

*Parameters of Care:  
Clinical Practice Guidelines  
for Oral and Maxillofacial Surgery  
(AAOMS ParCare 2012)*

**ANESTHESIA IN OUTPATIENT FACILITIES**

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THIS SECTION IS 1 OF 11 CLINICAL SECTIONS INCLUDED IN AAOMS  
PARCARE 2012, WHICH IS VIEWED AS A LIVING DOCUMENT APPLICABLE  
TO THE PRACTICE OF ORAL AND MAXILLOFACIAL SURGERY. IT WILL BE UPDATED  
AT DESIGNATED INTERVALS TO REFLECT NEW INFORMATION CONCERNING THE  
PRACTICE OF ORAL AND MAXILLOFACIAL SURGERY.

## **INTRODUCTION**

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Criteria and parameters in this section refer specifically and exclusively to methods used by Oral and Maxillofacial Surgeons to control the pain and anxiety of patients treated in outpatient facilities (eg, dental school surgery units, ambulatory surgery centers, Oral and Maxillofacial Surgeons' offices, and other facilities where Oral and Maxillofacial Surgery is performed).

Pain and anxiety control, using various techniques of regional (local) anesthesia, all forms of sedation, and general anesthesia, have been an integral part of the practice of Oral and Maxillofacial Surgery since the inception of the specialty. Anxiety, fear, and pain are concerns because each is inherent in the patient's reaction to the proposed treatment. All three must be controlled satisfactorily during the perioperative period to permit safe and effective completion of the surgical procedure. These anesthesia criteria have been developed to maximize safety and minimize risk for patients.

The practitioner's selection of a particular technique for controlling pain and anxiety during a specific procedure has to be individually determined for each patient, considering the risks and benefits for each case.

Techniques seldom used or applicable to very few patients are not included in this section. This category includes hypnosis, acupuncture, transcutaneous electrical nerve stimulation, and specific medications and techniques for controlling acute or chronic pain. Behavior modification techniques (biofeedback) and psychiatric management also have been excluded from this section.

In the future, new indications or new anesthetic agents and techniques may lead to changes in equipment. As new pieces of equipment and their techniques for use are evaluated for safety and efficacy and accepted for patient care and treatment, their inclusion in this document will be considered. Consequently, the use of capnography for patients under moderate sedation, deep sedation, and general anesthesia should be instituted in OMS practice and used on these patients effective January 2014 unless precluded or invalidated by the nature of the patient, procedure, or equipment. It is anticipated that this implementation date will allow adequate time for the refinement of materials and methods so as to optimize the use of capnography in an open system.

## **DEFINITIONS OF SEDATION AND ANESTHESIA**

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American Society of Anesthesiologists (ASA) *Continuum of Depth of Sedation Definition of General Anesthesia and Levels of Sedation/Analgesia* (approved by the ASA House of Delegates on October 27, 2004, and amended on October 21, 2009)

**Minimal Sedation (Anxiolysis)** is a drug-induced state during which patients respond normally to verbal commands. Although cognitive function and physical coordination may be impaired, airway reflexes and ventilatory and cardiovascular functions are unaffected.

**Moderate Sedation/Analgesia (Conscious Sedation)** is 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.

**Deep Sedation/Analgesia** is 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.

**General Anesthesia** is a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to 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.

Because sedation is 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 rescue\*\*\* patients whose level of sedation becomes deeper than initially intended. Individuals administering moderate sedation/analgesia should be able to rescue\*\*\*

patients who enter a state of deep sedation/analgesia, whereas those administering deep sedation/analgesia should be able to rescue\*\*\* patients who enter a state of general anesthesia.

\*\*Reflex withdrawal from a painful stimulus is NOT considered a purposeful response.

\*\*\*Rescue of a patient from a deeper level of sedation than intended is an intervention by a practitioner proficient in airway management and advanced life support. The qualified practitioner corrects adverse physiologic consequences of the deeper-than-intended level of sedation (such as hypoventilation, hypoxia, and hypotension) and returns the patient to the originally intended level of sedation.

These definitions are also published in the *AAOMS Office Anesthesia Evaluation Manual*.

## ***GENERAL CRITERIA, PARAMETERS, AND CONSIDERATIONS FOR ANESTHESIA IN OUTPATIENT FACILITIES***

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**INFORMED CONSENT:** All surgery must be preceded by the patient's or legal guardian's consent, unless an emergent situation dictates otherwise. These circumstances should be documented in the patient's record. Informed consent is obtained after the patient or the legal guardian has been informed of the indications for the procedure(s), the goals of treatment, the known benefits and risks of the procedure(s), the factors that may affect the risk, the treatment options, and the favorable outcomes.

