Council on Dental Education and Licensure
Call for Comment on Proposed Revisions

ADA Guidelines for the Use of Sedation and General Anesthesia by Dentists
and
ADA Guidelines for Teaching Pain Control and Sedation to Dentists and Dental Students

At the request of the 2015 ADA House of Delegates (Resolution 77H-2015), the Council on Dental Education and Licensure has reviewed the ADA Guidelines for the Use of Sedation and General Anesthesia by Dentists (Use Guidelines) and the Guidelines for Teaching Pain Control and Sedation to Dentists and Dental Students (Teaching Guidelines), all related written correspondence to date, oral testimony provided at the April 20, 2016 Members’ Hearing and the Council on Scientific Affairs Report, “Risks and Benefits of Using Capnography In Dental Patients Undergoing Moderate Sedation.” All of this information is posted on ADA.org.

Based on this careful review, the Council now proposes amendments to the Guidelines as presented in this document and seeks comment from the communities of interest as enumerated below, per Resolution 77H-2015:

77H-2015. Resolved, that the proposed Guidelines for the Use of Sedation and General Anesthesia by Dentists and the Guidelines for Teaching and Pain Control and Sedation to Dentists and Dental Students be referred to the Council on Dental Education and Licensure, in collaboration with the Council on Scientific Affairs, with a recommendation to consider:

- Elimination of the mandate for monitoring end tidal CO₂ for moderate sedation to allow for the choice of options such as: continuous use of a precordial or pretracheal stethoscope, continuous monitoring of end tidal carbon dioxide, and continual verbal communication with the patient. Per a detailed report by the ADA Science Institute on two systematic reviews, the Council continues to support its proposed mandate for monitoring end-tidal CO₂ during moderate sedation. [Lines 468-472 and 595-598]

- Reconsideration of the section “Moderate Sedation Course Duration” (hours and content), as proposed by level of sedation, or a possible option of separate course requirements for enteral and parenteral routes of sedation. The Council believes that depth of moderate sedation is entirely independent of the route of administration. Patients who arrive at a level of moderate sedation by an enteral or parenteral route are in the same clinical state. The Council maintains that moderately sedated patients via either route require the same attentiveness and monitoring. There should be no difference in the training requirements for the routes of administration. The Council continues to support course duration as 60 hours of instruction plus 20 patient experiences for moderate sedation. [Lines 1362-1365] The Council also proposes several competencies that must be certified by a course director, especially regarding rescue and emergency management. [Lines 1366-1372]

- Making patient evaluation provisions consistent throughout the document, including but not limited to, rationale and guidelines for the use of Body Mass Index (BMI) and the timing of medical history review. For moderate sedation and deep sedation/general anesthesia the Council believes that the ADA Sedation and Anesthesia Guidelines should require that patients undergo an evaluation prior to the administration of any sedative, at least a review at an appropriate time of their medical history and medication use, and that ASA III and IV patients should also require consultation with the primary care physician or medical specialist. [Lines 302-322; 397-409; and 518-550] The Council discussed available evidence demonstrating that patients with elevated BMI may be at increased risk for airway associated morbidity during sedation, particularly if in association with other factors such as obstructive sleep apnea. Therefore,
in regard to assessment of BMI, the Council proposes that Body Mass Index (BMI) measurements be considered part of a pre-procedural workup. [Lines 402-409 and 523-530]

- One additional amendment is proposed by the Council: The current ADA Guidelines support the use of the American Academy of Pediatrics/American Academy of Pediatric Dentistry "Guidelines for Monitoring and Management of Patients Before, During, and After Sedation for Diagnostic and Therapeutic Procedures." [Lines 107-112; 389-393; 510-514; 549-550; 627; 637; and 1097] Because of this reference to and support of the AAP/AAPD Guidelines, coupled with the special circumstances of managing pediatric patients who undergo sedation and anesthesia, the Council is proposing that the ADA Sedation and Anesthesia Guidelines should focus on the adult patient population. Accordingly, the Council is recommending that the remaining references to pediatric patients in the ADA Sedation and Anesthesia Guidelines be deleted.

The Council will consider feedback on its proposed amendments from the communities of interest and prepare a report to the 2016 ADA House of Delegates. A July 4 deadline allows the Council’s final report and resolution to be considered by the Board of Trustees at its July 31-August 2 meeting and posted for Delegates in time for district caucus meetings.

**The deadline for comments is July 4, 2016.**

Comments should reference the page number, line number(s), be specific, and offer supportive evidence. Comments should be addressed to:

Dr. Daniel J Gesek, Jr., Chair  
Council on Dental Education and Licensure  
American Dental Association  
211 East Chicago Avenue  
Chicago, IL 60611

Comments may be sent via ground delivery or e-mailed to asekj@ada.org.
Proposed Revisions to the 2012
Guidelines for the Use of Sedation and General Anesthesia by Dentists

Written Comment Period June 3 – July 4, 2016

Underscore denotes proposed additions
Strikethrough denotes proposed deletions

I. Introduction

The administration of local anesthesia, sedation and general anesthesia is an integral part of dental practice. The American Dental Association is committed to the safe and effective use of these modalities by appropriately educated and trained dentists. The purpose of these guidelines is to assist dentists in the delivery of safe and effective sedation and anesthesia.

Dentists providing sedation and anesthesia in compliance with their state rules and/or regulations prior to adoption of this document are not subject to Section III. Educational Requirements.

For children 12 years of age and under, the American Dental Association supports the use of the American Academy of Pediatrics/American Academy of Pediatric Dentistry Guidelines for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures. [Existing language moved from the Definitions section]

II. Definitions

Methods of Anxiety and Pain Control

analgesia - the diminution or elimination of pain. [moved to Terms section]

conscious sedation - 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 or verbal command and that is produced by a pharmacological or non-pharmacological method or a combination thereof.

In accord with this particular definition, the drugs and/or techniques used should carry a margin of safety wide enough to render unintended loss of consciousness unlikely. Further, patients whose only response is reflex withdrawal from repeated painful stimuli would not be considered to be in a state of conscious sedation.

combination inhalation-ental conscious sedation (combined conscious sedation) - conscious sedation using inhalation and enteral agents.

When the intent is anxiolysis only, and the appropriate dosage of agents is administered, then the definition of enteral and/or combination inhalation-ental conscious sedation (combined conscious sedation) does not apply.
local anesthesia – the elimination of sensation, especially pain, in one part of the body by the topical application or regional injection of a drug. [Moved to Terms section]

Note: Although the use of local anesthetics is the foundation of pain control in dentistry and has a long record of safety, dentists must be aware of the maximum, safe dosage limits for each patient. Large doses of local anesthetics in themselves may result in central nervous system depression, especially in combination with sedative agents. [Moved to Terms section]

combination inhalation–enteral conscious sedation (combined conscious sedation) – conscious sedation using inhalation and enteral agents.

When the intent is anxiolysis only, and the appropriate dosage of agents is administered, then the definition of enteral and/or combination inhalation–enteral conscious sedation (combined conscious sedation) does not apply.

Level of sedation is entirely independent of the route of administration. Moderate, and deep sedation or general anesthesia may be achieved via any route of administration and thus an appropriately consistent level of training must be established.

minimal sedation (previously known as anxiolysis) – a minimally depressed level of consciousness, produced by a pharmacological method, that retains the patient’s ability to independently and continuously maintain an airway and respond normally to tactile stimulation and verbal command. Although cognitive function and coordination may be modestly impaired, ventilatory and cardiovascular functions are unaffected.  

Further, patients whose only response is reflex withdrawal from repeated painful stimuli would not be considered to be in a state of minimal sedation.

When the intent is minimal sedation for adults, the appropriate initial dosing of a single enteral drug is no more than the maximum recommended dose (MRD) of a drug that can be prescribed for unmonitored home use.

The following definitions apply to administration of minimal sedation:

maximum recommended dose (MRD) - maximum FDA-recommended dose of a drug, as printed in FDA-approved labeling for unmonitored home use.

dosing for minimal sedation via the enteral route – minimal sedation may be achieved by the administration of a drug, either singly or in divided doses, by the enteral route to achieve the desired clinical effect, not to exceed the maximum recommended dose (MRD).

The administration of enteral drugs exceeding the maximum recommended dose during a single appointment is considered to be moderate sedation and the moderate sedation guidelines apply.

incremental dosing – administration of multiple doses of a drug until a desired effect is reached, but not to exceed the maximum recommended dose (MRD).

supplemental dosing – during minimal sedation, supplemental dosing is a single additional dose of the initial drug that may be necessary for prolonged procedures. The supplemental dose should not exceed one-half of the initial dose and should not be administered until the dentist has determined the clinical half-life of the initial dosing has passed. The total aggregate dose must not exceed 1.5x the MRD on the day of treatment.

2 Portions excerpted from Continuum of Depth of Sedation: Definition of General Anesthesia and Levels of Sedation/Analgesia, 2014 2004, of the American Society of Anesthesiologists (ASA). A copy of the full text can be obtained from ASA, 520 N. Northwest Highway, Park Ridge, IL 60068-2573.
Nitrous oxide/oxygen may be used in combination with a single enteral drug in minimal sedation.

