

TITLE: SEDATION FOR PROCEDURES- MODERATE AND DEEP

MANUAL: CLINICAL POLICY/PROCEDURES MANUAL AND MEDICAL STAFF

POLICY #B3-18

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Approval _____

Anthony Kosinski, MD, Medical Staff President
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I. VALUES CONTEXT

We respect the inherent dignity and worth of every individual.

II. PURPOSE/EXPECTED OUTCOMES

The purpose of this policy is to allow clinicians to provide their patients the benefits of sedation/analgesia while minimizing the associated risks. Sedation/Analgesia provides two general types of benefit:

- 1) It allows patients to tolerate unpleasant procedures by relieving anxiety, discomfort, or pain
- 2) In pediatrics and adults, sedation/analgesia may expedite the conduct of procedures that are not particularly uncomfortable but that require that the patient not move.

It establishes a consistent standard of care for patients receiving either moderate sedation/analgesia or deep sedation/analgesia regardless of the location, procedure performed or personnel. Collectively, moderate sedation/analgesia and deep sedation/analgesia will be referred to herein forward as moderate sedation and deep sedation.

Because sedation is a broad continuum that varies from patient to patient, it is not always possible to predict how an individual 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 should be able to rescue patients who enter a state of deep sedation/analgesia, while those administering deep sedation should be able to rescue patients who enter a state of general anesthesia.

III. POLICY

1. APPLICATION OF POLICY

- A. This policy applies to all patients, including pediatrics, where moderate sedation or deep sedation is administered to facilitate the performance of any therapeutic, diagnostic, or surgical procedure.
- B. This policy does NOT apply to minimal sedation, anxiolysis, or general anesthesia. See Definitions below.

- C. This policy does **NOT** apply to the following:
- 1) Patients who require general anesthesia, have lost protective reflexes and are unable to maintain a patent airway independently.
 - 2) Patients who require therapeutic pain management/chemical restraint.
 - 3) Patients who require sedation to be maintained on a ventilator.
 - 4) Patients who require medication to control seizures.
 - 5) Patients who undergo monitored anesthesia care (MAC) given by an anesthesia provider.
 - 6) Sedation for urgent intubation or establishment of an artificial airway
 - 7) Withdrawal syndromes where individual doses must be titrated to a disease specific response.

2. DEFINITIONS:

Sedation occurs in a dose-related continuum, is variable, and depends on each patient's response to various medications. The organization currently defines four (4) levels of sedation and anesthesia (American Society of Anesthesiologists, 2014) including the following:

- A. **Minimal Sedation (Anxiolysis)** – a medication induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, airway reflexes, and respiratory and cardiovascular functions are unaffected.
- B. **Moderate Sedation/Analgesia (“Conscious sedation”)** – a medication induced depression of consciousness during which patients respond purposefully to verbal commands either alone or accompanied by light tactile stimulation. Moderate Sedation patients often exhibit *eyelid ptosis, slurred speech, and delayed or altered responses to verbal stimuli. This patient still has the ability to give a “thumbs up” in response to verbal or tactile (light tap) stimulation.* No interventions are required to maintain a patent airway and spontaneous ventilation is adequate. Cardiovascular function is usually maintained. Note: Reflex withdrawal from a painful stimulus is NOT considered a purposeful response.
- C. **Deep Sedation/Analgesia** – a medication 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.
- D. **General Anesthesia** – a medication-induced loss of consciousness during which patients are not arousable even by painful stimuli. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway and positive pressure ventilation may be required because of depressed spontaneous ventilation or medication-induced depression of neuromuscular function. Cardiovascular function may be impaired.
- E. **Procedural Sedation** – is defined as the technique of administering sedatives or dissociative agents with or without analgesia to induce a state that allows the patient to tolerate unpleasant procedures while maintaining cardio-respiratory function. (ACEP clinical policy for procedural sedation and analgesia in the emergency department – Annals of Emergency Medicine, 2014).
- F. **Practitioner** – a licensed independent practitioner (LIP) to include but not limited to MD, DO, Nurse Practitioner, Nurse Anesthetist, Physician Assistant.