**DOCUMENTATION:** The *AAOMS ParCare 2012* includes documentation of objective findings, diagnoses, and patient management interventions. *The ultimate judgment regarding the appropriateness of any specific procedure must be made by the individual surgeon in light of the circumstances presented by each patient. Understandably, there may be good clinical reasons to deviate from these parameters. When a surgeon chooses to deviate from an applicable parameter based on the circumstances of a particular patient, he/she is well advised to note in the patient's record the reason for the procedure followed. Moreover, it should be understood that adherence to the parameters does not guarantee a favorable outcome.*

**FACILITIES:** When anesthesia is administered in an office setting by or for an Oral and Maxillofacial Surgeon, that office shall have been evaluated according to the American Association of Oral and Maxillofacial Surgeons (AAOMS) bylaws, AAOMS Governing Rules and Regulations 2010-2011 (Chapter III, Component Societies and Counterparts, Section 30. Qualifications, B). Specific language applicable to the facility is as follows: "fulfillment of an on-site office anesthesia evaluation with re-evaluation every five (5) years based on the AAOMS office anesthesia evaluation program or required applicable state or federal regulations." The current edition of the *AAOMS Office Anesthesia Evaluation Manual* (8<sup>th</sup> edition) is applicable. State laws govern the necessity for inspection of facilities in which Oral and Maxillofacial Surgeons administer anesthesia. When Oral and Maxillofacial Surgeons administer anesthesia in multiple locations, the primary facility must be inspected. The surgeon should ensure that all facilities are held to the same standard of excellence, that facilities are comparably equipped with anesthetic emergency drugs and equipment, and that the staffs are comparably and adequately trained.

When nitrous oxide is used alone or as an adjunct to any of the anesthetic techniques included in this section, appropriate scavenging equipment must be used to reduce trace gas environmental contamination. It is suggested that all staff be educated in the risks of trace gas and exposure to nitrous oxide and techniques to minimize such risks.

The surgeon should successfully complete a course in Advanced Cardiac Life Support (ACLS) at 2-year intervals. The facility must also be equipped to provide ACLS care. When pediatric patients are treated, the completion of a Pediatric Advanced Life Support (PALS) course should be considered and the facility equipped with appropriate age-specific equipment to provide PALS level care.

**PREANESTHETIC PHYSICAL AND LABORATORY ASSESSMENT:** Preanesthetic physical assessment is described in the *Patient Assessment* chapter of *AAOMS ParCare 2012*. Routine laboratory testing is not indicated. The need for laboratory testing should be based on the history and physical examination of the patient and the nature of the surgical procedure. Laboratory testing should be performed only when the results may alter the management of the patient.

**PERIOPERATIVE COMPLICATIONS AND EMERGENCIES:** Because adverse outcomes related to anesthesia, though rare, may be catastrophic, the following must be available and/or provided:

- A. Mobile auxiliary sources of light and suction that can be used during power failure. In addition to the central source of oxygen, there must be an auxiliary source capable of delivering oxygen under positive pressure for at least 1 hour.
- B. Periodic scheduled practice sessions for all personnel to demonstrate knowledge and skillful management of potential emergency problems
- C. ACLS guidelines and suggestions contained in the *AAOMS Office Anesthesia Evaluation Manual*, which are the recommendations for management of emergencies associated with anesthesia in the oral and maxillofacial surgery outpatient environment
- D. Appropriate equipment and drugs, as recommended in the *AAOMS Office Anesthesia Evaluation Manual*

**GENERAL THERAPEUTIC GOALS FOR ANESTHESIA IN OUTPATIENT FACILITIES:**

- A. Full recovery within a reasonable period
- B. Appropriate understanding by patient (family) of treatment options and acceptance of treatment plan
- C. Appropriate understanding and acceptance by patient (family) of favorable outcomes and known risks and complications

**GENERAL FACTORS AFFECTING RISK DURING ANESTHESIA IN OUTPATIENT FACILITIES:**

- A. Degree of patient's and/or family's understanding of the origin and natural course of the condition and/or disorder and the knowledge of the patient's and/or family's medical history
- B. Presence of coexisting systemic disease (eg, disease that increases a patient's ASA classification to II, III, or IV), as detailed in the *Patient Assessment* chapter
- C. Age of patient
- D. The use of prescribed or over-the-counter medications and/or herbal medications or vitamins
- E. Current or past use of illicit drugs or alcohol
- F. History of or present use of tobacco
- G. Degree of patient's and/or family's understanding of the therapeutic goals and acceptance of the proposed treatment, resulting in the patient's and family's cooperation and compliance with perioperative anesthetic instructions
- H. Documented airway assessment
- I. Familial history of problems related to anesthesia
- J. Diagnosed obstructive sleep apnea syndrome (OSAS) or Class II or Class III Body Mass Index (BMI)