Nitrous oxide/oxygen when used in combination with sedative agent(s) may produce minimal, moderate, deep sedation or general anesthesia. [This sentence was repositioned within this minimal sedation definition section]

If more than one enteral drug is administered to achieve the desired sedation effect, with or without the concomitant use of nitrous oxide, the guidelines for moderate sedation must apply.

Note: In accord with this particular definition, the drug(s) and/or techniques used should carry a margin of safety wide enough never to render unintended loss of consciousness. [Existing language repositioned within this minimal sedation definition section] The use of the MRD to guide dosing for minimal sedation is intended to create this margin of safety.

The use of preoperative sedatives for children (aged 12 and under) prior to arrival in the dental office, except in extraordinary situations, must be avoided due to the risk of unobserved respiratory obstruction during transport by untrained individuals.

Children (aged 12 and under) can become moderately sedated despite the intended level of minimal sedation; should this occur, the guidelines for moderate sedation apply.

For children 12 years of age and under, the American Dental Association supports the use of the American Academy of Pediatrics/American Academy of Pediatric Dentistry Guidelines for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures. [Moved to the Introduction section]

**Moderate sedation** - a drug-induced depression of consciousness during which patients respond *purposefully* to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.³

Note: In accord with this particular definition, the drugs and/or techniques used should carry a margin of safety wide enough to render unintended loss of consciousness unlikely. Repeated dosing of an agent before the effects of previous dosing can be fully appreciated may result in a greater alteration of the state of consciousness than is the intent of the dentist. Further, a patient whose only response is reflex withdrawal from a painful stimulus is not considered to be in a state of moderate sedation.

The following definition applies to the administration of moderate or greater sedation:

**Titration** - administration of incremental doses of an intravenous or inhalation drug until a desired effect is reached. Knowledge of each drug’s time of onset, peak response and duration of action is essential to avoid over sedation. Although the concept of titration of a drug to effect is critical for patient safety, when the intent is moderate sedation one must know whether the previous dose has taken full effect before administering an additional drug increment.

**Deep sedation** - a drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.³

**General anesthesia** - a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require

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³ Excerpted from *Continuum of Depth of Sedation: Definition of General Anesthesia and Levels of Sedation/Analgesia, 2004, of the American Society of Anesthesiologists (ASA)*. A copy of the full text can be obtained from ASA, 520 N. Northwest Highway, Park Ridge, IL 60068-2573.
assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired.

Because sedation and general anesthesia are a continuum, it is not always possible to predict how an individual patient will respond. Hence, practitioners intending to produce a given level of sedation should be able to diagnose and manage the physiologic consequences (rescue) for patients whose level of sedation becomes deeper than initially intended.\(^3\)

For all levels of sedation, the qualified dentist practitioner must have the training, skills, drugs and equipment to identify and manage such an occurrence until either assistance arrives (emergency medical service) or the patient returns to the intended level of sedation without airway or cardiovascular complications.

**Routes of Administration**

- **enteral** - any technique of administration in which the agent is absorbed through the gastrointestinal (GI) tract or oral mucosa [i.e., oral, rectal, sublingual].

- **parenteral** - a technique of administration in which the drug bypasses the gastrointestinal (GI) tract [i.e., intramuscular (IM), intravenous (IV), intranasal (IN), submucosal (SM), subcutaneous (SC), intraosseous (IO)].

- **transdermal** - a technique of administration in which the drug is administered by patch or iontophoresis through skin.

- **transmucosal** - a technique of administration in which the drug is administered across mucosa such as intranasal, sublingual, or rectal.

- **inhalation** - a technique of administration in which a gaseous or volatile agent is introduced into the lungs and whose primary effect is due to absorption through the gas/blood interface.

**Terms**

- **analgesia** – the diminution or elimination of pain [Existing language moved from Definitions section]

- **local anesthesia** - the elimination of sensation, especially pain, in one part of the body by the topical application or regional injection of a drug. [Existing language moved from Definitions section]

*Note: Although the use of local anesthetics is the foundation of pain control in dentistry and has a long record of safety, dentists must be aware of the maximum, safe dosage limits for each patient. Large doses of local anesthetics in themselves may result in central nervous system depression, especially in combination with sedative agents. [Existing language moved from Definitions section]*

- **qualified dentist** - meets the educational requirements for the appropriate level of sedation in accordance with Section III of these Guidelines, or a dentist providing sedation and anesthesia in compliance with their state rules and/or regulations prior to adoption of this document.

- **operating dentist** – dentist with primary responsibility for providing operative dental care while a qualifying dentist or independently practicing qualified anesthesia healthcare provider administers minimal, moderate or deep sedation or general anesthesia.

- **competency** – displaying special skill or knowledge derived from training and experience

- **must/shall** - indicates an imperative need and/or duty; an essential or indispensable item; mandatory.
should - indicates the recommended manner to obtain the standard; highly desirable.

may - indicates freedom or liberty to follow a reasonable alternative.

continual - repeated regularly and frequently in a steady succession.

continuous - prolonged without any interruption at any time.

time-oriented anesthesia record - documentation at appropriate time intervals of drugs, doses and physiologic data obtained during patient monitoring.

immediately available – on site in the facility and available for immediate use.

American Society of Anesthesiologists (ASA) Patient Physical Status Classification

ASA I - A normal healthy patient.
ASA II - A patient with mild systemic disease.
ASA III - A patient with severe systemic disease.
ASA IV - A patient with severe systemic disease that is a constant threat to life.
ASA V - A moribund patient who is not expected to survive without the operation.
ASA VI - A declared brain-dead patient whose organs are being removed for donor purposes.
E - Emergency operation of any variety (used to modify one of the above classifications, i.e., ASA III-E).

American Society of Anesthesiologists Fasting Guidelines*

<table>
<thead>
<tr>
<th>Ingested Material</th>
<th>Minimum Fasting Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear liquids</td>
<td>2 hours</td>
</tr>
<tr>
<td>Breast milk</td>
<td>4 hours</td>
</tr>
<tr>
<td>Infant formula</td>
<td>6 hours</td>
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<tr>
<td>Nonhuman milk</td>
<td>6 hours</td>
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<tr>
<td>Light meal</td>
<td>6 hours</td>
</tr>
<tr>
<td>Fatty meal</td>
<td>8 hours</td>
</tr>
</tbody>
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III. Educational Requirements

A. Minimal Sedation

1. To administer minimal sedation the dentist must demonstrate competency by having successfully completed:

   a. training to the level of competency in minimal sedation consistent with that prescribed in the ADA Guidelines for Teaching Pain Control and Sedation to Dentists and Dental Students,
   or

   b. a comprehensive training program in moderate sedation that satisfies the requirements described in the Moderate Sedation section of the ADA Guidelines for Teaching Pain Control and Sedation to Dentists and Dental Students at the time training was commenced,

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4 ASA Physical Status Classification System is reprinted with permission of the American Society of Anesthesiologists, 520 N. Northwest Highway, Park Ridge, IL 60068-2573.
c. b. an advanced education program accredited by the ADA Commission on Dental Accreditation that affords
comprehensive and appropriate training necessary to administer and manage minimal sedation commensurate with
these guidelines;

and
d. a current certification in Basic Life Support for Healthcare Providers.

2. Administration of minimal sedation by another qualified dentist or independently practicing qualified anesthesia
healthcare provider requires the operating dentist and his/her clinical staff to maintain current certification in Basic Life
Support for Healthcare Providers.

B. Moderate Sedation

1. To administer moderate sedation, the dentist must demonstrate competency by having successfully
completed:

a. a comprehensive training program in moderate sedation that satisfies the requirements described in the Moderate
Sedation section of the ADA Guidelines for Teaching Pain Control and Sedation to Dentists and Dental Students at the
time training was commenced,
or
b. an advanced education program accredited by the ADA Commission on Dental Accreditation that affords
comprehensive and appropriate training necessary to administer and manage moderate sedation commensurate with
these guidelines;

and
c. 1) a current certification in Basic Life Support for Healthcare Providers and 2) either current certification in Advanced
Cardiac Life Support (ACLS or equivalent) or completion of an appropriate dental sedation/anesthesia emergency
management course on the same recertification cycle that is required for ACLS.

2. Administration of moderate sedation by another qualified dentist or independently practicing qualified anesthesia
healthcare provider requires the operating dentist and his/her clinical staff to maintain current certification in Basic Life
Support for Healthcare Providers.

C. Deep Sedation or General Anesthesia

1. To administer deep sedation or general anesthesia, the dentist must demonstrate competency by having successfully
completed:

a. an advanced education program accredited by the ADA Commission on Dental Accreditation that affords
comprehensive and appropriate training necessary to administer and manage deep sedation or general anesthesia,
commensurate with Part IV.C of these guidelines;

and
b. 1) a current certification in Basic Life Support for Healthcare Providers and 2) either current certification in Advanced
Cardiac Life Support (ACLS or equivalent) or completion of an appropriate dental sedation/anesthesia emergency
management course on the same re-certification cycle that is required for ACLS.

2. Administration of deep sedation or general anesthesia by another qualified dentist or independently practicing qualified anesthesia
healthcare provider requires the operating dentist and his/her clinical staff to maintain current certification in Basic Life
Support for the Healthcare Provider.