- G. **Presence** – as used in the statement “*in the presence* of a physician, advanced practice registered nurse, or other healthcare professional” as being physically present at the patient’s bedside or within the confines of the patient’s immediate treatment space.
- H. **Rescue** – 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 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.

3. RESPONSIBILITY FOR CREDENTIALING (Medical Staff and Nursing)

- A. The Chairman of the Department of Anesthesia is responsible for recommending approval of moderate sedation and deep sedation privileges for all members of the Medical Staff. Recommendations for initial granting and renewal of these privileges will follow the procedure outlined in the Medical Staff Bylaws for initial granting and renewal of privileges (approval by the MEC and Board; see Addendum D).
- B. Moderate and deep sedation practices and outcomes shall be monitored and evaluated by the Anesthesia Department.
 - 1) Identified concerns with processes related to the use of sedation will be referred to the appropriate medical staff, administrative committees, and escalation processes.
- C. Nursing Administration will ensure that Registered Nurses (RN) who monitor and administer moderate sedation and/or monitor patients receiving deep sedation, have completed competencies for the safe provision of Procedural Sedation.

4. PERSONNEL

- A. All moderate sedation or deep sedation must be administered under the direct supervision of a licensed practitioner who has clinical privileges for the level of sedation being administered.
 - 1) **ONLY PRACTITIONERS, who are appropriately credentialed, may administer medications with the intent of deep sedation. The RN ONLY monitors and recovers patients who have received deep sedation.**
 - 2) **RNs may only administer medications to a level of moderate sedation.**
- B. Qualified personnel, including the practitioner performing the procedure, shall be present during the procedure. Qualified personnel shall be present to appropriately evaluate and monitor the patient during recovery and discharge of the patient from the post-sedation area.
- C. The RN assigned to monitor the patient during moderate or deep sedation shall not act as an assistant to the practitioner performing the procedure.

D. Sedation Team Members:

- 1) The practitioner performing the procedure and/or ordering the sedation:
 - a) If the intent is Moderate sedation: will be immediately available (1-5 min away)
 - b) If the intent is Deep sedation: remains at the patient's bedside or within the confines of the patient's immediate treatment space.
- 2) A qualified RN or a qualified practitioner that is not performing the procedure:
 - a) Is solely responsible for monitoring the patient throughout the administration of sedation and the recovery process. This qualified individual *should have no other duties.*
- 3) In MRI/CT location:
 - a) If the intent is Moderate sedation: the qualified RN monitors in line of sight of the patient (may be behind the window).
 - b) If the intent is Deep sedation: the practitioner and the qualified RN monitors in line of sight of the patient (may be behind the window).
- 4) Additional practitioner, RN or Tech to assist the practitioner performing the procedure, if assistance is required
- 5) A respiratory care therapist is:
 - a) Required for all procedures involving the administration of deep sedation
 - b) Readily available if requested, for moderate sedation.
 - c) Required in the Emergency Department(ED) for any moderate or deep sedation procedure due to the emergent nature of the ED patient.

E. Qualifications:

- 1) Qualifications for Physicians/Practitioners:
 - a) The practitioner performing the procedure must be privileged for the specific procedure and administration of the appropriate level of sedation. This includes education, training, and experience in the following:
 1. Evaluating patients for sedation procedures
 2. Sufficient knowledge of the pharmacology, indications, and contraindications for the use of sedatives and reversal agents to enable safe administration, and have the ability to recognize and initiate treatment for adverse reactions to those agents.
 - b) *Moderate sedation/analgesia* - Practitioners who have appropriate credentials and are permitted to administer moderate sedation are qualified to rescue patients from deep sedation and are competent to manage a compromised airway and to provide adequate oxygenation and ventilation.
 - c) *Deep sedation/analgesia* – Practitioners who have been appropriately credentialed and are permitted to administer deep sedation are qualified to rescue patients from general anesthesia and are competent to manage an unstable cardiovascular system as well as a compromised airway and inadequate oxygenation and ventilation. Only practitioners who have core privileges in Critical Care Medicine or Emergency Medicine will be granted privileges for administration of deep sedation/analgesia.
 - d) MEDICAL STAFF CREDENTIALING CRITERIA FOR MODERATE SEDATION/ANALGESIA AND DEEP SEDATION/ANALGESIA (See Addendum D).