**GENERAL FAVORABLE THERAPEUTIC OUTCOMES FOR ANESTHESIA IN OUTPATIENT FACILITIES:**

- A. Recovery of the patient from the anesthetic effects, returning to his/her preanesthetic physiologic and psychologic state within an appropriate time after the cessation of the administration of the anesthetic drugs
- B. Agreement that the anesthetic experience was satisfactory by both the surgeon and the patient
- C. Recovery from the administration of sedatives, anesthetic agents, and other adjunctive medications
- D. Patient (family) acceptance of procedure and understanding of outcomes

**GENERAL KNOWN RISKS AND COMPLICATIONS FOR ANESTHESIA IN OUTPATIENT FACILITIES:**

- A. Syncope
- B. Drug over dosage or reaction (allergy or sensitivity)
- C. Adverse cardiovascular or pulmonary event
- D. Vascular injury
- E. Respiratory depression, obstruction, or arrest
- F. Airway loss or obstruction requiring an emergent airway using endotracheal intubation, laryngeal mask airway (LMA) or other adjunct airway device placement, or surgical airway
- G. Inability to intubate or ventilate
- H. Prolonged hypoxia or hypercapnea
- I. Vomiting and/or aspiration
- J. Displacement of foreign body into upper airway or bronchi
- K. Development of peripheral or central neurologic deficit

- L. Anesthesia-related organ failure
- M. Unplanned hospital admission
- N. Dental injury related to anesthetic care (when likelihood of dental injury is possible, it should be noted in the patient's record before surgery)
- O. Other oral and nasal injuries, such as laceration, hematoma, subcutaneous emphysema, hemorrhage, and edema, related to anesthetic administration
- P. Ocular injuries
- Q. Malignant hyperthermia
- R. Death

## ***SPECIAL CONSIDERATIONS FOR PEDIATRIC ANESTHESIA IN OUTPATIENT FACILITIES***

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Perhaps in no other patient group is the area of anxiety and pain control more pertinent than in the pediatric population. The goals of pediatric anesthesia are to provide efficient, safe, reversible and profound anesthesia, sedation, or analgesia as indicated. Moreover, the surgeon should make every effort to limit recall of the anesthetic surgical experience. The youngest child a surgeon will treat must be determined by each Oral and Maxillofacial Surgeon based on training, experience, appropriately sized equipment, and the availability of trained staff responsible for the welfare and safety of the patient.

Patient selection criteria may differ in subtle ways from those used to assess adults for sedation and anesthesia. Particular attention to evidence of recent upper respiratory tract infection (URI) is important when assessing children. A one to two-week postponement due to the runny nose may be appropriate. A runny nose or very mild form of URI must be differentiated from a more severe URI. The more severe URI should be allowed to clear and would require a 4- to 6-week period of delay to allow airway reactivity to resolve. Asthma is common in children, and when identified a thorough assessment of severity and current status is important. Endocrine disorders (diabetes), congenital cardiac defects, hematologic disease, and familial risk for susceptibility to malignant hyperthermia should all be assessed carefully in the pre-sedation/anesthesia assessment of children. Recognizing that this may be the very first time that this young patient has ever been exposed to anesthetic drugs serves to highlight the need for a detailed family history.

Children have unique anatomical and physiologic characteristics that must be considered during anesthesia. Their airways provide little margin for error because of small mandibles, relatively large tongue and tonsillar/adenoidal tissues, smaller and more anteriorly superiorly placed glottises, and supple, pliable larynges that are easily compressed. The narrowest point of the child's airway is at the cricoid ring, and endotracheal tube size must be determined accurately to avoid mucosal compression or injury and subsequent postanesthesia airway edema. The child has a proportionately larger head and tongue than does the adult and may also have a long, floppy epiglottis. Laryngospasm is a fairly common complication that must be skillfully managed as quickly as possible. It is paramount to avoid periods of oxygen desaturation, which very quickly suppress cardiac function (eg, bradycardia) and reduce cardiac output. Most poor outcomes in pediatric anesthesia occur related to loss of the airway. Cardiac events that are not the result of hypoxemia and hypercarbia related to airway problems are uncommon in children.

Pharmacologic considerations demand a thorough knowledge of parenteral and oral anesthetic and analgesic agents. Most, if not all, agents should be administered and prescribed as units per kilogram of weight of the child, which is standard pediatric practice.