For all levels of sedation and anesthesia, dentists, who are currently providing sedation and anesthesia in
compliance with their state rules and/or regulations prior to adoption of this document, are not subject to these
educational requirements. However, all dentists providing sedation and general anesthesia in their offices or the
offices of other dentists should comply with the Clinical Guidelines in this document.
IV. Clinical Guidelines

A. Minimal sedation

1. Patient History and Evaluation

Patients considered for minimal sedation must be suitably evaluated prior to the start of any sedative procedure. In healthy or medically stable individuals (ASA I, II) this should may consist of a review of their current medical history and medication use. However, In addition, patients with significant medical considerations (ASA III, IV) may require consultation with their primary care physician or consulting medical specialist.

2. Pre-Operative Evaluation and Preparation

- The patient, parent, legal guardian or care giver must be advised regarding the procedure associated with the delivery of any sedative agents and informed consent for the proposed sedation must be obtained.
- Determination of adequate oxygen supply and equipment necessary to deliver oxygen under positive pressure must be completed.
- An appropriate focused physical evaluation must be performed as deemed appropriate.
- Baseline vital signs including body weight, height, blood pressure, pulse rate, and respiration rate must be obtained unless invalidated by the nature of the patient, procedure or equipment the patient's behavior prohibits such determination. Body temperature should be measured when clinically indicated.
- Preoperative dietary restrictions must be considered based on the sedative technique prescribed.
- Pre-operative verbal and written instructions must be given to the patient, parent, escort, guardian or care giver.

3. Personnel and Equipment Requirements

Personnel:
- At least one additional person trained in Basic Life Support for Healthcare Providers must be present in addition to the dentist.

Equipment:
- A positive-pressure oxygen delivery system suitable for the patient being treated must be immediately available.
- A log of equipment maintenance, including monitors and anesthesia delivery system, must be maintained. A pre-procedural check of equipment for each administration of sedation must be performed.
- When inhalation equipment is used, it must have a fail-safe system that is appropriately checked and calibrated. The equipment must also have either (1) a functioning device that prohibits the delivery of less than 30% oxygen or (2) an appropriately calibrated and functioning in-line oxygen analyzer with audible alarm.
- An appropriate scavenging system must be available if gases other than oxygen or air are used.

4. Monitoring and Documentation

Monitoring: A dentist, or at the dentist’s direction, an appropriately trained individual, must remain in the operatory during active dental treatment to monitor the patient continuously until the patient meets the criteria for discharge to the recovery area. The appropriately trained individual must be familiar with monitoring techniques and equipment. Monitoring must include:

Consciousness:
• Level of sedation (e.g., responsiveness to verbal commands) must be continually assessed.

Oxygenation:

• Color of mucosa, skin or blood must be evaluated continually.

• Oxygen saturation by pulse oximetry may be clinically useful and should be considered.

Ventilation:

• The dentist and/or appropriately trained individual must observe chest excursions continually.

• The dentist and/or appropriately trained individual must verify respirations continually.

Circulation:

• Blood pressure and heart rate should be evaluated pre-operatively, post-operatively and intraoperatively as necessary (unless the patient is unable to tolerate such monitoring).

Documentation: An appropriate sedative record must be maintained, including the names of all drugs administered, time administered and route of administration, including local anesthetics, dosages, and monitored physiological parameters.

5. Recovery and Discharge

• Oxygen and suction equipment must be immediately available if a separate recovery area is utilized.

• The qualified dentist or appropriately trained clinical staff must monitor the patient during recovery until the patient is ready for discharge by the dentist.

• The qualified dentist must determine and document that level of consciousness, oxygenation, ventilation and circulation are satisfactory prior to discharge.

• Post-operative verbal and written instructions must be given to the patient, and parent, escort, guardian or care giver.

6. Emergency Management

• If a patient enters a deeper level of sedation than the dentist is qualified to provide, the dentist must stop the dental procedure until the patient returns to the intended level of sedation.

• The qualified dentist is responsible for the sedative management, adequacy of the facility and staff, diagnosis and treatment of emergencies related to the administration of minimal sedation and providing the equipment and protocols for patient rescue.

7. Management of Children

For children 12 years of age and under, the American Dental Association supports the use of the American Academy of Pediatrics/American Academy of Pediatric Dentistry Guidelines for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures.

B. Moderate Sedation

1. Patient History and Evaluation

Patients considered for moderate sedation must undergo an evaluation prior to the administration of any sedative, be suitably evaluated prior to the start of any sedative procedure. In healthy or medically stable
individuals (ASA I, II). This should consist of at least a review at an appropriate time of their current medical history and medication use. However, in addition, patients with significant medical considerations (e.g., ASA III, IV) may should also require consultation with their primary care physician or consulting medical specialist. Assessment of Body Mass Index (BMI)* should be considered part of a pre-procedural workup. Patients with elevated BMI may be at increased risk for airway associated morbidity, particularly if in association with other factors such as obstructive sleep apnea.

*Standardized BMI category definitions can be obtained from the Centers for Disease Control and Prevention or the American Society of Anesthesiologists.

2. Pre-operative Evaluation and Preparation

- The patient, parent, legal guardian or care giver must be advised regarding the procedure associated with the delivery of any sedative agents and informed consent for the proposed sedation must be obtained.
- Determination of adequate oxygen supply and equipment necessary to deliver oxygen under positive pressure must be completed.
- An appropriate focused physical evaluation must should be performed as deemed appropriate.
- Baseline vital signs including body weight, height, blood pressure, pulse rate, respiration rate, and blood oxygen saturation by pulse oximetry must be obtained unless precluded by the nature of the patient, procedure or equipment the patient’s behavior prohibits such determination. Body temperature should be measured when clinically indicated.
- Preoperative dietary restrictions must be considered based on the sedative technique prescribed.
- Pre-operative verbal or written instructions must be given to the patient, and parent, escort, guardian or care giver, including pre-operative fasting instructions based on the ASA Summary of Fasting and Pharmacologic Recommendations.

3. Personnel and Equipment Requirements

**Personnel:**
- At least one additional person trained in Basic Life Support for Healthcare Providers must be present in addition to the dentist.

**Equipment:**
- A positive-pressure oxygen delivery system suitable for the patient being treated must be immediately available.
- A log of equipment maintenance, including monitors and anesthesia delivery system, must be maintained. A pre-procedural check of equipment for each administration of sedation must be performed.
- When inhalation equipment is used, it must have a fail-safe system that is appropriately checked and calibrated. The equipment must also have either (1) a functioning device that prohibits the delivery of less than 30% oxygen or (2) an appropriately calibrated and functioning in-line oxygen analyzer with audible alarm.
- The equipment necessary for monitoring end-tidal CO2 and auscultation of breath sounds must be immediately available.
- An appropriate scavenging system must be available if gases other than oxygen or air are used.
- The equipment necessary to establish intravenous access must be available.
- If parenteral sedation is administered, a secure intravenous access site must be maintained until the patient meets discharge criteria.

4. Monitoring and Documentation
Monitoring: A qualified dentist administering moderate sedation must remain in the operatory room to
monitor the patient continuously until the patient meets the criteria for recovery. When active treatment
concludes and the patient recovers to a minimally sedated level a qualified auxiliary may be directed by the
dentist to remain with the patient and continue to monitor them as explained in the guidelines until they are
discharged from the facility. The dentist must not leave the facility until the patient meets the criteria for
discharge and is discharged from the facility. Monitoring must include:

Consciousness:
- Level of sedation consciousness (e.g., responsiveness to verbal command) must be continually assessed.

Oxygenation:
- Color of mucosa, skin or blood must be evaluated continually.
- Oxygen saturation must be evaluated by pulse oximetry continuously.

Ventilation:
- The dentist must observe chest excursions continually.
- The dentist must monitor ventilation and/or breathing by monitoring end-tidal CO\textsubscript{2} unless precluded or
  invalidated by the nature of the patient, procedure or equipment. In addition, ventilation should be
  monitored by continual observation of qualitative signs, including chest excursion and auscultation of
  breath sounds with a precordial or pretracheal stethoscope. This can be accomplished by auscultation of
  breath sounds, monitoring end-tidal CO\textsubscript{2} or by verbal communication with the patient.

Circulation:
- The dentist must continually evaluate blood pressure and heart rate unless invalidated by the nature of
  the patient, procedure or equipment the patient is unable to tolerate and this is noted in the time-
  oriented anesthesia record.
- Continuous ECG monitoring of patients with significant cardiovascular disease should be considered.

Documentation:
- Appropriate time-oriented anesthetic record must be maintained, including the names of all drugs,
  dosages and their administration times, including local anesthetics, dosages and monitored physiological
  parameters. (See Additional Sources of Information for sample of a time-oriented anesthetic record).
- Pulse oximetry, heart rate, respiratory rate, blood pressure and level of consciousness must be recorded
  continually.