2) Qualifications for Registered Nurses

- a) The RN must demonstrate current competence in moderate and deep sedation and advanced life support emergency airway and resuscitation measures (ACLS and PALS as appropriate).
- b) The RN responsible for administering moderate sedation and monitoring either moderate or deep sedation must have annual education related to the administration, side effects, and complications of the sedatives, reversal agents including appropriate interventions. Education record and initial competency validation on file.

IV. PROCEDURE

1. PRACTITIONER PRE-PROCEDURE ASSESSMENT AND DOCUMENTATION

- A. Patients presenting for moderate or deep sedation procedures should undergo an abbreviated History and Physical (sometimes called a “short” form) also to include an airway assessment. The patient is evaluated prior to the administration of sedation.
- B. The practitioner directing the administration of the moderate or deep sedation must review and document, before the procedure, relevant aspects of the patient’s medical history which may include:
 - 1) Medical history or abnormalities of pertinent organ systems
 - 2) Current medications
 - 3) Drug allergies and adverse reactions with anesthesia or sedation.
 - 4) Patient acuity is assessed to plan for the appropriate level of post-procedure care. Patient’s physical status assessment and appropriateness of the procedure in view of the patient’s health status (see Addendum B) will be documented. Involvement of Anesthesia Services should be considered for American Society of Anesthesiology (ASA) Class III, IV and V patients, or any patient who may be at increased risk from procedural sedation.
 - 5) Basic Airway Assessment (see Addendum F).
 - 6) Informed Consent for procedure/sedation analgesia is obtained and signed by the Practitioner prior to the administration of moderate or deep sedation.

2. NPO GUIDELINES

- A. Patients undergoing moderate or deep sedation for elective procedures should not drink fluids or eat solid foods for the ASA recommended period of time to allow for gastric emptying prior to their procedure:
 - 1) 2 hours for clear liquids
 - 2) 4 hours for breast milk
 - 3) 6 hours for infant formula
 - 4) 6 hours for non-human milk
 - 5) 8 hours for solid food

Patients may brush their teeth and, if appropriate, take their scheduled medication with a sip of water. The above recommendations apply to healthy patients who are undergoing elective procedures. Patients with a history of gastro-esophageal reflux or other GI motility disorders should be NPO for at least 8 hours prior to procedure.

In urgent, emergent or other situations, the potential for pulmonary aspiration of gastric contents must be considered in determining (1) the target level of sedation, (2) appropriate sedation medication, or (3) whether the procedure should be delayed.

3. LOCATIONS

- A. The primary locations for the use of moderate and/or deep sedation include the following, except in the case where delay would adversely affect the patient:
 - 1) Ambulatory Surgery Center (ASC)
 - 2) ASI
 - 3) Cath Lab/Angio/EP Lab
 - 4) Critical Care Departments
 - 5) Endoscopy
 - 6) Emergency Department
 - 7) Imaging/Interventional Radiology
 - 8) OR
- B. Any procedure requiring moderate or deep sedation will be performed ONLY when qualified personnel and equipment are available.

4. EQUIPMENT

- A. Emergency resuscitation equipment must be available in the patient’s room or procedure area during sedation. Patients shall receive sedation in areas of the facility that can accommodate required monitoring equipment and can provide emergency care. The following emergency equipment will be readily available prior to, during and after the procedure, until the patient is recovered.
 - 1) Emergency crash cart (age appropriate) with reversal agents and defibrillator
 - 2) Ambu-bag with appropriate age/size masks
 - 3) Supplemental oxygen, cannulas, airway adjunct (age appropriate oral and nasal airways)
 - 4) Adequate suction with catheters, Yankauer tips
 - 5) Monitor for ECG, blood pressure, pulse oximeter
 - 6) End-tidal CO2 monitoring is required for both moderate and deep sedation
 - 7) Intravenous (IV) access must be continuously maintained, except for patients receiving sedation via other routes, e.g., intranasal, orally, IM. These patients must have a person skilled in establishing venous access and equipment immediately available.
 - 8) Supplies to administer IV fluids, drugs, blood products available as needed.
 - 9) Telephone
 - 10) Stethoscope