The availability of appropriate size pediatric anesthesia equipment and resuscitation supplies is an obvious requirement. Pediatric paddles are available for defibrillators.

PALS courses are recommended for practitioners providing anesthesia to children. PALS protocols may be useful in the resuscitation of children. Arrests are rare events, and in the anxiety of a pediatric resuscitation the calculation of quickly needed emergency drugs may be particularly challenging. One-page printouts of dosages in milliliters for the known concentrations of the commonly used drugs that would be required for the actual weight of the particular pediatric patient being anesthetized can facilitate a smooth, coordinated, and most likely successful resuscitation.

Finally, socioeconomic, psychological, emotional, and relational factors may affect a child's perception of anesthesia, subsequent induction of anesthetic, the postanesthetic recovery experience, and ultimate pain control. Many of these factors relate to the parent and the child. Accordingly, the Oral and Maxillofacial Surgeon must understand how to identify and how to modify, control, or eliminate these factors if they adversely affect the surgeon/anesthetist's management of the pediatric patient.

## ***SPECIAL CONSIDERATIONS FOR ANESTHETIC MANAGEMENT OF THE PREGNANT PATIENT IN OUTPATIENT FACILITIES***

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Although elective surgery can usually be delayed until post partum, there are situations in which a pregnant female will present to the office requiring immediate surgery. The consequences of not providing essential care may present a greater risk than surgical intervention. The anesthetic goals in treating the pregnant patient include the ability to control the patient's pain and anxiety. In addition to maternal safety, anesthetic management must maintain fetal safety, which includes avoiding intrauterine fetal asphyxia and preterm labor.

A thorough knowledge of pharmacologic agents is required. Most local anesthetics are considered relatively safe during pregnancy. Single exposure to the commonly used sedatives benzodiazepines, opioids, and nitrous oxide have undetermined risk of teratogenicity. The Oral and Maxillofacial Surgeon should also counsel the patient about analgesics, including over-the-counter medications, because certain medications may not be acceptable during specific stages of pregnancy.

Both physiologic changes of pregnancy and the stage of pregnancy can influence the risk to the fetus and/or mother. Notable physiologic changes that will affect the anesthetic management of the patient include decreased functional residual capacity and increased oxygen consumption, increased cardiac output and decreased systemic vascular resistance, and decreased gastric emptying and decreased lower esophageal sphincter pressure and airway edema. These changes make the patient more susceptible to developing hypoxia, becoming hypotensive, and aspirating under anesthesia.

Pain and anxiety control options for these patients include local anesthesia, sedation, or general anesthesia. The technique selected depends on multiple factors, including the diagnosis, the ability to treat the patient comfortably, and the stage of pregnancy.

Consultation with the practitioner already managing the pregnant patient's prenatal care may be helpful in determining the most appropriate timing for surgery and the optimal perioperative anesthetic care.

## ***SPECIAL CONSIDERATIONS FOR ANESTHETIC MANAGEMENT OF THE OBESE PATIENT IN OUTPATIENT SETTINGS***

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Obesity in this country, as well as the entire world, is increasing at an alarming rate. This problem seems to be found in all ages of patients from the very young to the elderly. The obese patient presents with special anatomical and physiologic problems that must be addressed when outpatient anesthesia is provided for dental procedures. Obesity can be defined by Body Mass Index (BMI) and is classified as Class I (BMI 30-34.9), Class II (BMI 35-39.9) and Class III (BMI  $\geq$ 40). These classes are associated with increasing risk (high to extremely high) for type 2 diabetes, hypertension, and cardiovascular disease relative to normal weight and waist circumference.

Medical conditions, including diabetes, hypertension, coronary artery disease, cardiovascular disease, osteoarthritis, rheumatoid arthritis, multiple types of cancers, gall bladder disease, stroke, gastroesophageal reflux disease, and (OSAS) are some of the common problems found in the obese patient that will influence anesthetic care. Cardiovascular disease seems to be one of the more problematic issues in the obese patient. Left ventricular hypertrophy and other physiologic processes put the obese patient at an increased risk of acute coronary syndrome, congestive heart failure, and death.

The anatomical problems in these patients are primarily related to excess tissue in all the structures, resulting in difficult access to the airway. This overabundance of tissue makes airway management with unintubated general anesthesia difficult. These same anatomical problems make airway resuscitation and management extremely difficult, putting the patient at risk of neurologic damage or death.

