Parameters of Care:
Clinical Practice Guidelines
for Oral and Maxillofacial Surgery
(AAOMS ParCare 2023)

ANESTHESIA IN OUTPATIENT FACILITIES

J Oral Maxillofac Surg
81:e35-e50, 2023, Suppl 11S

THIS SECTION IS 1 OF 11 CLINICAL SECTIONS INCLUDED IN *AAOMS PARCARE 2023,* 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

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 3 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.

DEFINITIONS OF SEDATION AND ANESTHESIA

The following definitions are taken from the 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 13, 1999, last amended on October 15, 2014).

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

Moderate Sedation/Analgesia 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. Practitioners 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. It is not appropriate to continue the procedure at an unintended level of sedation.

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

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 *American Association of Oral and Maxillofacial Surgeons (AAOMS) ParCare 2023* 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 AAOMS bylaws, AAOMS Governing Rules and Regulations 2016-2017 (Bylaws – 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* 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.

Each facility where the Oral and Maxillofacial Surgeon provides anesthesia services should be certified by an independent third party to verify the proper functioning of the medical gas lines. This certification must include an analysis of the medical gas delivered by each marked line and an assessment of the functionality of all "fail-safe" mechanisms. Certification should be in accordance with local or state regulations. Regular verification of anesthetic gas administration devices should be obtained per manufacturers guidelines.

PREANESTHETIC PHYSICAL AND LABORATORY ASSESSMENT: Preanesthetic physical assessment is described in the *Patient Assessment* chapter of *AAOMS ParCare2023*. 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 emergency mock drill 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 ARE AS FOLLOWS

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

GENERAL FACTORS AFFECTING RISK DURING ANESTHESIA IN OUTPATIENT FACILITIES ARE AS FOLLOWS

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 and psychiatric 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, marijuana, 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. Conditions that promote airway obstruction
I. Conditions that impede ventilation and/or intubation of the hypopneic/apneic patient
J. Familial history of problems related to anesthesia
K. Diagnosed obstructive sleep apnea (OSA) or class II or class III body mass index (BMI)
L. Presence of infection
M. Pregnancy

GENERAL FAVORABLE THERAPEUTIC OUTCOMES FOR ANESTHESIA IN OUTPATIENT FACILITIES ARE AS FOLLOWS

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 ARE AS FOLLOWS

A. Syncope
B. Drug overdosage 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 a rescue airway maneuver or adjunct airway device placement
G. Inability to ventilate or intubate
H. Prolonged hypoxia or hypercapnia
I. Vomiting and/or aspiration
J. Displacement of foreign body into upper airway or bronchi
K. Development of peripheral neurologic deficit
L. Anesthesia-related organ failure
M. Unplanned hospital admission
N. Dental injury related to anesthetic care
O. Other oral and nasal injuries, such as laceration, hematoma, subcutaneous emphysema, hemorrhage, and edema, related to anesthetic administration
P. Ocular injuries

Q. Thromboembolic phenomena (especially with long duration of immobility during anesthesia)
R. Malignant hyperthermia
S. Airway fire
T. Brain injury
U. Death

SPECIAL CONSIDERATIONS FOR PEDIATRIC ANESTHESIA IN OUTPATIENT FACILITIES

It is important to appreciate that children are not simply "small adults," but have many unique and constantly changing anatomic, physiologic, pharmacologic, and psychological differences. The anesthetic goals for the pediatric patient are safety, cooperation, elimination of pain, reduction of anxiety, and control of behavior to allow completion of the planned intervention.

The initial evaluation of the pediatric patient is unique in several ways. The history is derived almost completely from the caregiver. Systemic diseases and prescription medications are uncommon, and past anesthetic experiences are rare. Instead, a family history of allergies and conditions such as sickle-cell anemia and malignant hyperthermia are of great importance. A targeted physical examination should consist of an airway, heart, and lung evaluation. Recent upper respiratory infection, fever, mucopurulent nasal discharge, audible wheezing, or productive cough should prompt further evaluation, as these conditions often predispose to laryngospasm and accelerated oxygen desaturation. Congenital cardiac defects or the presence of a new cardiac murmur should be evaluated completely prior to proceeding. Female patients of childbearing age (usually 12 years and older) should be questioned and tested for the possibility of pregnancy in all circumstances where a general anesthetic is considered. Sensitivity in performing this assessment is necessary, but the subject should not be ignored. A urine or serum human chorionic gonadotropin may be appropriate and is required by many institutions.

Children have unique anatomical and physiologic characteristics that must be considered during anesthesia. Their small nares, large tongue, and enlarged tonsils/adenoids can cause passive airway obstruction. Children have a large head, yet a short neck, leading to neck flexion and airway obstruction when lying supine. The epiglottis can be long, narrow, and often angled posteriorly. The larynx is higher than in the adult, and funnel shaped, with the narrowest portion located below inclined vocal cords. These factors hamper direct laryngoscopy and can present significant challenges during airway management. The pediatric airway is far more reactive to stimuli such as secretion or foreign bodies than an adult airway. As a result, laryngospasm is a complication that must be quickly identified and skillfully managed. The pediatric heart has less muscle mass and a lower strength of contraction leading to an invariant stroke volume. Although cardiac output can be maintained over a wide range of preloads and rates without failing, young pediatric patients rely almost solely on heart rate to maintain blood pressure. As a result, bradycardia is an ominous sign during any pediatric anesthetic and must be immediately detected and corrected. On reviewing cases of cardiac arrest during pediatric anesthetics, the single most causative factor was found to be an untreated respiratory arrest degenerating to cardiac arrest. This reinforces the importance of airway management in the anesthetic care of pediatric patients.

