counter clockwise and be marked to indicate vapour concentration in volume percent. It must mark and lock the control in the "off" position.
 - the vaporizer must be connected to the scavenging system. Where multiple vaporizers are used, an Interlock System must be installed.

3. If the patient is intubated or a laryngeal mask airway is used, then the anaesthetic machine must be fitted with an oxygen analyzer.

4. It is the dentist's responsibility to ensure that the dental office in which deep sedation or general anaesthesia is being performed is equipped with the following:

- reserve source of oxygen
- portable apparatus for intermittent positive pressure resuscitation
- pulse oximeter
- sphygmomanometers and stethoscopes of appropriate sizes
- tonsil suction (Yankauer) adaptable to the suction outlet
- full face masks of appropriate sizes and connectors
- adequate selection of endotracheal tubes and appropriate connectors
- endotracheal tube introducer (Macintosh 3 & 4)
- laryngoscope with an adequate selection of blades, spare batteries and bulbs
- Magill forceps
- adequate selection of oral airways
- portable auxiliary systems for light, suction, and oxygen
- apparatus for emergency tracheotomy or cricothyroid membrane puncture
- electrocardioscope and defibrillator
- capnometer, if endotracheal intubation is used to administer general anaesthesia
- drugs for management of emergencies, including
 - oxygen
 - epinephrine
 - nitroglycerin
 - parenteral antihistamine (e.g. diphenhydramine)
 - bronchodilator (salbutamol)
 - parenteral vasopressor (e.g. ephedrine)
 - parenteral atropine
 - parenteral corticosteroid
 - intravenous lidocaine
 - flumazenil (if benzodiazepines are administered)
 - naloxone (if opioids are administered)
 - intravenous fluids
 - succinylcholine
 - antihypertensive
 - dantrolene, if triggering agents for malignant hyperthermia are being used
 - acetylsalicylic acid (ASA)

APPENDIX I

Medical History and Patient Evaluation

An adequate, current, clearly recorded and signed medical history must be made for each patient. The history is part of the patient's permanent record. It forms a data base upon which appropriate sedation modality is determined. The medical history must be kept current. This information may be organized in any format that each dentist prefers provided that the scope of the content contains the minimum information describing in this section.

Vital Statistics

This includes the patient's full name, date of birth, sex, and the name of the person to be notified in the event of an emergency. In case of a minor or a mentally disadvantaged patient, the name of the parent or guardian must be recorded.

Core Medical History

The Core Medical history must fulfill the following two basic requirements:

- It must elicit the core medical information to enable the dentist to assign the correct ASA Classification (see Appendix II) in order to assess risk factors in relation to sedation choices.
- It must provide written evidence of a logical process of patient evaluation.

This core information should be a system-based review of the patient's past and current health status. It can be developed from the responses to the following inquiries:

- Are you now under a physician's care or direction or have you been during the last 5 years?
- When was your last medical examination?
- Have you ever had a serious illness, accident, or required hospitalization?
- Are you taking any medication(s)? If yes, what is the drug(s), dose(s) and for how long?
- Do you have any allergies or have you ever had a reaction to any drugs?
- Have you ever had any breathing difficulty or asthma, emphysema, chronic cough, pneumonia, tuberculosis or any other lung problems? Do you smoke?
- Have you or any family member ever had any problems associated with the administration of anesthesia ?
- Have you ever had any heart or blood vessel problems such as murmurs, heart attack, high or low blood pressure,
- Have you ever had a stroke?
- Are you subject to fainting, dizziness, nervous disorders, convulsions or epilepsy?
- Have you ever had hepatitis, liver or kidney disease, jaundice, yellow skin?
- Have you had any health problems not described above?

Core Physical Examination

A current, basic physical examination, suitable for determining information that may be significant to sedation and appropriate to the modality being used, must be carried out for each patient. At a minimum, all modalities of sedation require the evaluation and recording of significant positive findings related to:

- general appearance (note obvious abnormalities);
- head, neck and intra-oral examination, particularly pertaining to airway, such as range of motion, loose teeth, potential obstruction from large tongue, tonsils, etc.
- the taking and recording of vital signs i.e. heart rate and blood pressure.