5. Recovery and Discharge
- Oxygen and suction equipment must be immediately available if a separate recovery area is utilized.
- The qualified dentist or appropriately trained clinical staff must continually monitor the patient’s blood
  pressure, heart rate, oxygenation and level of consciousness.
- The qualified dentist must determine and document that level of consciousness; oxygenation, ventilation
  and circulation are satisfactory for discharge.
- Post-operative verbal and written instructions must be given to the patient, and parent, escort, guardian
  or care giver.
- If a pharmacological reversal agent is administered before discharge criteria have been met, the patient
  must be monitored for a longer period than usual before discharge, since re-sedation may occur once the
  effects of the reversal agent have waned.

6. Emergency Management
• If a patient enters a deeper level of sedation than the dentist is qualified to provide, the dentist must stop the dental procedure until the patient returns to the intended level of sedation.
• The qualified dentist is responsible for the sedative management, adequacy of the facility and staff, diagnosis and treatment of emergencies related to the administration of moderate sedation and providing the equipment, drugs and protocol for patient rescue.

7. Management of Children

For children 12 years of age and under, the American Dental Association supports the use of the American Academy of Pediatrics/American Academy of Pediatric Dentistry Guidelines for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures.

C. Deep Sedation or General Anesthesia

1. Patient History and Evaluation

Patients considered for deep sedation or general anesthesia must undergo an evaluation prior to the start of any sedative procedure. In healthy or medically stable individuals (ASA I, II), this must consist of at least a review of their current medical history and medication use and NPO status. In addition, however, patients with significant medical considerations (e.g., ASA III, IV) may also require consultation with their primary care physician or consulting medical specialist. Assessment of Body Mass Index (BMI)* should be considered part of a pre-procedural workup. Patients with elevated BMI may be at increased risk for airway associated morbidity, particularly if in association with other factors such as obstructive sleep apnea.

*Standardized BMI category definitions can be obtained from the Centers for Disease Control and Prevention or the American Society of Anesthesiologists.

2. Pre-operative Evaluation and Preparation

- The patient, parent, legal guardian or care giver must be advised regarding the procedure associated with the delivery of any sedative or anesthetic agents and informed consent for the proposed sedation/anesthesia must be obtained.
- Determination of adequate oxygen supply and equipment necessary to deliver oxygen under positive pressure must be completed.
- A focused physical evaluation must be performed as deemed appropriate.
- Baseline vital signs including body weight, height, blood pressure, pulse rate, respiration rate, and blood oxygen saturation by pulse oximetry must be obtained unless invalidated by the patient, procedure or equipment the patient's behavior prohibits such determination. In addition, body temperature should be measured when clinically appropriate.
- Preoperative dietary restrictions must be considered based on the sedative/anesthetic technique prescribed.
- Pre-operative verbal and written instructions must be given to the patient, and parent, escort, guardian or care giver, including pre-operative fasting instructions based on the ASA Summary of Fasting and Pharmacologic Recommendations.
- An intravenous line, which is secured throughout the procedure, must be established except as provided in part IV. C.6. Pediatric and Special Needs Patients.

3. Personnel and Equipment Requirements

Personnel: A minimum of three (3) individuals must be present.
• A dentist qualified in accordance with part III. C. of these Guidelines to administer the deep sedation or general anesthesia.
• Two additional individuals who have current certification of successfully completing a Basic Life Support (BLS) Course for the Healthcare Provider.
• When the same individual administering the deep sedation or general anesthesia is performing the dental procedure, one of the additional appropriately trained team members must be designated for patient monitoring.

**Equipment:**

• A positive-pressure oxygen delivery system suitable for the patient being treated must be immediately available.
• A log of equipment maintenance, including monitors and anesthesia delivery systems, must be maintained. A pre-procedural check of equipment for each administration must be performed.
• When inhalation equipment is used, it must have a fail-safe system that is appropriately checked and calibrated. The equipment must also have either (1) a functioning device that prohibits the delivery of less than 30% oxygen or (2) an appropriately calibrated and functioning in-line oxygen analyzer with audible alarm.
• An appropriate scavenging system must be available if gases other than oxygen or air are used.
• The equipment necessary to establish intravenous access must be available.
• Equipment and drugs necessary to provide advanced airway management, and advanced cardiac life support must be immediately available.
• The equipment necessary for monitoring end-tidal CO₂ and auscultation of breath sounds must be immediately available.
• If volatile anesthetic agents are utilized, a capnograph must be utilized and an inspired agent analysis monitor should be considered.
• Resuscitation medications and an appropriate defibrillator must be immediately available.

4. Monitoring and Documentation

**Monitoring:** A qualified dentist administering deep sedation or general anesthesia must remain in the operatory room to monitor the patient continuously until the patient meets the criteria for recovery. The dentist must not leave the facility until the patient meets the criteria for discharge and is discharged from the facility. Monitoring must include:

**Oxygenation:**
- Color of mucosa, skin or blood must be continually evaluated.
- Oxygenation saturation must be evaluated continuously by pulse oximetry.

**Ventilation:**
- Intubated patient: End-tidal CO₂ must be continuously monitored and evaluated.
- Non-intubated patient: Breath sounds via auscultation and/or End-tidal CO₂ must be continually monitored and evaluated unless precluded or invalidated by the nature of the patient, procedure, or equipment. In addition, ventilation should be monitored and evaluated by continual observation of qualitative signs, including auscultation of breath sounds with a precordial or pretracheal stethoscope.
- Respiration rate must be continually monitored and evaluated.

**Circulation:**
- The dentist must continuously evaluate heart rate and rhythm via ECG throughout the procedure, as well as pulse rate via pulse oximetry.
- The dentist must continually evaluate blood pressure.
Temperature:

- A device capable of measuring body temperature must be readily available during the administration of deep sedation or general anesthesia.
- The equipment to continuously monitor body temperature should be available and must be performed whenever triggering agents associated with malignant hyperthermia are administered.

Documentation:

- Appropriate time-oriented anesthetic record must be maintained, including the names of all drugs, dosages and their administration times, including local anesthetics and monitored physiological parameters. (See Additional Sources of Information for sample of a time-oriented anesthetic record)
- Pulse oximetry and end-tidal CO₂ measurements (if taken), heart rate, respiratory rate and blood pressure must be recorded continually.

5. Recovery and Discharge

- Oxygen and suction equipment must be immediately available if a separate recovery area is utilized.
- The dentist or clinical staff must continually monitor the patient’s blood pressure, heart rate, oxygenation and level of consciousness.
- The dentist must determine and document that level of consciousness; oxygenation, ventilation and circulation are satisfactory for discharge.
- Post-operative verbal and written instructions must be given to the patient, and parent, escort, guardian or care giver.

6. Pediatric Patients and Those with Special Needs Patients

Because many dental patients undergoing deep sedation or general anesthesia are mentally and/or physically challenged, it is not always possible to have a comprehensive physical examination or appropriate laboratory tests prior to administering care. When these situations occur, the dentist responsible for administering the deep sedation or general anesthesia should document the reasons preventing the recommended preoperative management.

In selected circumstances, deep sedation or general anesthesia may be utilized without establishing an indwelling intravenous line. These selected circumstances may include very brief procedures or periods of time, which, for example, may occur in some pediatric patients; or the establishment of intravenous access after deep sedation or general anesthesia has been induced because of poor patient cooperation.

7. Emergency Management

The qualified dentist is responsible for sedative/anesthetic management, adequacy of the facility and staff, diagnosis and treatment of emergencies related to the administration of deep sedation or general anesthesia and providing the equipment, drugs and protocols for patient rescue.

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Note regarding Section V: Additional Sources of Information as well as references supporting the Guidelines will become available on the ADA’s website and no longer listed within the policy document.

V. Additional Sources of Information


American Society of Anesthesiologists (ASA). Practice Guidelines for Preoperative Fasting and the Use of Pharmacological Agents to Reduce the Risk of Pulmonary Aspiration: Application to Healthy Patients Undergoing Elective Procedures. Available at https://ecommerce.asahq.org/p-178-practice-guidelines-for-preoperative-fasting.aspx. The ASA has other anesthesia resources that might be of interest to dentists. For more information, go to http://www.asahq.org/publicationsAndServices/sgstoc.htm


Dionne, Raymond A.; Yagiela, John A., et al. Balancing efficacy and safety in the use of oral sedation in dental outpatients. JADA 2006;137(4):502-13. ADA members can access this article online at http://jada.ada.org/cgi/content/full/137/4/502
I. Introduction

The administration of local anesthesia, sedation and general anesthesia is an integral part of the practice of dentistry. The American Dental Association is committed to the safe and effective use of these modalities by appropriately educated and trained dentists.

Anxiety and pain control can be defined as the application of various physical, chemical and psychological modalities to the prevention and treatment of preoperative, operative and postoperative patient anxiety and pain to allow dental treatment to occur in a safe and effective manner. It involves all disciplines of dentistry and, as such, is one of the most important aspects of dental education. The intent of these Guidelines is to provide direction for the teaching of pain control and sedation to dentists and can be applied at all levels of dental education from predoctoral through continuing education. They are designed to teach initial competency in pain control and minimal and moderate sedation techniques.

These Guidelines recognize that many dentists have acquired a high degree of competency in the use of anxiety and pain control techniques through a combination of instruction and experience. It is assumed that this has enabled these teachers and practitioners to meet the educational criteria described in this document.