Pharmacologic considerations demand a thorough knowledge of anesthetic and analgesic agents. Many routes of drug administration are available to the Oral and Maxillofacial Surgeon providing pediatric anesthesia. All pediatric patients should be weighed prior to drug dose selection. Most, if not all, agents should be administered and prescribed as units per kilogram of weight of the child. Intraoperative and postoperative monitoring is instrumental in detecting situations early enough for corrective interventions. Because of the constantly changing morphology of the pediatric patient, appropriately sized equipment is vital to the delivery of anesthesia and rescue during an emergency. PALS protocols may be useful in the resuscitation of children. Those Oral and Maxillofacial Surgeons who administer anesthesia to young children should be PALS certified. In the anxiety of a pediatric anesthetic emergency, the timely calculation of emergency drug dosages may be particularly challenging. Therefore, prior to anesthetic administration, calculations of emergency dosages expressed as mg/kg or ml of the most commonly used drugs that would be required for the pediatric patient being anesthetized can facilitate a smooth, coordinated, and successful outcome.

Although anesthetic care is often necessary for pediatric patients in need of surgical intervention, there are concerns whether anesthetics themselves pose a risk to their later intellectual development. At this time, there is no definitive information to draw any firm conclusions between anesthetic administration and subsequent disabilities.

Safety is paramount to pediatric anesthetic care. Therefore, the age of the patient and preoperative evaluation, difficulty of the planned procedure and the training and experience of the practitioner should guide the Oral and Maxillofacial Surgeon as to the choice of technique and most suitable environment to provide anesthetic care.

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

Although elective surgery can usually be delayed until postpartum, 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 inhaled anesthesia agents 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. Pregnant patients also develop increased cardiac output, decreased systemic vascular resistance, decreased gastric emptying, and decreased lower esophageal sphincter pressure. These changes make the patient more susceptible to developing hypoxia, becoming hypotensive, and aspirating under anesthesia. Appropriate patient positioning to prevent inferior vena cava positioning when the patient is supine needs to be considered.

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

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. A patient with obesity presents with special anatomical and physiologic problems that must be addressed when outpatient anesthesia is provided for dental procedures. Obesity can be defined by 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 OSA are some of the common problems found in a patient with obesity that will influence anesthetic care. Cardiovascular disease seems to be one of the more problematic issues in a patient with obesity. 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 deficiencies of the upper airway, making access more difficult. Both laryngoscopy and anesthetic techniques that do not utilize an artificial airway can be challenging. Comorbid conditions, decreased functional residual capacity, complex airways, and even difficult intravenous access can place a patient with obesity at higher risk for anesthetic complications.

A large percentage of patients with obesity also present with OSA. This problem also occurs in patients without obesity, but it is not as common. Symptoms of OSA include daytime somnolence, insomnia, and difficulty with memory and concentration. Signs of OSA include hypertension, hypoxemia, hypercarbia, polycythemia, and cor pulmonale.

Use of the STOP-BANG questionnaire may be helpful in identifying previously undiagnosed patients with obstructive sleep apnea. Also, questioning the patient's partner may more readily reveal this problem because OSA can go unrecognized by the patient who may be unaware of these episodes of apnea. Questions related to snoring, tiredness, and observed cessation in breathing are important. Providing anesthesia for the OSA patient often requires special consideration. As in a patient with obesity, airway management may be difficult due to the overabundance of soft-tissue or anatomic deficiencies.

Moderate sedation in patients with obesity 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 or other supraglottic

device placement, and even surgical airway procedures specific for patients with obesity. Postprocedural and postdischarge use of opioids should be considered with caution, as the risk of respiratory depression in the patient who already has sleep disordered breathing may be increased.

Specialized equipment and surgical chairs/tables must be adequate for patient support. The surgical team must be trained in patient movement to prevent staff and patient injuries.

SPECIAL CONSIDERATIONS FOR ANESTHETIC MANAGEMENT OF THE GERIATRIC PATIENT IN OUTPATIENT SETTINGS

The US population is aging as a result of the parallel decline in both mortality and fertility rates. According to the US Census Bureau, the number of elderly was 12.9% of the population in 2009. By 2030, the number of elderly will increase to 19% of the US population. As a result, the Oral and Maxillofacial Surgeon should expect an increase in geriatric patients seeking surgical care. Although chronologic age does not always predict physiologic age, it is prudent to consider advancing age, frailty, and comorbid disease as anesthetic risk factors. The goal of geriatric anesthesia is to provide safe and effective care in this increasingly medically complex population.

Completing a preanesthetic evaluation often requires time and patience. Medical consultation may be necessary to complete the medical history or optimize function. Determination of the geriatric patient's mental status is valuable, as postoperative delirium is more common in patients with dementia or preoperative mental status changes. Also, assessing the level of exercise tolerance can be integral to estimating the patient's ability to tolerate the combined stress of anesthesia and surgery. This is best communicated using metabolic equivalents for aerobic activity, with ≥4 metabolic equivalents for aerobic activity (eg, climbing a flight of stairs without rest or shortness of breath) generally considered adequate.

A steady decline of organ function does occur with advancing age. Baroreceptors become dampened, resulting in an increase in orthostatic hypotension. There is a progressive stiffening of both the myocardium and vasculature due to the loss of elastin and increased collagen deposition. This results in an increase in systolic blood pressure and a reduction in cardiac output. The lungs also become stiffer and less compliant. With a concomitant loss of muscle strength in the chest wall and diaphragm, there is an increased incidence of hypoventilation. With advancing age, an impaired cough reflex and diminished laryngeal reflexes create an increasing risk of aspiration. Also, renal function declines, hepatic blood flow is reduced, and liver mass is decreased. This results in decreased albumin production, as well as slower metabolism and elimination of medications.