A large percentage of obese patients also present with OSAS. This problem also occurs in nonobese patients, but it is not as common. Symptoms of OSAS include daytime somnolence, insomnia, and intellectual deterioration. Signs of OSAS include hypertension, hypoxemia, hypocarbia, polycythemia, and cor pulmonale. Questioning the patient's partner may more readily reveal this problem because OSAS can go unrecognized by the patient who is obviously asleep during these episodes of apnea. Questions related to tiredness and observed cessation in breathing are important. Providing anesthesia for the OSAS patient often requires special considerations. As in the obese patient, airway management may be difficult due to the overabundance of soft tissue.

Moderate sedation in obese patients can result in airway obstruction, oxygen desaturation, hypercarbia, and cardiac arrhythmias. If more extensive procedures are to be performed or if the patient is apprehensive, intubated or LMA managed anesthesia should be considered. If deep sedation/general anesthesia is to be provided in the office setting, the practitioner should be experienced in airway management, including endotracheal intubation, LMA and other adjunct airway device placement, and surgical airway specifically for the obese patient. Postprocedural and postdischarge use of opioids should be considered with caution, and the risk of disordered breathing may continue.



## **LOCAL ANESTHESIA**

### **I. Indications for Therapy**

- A. Need to provide treatment that may create sensations, especially pain, which could interfere with patient comfort and hinder safe and effective treatment

### **II. Specific Therapeutic Goals for Local Anesthesia**

- A. Profound anesthesia in the surgical area
- B. Return of normal sensation within a prescribed period of time

### **III. Specific Factors Affecting Risk for Local Anesthesia**

*Severity factors that increase risk and the potential for known complications:*

- A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
- B. Presence of infection
- C. History of drug allergy and/or hypersensitivity to local anesthetic agents
- D. Vasoactivity
- E. Route of administration
- F. Vascularity of site
- G. Rate of administration
- H. Presence or absence of vasoconstrictor (especially in those patients with underlying cardiac disease where epinephrine-induced tachycardia may precipitate myocardial ischemia)
- I. Dose administered
- J. Specific local anesthetic agent used

### **IV. Indicated Therapeutic Parameters for Local Anesthesia**

- A. Completion of a medical history questionnaire, signed and dated by the patient or a responsible party
- B. Review of medical history by the Oral and Maxillofacial Surgeon, with all significant responses evaluated and noted in the patient's record (dialogue history)
- C. Pretreatment physical evaluation, as defined in the *Patient Assessment* chapter, and vital signs recorded in the patient's record
- D. Completion of medical consultation or additional laboratory testing, if indicated, before initiation of treatment (except in extreme emergency)
- E. Continual observation and supervision of patient throughout the procedure until recovery criteria for discharge are met
- F. Documentation of all drugs, dosages, and times of administration
- G. Explanation of postoperative instructions to the patient and/or a responsible adult at the time of discharge
- H. Determination that the patient is clinically stable

### **V. Outcome Assessment Indices for Local Anesthesia**

*Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation.*

- A. Favorable therapeutic outcome
  - 1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
- B. Known risks and complications associated with therapy
  - 1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
  - 2. Localized tissue injury (eg, mucosal, vessel), resulting directly from the administration of the anesthetic
  - 3. Long-term and/or permanent neurologic changes

## **LOCAL ANESTHESIA (continued)**

4. Events, such as syncope, hypertensive episode, angina, and ectopy, related temporally to local anesthesia care
5. Clinical evidence of broken needle and imaging, if indicated, to verify location
6. Persistent trismus
7. Evidence of intravascular injection of local anesthetic and/or vasoconstrictive agents
8. Hematoma
9. Soft tissue space infection
10. Overdose
11. Methemoglobinemia

## **MODERATE SEDATION**

*Moderate sedation may be achieved with parenteral agents, nitrous oxide, and/or oral, rectal, and intranasal medications.*

### **I. Indications for Therapy**

*May include one or both of the following:*

- A. Need to depress the level of consciousness, anxiety, and/or pain minimally so that the patient can undergo a planned procedure
- B. Need to retain the patient's ability to maintain an airway independently and continuously and respond appropriately to physical stimulation and verbal command

### **II. Specific Therapeutic Goals for Moderate Sedation**

- A. The presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
- B. Depressed level of consciousness
- C. Reduced anxiety and improved patient cooperation during the surgical procedure
- D. Anxiolysis to reduce cardiopulmonary morbidity
- E. Ability to respond purposefully to physical stimulation and to spoken commands and ambulate normally without assistance shortly after completion of procedure(s)

### **III. Specific Factors Affecting Risk for Moderate Sedation**

*Severity of factors that increase risk and the potential for known complications:*