It is not the intent of the Guidelines to fit every program into the same rigid educational mold. This is neither possible nor desirable. There must always be room for innovation and improvement. They do, however, provide a reasonable measure of program acceptability, applicable to all institutions and agencies engaged in predoctoral and continuing education.

The curriculum in anxiety and pain control is a continuum of educational experiences that will extend over several years of the predoctoral program. It should provide the dental student with the knowledge and skills necessary to provide minimal sedation to alleviate anxiety and control pain without inducing detrimental physiological or psychological side effects. Dental schools whose goal is to have predoctoral students achieve competency in techniques such as local anesthesia and nitrous oxide inhalation and minimal sedation must meet all of the goals, prerequisites, didactic content, clinical experiences, faculty and facilities, as described in these Guidelines.

Techniques for the control of anxiety and pain in dentistry should include both psychological and pharmacological modalities. Psychological strategies should include simple relaxation techniques for the anxious patient and more comprehensive behavioral techniques to control pain. Pharmacological strategies should include not only local anesthetics but also sedatives, analgesics and other useful agents. Dentists should learn indications and techniques for administering these drugs enterally, parenterally and by inhalation as supplements to local anesthesia.

The predoctoral curriculum should provide instruction, exposure and/or experience in anxiety and pain control, including minimal and moderate sedation. The predoctoral program must also provide the knowledge and skill to enable students to recognize and manage any emergencies that might arise as a consequence of treatment.
Predoctoral dental students must complete a course in Basic Life Support for the Healthcare Provider. Though Basic Life Support courses are available online, any course taken online should be followed up with a hands-on component and be approved by the American Heart Association or the American Red Cross.

Local anesthesia is the foundation of pain control in dentistry. Although the use of local anesthetics in dentistry has a long record of safety, dentists must be aware of the maximum safe dosage limit for each patient, since large doses of local anesthetics may increase the level of central nervous system depression with sedation. The use of minimal and moderate sedation requires an understanding of local anesthesia and the physiologic and pharmacologic implications of the local anesthetic agents when combined with the sedative agents.

Level of sedation is entirely independent of the route of administration. Moderate, and deep sedation or general anesthesia may be achieved via any route of administration and thus an appropriately consistent level of training must be established.

For children 12 years of age and under, the American Dental Association supports the use of the American Academy of Pediatrics/American Academy of Pediatric Dentistry Guidelines for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures. [Existing language moved from the Definitions section]

The knowledge, skill and clinical experience required for the safe administration of deep sedation and/or general anesthesia are beyond the scope of predoctoral and continuing education programs. Advanced education programs that teach deep sedation and/or general anesthesia to competency have specific teaching requirements described in the Commission on Dental Accreditation requirements for those advanced programs and represent the educational and clinical requirements for teaching deep sedation and/or general anesthesia in dentistry.

The objective of educating dentists to utilize pain control, sedation and general anesthesia is to enhance their ability to provide oral health care. The American Dental Association urges dentists to participate regularly in continuing education update courses in these modalities in order to remain current.

All areas in which local anesthesia and sedation are being used must be properly equipped with suction, physiologic monitoring equipment, a positive pressure oxygen delivery system suitable for the patient being treated and emergency drugs. Protocols for the management of emergencies must be developed and training programs held at frequent intervals.

II. Definitions

Methods of Anxiety and Pain Control

analgesia—the diminution or elimination of pain. [Moved to Terms section]

conscious sedation—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 or verbal command and that is produced by a pharmacological or non-pharmacological method or a combination thereof.

In accord with this particular definition, the drugs and/or techniques used should carry a margin of safety wide enough to render unintended loss of consciousness unlikely. Further, patients whose only response is reflex withdrawal from repeated painful stimuli would not be considered to be in a state of conscious sedation.

combination inhalation–enteral conscious sedation (combined conscious sedation)—conscious sedation using inhalation and enteral agents.

\(^2\) Parenteral conscious sedation may be achieved with the administration of a single agent or by the administration of more than one agent.
When the intent is anxiolysis only, and the appropriate dosage of agents is administered, then the definition of enteral and/or combination inhalation-ental conscious sedation (combined conscious sedation) does not apply.

**local anesthesia** - the elimination of sensation, especially pain, in one part of the body by the topical application or regional injection of a drug. [Moved to Terms section]

*Note: Although the use of local anesthetics is the foundation of pain control in dentistry and has a long record of safety, dentists must always be aware of the maximum, safe dosage limits for each patient. Large doses of local anesthetics in themselves may result in central nervous system depression especially in combination with sedative agents.* [Moved to Terms section]

**minimal sedation (previously known as anxiolysis)** - a minimally depressed level of consciousness, produced by a pharmacological method, that retains the patient’s ability to independently and continuously maintain an airway and respond normally to tactile stimulation and verbal command. Although cognitive function and coordination may be modestly impaired, ventilatory and cardiovascular functions are unaffected.²

Further, patients whose only response is reflex withdrawal from repeated painful stimuli would not be considered to be in a state of minimal sedation.

When the intent is minimal sedation for adults, the appropriate initial dosing of a single enteral drug is no more than the maximum recommended dose (MRD) of a drug that can be prescribed for unmonitored home use.

The following definitions apply to administration of minimal sedation:

**maximum recommended dose (MRD)** - maximum FDA-recommended dose of a drug, as printed in FDA-approved labeling for unmonitored home use.

**dosing for minimal sedation via the enteral route** – minimal sedation may be achieved by the administration of a drug, either singly or in divided doses, by the enteral route to achieve the desired clinical effect, not to exceed the maximum recommended dose (MRD).

The administration of enteral drugs exceeding the maximum recommended dose during a single appointment is considered to be moderate sedation and the moderate sedation guidelines apply.

**incremental dosing** – administration of multiple doses of a drug until a desired effect is reached, but not to exceed the maximum recommended dose (MRD).

**supplemental dosing** – during minimal sedation, supplemental dosing is a single additional dose of the initial drug that may be necessary for prolonged procedures. The supplemental dose should not exceed one-half of the initial dose and should not be administered until the dentist has determined the clinical half-life of the initial dosing has passed. The total aggregate dose must not exceed 1.5x the MRD on the day of treatment.

Nitrous oxide/oxygen may be used in combination with a single enteral drug in minimal sedation.

Nitrous oxide/oxygen when used in combination with sedative agent(s) may produce minimal, moderate, deep sedation or general anesthesia. [This sentence was repositioned within this minimal sedation definition section]

² Portions excerpted from Continuum of Depth of Sedation: Definition of General Anesthesia and Levels of Sedation/Analgesia, 2014-2004, of the American Society of Anesthesiologists (ASA). A copy of the full text can be obtained from ASA, 520 N. Northwest Highway, Park Ridge, IL 60068-2573.
If more than one enteral drug is administered to achieve the desired sedation effect, with or without the concomitant use of nitrous oxide, the guidelines for moderate sedation must apply.

Note: In accord with this particular definition, the drug(s) and/or techniques used should carry a margin of safety wide enough never to render unintended loss of consciousness. [Existing language repositioned within this minimal sedation definition section] The use of the MRD to guide dosing for minimal sedation is intended to create this margin of safety.

The use of preoperative sedatives for children (aged 12 and under) prior to arrival in the dental office, except in extraordinary situations, must be avoided due to the risk of unobserved respiratory obstruction during transport by untrained individuals.

Children (aged 12 and under) can become moderately sedated despite the intended level of minimal sedation; should this occur, the guidelines for moderate sedation apply.

For children 12 years of age and under, the American Dental Association supports the use of the American Academy of Pediatrics/American Academy of Pediatric Dentistry Guidelines for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures. [Moved to the Introduction section]

**Moderate Sedation** - a drug-induced depression of consciousness during which patients respond *purposefully* to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.³

Note: In accord with this particular definition, the drugs and/or techniques used should carry a margin of safety wide enough to render unintended loss of consciousness unlikely. Repeated dosing of an agent before the effects of previous dosing can be fully appreciated may result in a greater alteration of the state of consciousness than is the intent of the dentist. Further, a patient whose only response is reflex withdrawal from a painful stimulus is not considered to be in a state of moderate sedation.

The following definition applies to administration of moderate and deeper levels of sedation:

**Titration** - administration of incremental doses of an intravenous or inhalation drug until a desired effect is reached. Knowledge of each drug’s time of onset, peak response and duration of action is essential to avoid over sedation. Although the concept of titration of a drug to effect is critical for patient safety, when the intent is moderate sedation one must know whether the previous dose has taken full effect before administering an additional drug increment.

**Deep Sedation** - a drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.³

**General Anesthesia** – a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired.³

Because sedation and general anesthesia are a continuum, it is not always possible to predict how an individual patient will respond. Hence, practitioners intending to produce a given level of sedation should be able to diagnose and

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³ Excerpted from Continuum of Depth of Sedation: Definition of General Anesthesia and Levels of Sedation/Analgesia, 2014 2004, of the American Society of Anesthesiologists (ASA). A copy of the full text can be obtained from ASA, 520 N. Northwest Highway, Park Ridge, IL 60068-2573.
manage the physiologic consequences (rescue) for patients whose level of sedation becomes deeper than initially intended.3

For all levels of sedation, the qualified dentist practitioner must have the training, skills, drugs and equipment to identify and manage such an occurrence until either assistance arrives (emergency medical service) or the patient returns to the intended level of sedation without airway or cardiovascular complications.