This can be carried out by most general practitioners and specialists.

If a more in-depth physical examination is required involving:

- auscultation (cardiac or pulmonary);
- examination of other physiologic systems; or
- other assessments,

This examination must be performed by a physician or by a dentist who has received formal training in a post-graduate anesthesiology program or an oral and maxillofacial surgery program.

The core physical examination may include an order for and assessment of laboratory data if indicated.

APPENDIX II

American Society of Anesthesiology Physical Status Classification System

ASA I:	A normal healthy patient.
ASA II:	A patient with mild systemic disease.
ASA III:	A patient with server systemic disease that limits activity but is not incapacitating.
ASA IV:	A patient with incapacitation systemic disease that is a constant threat to life.
ASA V:	A moribund patient not expected to survive 24 hours with or without operation.
ASA E:	Emergency operation of any variety; E precedes the number, indicating the patient's Physical status.

APPENDIX III

Anesthetic Record for Parenteral Conscious Sedation or Deep Sedation

An anesthetic/sedation record should contain the following information:

- patient name
- date of procedure
- verification of NPO status
- verification of accompaniment for discharge
- pre-operative blood pressure, heart rate, and oxygen saturation
- ASA status
- names of all drugs administered
- doses of all drugs administered
- time of administration of all drug
- if used: intravenous type, location of venipuncture, type and amount of fluids administered
- list of monitors used
- record of systolic and diastolic blood pressure, heart rate, oxygen saturation, at appropriate intervals as described in the *Guidelines*. If the monitors used provide an automated printout may be attached in lieu of handwritten recording of these signs.
- time of the start and completion of the administration of the sedation
- time of the start and completion of the administration of the dental procedure
- recovery period
- discharge criteria met: Oriented, ambulatory, vital signs stable (record of blood pressure, heart rate, oxygen saturation)
- time of discharge
- name of professional responsible for the case
- a notation of any complication or adverse reaction

APPENDIX IV

Part I – Conscious Sedation

1. Oral Administration of a single sedative drug.

This is fully within the training of all licensable dentists in Nova Scotia and requires no specific action of the Provincial Dental Board of Nova Scotia.

2. Nitrous Oxide and Oxygen

Any dentist wishing to perform nitrous oxide and oxygen conscious sedation in their office must present to the Registrar proof of completion of a recognized course as described in Part I, 2, ii).

The Registrar will make note of this in the Registry and issue the dentist a permit to provide nitrous oxide sedation.

3. Combination of Oral Sedative Drug or Nitrous Oxide / Oxygen with an Oral Sedative Drug.

Any dentist wishing to perform nitrous oxide and oxygen conscious sedation in conjunction with an oral sedative drug or sedation with a combination of oral sedative drugs in their office must present to the Registrar proof that they have completed a course of instruction as described in Part I, 3 on page 5 or completed a program of instruction as described in Part II, Additional Professional Responsibilities, 3 on page 9.

The Registrar shall enter this in the Registry and issue the dentist a permit to perform these forms of conscious sedation.

4. Parenteral Conscious Sedation

Any dentist wishing to practice parenteral conscious sedation must present to the Registrar proof of completion of a course of study as described in Part I, 4 on page 6 or completed a program as described in Part II, Additional Professional Responsibility page 9.

Additional Professional Responsibilities, 2, a) or b). The Registrar shall enter this in the Registry and issue the dentist a permit to practice this form of sedation.

Part II Deep Sedation and General Anaesthesia

Any dentist wishing to practice deep sedation / general anaesthesia must submit to the Registrar proof that they have completed a formal training program as defined in Part II Additional Professional Responsibilities 3, on page 9. The Registrar shall enter this into the Registry, inspect the facility where the deep sedation / general anaesthesia is to be administered and then issue the dentist(s) a permit to practice deep sedation in that facility.

The Provincial Dental Board of Nova Scotia appreciates the Royal College of Dental Surgeons of Ontario's willingness to share their documentation upon which these guidelines are based.