5. MEDICATION ADMINISTRATION

- A. The practitioner supervising the procedure must order the medication and dosage for the initial and continued administration of moderate sedation or deep sedation.
- B. The dosage of medication should be *individualized* according to the patient’s weight, age, medical condition, medical history and patient response to sedation/analgesic medications due to the danger of hypoventilation or apnea.
- C. The sedative and narcotic/opiate drugs should be titrated to effect.
- D. RNs may prepare and administer medications for moderate sedation under the immediate direct supervision of a qualified practitioner.
- E. Validate current height and weight of pediatric patients and calculate correct dosage of reversal agents prior to procedure for potential administration.

- F. **Medications listed below, even if intended for the use of moderate sedation, frequently become deep sedation agents and should receive care consistent with that required for deep sedation.** (See Addendum E – Dosing Guidelines for Procedural Sedation Medications)

The practitioner must be specifically credentialed in deep sedation to administer any of the following medications:

- 1) Propofol IV
- 2) Methohexital IV
- 3) Etomidate IV
- 4) Ketamine IV/IM- (Ketamine IM may be administered by an RN only under the direct supervision of an Anesthesiologist, Emergency Medicine physician, or an Intensivist.)

6. SITE MARKING- See Universal Protocol-Time Out Policy

7. MONITORING/DOCUMENTATION

- A. Immediately prior to the start of the procedure, a member of the sedation team initiates a Time Out: Correct patient (using 2 identifiers), procedure, position, side/site (if applicable), implants and availability of necessary equipment with the patient, practitioner and all members of the procedure team. The procedure is not started until all team members concur with the Time Out and any questions or concerns are resolved.
- B. During the procedure, vital signs (heart rate/rhythm, respiratory rate/quality, blood pressure, oxygen saturation, end-tidal CO₂, pain scale and level of sedation) are to be monitored continuously and documented after every medication administration and at a **minimum of every five (5) minutes**.
- C. Monitoring personnel should immediately report any significant changes in patient status to the practitioner performing the procedure.

8. RECOVERY

- A. A post-sedation note is completed by the practitioner and entered in the medical record.
- B. The qualified RN must monitor the patient from the completion of the procedure until the patient has adequately recovered, as defined by Aldrete Scoring Guidelines (See Addendum A- *Aldrete's Post Anesthesia Recovery Room Scoring*), or discharge to a location with a level of care that is greater or consistent with the current level of care.
- C. The frequency of monitoring should be **every fifteen (15) minutes** until the patient meets discharge criteria.
- D. Patients who have been given a reversal agent, naloxone or flumazenil, must be observed for a **minimum of 2 hours** after the last administration of the reversal agent, in order to discharge the patient. This is to ensure that patients do not become re-sedated after reversal effects have worn off.

9. TRANSFER TO POST-PROCEDURE CARE OR DISCONTINUATION OF THIS PROTOCOL

- A. Stable inpatients will be returned to their specific unit where monitoring is continued as per that unit's nursing standard or practitioner order.
- B. Discharge from the facility as an outpatient:
 - 1) Must meet the Aldrete Score of ≥ 8 or pre-procedure score. Note: All pediatric patients must meet the score of ≥ 10 or pre-procedure score
 - 2) Written physician discharge order
 - 3) Written discharge instructions
 - 4) In the company of an individual who accepts responsibility for the patient
 - 5) Patient will not drive him/herself upon discharge

10. Quality Assurance and Performance Improvement (QAPI):

- A. The Department of Anesthesia will have oversight of the sedation/analgesia program, including practitioner credentialing.
- B. Any adverse outcomes will be reported in the Event Reporting system. A Quality Coordinator will complete a medical record review using the Adverse Outcome Measurement tool available in VERGE and forward to Chief of Anesthesia
- C. Assessment of the program, with data, will be reported through the Performance Monitoring Committees on an annual basis.
- D. The Department of Anesthesia will review Quality data quarterly. The data will be provided by the Performance Improvement Department.
- E. QAPI serves as a framework upon which a comprehensive quality assurance and performance improvement (PI) program is created. The activities of QAPI involve members at all levels of the organization to objectively and systematically plan, assess, and evaluate the quality of patient care and safety as well as to continuously seek and act on opportunities to improve the quality and value to our patients and community. This comprehensive approach will ensure high quality care is proactive, driven by data, addresses gaps in systems and/or processes, implements improvement by continuously monitoring effectiveness of interventions to ensure optimal clinical outcomes.