Routes of Administration

ental - any technique of administration in which the agent is absorbed through the gastrointestinal (GI) tract or oral mucosa [i.e., oral, rectal, sublingual].

parenteral - a technique of administration in which the drug bypasses the gastrointestinal (GI) tract [i.e., intramuscular (IM), intravenous (IV), intranasal (IN), submucosal (SM), subcutaneous (SC), intraosseous (IO)].

tansdermal - a technique of administration in which the drug is administered by patch or iontophoresis through skin.

transmucosal – a technique of administration in which the drug is administered across mucosa such as intranasal, sublingual, or rectal.

inalation - a technique of administration in which a gaseous or volatile agent is introduced into the lungs and whose primary effect is due to absorption through the gas/blood interface.

Terms

analgesia – the diminution or elimination of pain [Existing language moved from Definitions section]

local anesthesia - the elimination of sensation, especially pain, in one part of the body by the topical application or regional injection of a drug. [Existing language moved from Definitions section]

ote: Although the use of local anesthetics is the foundation of pain control in dentistry and has a long record of safety, dentists must always be aware of the maximum, safe dosage limits for each patient. Large doses of local anesthetics in themselves may result in central nervous system depression especially in combination with sedative agents. [Existing language moved from Definitions section]

qualified dentist – meets the educational requirements for the appropriate level of sedation in accordance with Section III of these Guidelines, or a dentist providing sedation and anesthesia in compliance with their state rules and/or regulations prior to adoption of this document.

must/shall - indicates an imperative need and/or duty; an essential or indispensable item; mandatory.

should -indicates the recommended manner to obtain the standard; highly desirable.

may - indicates freedom or liberty to follow a reasonable alternative.

continual - repeated regularly and frequently in a steady succession.

continuous - prolonged without any interruption at any time.

time-oriented anesthesia record - documentation at appropriate time intervals of drugs, doses and physiologic data obtained during patient monitoring.

immediately available – on site in the facility and available for immediate use.
Levels of Knowledge

- **familiarity** - a simplified knowledge for the purpose of orientation and recognition of general principles.
- **in-depth** - a thorough knowledge of concepts and theories for the purpose of critical analysis and the synthesis of more complete understanding (highest level of knowledge).

Levels of Skill

- **exposed** - the level of skill attained by observation of or participation in a particular activity.
- **competent** - displaying special skill or knowledge derived from training and experience.
- **proficient** - the level of skill attained when a particular activity is accomplished with repeated quality and a more efficient utilization of time (highest level of skill).

American Society of Anesthesiologists (ASA) Patient Physical Status Classification

- **ASA I** - A normal healthy patient.
- **ASA II** - A patient with mild systemic disease.
- **ASA III** - A patient with severe systemic disease.
- **ASA IV** - A patient with severe systemic disease that is a constant threat to life.
- **ASA V** - A moribund patient who is not expected to survive without the operation.
- **ASA VI** - A declared brain-dead patient whose organs are being removed for donor purposes.
- **E** - Emergency operation of any variety (used to modify one of the above classifications, i.e., ASA III-E).

American Society of Anesthesiologists’ Fasting Guidelines*

<table>
<thead>
<tr>
<th>Ingested Material</th>
<th>Minimum Fasting Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear liquids</td>
<td>2 hours</td>
</tr>
<tr>
<td>Breast milk</td>
<td>4 hours</td>
</tr>
<tr>
<td>Infant formula</td>
<td>6 hours</td>
</tr>
<tr>
<td>Nonhuman milk</td>
<td>6 hours</td>
</tr>
<tr>
<td>Infant formula</td>
<td>6 hours</td>
</tr>
<tr>
<td>Light meal</td>
<td>6 hours</td>
</tr>
<tr>
<td>Fatty meal</td>
<td>8 hours</td>
</tr>
</tbody>
</table>


Education Courses

- Education may be offered at different levels (competency, update, survey courses and advanced education programs).
- A description of these different levels follows:

1. **Competency Courses** are designed to meet the needs of dentists who wish to become **competent knowledgeable and proficient** in the safe and effective administration of local anesthesia, minimal and moderate sedation. They consist of lectures, demonstrations and sufficient clinical participation to assure the faculty that the dentist understands the procedures taught and can safely and effectively apply them so that mastery of the subject is

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4 ASA Physical Status Classification System is reprinted with permission of the American Society of Anesthesiologists, 520 N. Northwest Highway, Park Ridge, IL 60068-2573.
achieved. Faculty must assess and document the dentist’s competency upon successful completion of such training. To
maintain competency, periodic update courses must be completed.

2. Update Courses are designed for persons with previous training. They are intended to provide a review of the
subject and an introduction to recent advances in the field. They should be designed didactically and clinically to meet
the specific needs of the participants. Participants must have completed previous competency training (equivalent, at a
minimum, to the competency course described in this document) and have current experience to be eligible for
enrollment in an update course.

3. Survey Courses are designed to provide general information about subjects related to pain control and sedation.
Such courses should be didactic and not clinical in nature, since they are not intended to develop clinical competency.

4. Advanced Education Courses are a component of an advanced dental education program, accredited by the ADA
Commission on Dental Accreditation in accord with the Accreditation Standards for advanced dental education
programs. These courses are designed to prepare the graduate dentist or postdoctoral student in the most
comprehensive manner to be competent knowledgeable and proficient in the safe and effective administration of
minimal, moderate and deep sedation and general anesthesia.

III. Teaching Pain Control

These Guidelines present a basic overview of the recommendations for teaching pain control.

A. General Objectives: Upon completion of a predoctoral curriculum in pain control the dentist must:

1. have an in-depth knowledge of those aspects of anatomy, physiology, pharmacology and psychology involved
   in the use of various anxiety and pain control methods;
2. be competent in evaluating the psychological and physical status of the patient, as well as the magnitude of
   the operative procedure, in order to select the proper regimen;
3. be competent in monitoring vital functions;
4. be competent in prevention, recognition and management of related complications;
5. be familiar with have in-depth knowledge of the appropriateness of and the indications for medical
   consultation or referral;
6. be competent in the maintenance of proper records with accurate chart entries recording medical history,
   physical examination, vital signs, drugs administered and patient response.

B. Pain Control Curriculum Content:

1. Philosophy of anxiety and pain control and patient management, including the nature and purpose of
   pain
2. Review of physiologic and psychologic aspects of anxiety and pain
3. Review of airway anatomy and physiology
4. Physiologic monitoring
   a. Observation
      (1) Central nervous system
      (2) Respiratory system
         a. Oxygenation
         b. Ventilation
      (3) Cardiovascular system
b. Monitoring equipment

5. Pharmacologic aspects of anxiety and pain control

a. Routes of drug administration

b. Sedatives and anxiolytics

c. Local anesthetics

d. Analgesics and antagonists

e. Adverse side effects

f. Drug interactions

g. Drug abuse

6. Control of preoperative and operative anxiety and pain

a. Patient evaluation

(1) Psychological status

(2) ASA physical status

(3) Type and extent of operative procedure

b. Nonpharmacologic methods

(1) Psychological and behavioral methods

(a) Anxiety management

(b) Relaxation techniques

(c) Systematic desensitization

(2) Interpersonal strategies of patient management

(3) Hypnosis

(4) Electronic dental anesthesia

(5) Acupuncture/Acupressure

(6) Other

c. Local anesthesia

(1) Review of related anatomy, and physiology

(2) Pharmacology

(i) Dosing

(ii) Toxicity

(iii) Selection of agents

(3) Techniques of administration

(i) Topical

(ii) Infiltration (supraperiosteal)

(iii) Nerve block – maxilla-to include:

(aa) Posterior superior alveolar

(bb) Infraorbital

(cc) Nasopalatine

(dd) Greater palatine

(ee) Maxillary (2nd division)

(ff) Other blocks

(iv) Nerve block – mandible-to include:

(aa) Inferior alveolar-lingual

(bb) Mental-incisive

(cc) Buccal

(dd) Gow-Gates

(ee) Closed mouth

(v) Alternative injections-to include:

(aa) Periodontal ligament

(bb) Intraosseous

d. Prevention, recognition and management of complications and emergencies
C. Sequence of Pain Control Didactic and Clinical Instruction: Beyond the basic didactic instruction in local anesthesia, additional time should be provided for demonstrations and clinical practice of the injection techniques. The teaching of other methods of anxiety and pain control, such as the use of analgesics and enteral, inhalation and parenteral sedation, should be coordinated with a course in pharmacology. By this time the student also will have developed a better understanding of patient evaluation and the problems related to prior patient care. As part of this instruction, the student should be taught the techniques of venipuncture and physiologic monitoring. Time should be included for demonstration of minimal and moderate sedation techniques.

Following didactic instruction in minimal and moderate sedation, the student must receive sufficient clinical experience to demonstrate competency in those techniques in which the student is to be certified. It is understood that not all institutions may be able to provide instruction to the level of clinical competence in pharmacologic sedation modalities to all students. The amount of clinical experience required to achieve competency will vary according to student ability, teaching methods and the anxiety and pain control modality taught.