- A. The presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
- B. Noncompliance with eating and drinking (nothing by mouth [NPO]) requirements or physical conditions that could affect gastric emptying
- C. Presence of systemic infection

### **IV. Indicated Therapeutic Parameters for Moderate Sedation**

- A. Completion of a medical history questionnaire, signed and dated by the patient or a responsible adult
- B. Review of medical history by the Oral and Maxillofacial Surgeon on the day of surgery, with all significant responses evaluated and noted in the patient's record (dialogue history)
- C. Determination and documentation of the patient's ASA classification and fitness for moderate sedation in the office
- D. Documentation of airway assessment
- E. Documentation of baseline vital signs
- F. Completion of medical consultation or additional laboratory testing, if indicated, before initiation of treatment (except in extreme emergency)

**MODERATE SEDATION (continued)**

- G. Maintenance and completion of time-oriented anesthesia record (similar to that provided in the *AAOMS Office Anesthesia Evaluation Manual*) for each anesthetic administration
  - 1. Documentation of the anesthetic agents, including dosages, routes of administration, and times of administration
  - 2. Documentation of continuous monitoring including heart rate, blood pressure, ventilation, SpO<sub>2</sub> (arterial oxygen saturation), and temperature (when indicated) on at least a 5-minute interval
  - 3. Continuous electrocardiograph (ECG) monitoring
  - 4. Consider end-tidal carbon dioxide (ETCO<sub>2</sub>) measurement and provide continuous ETCO<sub>2</sub> monitoring effective January 2014 (See page ANE-2 Introduction)
- H. Determination and documentation that the patient has been NPO for an appropriate period of time
- I. Documentation that contact lenses and complete/partial intraoral prosthesis have been removed
- J. Documentation of maintenance (including calibration if appropriate) of the analgesic/anesthetic machine at appropriate intervals
- K. Documentation of the presence and identity of each team member throughout the administration of moderate sedation. The team should consist of the surgeon who must be trained and currently competent in ACLS and one additional person trained and currently competent in Basic Life Support for Healthcare Providers.
- L. The individual designated to monitor the patient's level of sedation and/or administer the sedation medications (if allowed by state or territory statute) may assist with minor, interruptible tasks within the procedure room once the patient's level of sedation/analgesia and vital signs have stabilized. Adequate monitoring of the patient's level of sedation/anesthesia can be done by another member of the anesthesia team who has appropriate education and training.
- M. Use of supplemental oxygen: unless there are contraindications to the use of oxygen by the procedure, supplemental oxygen must be administered while the patient is sedated. The ability and equipment to provide positive pressure oxygen must be available.
- N. Intravenous access for patients receiving intravenous medications for moderate sedation and maintenance of vascular access throughout the procedure until the patient is no longer at risk for cardiorespiratory depression
- O. Intravenous access for patients who receive moderate sedation by nonintravenous routes; determination by the Oral and Maxillofacial Surgeon of the advisability of establishing or reestablishing intravenous access is on a case-by-case basis
- P. Intravenous access using a new infusion set, including a new infusion line and new bag of fluid, for each patient
- Q. Positioning of the patient to avoid injury to him/herself or others during the period of moderate sedation
- R. Immediate availability of equipment to assess body temperature
- S. Facility equipped with emergency drugs and equipment that allow appropriate management of untoward events
- T. Adherence to recommendations for management of complications and emergencies, as described in the *AAOMS Office Anesthesia Evaluation Manual*
- U. Determination and documentation that oxygenation, ventilation, circulation, and temperature (when indicated) are stable before discharge
- V. Written postoperative instructions given to the patient and a responsible adult and explained to both the patient and a responsible adult at the time of discharge. These should include instructions not to operate any vehicle or machinery and/or be involved in any contractual or legal process for an appropriate period of time. In certain situations, the surgeon will not have written instructions in all languages.
- W. Determination by the surgeon that the patient's vital signs are stable, the patient is mentally alert, and the patient is no longer at risk for cardiorespiratory depression. A notation should be made in the medical record that the patient has achieved predetermined discharge criteria.
- X. Discharge of the patient in the care of a responsible adult. A responsible adult should be available to provide assisted care to the patient until the patient is fully recovered from anesthetic drugs.