V. RELATED POLICIES:

Universal Protocol- Time Out Policy

VI. REFERENCES

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**ADDENDA TO POLICY: SEDATION FOR PROCEDURES-
MODERATE AND DEEP SEDATION**

Addendum A

Aldrete's Post Anesthesia Recovery Room Scoring	
Criteria	Definitions
Activity	2 - Able to move 4 extremities 1 - Able to move 2 extremities 0 - Able to move 0 extremities
Respiration	2 - Able to deep breath/cough 1 - Dyspnea or limited breathing 0 - Apneic
Cardiovascular	2 - BP \pm 20% pre-anesthetic level 1 - BP \pm 20-50% pre-anesthetic level 0 - BP \pm 50% pre-anesthetic level
Color	2 - Pink or normal 1 - Pale or dusky 0 - Cyanotic
Moderate/deepness	2 - Fully awake 1 - Arousable on calling 0 - Not responding
Additional Aldrete's Score Criteria for Pediatric Patients	
Criteria	Definitions
Only pediatric patients must score an additional 2 points to meet discharge criteria.	2 - < 12 months of age – strong cry 3 - > 12 month of age – awake, verbally responsive and strong cry 1 - Drowsy, weak cry 0 - Not responsive

Addendum B

ASA CLASSIFICATION

<u>The ASA Physical Status Classification System</u>	
Classification	Definitions
I	A normal healthy patient
II	A patient with mild systemic disease
III	A patient with severe systemic disease
IV	A patient with severe systemic disease that is a constant threat to life
V	A moribund patient who is not expected to survive without the operation

Source: ASA Physical Status Classification System. (2014). American Society of Anesthesiologists.

Addendum C

SEDATION SCORE

<u>Sedation Score during procedure</u>	
Criteria	Definitions
0	Alert
1	Occasionally drowsy, easy to arouse with verbal stimuli
2	Frequently drowsy, arouses to tactile stimuli
3	Somnolent, difficult to arouse, arouses to vigorous/painful stimuli
4	Unresponsive

Source: ASA Physical Status Classification System. (2014). American Society of Anesthesiologists.

Addendum D**MEDICAL STAFF CREDENTIALING CRITERIA FOR MODERATE SEDATION/
ANALGESIA AND DEEP SEDATION/ANALGESIA****CRITERIA FOR PRIVILEGING FOR MODERATE SEDATION/ANALGESIA****I. GRANTING OF PRIVILEGES AT THE TIME OF INITIAL CREDENTIALING FOR
MODERATE SEDATION/ANALGESIA**

- Read the policy: “Sedation for Procedures- Moderate and Deep”.
- Sign a statement agreeing to abide by the policy.
- Read the Learning Module and pass exam-demonstrating knowledge about moderate sedation/analgesia.
- Be recommended for approval by the Chairperson of the Department of Anesthesia.

RENEWAL OF MODERATE SEDATION/ANALGESIA PRIVILEGES

- Review the policy: “Sedation for Procedures-Moderate and Deep”, for any revisions or changes that may have occurred.
- Sign a statement agreeing to abide by the policy.
- Perform procedural sedation on at least 10 patients in the past 24 months or retake and pass the procedural sedation test.
- If no procedures have been performed during the last two years, successfully complete the learning module and examination.

**II. GRANTING OF PRIVILEGES AT THE TIME OF INITIAL CREDENTIALING FOR DEEP
SEDATION/ANALGESIA**

- Deep sedation/analgesia may be provided only by practitioners with core privileges in, Critical Care or Emergency Medicine and who have been granted moderate sedation/analgesia privileges.
- Maintenance of core privileges in these specialties indicates the practitioner’s ability to manage an airway, including endotracheal intubation and management of hemodynamic instability.