In the geriatric patient, a practitioner should plan for reduced dosing requirements and expect longer elimination half-lives of anesthetic drugs. This reflects the time proven adage – "start low and go slow." Increased sensitivity to anesthetic agents also results in an increased sensitivity to their side effects. Medications with anticholinergic effects should be limited or avoided and preference should be given to reversible anesthetic agents. Minimizing the number and dosage of agents, avoiding hypercarbia and hypoxia are important goals of anesthetic care in this population. Prolonged recovery should be anticipated in all elderly patients. Consideration should be given to anesthetic techniques that will cause the least disruption to a geriatric patient's routine, when available.

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 titled 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

LOCAL ANESTHESIA (continued)

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
C. A brief pretreatment physical evaluation by the Oral and Maxillofacial Surgeon
D. Documentation of baseline vital signs
E. Completion of medical consultation or additional laboratory testing, if indicated, before initiation of treatment
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. Continual observation and supervision of patient throughout the procedure until discharge criteria are met

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 titled 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 titled 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
   4. Events, such as syncope, hypertensive episode, angina, and ectopy, related 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

MINIMAL SEDATION/MODERATE SEDATION

Sedation may be achieved with nitrous oxide, parenteral agents, oral, rectal, and/or 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 Minimal Sedation/Moderate Sedation

A. The presence of a general therapeutic goal, as listed in the section titled 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. Minimal sedation to reduce cardiopulmonary morbidity

MINIMAL SEDATION/MODERATE SEDATION (continued)

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 Minimal Sedation/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 titled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
B. Noncompliance with eating and drinking (nothing by mouth) requirements or physical conditions that could affect gastric emptying

IV. Indicated Therapeutic Parameters for Minimal Sedation/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. Documentation of assessment for possible pregnancy and test result when appropriate
D. A brief physical evaluation, especially of the heart and lungs, by the Oral and Maxillofacial Surgeon
E. Determination and documentation of the patient's ASA classification and fitness for moderate sedation in the office
F. Documentation of airway assessment
G. Documentation of baseline vital signs
H. Completion of medical consultation or additional laboratory testing, if indicated, before initiation of treatment (except in extreme emergency)
I. Determination and documentation that the patient has been nothing by mouth for an appropriate period of time
J. 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 appropriate to the level of sedation, including heart rate, blood pressure, ventilation, SpO_2 (arterial oxygen saturation), continuous electrocardiograph monitoring, continuous $ETCO_2$ monitoring
K. Documentation of maintenance (including calibration if appropriate) of the analgesic/anesthetic machine at appropriate intervals
L. 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.
M. 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.
N. Nitrous oxide may only be administered in conjunction with supplemental oxygen, and only via apparatus equipped with a failsafe mechanism to maintain nitrous levels below 70%. Supplemental oxygen should be administered during moderate sedation if there is potential for cardiorespiratory depression. The ability and equipment to provide positive pressure oxygen must be available.
O. Intravenous access for patients receiving intravenous medications for moderate sedation should be maintained if the procedure is prolonged or if there is a risk for prolonged cardiorespiratory depression. Consideration for establishing intravenous access for patients who receive moderate sedation by non-intravenous routes, especially if the procedure is prolonged or if there is a risk for prolonged cardiorespiratory depression.
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. Use of mechanical or pharmacological prophylaxis against deep venous thrombosis in at-risk patients
S. Immediate availability of equipment to assess body temperature
T. Facility equipped with emergency drugs and equipment that allow appropriate ACLS intervention, including a device to confirm exhaled CO_2
U. 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

MINIMAL SEDATION/MODERATE SEDATION (continued)

V. Written postoperative instructions given and explained to the patient and to a responsible adult (when an escort is necessary due to method or depth of sedation)
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 in the care of a responsible adult if cognitive and/or psychomotor status remains impaired postoperatively

V. Outcome Assessment Indices for Minimal Sedation/Moderate Sedation

I. 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 titled 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 titled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
   2. Events related to minimal sedation/moderate sedation are as follows:
      a. Unintended changes of the patient's level of consciousness (eg, deeper or lighter than intended)
      b. Aspiration
      c. Allergic reaction
      d. Bronchospasm
      e. Respiratory arrest, hypoventilation, or hyperventilation
      f. Hypoxia, hypercarbia, or hypocarbia
      g. Pulmonary edema
      h. Congestive heart failure
      i. Unanticipated need to support the airway
      j. Dental, oral, or airway trauma secondary to intubation or placement of other adjunctive airway devices
      k. Prolonged intubation
      l. Prolonged emergence from anesthesia
      m. Postoperative dysphoria, excitation, or psychogenic sequelae, including postoperative cognitive deficit
      n. Peripheral vascular injury
      o. Peripheral or central neurologic deficit (eg, due to positioning during anesthesia)
      p. Cardiovascular injury
      q. Organ damage
      r. Ocular injury
      s. Flash fire in an oxygen-rich environment
      t. Failure to emerge from anesthesia, requiring hospital admission for observation
      u. Adverse reaction to medication
      v. Death

DEEP SEDATION/GENERAL ANESTHESIA

I. Indications for Therapy

A. Need to depress the patient's level of consciousness, anxiety, pain, and recall 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 titled 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 the following:

DEEP SEDATION/GENERAL ANESTHESIA (continued)

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 titled 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 nothing by mouth requirements
F. Psychological aversion to intravenous or intramuscular injections and/or anesthetic mask
G. Presence of severe facial 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 tract infection
J. Regulatory and/or third-party decisions concerning access to care, indicated therapy, drugs, devices, and/or materials
K. Special needs patients