**V. Outcome Assessment Indices for Moderate Sedation**

*Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation.*

### **MODERATE SEDATION (continued)**

- A. Favorable therapeutic outcomes
  - 1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
- B. Known risks and complications associated with therapy
  - 1. Presence of general known risks or complications, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
  - 2. Unintended changes of the patient's level of consciousness (eg, to that of deep sedation or general anesthesia)
  - 3. Events related temporally to moderate sedation
    - a. Aspiration
    - b. Respiratory changes
    - c. Dysphoria
    - d. Psychogenic sequelae
    - e. Unexpected changes in vital signs from baseline
    - f. Cardiac dysrhythmia, other than arrest
  - 4. Failure to emerge from sedation sufficiently for discharge from facility within an appropriate time after completion of procedure
  - 5. Unplanned hospital admission after administration of moderate sedation

### **DEEP SEDATION/GENERAL ANESTHESIA**

#### **I. Indications for Therapy**

- A. Need to depress the patient's level of consciousness, anxiety, pain, and recall sufficiently during a planned procedure, recognizing that this may result in the partial or complete loss of protective reflexes and/or the patient's ability to maintain an airway independently, as well as possible changes in cardiovascular and pulmonary function.

#### **II. Specific Therapeutic Goals for Deep Sedation/General Anesthesia**

- A. The presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
- B. In deep sedation/general anesthesia, a controlled state of depressed consciousness/loss of consciousness resulting in:
  - 1. An inability to respond purposefully to physical stimulation or verbal command
  - 2. Adequate control of pain and anxiety
  - 3. Probable but not guaranteed inability to recall surgical experience

#### **III. Specific Factors Affecting Risk for Deep Sedation/General Anesthesia**

- A. The presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
- B. Loss of the ability to respond purposefully to physical stimulation or verbal command and/or loss of protective cardiopulmonary reflexes and the ability to maintain an airway independently
- C. Factors compromising airway patency
- D. Factors compromising cardiovascular function
- E. Noncompliance with or conditions affecting NPO requirements
- F. Psychological aversion to intravenous or intramuscular injections and/or anesthetic mask
- G. Presence of intraoral abscess or cellulitis
- H. Presence of facial anomalies and anatomical variations that might prevent or impede adequate airway management
- I. Presence of a recent or active upper respiratory infection
- J. Regulatory and/or third-party decisions concerning access to care, indicated therapy, drugs, devices, and/or materials
- K. Special needs patients

## **DEEP SEDATION/GENERAL ANESTHESIA (continued)**

### **IV. Indicated Therapeutic Parameters for Deep Sedation/General Anesthesia**

- A. Completion of an appropriate medical history questionnaire, signed and dated by the patient or a responsible adult
- B. Review of medical history by an Oral and Maxillofacial Surgeon, with all significant responses evaluated and noted in the patient's record (dialogue history) on the date of surgery
- C. A brief physical evaluation, especially of heart and lungs, by the Oral and Maxillofacial Surgeon
- D. Determination and documentation of the patient's ASA classification and fitness for general anesthesia in the office
- E. Completion of medical consultation or additional laboratory testing, if indicated, before initiation of treatment
- F. Maintenance and completion of a time-oriented (at least every 5 minutes) anesthesia record (similar to that provided in the *AAOMS Anesthesia Manual*) for each anesthetic administration
  - 1. Documentation of the anesthetic agents, including dosages, routes of administration, and times of administration
  - 2. Documentation of continuous monitoring, including heart rate, blood pressure, oxygen saturation, ventilation (and temperature, if monitored)
- G. Determination and documentation that the patient has been NPO for an appropriate period of time
- H. Documentation that the patient is currently not wearing contact lenses and/or complete or partial denture
- I. Documentation of maintenance (including calibration if appropriate) of the anesthetic machine at appropriate intervals
- J. Documentation of the presence and identity of each team member throughout administration of general anesthesia. The team should consist of the surgeon, trained and currently competent in ACLS, and two additional persons, trained and currently competent in Basic Life Support for Healthcare Providers.
- K. The individual designated to monitor that patient's level of sedation should have no other responsibilities.
- L. Use of supplemental oxygen throughout the anesthetic period and availability of supplemental oxygen throughout the postoperative period
- M. Intravenous access for patients receiving intravenous medications for deep sedation/anesthesia and maintenance of vascular access throughout the procedure and until the patient is no longer at risk for cardiorespiratory depression
- N. Intravenous access for patients who receive deep sedation/general anesthesia by nonintravenous routes and determination by the Oral and Maxillofacial Surgeon of the advisability of establishing or reestablishing intravenous access on a case-by-case basis
- O. Intravenous access using a new infusion set, including a new infusion line and new bag of fluid, for each patient
- P. Continuous supervision, monitoring, and documentation on at least a 5-minute interval in the anesthetic record of:
  - 1. Ventilation and oxygenation during the administration of the anesthetic
    - a. Continuous use of pulse oximetry during both the intraoperative and recovery period with the appropriate alarm settings established
    - b. Documentation of data during the perioperative period
    - c. Ventilatory monitoring should include all of the following:
      - i. Auscultation of breath sounds when appropriate
      - ii. Observations of the excursions of the chest wall
      - iii. Use of a precordial or pretracheal stethoscope when appropriate
      - iv. Observation of the reservoir bag when appropriate
      - v. Monitoring color of skin, mucosa, nail beds, and surgical site
      - vi. Monitoring of expiratory gases including ET $\text{CO}_2$  (capnometry or capnography) effective January 2014 (See page ANE-2 Introduction)
    - d. When endotracheal intubation or an LMA is used:
      - i. Monitoring of ET $\text{CO}_2$
      - ii. Monitoring of inspired oxygen concentration
      - iii. Use of the following when a ventilator is used:
        - aa. Disconnect alarm
        - bb. High and low respiratory pressure alarms
        - cc. Supply pressure indicator
        - dd. Respiratory rate and volume alarms
        - ee. Adjustable expiratory and tidal volumes