Clinical experience in minimal and moderate sedation techniques should be related to various disciplines of dentistry and not solely limited to surgical cases. Typically, such experience will be provided in managing healthy adult patients. The sedative care of pediatric patients and those with special needs requires advanced didactic and clinical training.

Throughout both didactic and clinical instruction in anxiety and pain control, psychological management of the patient should also be stressed. Instruction should emphasize that the need for sedative techniques is directly related to the patient’s level of anxiety, cooperation, medical condition and the planned procedures.

D. Faculty: Instruction must be provided by qualified faculty for whom anxiety and pain control are areas of major proficiency, interest and concern.

E. Facilities: Competency courses must be presented where adequate facilities are available for proper patient care, including drugs and equipment for the management of emergencies.

IV. Teaching Administration of Minimal Sedation

The faculty responsible for curriculum in minimal sedation techniques must be familiar with the ADA Policy Statement: Guidelines for the Use of Sedation and General Anesthesia by Dentists, and the Commission on Dental Accreditation’s Accreditation Standards for dental education programs.

These Guidelines present a basic overview of the recommendations for teaching minimal sedation. These include courses in nitrous oxide/oxygen sedation, enteral sedation, and combined inhalation/enteral techniques.

General Objectives: Upon completion of a competency course in minimal sedation, the dentist must be able to:

1. Describe the adult and pediatric anatomy and physiology of the respiratory, cardiovascular and central nervous systems, as they relate to the above techniques.
2. Describe the pharmacological effects of drugs.
3. Describe the methods of obtaining a medical history and conduct an appropriate physical examination.
4. Apply these methods clinically in order to obtain an accurate evaluation.
5. Use this information clinically for ASA classification and risk assessment, and pre-procedure fasting instructions.
6. Choose the most appropriate technique for the individual patient.
7. Use appropriate physiologic monitoring equipment.
8. Describe the physiologic responses that are consistent with minimal sedation.
9. Understand the sedation/general anesthesia continuum.
10. Demonstrate the ability to diagnose and treat emergencies related to the next deeper level of anesthesia than intended.

Inhalation Sedation (Nitrous Oxide/Oxygen)
A. Inhalation Sedation Course Objectives: Upon completion of a competency course in inhalation sedation techniques, the dentist must be able to:

1. Describe the basic components of inhalation sedation equipment.
2. Discuss the function of each of these components.
3. List and discuss the advantages and disadvantages of inhalation sedation.
4. List and discuss the indications and contraindications of inhalation sedation.
5. List the complications associated with inhalation sedation.
6. Discuss the prevention, recognition and management of these complications.
7. Administer inhalation sedation to patients in a clinical setting in a safe and effective manner.
8. Discuss the abuse potential, occupational hazards and other untoward effects of inhalation agents.

B. Inhalation Sedation Course Content:

1. Historical, philosophical and psychological aspects of anxiety and pain control.
2. Patient evaluation and selection through review of medical history taking, physical diagnosis and psychological considerations.
4. Description of the stages of drug-induced central nervous system depression through all levels of consciousness and unconsciousness, with special emphasis on the distinction between the conscious and unconscious state.
5. Review of pediatric and adult respiratory and circulatory physiology and related anatomy.
6. Pharmacology of agents used in inhalation sedation, including drug interactions and incompatibilities.
7. Indications and contraindications for use of inhalation sedation.
8. Review of dental procedures possible under inhalation sedation.
9. Patient monitoring using observation and monitoring equipment (i.e., pulse oximetry), with particular attention to vital signs and reflexes related to pharmacology of nitrous oxide.
10. Importance of maintaining proper records with accurate chart entries recording medical history, physical examination, vital signs, drugs and doses administered and patient response.
12. Administration of local anesthesia in conjunction with inhalation sedation techniques.
13. Description, maintenance and use of inhalation sedation equipment.
14. Introduction to potential health hazards of trace anesthetics and proposed techniques for limiting occupational exposure.
15. Discussion of abuse potential.

C. Inhalation Sedation Course Duration: While length of a course is only one of the many factors to be considered in determining the quality of an educational program, the course should be a minimum of 14 hours plus management of clinical dental cases, including a clinical component during which clinical competency in inhalation sedation technique is achieved. The inhalation sedation course most often is completed as a part of the predoctoral dental education program. However, the course may be completed in a postdoctoral continuing education competency course.

D. Participant Evaluation and Documentation of Inhalation Sedation Instruction: Competency courses in inhalation sedation techniques must afford participants with sufficient clinical experience to enable them to achieve competency. This experience must be provided under the supervision of qualified faculty and must be evaluated. The course director must certify the competency of participants upon satisfactory completion of training. Records of the didactic instruction and clinical experience, including the number of patients treated by each participant must be maintained and available.

E. Faculty: The course should be directed by a dentist or physician qualified by experience and training. This individual should possess an active permit or license to administer moderate sedation in at least one state, have had at least three years of experience, including the individual’s formal postdoctoral training in anxiety and pain control.
addition, the participation of highly qualified individuals in related fields, such as anesthesiologists, pharmacologists, internists, and cardiologists and psychologists, should be encouraged.

A participant-faculty ratio of not more than ten-to-one when inhalation sedation is being used allows for adequate supervision during the clinical phase of instruction; a one-to-one ratio is recommended during the early state of participation.

The faculty should provide a mechanism whereby the participant can evaluate the performance of those individuals who present the course material.

F. Facilities: Competency courses must be presented where adequate facilities are available for proper patient care, including drugs and equipment for the management of emergencies.

Enteral and/or Combination Inhalation-Enteral Minimal Sedation

A. Enteral and/or Combination Inhalation-Enteral Minimal Sedation Course Objectives: Upon completion of a competency course in enteral and/or combination inhalation-ental minimal sedation techniques, the dentist must be able to:

1. Describe the basic components of inhalation sedation equipment.
2. Discuss the function of each of these components.
3. List and discuss the advantages and disadvantages of enteral and/or combination inhalation-ental minimal sedation (combined minimal sedation).
4. List and discuss the indications and contraindications for the use of enteral and/or combination inhalation-ental minimal sedation (combined minimal sedation).
5. List the complications associated with enteral and/or combination inhalation-ental minimal sedation (combined minimal sedation).
6. Discuss the prevention, recognition and management of these complications.
7. Administer enteral and/or combination inhalation-ental minimal sedation (combined minimal sedation) to patients in a clinical setting in a safe and effective manner.
8. Discuss the abuse potential, occupational hazards and other effects of enteral and inhalation agents.
9. Discuss the pharmacology of the enteral and inhalation drugs selected for administration.
10. Discuss the precautions, contraindications and adverse reactions associated with the enteral and inhalation drugs selected.
11. Describe a protocol for management of emergencies in the dental office and list and discuss the emergency drugs and equipment required for management of life-threatening situations.
12. Demonstrate the ability to manage life-threatening emergency situations, including current certification in Basic Life Support for Healthcare Providers.
13. Discuss the pharmacological effects of combined drug therapy, their implications and their management. Nitrous oxide/oxygen when used in combination with sedative agent(s) may produce minimal, moderate, deep sedation or general anesthesia.

B. Enteral and/or Combination Inhalation-Enteral Minimal Sedation Course Content:

1. Historical, philosophical and psychological aspects of anxiety and pain control.
2. Patient evaluation and selection through review of medical history taking, physical diagnosis and psychological profiling.
4. Description of the stages of drug-induced central nervous system depression through all levels of consciousness and unconsciousness, with special emphasis on the distinction between the conscious and the unconscious state.
5. Review of pediatric and adult respiratory and circulatory physiology and related anatomy.
6. Pharmacology of agents used in enteral and/or combination inhalation-ental minimal sedation, including drug interactions and incompatibilities.
7. Indications and contraindications for use of enteral and/or combination inhalation-entalal minimal sedation (combined minimal sedation).
8. Review of dental procedures possible under enteral and/or combination inhalation-entalal minimal sedation).
9. Patient monitoring using observation, monitoring equipment, with particular attention to vital signs and reflexes related to consciousness.
10. Maintaining proper records with accurate chart entries recording medical history, physical examination, informed consent, time-oriented anesthesia record, including the names of all drugs administered including local anesthetics, doses, and monitored physiological parameters.
12. Administration of local anesthesia in conjunction with enteral and/or combination inhalation-entalal minimal sedation techniques.
13. Description, maintenance and use of inhalation sedation equipment.
14. Introduction to potential health hazards of trace anesthetics and proposed techniques for limiting occupational exposure.
15. Discussion of abuse potential.

C. Enteral and/or Combination Inhalation-Enteral Minimal Sedation Course Duration: Participants must be able to document current certification in Basic Life Support for Healthcare Providers and have completed a nitrous oxide competency course to be eligible for enrollment in this course. While length of a course is only one of the many factors to be considered in determining the quality of an educational program, the course should include a minimum of 16 hours, plus clinically-oriented experiences during which competency in enteral and/or combined inhalation-entalal minimal sedation techniques is demonstrated. Clinically-oriented experiences may include group observations on patients undergoing enteral and/or combination inhalation-entalal minimal sedation. Clinical experience in managing a compromised airway is critical to the prevention of life-threatening emergencies. The faculty should schedule participants to return for additional clinical experience if competency has not been achieved in the time allotted. The educational course may be completed in a predoctoral dental education curriculum or a postdoctoral continuing education competency course.