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 the patient's history by an Oral and Maxillofacial Surgeon, on the date of surgery, with all significant responses evaluated and noted in the patient's record. This should include the patient's:
   1. Medical history
   2. Anesthesia and surgical history
   3. Family history
   4. Social history
   5. Current medications
   6. Allergies
C. Completion of medical consultation or additional laboratory testing, if indicated, before initiation of treatment
D. Documentation of patient's last menstrual period or pregnancy test result when appropriate
E. A brief physical evaluation, especially of heart and lungs, by the Oral and Maxillofacial Surgeon
F. Documentation of airway assessment
G. Documentation of baseline vital signs
H. Determination and documentation of the patient's ASA classification and fitness for general anesthesia in the office
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 PALS where appropriate), and at least 2 additional persons, trained and currently competent in Basic Life Support for Healthcare Providers.
K. The individual designated to monitor the 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. Consideration for intravenous access for patients who receive deep sedation/general anesthesia by non-intravenous routes especially if the procedure is prolonged or if there is a risk for prolonged cardiorespiratory depression
N. Intravenous access using a new infusion set, including a new infusion line and new bag of fluid, for each patient
O. Use of a “timeout” to confirm correct patient, procedure, and equipment prior to initiation of anesthesia
P. Continuous supervision, monitoring of:
   1. Ventilation and oxygenation during the administration of the anesthetic and recovery period
      a. Monitoring of oxygenation should include continuous use of pulse oximetry

DEEP SEDATION/GENERAL ANESTHESIA (continued)

b. 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 $ETCO_2$ (capnometry or capnography)
c. When endotracheal intubation or an LMA is used:
   i. Monitoring of $ETCO_2$
   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

2. The cardiovascular status of the patient:
   a. Including heart rate and blood pressure
   b. Use of the electrocardiograph, 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.
3. Temperature of the patient (when appropriate)

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. Use of mechanical or pharmacological prophylaxis against deep venous thrombosis in at risk patients

S. Equipment to assess body temperature is immediately available
   1. 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.

T. Facility equipped with emergency drugs and equipment that allow appropriate ACLS/PALS intervention, including a device to confirm exhaled CO_2

U. 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/PALS Manual

V. Written postoperative instructions are given to the patient and a responsible adult and explained to both the patient and a responsible adult at the time of discharge.

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

I. 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 titled 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 titled General Criteria, Parameters, and Considerations for Anesthesia in Outpatient Facilities
   2. Events related to deep sedation/general anesthesia

DEEP SEDATION/GENERAL ANESTHESIA (continued)

a. Unintended changes of the patient's level of consciousness (eg, lighter than intended)
b. Recall of events during anesthesia
c. Aspiration
d. Allergic reaction
e. Bronchospasm
f. Respiratory arrest, hypoventilation, or hyperventilation
g. Hypoxia, hypercarbia, or hypocarbia
h. Pulmonary edema
i. Congestive heart failure
j. Unanticipated need to intubate patient
k. Dental, oral, or airway trauma secondary to intubation or placement of other adjunctive airway devices
l. Prolonged intubation
m. Prolonged emergence from anesthesia
n. Postoperative dysphoria, excitation, or psychogenic sequelae, including Postopertative Cognitive Deficit
o. Peripheral vascular injury
p. Peripheral or central neurologic deficit (eg, due to positioning during anesthesia)
q. Cardiovascular injury
r. Organ damage
s. Ocular injury
t. Flash fire in an oxygen-rich environment
u. Failure to emerge from anesthesia, requiring hospital admission for observation
v. Malignant hyperthermia
w. Adverse reaction to medication
x. 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.

SPECIAL CONSIDERATIONS FOR PEDIATRIC ANESTHESIA IN OUTPATIENT FACILITIES

1. Wiemer SJ, Nathan JM, Heggestad BT, et al: Safety of outpatient procedural sedation administered by oral and maxillofacial surgeons: The mayo clinic experience in 17,634 sedations (2004 to 2019). J Oral Maxillofac Surg 79:990–999, 2021
2. Fain DW, Ferguson BL, Indresano AT, et al: The oral and maxillofacial surgery anesthesia team model. J Oral Maxillofac Surg 75:1097–1100, 2017
3. Todd DW, Weber CR, Krishnan DG, et al: Oral-maxillofacial surgery anesthesia team model at a crossroads safety in office-based anesthesia – Lessons we can learn from aviation. J Oral Maxillofac Surg 79:1812, 2021
4. Todd DW, Schaefer JJ: The American association of oral and maxillofacial surgeons simulation program. Oral Maxillofac Surg Clin N Am 30:195, 2018
5. American Academy of Pediatric Dentistry. Ad Hoc committee on sedation and anesthesia: Policy on the use of deep sedation and general anesthesia in the pediatric dental office. Adopted 1999. Revised 2004- 2007, 2012. Pediatr Dent 38:94, http://www.aapd.org/media/Policies_Guidelines/P_Sedation1.pdf. Accessed January 5, 2017
6. American Academy of Pediatric Dentistry. Clinical affairs committee: Policy on minimizing occupational health hazards associated with nitrous oxide. Adopted 1987. Revised 1993, 1996, 2000, 2003, 2008, 2013. Pediatr Dent 38:92, http://www.aapd.org/media/Policies_Guidelines/P_NO2Hazards1.pdf. Accessed January 5, 2017
7. American Academy of Pediatric Dentistry. Clinical affairs committee-behavior management subcommittee: Guideline on behavior guidance for the pediatric dental patient. Adopted 1990. Revised 1991, 1996, 2000, 2005, 2006, 2008, 2011, 2015. Pediatr Dent 38:185, http://www.aapd.org/media/Policies_Guidelines/G_BehavGuide1.pdf. Accessed January 5, 2017
8. American Academy of Pediatric Dentistry. Clinical affairs committee-sedation and general anesthesia: Guideline on use of anesthesia personnel in the administration of office-based deep sedation/general anesthesia to the pediatric dental patient. Adopted 2001. Revised 2005, 2007, 2009, 2012. Pediatr Dent 38:246, http://www.aapd.org/media/Policies_Guidelines/G_AnesthesiaPersonnel1.pdf. Accessed January 5, 2017
9. American Academy of Pediatric Dentistry. Council on Clinical Affairs: Guideline on management considerations for pediatric oral surgery and oral pathology. Adopted 2005. Revised 2010, 2014, 2015. Pediatr Dent 38:315, http://www.aapd.org/media/Policies_Guidelines/G_OralSurgery2.pdf. Accessed January 5, 2017