## **DEEP SEDATION/GENERAL ANESTHESIA (continued)**

2. The cardiovascular status of the patient
  - a. Documentation of continuous monitoring, including heart rate, blood pressure, respiration (and temperature, if monitored)
  - b. Use of the ECG, which must be continuously displayed and/or recorded until the patient leaves the operating room and documentation of its use in the anesthetic record. This documentation could be a notation of the rhythm present during the procedure or a sample of the rhythm strip.
- Q. Positioning and protection of the patient to avoid injury to himself/herself or to others during the period of anesthesia
  1. Appropriately positioned and padded extremities to minimize peripheral nerve injuries
  2. Appropriately protected eyes to avoid injury
- R. Equipment to assess body temperature that is immediately available  
Body temperature must be continuously monitored in all patients who are being anesthetized with agents that can induce malignant hyperthermia, and a plan to treat malignant hyperthermia must be in place. It is recommended that all children have their temperature monitored.
- S. Facility equipped with emergency drugs and equipment that allow appropriate ACLS intervention, including a device to confirm exhaled CO<sub>2</sub>
- T. Adherence to recommendations for management of complications and emergencies, as described in the current edition of the *AAOMS Office Anesthesia Evaluation Manual* and in the current *ACLS Manual*
- U. Determination and documentation that oxygenation, ventilation, circulation, and temperature (when indicated) are stable before discharge
- V. Written postoperative instructions given to the patient and a responsible adult and explained to both the patient and a responsible adult at the time of discharge. In certain situations the surgeon will not have written instructions available in all languages.
- W. Determination by the surgeon that the patient's vital signs are stable, the patient is mentally alert, and the patient is no longer at risk for cardiorespiratory depression before discharge. A notation should be made in the medical record that the patient has achieved predetermined discharge criteria.
- X. Discharge of the patient into the care of a responsible adult. A responsible adult should be available to provide assisted care to the patient until the patient is fully recovered from the anesthetic.

## **V. Outcome Assessment Indices for Deep Sedation/General Anesthesia**

*Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation.*

- A. Favorable therapeutic outcomes
  1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
- B. Known risks and complications associated with therapy
  1. Presence of general risks or complications, as listed in the section entitled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
  2. Events related temporally to general anesthesia
    - a. Aspiration
    - b. Respiratory arrest, hypoventilation, or hyperventilation
    - c. Hypoxia, hypercarbia, or hypocarbia
    - d. Pulmonary edema
    - e. Congestive heart failure
    - f. Unanticipated need to intubate patient
    - g. Dental, oral, or airway trauma secondary to intubation or placement of other adjunctive airway devices
    - h. Prolonged intubation
    - i. Prolonged emergence from anesthesia
    - j. Postoperative dysphoria, excitation, or psychogenic sequelae
    - k. Peripheral vascular injury
    - l. Peripheral or central neurologic deficit

***DEEP SEDATION/GENERAL ANESTHESIA (continued)***

- m. Cardiovascular injury
- n. Organ damage
- o. Ocular injury
- p. Failure to emerge from anesthesia, requiring hospital admission for observation
- q. Malignant hyperthermia
- r. Adverse reaction to medication
- s. Death

## SELECTED REFERENCES – ANESTHESIA IN OUTPATIENT FACILITIES

This list of selected references is intended only to acknowledge some of the sources of information drawn on in the preparation of this document. Citation of the reference material is not meant to imply endorsement of any statement contained in the reference material. The list is not an exhaustive compilation of information on the topic. Readers should consult other sources to obtain a complete bibliography.

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