These Guidelines are not intended for the management of enteral and/or combination inhalation-entalal minimal sedation in children, which requires additional course content and clinical learning experience.

D. Participant Evaluation and Documentation of Instruction: Competency courses in combination inhalation-entalal minimal sedation techniques must afford participants with sufficient clinical understanding to enable them to achieve competency. The course director must certify the competency of participants upon satisfactory completion of the course. Records of the course instruction must be maintained and available.

E. Faculty: The course should be directed by a dentist or physician qualified by experience and training. This individual should possess a current permit or license to administer moderate sedation in at least one state, have had at least three years of experience, including the individual’s formal postdoctoral training in anxiety and pain control. Dental faculty with broad clinical experience in the particular aspect of the subject under consideration should participate. In addition, the participation of highly qualified individuals in related fields, such as anesthesiologists, pharmacologists, interns, and cardiologists and psychologists, should be encouraged. The faculty should provide a mechanism whereby the participant can evaluate the performance of those individuals who present the course material.

F. Facilities: Competency courses must be presented where adequate facilities are available for proper patient care, including drugs and equipment for the management of emergencies.

V. Teaching Administration of Moderate Sedation

These Guidelines present a basic overview of the requirements for a competency course in moderate sedation. These include courses in enteral and parenteral moderate sedation and parenteral moderate sedation. The teaching guidelines contained in this section on moderate sedation differ slightly from documents in medicine to reflect the
differences in delivery methodologies and practice environment in dentistry. For this reason, separate teaching guidelines have been developed for moderate enteral and moderate parenteral sedation.

Completion of a pre-requisite nitrous oxide-oxygen competency course is required for participants combining parenteral moderate sedation with nitrous oxide-oxygen. [Existing language moved from Section C]

A. Course Objectives: Upon completion of a course in moderate sedation, the dentist must be able to:

1. List and discuss the advantages and disadvantages of moderate sedation.
2. Discuss the prevention, recognition and management of complications associated with moderate sedation.
3. Administer moderate sedation to patients in a clinical setting in a safe and effective manner.
4. Discuss the abuse potential, occupational hazards and other untoward effects of the agents utilized to achieve moderate sedation.
5. Describe and demonstrate the technique of intravenous access, intramuscular injection and other parenteral techniques.
6. Discuss the pharmacology of the drug(s) selected for administration.
7. Discuss the precautions, indications, contraindications and adverse reactions associated with the drug(s) selected.
8. Administer the selected drug(s) to dental patients in a clinical setting in a safe and effective manner.
9. List the complications associated with techniques of moderate sedation.
10. Describe a protocol for management of emergencies in the dental office and list and discuss the emergency drugs and equipment required for the prevention and management of emergency situations.
11. Discuss principles of advanced cardiac life support or an appropriate dental sedation/anesthesia emergency course equivalent.
12. Demonstrate the ability to manage emergency situations.
13. Demonstrate the ability to diagnose and treat emergencies related to the next deeper level of anesthesia than intended.

B. Moderate Sedation Course Content:

1. Historical, philosophical and psychological aspects of anxiety and pain control.
2. Patient evaluation and selection through review of medical history taking, physical diagnosis and psychological considerations.
3. Use of patient history and examination for ASA classification, risk assessment and pre-procedure fasting instructions.
5. Description of the sedation anesthesia continuum, with special emphasis on the distinction between the conscious and the unconscious state.
6. Review of pediatric and adult respiratory and circulatory physiology and related anatomy.
7. Pharmacology of local anesthetics and agents used in moderate sedation, including drug interactions and contraindications.
8. Indications and contraindications for use of moderate sedation.
10. Patient monitoring using observation and monitoring equipment, with particular attention to vital signs, ventilation/breathing and reflexes related to consciousness.
11. Maintaining proper records with accurate chart entries recording medical history, physical examination, informed consent, time-oriented anesthesia record, including the names of all drugs administered including local anesthetics, doses, and monitored physiological parameters.
13. Description, maintenance and use of moderate sedation monitors and equipment.
15. Intravenous access: anatomy, equipment and technique.
16. Prevention, recognition and management of complications of venipuncture and other parenteral techniques.

17. Description and rationale for the technique to be employed.

18. Prevention, recognition and management of systemic complications of moderate sedation, with particular attention to airway maintenance and support of the respiratory and cardiovascular systems.

C. Moderate Enteral Sedation Course Duration: A minimum of 24 hours of instruction, plus management of at least 10 adult case experiences by the enteral and/or enteral-nitrous oxide/oxygen route are required to achieve competency. These ten cases must include at least three live clinical dental experiences managed by participants in groups no larger than five. The remaining cases may include simulations and/or video presentations, but must include one experience in returning (rescuing) a patient from deep to moderate sedation. Participants combining enteral moderate sedation with nitrous oxide-oxygen must have first completed a nitrous oxide competency course.

Participants should be provided supervised opportunities for clinical experience to demonstrate competence in airway management. Clinical experience will be provided in managing healthy adult patients; this course in moderate enteral sedation is not designed for the management of children (aged 12 and under). Additional supervised clinical experience is necessary to prepare participants to manage medically compromised adults and special needs patients. This course in moderate enteral sedation does not result in competency in moderate parenteral sedation. The faculty should schedule participants to return for additional didactic or clinical exposure if competency has not been achieved in the time allotted.

Moderate Parenteral Sedation Course Duration and Documentation:

The Course must include:

- A minimum of 60 hours of instruction plus administration of sedation for at least 20 individually managed patients.
- Certification of competence in moderate sedation technique(s).
- Certification of competence in rescuing patients from a deeper level of sedation than intended including managing the airway, vascular access and reversal medications.
- Provision by course director or faculty of additional clinical experience if participant competency has not been achieved in time allotted.
- Records of instruction and clinical experiences (i.e., number of patients managed by each participant in each modality/ route) that are maintained and available for participant review.

A minimum of 60 hours of instruction, plus management of at least 20 patients by the intravenous route per participant, is required to achieve competency in moderate sedation techniques. Participants combining parenteral moderate sedation with nitrous oxide-oxygen must have first completed a nitrous oxide competency course.

Clinical experience in managing a compromised airway is critical to the prevention of emergencies. Participants should be provided supervised opportunities for clinical experience to demonstrate competence in management of the airway. Typically, clinical experience will be provided in managing healthy adult patients. Additional supervised clinical experience is necessary to prepare participants to manage children (aged 12 and under) and medically compromised adults. Successful completion of this course does result in clinical competency in moderate sedation. The faculty should schedule participants to return for additional clinical experience if competency has not been achieved in the time allotted.

D. Participant Evaluation and Documentation of Instruction: Competency courses in moderate sedation techniques must afford participants with sufficient clinical experience to enable them to achieve competency. This experience must be provided under the supervision of qualified faculty and must be evaluated. The course director must certify the competency of participants upon satisfactory completion of training in each moderate sedation technique, including instruction, clinical experience, managing the airway, vascular access and reversal medications and airway management. Records of the didactic instruction and clinical experience, including the number of patients managed by each participant in each anxiety and pain control modality must be maintained and available for review.
**E. Faculty:** The course should be directed by a dentist or physician qualified by experience and training. This individual should possess a current permit or license to administer moderate or deep sedation and general anesthesia in at least one state, have had at least three years of experience, including formal postdoctoral training in anxiety and pain control. Dental faculty with broad clinical experience in the particular aspect of the subject under consideration should participate. In addition, the participation of highly qualified individuals in related fields, such as anesthesiologists, pharmacologists, internists, cardiologists and psychologists, should be encouraged.

A participant-faculty ratio of no more than five-four-to-one when moderate enteral sedation is being taught allows for adequate supervision during the clinical phase of instruction. A participant-faculty ratio of no more than three-to-one when moderate parenteral sedation is being taught allows for adequate supervision during the clinical phase of instruction. A one-to-one ratio is recommended during the early stage of participation.

The faculty should provide a mechanism whereby the participant can evaluate the performance of those individuals who present the course material.

**F. Facilities:** Competency courses in moderate sedation must be presented where adequate facilities are available for proper patient care, including drugs and equipment for the management of emergencies. These facilities may include dental and medical schools/offices, hospitals and surgical centers.

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Note regarding Section V: Additional Sources of Information as well as references supporting the Guidelines will become available on the ADA’s website and no longer listed within the policy document.

**VI. Additional Sources of Information**

- The ASA has other anesthesia resources that might be of interest to dentists. For more information, go to [http://www.asahq.org/publicationsAndServices/ssstoc.htm](http://www.asahq.org/publicationsAndServices/ssstoc.htm).

Dionne, Raymond A.; Yagiela, John A., et al. Balancing efficacy and safety in the use of oral sedation in dental outpatients. JADA 2006;137(4):502-13. ADA members can access this article online at http://jada.ada.org/cgi/content/full/137/4/502