10. American Academy of Pediatric Dentistry. Council on clinical affairs: Guideline on use of local anesthesia for pediatric dental patients. Adopted 2005. Revised 2009, 2015. Pediatr Dent 38:204, http://www.aapd.org/media/Policies_Guidelines/G_LocalAnesthesia2.pdf. Accessed January 5, 2017
11. American Academy of Pediatric Dentistry. Council on clinical affairs: Guideline on use of nitrous oxide for pediatric dental patients. Adopted 2005. Revised 2009, 2013. Pediatr Dent 38:211, http://www.aapd.org/media/Policies_Guidelines/G_Nitrous1.pdf. Accessed January 5, 2017
12. American Academy of Pediatrics. American Academy of pediatric dentistry: Guideline for monitoring and management of pediatric patients before, during, and after sedation for diagnostic and therapeutic procedures: Updated 2016. Adopted 2006. Revised 2016. Pediatr Dent 38:216, http://www.aapd.org/media/Policies_Guidelines/G_Sedation1.pdf. Accessed January 5, 2017
13. Anesthesia and Sedation in the Dental Office. National institutes of health consensus development conference statement. Consensus Statement 5:6. Natl Inst Health Consensus Dev Conf, http://consensus.nih.gov/1985/1985AnesthesiaDental050html.htm. Accessed January 5, 2017
14. Boriosi J, Hollman G: Making the case for use of the pretracheal stethoscope in pediatric procedural sedation. Pediatr Anaesth 26:249, 2016
15. Bosack R, Lieblich S (eds): Anesthesia complications in the dental office. Ames, IA, John Wiley & Sons, Inc, 2014
16. Campbell R: Ambulatory (office) anesthesia complications, *in* Kaban LB, Pogrel MA, Perrott DH (eds): Complications in oral and maxillofacial surgery. WB Saunders, 1997, p 19
17. Cravero JP, Blike GT: Review of pediatric sedation. Anesth Analg 99:1355, 2004
18. Davidson AJ, Disma N, de Graaff JC, et al: Neurodevelopmental outcome at 2 years of age after general anaesthesia and awake-regional anaesthesia in infancy (GAS): An international multicentre, randomised controlled trial. Lancet 387:239, 2016
19. Konig MW, Varughese AM, Brennen KA, et al: Quality of recovery from two types of general anesthesia for ambulatory dental surgery in children: A double-blind, randomized trial. Paediatr Anaesth 19:748, 2009
20. Langhan ML, Shabanova V, Li F, et al: A randomized controlled trial of capnography during sedation in a pediatric emergency setting. Am J Emerg Med 33:25, 2015
21. Lightdale JR, Goldmann DA, Feldman HA, et al: Microstream capnography improves patient monitoring during moderate sedation: A randomized, controlled trial. Pediatrics 117:e1170, 2006
22. Lourenco-Matharu L, Ashley PF, Furness S: Sedation of children undergoing dental treatment. Cochrane Database Syst Rev 14:CD003877, 2012
23. Silegy T, Jacks S: Pediatric oral conscious sedation. J Calif Dent Assoc 31:413, 2003
24. Todd DW: Pediatric sedation and anesthesia for the oral surgeon. Oral Maxillofac Surg Clin North Am 25:467, 2013
25. Trapp LD: Techniques for induction of general anesthesia in the pediatric dental patient. Anesth Prog 39:138, 1992
26. Warwick JP, Mason DG: Obstructive sleep apnea syndrome in children. Anaesthesia 53:571, 1998
27. Winikoff SI, Rosenblum M: Anesthetic management of the pediatric patient for ambulatory surgery. Oral Maxillofac Surg Clin North Am 11:505, 1999
28. Krishnan DG: Anesthesia for the pediatric oral and maxillofacial surgery patient. Oral Maxillofac Surg Clin North Am 30(2):171, 2018
29. Zhou P, Zhang C, Huang G, Hu Y, Ma W, Yu C: The effect of sevoflurane anesthesia for dental procedure on neurocognition in children: A prospective, equivalence, controlled trial. BMC Pediatr 21(1):177, 2021

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

30. American College of Obstetricians and Gynecologists. Committee on Obstetric practice: Nonobstetric surgery during pregnancy. Obstet Gynecol 117:420, 2011
31. Bosack R, Lieblich S (eds): Anesthesia complications in the dental office. John Wiley & Sons, Inc, 2014
32. Cheek TG, Baird E: Anesthesia for nonobstetric surgery: Maternal and fetal considerations. Clin Obstet Gynecol 52:535, 2009
33. Chestnut DH, Wong CA, Tsen LC, et al: Chestnut's Obstetric Anesthesia: Principles and Practice (ed 5). Saunders, 2014
34. Crowley KE: Anesthetic issues and anxiety management in the female oral and maxillofacial surgery patient. Oral Maxillofac Surg Clin North Am 19:141, 2007
35. Fayans EP, Stuart HR, Carsten D, et al: Local anesthetic use in the pregnant and postpartum patient. Dent Clin North Am 54:697, 2010
36. Flynn TR, Susarla SM: Oral and maxillofacial surgery for the pregnant patient. Oral Maxillofac Surg Clin North Am 19:207, 2007
37. Lutes M, Slawter A: Focus On: Emergency airway management in the pregnant patient. ACEP News July 2007, http://www.acep.org/content.aspx?id=26682. Accessed January 5, 2017
38. Ni Mhuireachtaigh R, O'Gorman DA: Anesthesia in pregnant patients for nonobstetric surgery. J Clin Anesth 18:60, 2006
39. Turner M, Aziz SR: Management of the pregnant oral and maxillofacial patient. J Oral Maxillofac Surg 60:1479, 2002

SPECIAL CONSIDERATIONS FOR ANESTHETIC MANAGEMENT OF THE OBESE PATIENT IN OUTPATIENT FACILITIES

40. Atkins M, White J, Ahmed K: Day surgery and body mass index: Results of a national survey. Anaesthesia 57:169, 2002
41. Chacon GE, Viebweg TL, Ganzberg SI: Management of the obese patient undergoing office-based oral and maxillofacial surgery procedures. J Oral Maxillofac Surg 62:88, 2004
42. Chung F, Yegneswaran B, Liao P, et al: STOP questionnaire: A tool to screen patients for obstructive sleep apnea. Anesthesiology 108:812, 2008
43. den Herder C, Schmeck J, Appelboom DJ, et al: Risks of general anesthesia in people with obstructive sleep apnea. BMJ 329:955, 2004
44. Ebert TJ, Shankar H, Haake RM: Perioperative considerations for patients with morbid obesity. Anesthesiol Clin 24:621, 2006
45. Gross JB, Bachenberg KL, Benumof JL, et al: And the American Society of Anesthesiologists task force on perioperative management of patients with obstructive sleep apnea: Practice guidelines for the perioperative management of patients with obstructive sleep apnea: a report by the American Society of Anesthesiologists task force on perioperative management of patients with obstructive sleep apnea. Anesthesiology 104:1081, 2006
46. Ogunnaike B: The morbidly obese patient undergoing outpatient surgery. Int Anesthesiol Clin 51:113, 2013
47. Todd DW: Anesthetic considerations for the obese and morbidly obese oral and maxillofacial surgery patient. J Oral Maxillofac Surg 63:1348, 2005
48. Wadhwa A, Singh PM, Sinha AC: Airway management in patients with morbid obesity. Intl Anesthesiol Clin 51:26, 2013
49. US Department of Health and Human ServicesNational Institutes of Health. National heart, lung, and blood Institute: Facts about sleep apnea, https://www.nhlbi.nih.gov/health/sleep-apnea. Accessed October 29, 2022

SPECIAL CONSIDERATIONS FOR ANESTHETIC MANAGEMENT OF THE GERIATRIC PATIENT IN OUTPATIENT FACILITIES

50. Best practice statement from the American geriatrics Society Expert Panel on postoperative delirium in older adults: Postoperative delirium in older adults. J Am Coll Surg 220:136, http://www.journalacs.org/article/S1072-7515(14)01793-1/pdf. Accessed January 5, 2017

51. Bosack R, Lieblich S (eds): Anesthesia complications in the dental office. John Wiley & Sons, Inc, 2014
52. Muravchick S: Physiologic changes of aging. ASA Refresh Courses Anesthesiol 31:139, 2003
53. Sadean MR, Glass PS: Pharmacokinetics in the elderly. Best Prac Res Clin Anaesthesiol 17:191, 2003
54. Sieber FE, Barnett SR: Preventing postoperative complications in the elderly. Anesthesiol Clin 29:83, 2011
55. Tonner PH, Kampen J, Scholz J: Pathophysiological changes in the elderly. Best Prac Res Clin Anaesthesiol 17:163, 2003
56. Tune LE: Anticholinergic effects of medication in elderly patients. J Clin Psychiatry 62(Suppl 21):11, 2001
57. Vuyk J: Pharmacodynamics in the elderly. Best Prac Res Clin Anaesthiol 17:207, 2003
58. White PF, White LM, Monk T, et al: Perioperative care for the older outpatient undergoing ambulatory surgery. Anesth Analg 114:1190, 2012

LOCAL ANESTHESIA

59. American Academy of Pediatric Dentistry. Council on clinical affairs: Guideline on use of local anesthesia for pediatric dental patients. Adopted 2005. Revised 2009, 2015. Pediatr Dent 38:204, http://www.aapd.org/media/Policies_Guidelines/G_LocalAnesthesia.pdf. Accessed January 5, 2017
60. Cummings DR, Yamashita DD, McAndrews JP: Complications of local anesthesia used in oral and maxillofacial surgery. Oral Maxillofac Surg Clin North Am 23:369, 2011
61. Jastak TD, Yagiela JA, Donaldson D: Local Anesthesia of the Oral Cavity. WB Saunders Co, 1995
62. Malamed SF: Handbook of Local Anesthesia (ed 6). St. Louis, MO, Mosby, 2012
63. Williams JV, Williams LR, Colbert SD, et al: Amaurosis, ophthalmoplegia, ptosis, mydriasis and periorbital blanching following inferior alveolar nerve anaesthesia. Oral Maxillofac Surg 15:67, 2011

MINIMAL SEDATION/MODERATE SEDATION

64. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 1: Executive summary. Circulation 132(18 Suppl 2):S315, 2015
65. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 3: Ethical issues. Circulation 132(18 Suppl 2):S383, 2015
66. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 4: Systems of care and continuous quality improvement. Circulation 132(18 Suppl 2):S397, 2015
67. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 5: Adult basic life support and cardiopulmonary resuscitation quality. Circulation 132(18 Suppl 2):S414, 2015
68. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 6: Alternative techniques and ancillary devices for cardiopulmonary resuscitation. Circulation 132(18 Suppl 2):S436, 2015
69. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 7: Adult advanced cardiovascular life support. Circulation 132(18 Suppl 2):S444, 2015
70. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 8: Post cardiac arrest care. Circulation 132(18 Suppl 2):S465, 2015
71. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 9: Acute coronary syndromes. Circulation 132(18 Suppl 2):S483, 2015
72. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 10: Special circumstances of resuscitation. Circulation 132(18 Suppl 2):S501, 2015
73. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 11: Pediatric basic life support and cardiopulmonary resuscitation quality. Circulation 132(18 Suppl 2):S519, 2015
74. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 12: Pediatric advanced life support. Circulation 132(18 Suppl 2):S526, 2015
75. 2015 American heart association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Part 14: Education. Circulation 132(18 Suppl 2):S561, 2015
76. Adlesic EC: Cardiovascular anesthetic complications and treatment in oral surgery. Oral Maxillofac Surg Clin North Am 25:487, 2013
77. American Academy of Pediatric Dentistry. Council on clinical affairs: Guideline on use of nitrous oxide for pediatric dental patients. Adopted 2005. Revised 2009, 2013. Pediatr Dent 38:211, http://www.aapd.org/media/Policies_Guidelines/G_Nitrous1.pdf. Accessed January 5, 2017
78. American Academy of Pediatric Dentistry. Clinical Affairs Committee. Policy on minimizing occupational health hazards associated with nitrous oxide. Pediatr Dent 38:92, http://www.aapd.org/media/Policies_Guidelines/P_NO2Hazards1.pdf. Accessed January 5, 2017
79. American Association of Oral and Maxillofacial Surgeons (AAOMS): Office Anesthesia Evaluation Manual (ed 8). AAOMS, 2012
80. American Society of anesthesiologists: Mandatory monitoring of CO_2, http://www.capnography.com/new/capnography-introduction/asa-guidelines. Accessed January 5, 2017
81. Inverso G, Dodson TB, Gonzalez ML, et al: Complications of moderate sedation versus deep sedation/general anesthesia for adolescent patients undergoing third molar extraction. J Oral Maxillofac Surg 74:474, 2016
82. Kodali BS: Capnography outside the operating rooms. Anesthesiology 118:192, 2013
83. Langhan ML, Shabanova V, Li FY, et al: A randomized controlled trial of capnography during sedation in a pediatric emergency setting. Am J Emerg Med 33:25, 2015
84. Lightdale JR, Goldman DA, Feldman HA, et al: Microstream capnography improves patient monitoring during moderate sedation: A randomized, controlled trial. Pediatrics 117:e1170, 2006
85. Liu T, Pretty IA, Goodwin M: Estimating the need for dental sedation: Evaluating the threshold of the IOSN tool in an adult population. Br Dent J 214:E23, 2013
86. Task force on sedation and analgesia by non-Anesthesiologists: Practice guidelines for sedation and analgesia by non-anesthesiologists. Anesthesiology 96:1004, 2002

DEEP SEDATION/GENERAL ANESTHESIA

87. Olasveengen TM, Mancini ME, Perkins GD, et al: Adult basic life support: 2020 international Consensus on cardiopulmonary resuscitation and emergency cardiovascular care Science with treatment recommendations. Circulation 142(16_suppl_1):S41–S91, 2020
88. Panchal AR, Berg KM, Hirsch KG, et al: 2019 American heart association focused update on advanced cardiovascular life support: Use of advanced airways, Vasopressors, and Extracorporeal cardiopulmonary resuscitation during cardiac arrest: An update to the American heart association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. Circulation 140(24):e881–e894, 2019

89. Wyckoff MH, Singletary EM, Soar J, et al: 2021 international Consensus on cardiopulmonary resuscitation and emergency cardiovascular care Science with treatment recommendations: Summary from the basic life support; advanced life support; Neonatal life support; education, Implementation, and teams; First Aid task Forces; and the COVID-19 working group. Resuscitation 169:229–311, 2021
90. Maconochie IK, Aickin R, Hazinski MF, et al: Pediatric life support: 2020 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. Resuscitation 156:A120–A155, 2020
91. Adlesic EC: Cardiovascular anesthetic complications and treatment in oral surgery. Oral Maxillofac Surg Clin North Am 25:487, 2013
92. Agarwal R, Porter MH, Obeid G: Common medical illnesses that affect anesthesia and their anesthetic management. Oral Maxillofac Surg Clin North Am 25:407, 2013
93. American Academy of Pediatric Dentistry. Clinical affairs committee-behavior management subcommittee: Guideline on behavior guidance for the pediatric dental patient. Adopted 1990. Revised 1991, 1996, 2000, 2005, 2006, 2008, 2011, 2015, 2018. Pediatr Dent 40(6):254–267, https://www.aapd.org/globalassets/media/policies_guidelines/bp_behavguide.pdf. Accessed October 25, 2022
94. American Academy of Pediatric Dentistry. Use of anesthesia providers in the administration of office-based deep sedation/general anesthesia to the pediatric dental patient. The reference manual of pediatric dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry, 2021. https://www.aapd.org/link/e23cd5aea5424cb7868bbe98bea944f6.aspx. Accessed October 25, 2022
95. American Academy of Pediatric Dentistry. Management Considerations for Pediatric Oral Surgery and Oral Pathology. The Reference Manual of Pediatric Dentistry. American Academy of Pediatric Dentistry, 2021, pp 450–460
96. American Academy of Pediatric Dentistry. Council on Clinical Affairs: Guideline on management considerations for pediatric oral surgery and oral pathology. Adopted 2005. Revised 2010, 2014, 2015. Pediatr Dent 38:315, http://www.aapd.org/media/Policies_Guidelines/G_OralSurgery2.pdf. Accessed October 25th January 5, 20221720172017
97. American Association of Oral and Maxillofacial Surgeons (AAOMS): Office Anesthesia Evaluation Manual (ed 9). AAOMS, 2018. Accessed October 25, 2022
98. American dental association (ADA) guidelines for teaching pain control and sedation to dentists and dental students, 2021. http://www.ada.org/~/media/ADA/Education%20and%20Careers/Files/ADA_Guidelines_Teaching_Pediatr ic_Sedation.pdf. Accessed October 25, 2022
99. American dental association (ADA) and commission on dental accreditation (CODA): Accreditation standards for advanced specialty education programs in oral and maxillofacial surgery, 2022. http://www.ada.org/en/~/media/CODA/Files/aegd. Accessed October 25, 2022
100. American Society of Anesthesiologists (ASA) standards, guidelines and statements can be found at, https://www.asahq.org/standards-and-guidelines. Accessed October 25, 2022
101. American Society of anesthesiologists (ASA): Physical status classification System, https://www.asahq.org/resources/clinical-information/asa-physical-status-classification-system. Accessed January 5, 2017
102. Practice guidelines for preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration: Application to Healthy patients undergoing elective procedures: An updated report by the American Society of anesthesiologists task force on preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration. Anesthesiology 126(3):376–393, 2017
103. American society of anesthesiologists (ASA): Standards for basic anesthetic monitoring, https://www.asahq.org/standards-and-guidelines/standards-for-basic-anesthetic-monitoring. Accessed October 25, 2022
104. Chung WL: Anesthesia equipment for the oral and maxillofacial surgery practice. Oral Maxillofac Surg Clin North Am 25:373, 2013
105. Gan TJ, Belani KG, Bergese S, et al: Fourth consensus guidelines for the management of postoperative nausea and vomiting. Anesth Analg 131(2): 411–448, 2020 [published correction appears in Anesth Analg. 2020 Nov;131(5):e241]
106. Gesek DJ Jr: Respiratory anesthetic emergencies in oral and maxillofacial surgery. Oral Maxillofac Surg Clin North Am 25:479, 2013
107. Giovannitti JA Jr: Pharmacology of intravenous sedative/anesthetic medications used in oral surgery. Oral Maxillofac Surg Clin North Am 25:439, 2013
108. Herlich A: Anesthetic emergencies in oral surgery: Malignant hyperthermia, endocrinopathy, and neurologic events. Oral Maxillofac Surg Clin North Am 25:507, 2013
109. Loyola university medical education network: Pulmonary problems during pregnancy, http://www.meddean.luc.edu/lumen/MedEd/Medicine/PULMONAR/diseases/preg2.htm. Accessed October 25, 2022
110. Malignant Hyperthermia Association of the United States, https://www.mhaus.org/healthcare-professionals/. Accessed October 25, 2022
111. Munnur U, de Boisblanc B, Suresh MS: Airway problems in pregnancy. Crit Care Med 33(10 Suppl):S259–S268, 2005 [published correction appears in Crit Care Med. 2006 Jan;34(1):273]
112. National heart, lung and blood Institute (US): Classification of Overweight and obesity by BMI, waist circumference, and associated disease risks, http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/bmi_dis.htm. Accessed October 25, 2022
113. O'Halloran M: The use of anaesthetic agents to provide anxiolysis and sedation in dentistry and oral surgery. Australas Med J 6:713, 2013
114. Orfanos JG, Quereshy FA: Causes of the difficult airway. Atlas Oral Maxillofac Surg Clin North Am 18:1, 2010
115. Phero JC, Rosenberg MB, Giovannitti JA Jr: Adult airway evaluation in oral surgery. Oral Maxillofac Surg Clin North Am 25:385, 2013
116. Robert RC, Liu S, Patel C, et al: Advancements in office-based anesthesia in oral and maxillofacial surgery. Atlas Oral Maxillofac Surg Clin North Am 21:139, 2013
117. Sims PG: Preoperative, intraoperative, and postoperative anesthesia assessment and monitoring in oral surgery. Oral Maxillofac Surg Clin North Am 25:367, 2013
118. Stronczek MJ: Determining the appropriate oral surgery anesthesia modality, setting, and team. Oral Maxillofac Surg Clin North Am 25:357, 2013
119. Todd DW, Weber CR, Krishnan DG, Egbert MA: Oral-maxillofacial surgery anesthesia team model at a Crossroads safety in office-based anesthesia - Lessons We can Learn from Aviation. J Oral Maxillofac Surg 79(9):1812–1814, 2021
120. Barrett W, Buxhoeveden M, Dhillon S: Ketamine: A versatile tool for anesthesia and analgesia. Curr Opin Anaesthesiol 33(5):633–638, 2020
121. Nolan PJ, Delgadillo JA, Youssef JM, Freeman K, Jones JL, Chehrehsa A: Dexmedetomidine provides fewer respiratory events compared with Propofol and Fentanyl during third molar surgery: A randomized clinical trial. J Oral Maxillofac Surg 78(10):1704–1716, 2020