RENEWAL OF DEEP SEDATION/ANALGESIA PRIVILEGES

- Review the policy: “Sedation for Procedures-Moderate and Deep”, for any revisions or changes that may have occurred.
- Renewal of deep sedation/analgesia privileges may be granted to those practitioners who have maintained core privileges in Critical Care or Emergency Medicine and who have met the criteria for renewal of moderate sedation/analgesia privileges.
- The practitioner must have demonstrated the ability to manage an airway that might require endotracheal intubation and provide advanced life support.

Addendum E

Dosing Guidelines for Moderate and Deep Sedation Medications

Drug	IV dosing		Onset	Peak	Duration	Clinical Considerations
	Pediatric	Adult				

Opioids – May alter hemodynamics, may cause bradycardia &/or GI upset

Fentanyl (Sublimaze)	<u>Initial:</u> 1-2 mcg/kg/dose Slow (1-2 min) <u>Titrate:</u> Half original dose every 3-5 min	<u>Initial:</u> 0.5-1 mcg/kg Slow (1-2 min) <u>Titrate:</u> 0.5 mcg/kg every 2 min	30-60 sec	20 min	30-60 min	<u>Admin 3 min before procedure;</u> May cause: seizures and resp. paralysis related to speed of injection
Morphine	<u>Initial:</u> 0.05-1 mg/kg slow <u>Titrate:</u> 0.02-0.05 mg/kg every 5-10 min	<u>Initial:</u> 3-4 mg slow <u>Titrate:</u> 1-2 mg every 5-10 min	5 min	20 min	3-4 hr	May cause local histamine release (flushing & itching)
<u>Reversal Agent</u> Naloxone (Narcan)	0.01 mg/kg for children < 20 kg <u>May repeat every</u> <u>2-3 min prn</u> Recovery must	0.04-0.1 mg prn <u>May repeat every</u> <u>2-3 min prn</u> be a minimum	< 2 min 2 hrs	5-15 min after	15-60 min last dose	Opioid may outlast Naloxone duration, repeated doses often necessary

Benzodiazepines

Midazolam (Versed)	<u>Initial:</u> 0.05-1mg/kg/dose over 5 min Max single dose= 2mg <u>Titrate:</u> 0.025 mg/kg every 5 min	<u>Initial:</u> 1-2mg Max single dose= 2.5mg Elderly= 1.5mg <u>Titrate:</u> 0.5-2 mg every 5 min	2-3 min	3-5 min	30 min doubled in elderly and obese (< 2 hr)	Large interpatient variability
<u>Reversal Agent</u> Flumazenil (Romazicon)	0.01 mg/kg for children < 20 kg <u>Max dose= 1mg</u> Recovery must	0.1-0.2 mg over 10-15 sec Repeat at 60 sec intervals ≤ 1 mg, ≤ 3 mg in 1 hr period <u>Max dose= 5mg</u> be a minimum	1-3 min 2 hrs	6-10 min after	30-45 min (< 60 min) last dose	Benzodiazepines may outlast Romazicon duration, repeated doses often necessary

Barbiturates

Methohexital (Brevital) For DEEP SEDATION ONLY. Physician must have Deep privileges	<u>Initial:</u> 0.5-1 mg/kg up to 40 mg/dose <u>Titrate:</u> 0.5 mg/kg every 2-5 min to effect	<u>Initial:</u> 1 mg/kg up to 50 mg/dose <u>Titrate:</u> 0.5 mg/kg every 2-5 min to effect	10-20 sec	45 sec	5-10 min (10-60 min) dose dependent	Do not infuse faster than 50 mg/min, twitching & myoclonus often mistaken for seizures
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Addendum E

Dosing Guidelines for Moderate and Deep Sedation Medications (Cont.)

Drug	IV Dosing		Onset	Peak	Duration	Clinical Consideration
	Pediatric	Adult				
Hypnotics						
Propofol (Diprivan) For DEEP SEDATION ONLY. Physician must have Deep privileges	<u>Initial:</u> 6mo to 2 yrs old= 1-2mg/kg 2yrs and older= 0.5-1mg/kg <u>Titrate:</u> desired response	<u>Initial:</u> 0.5-1mg/kg over 1-2min <u>Titrate:</u> 0.5mg/kg every 3-5 min to desired response	< 40 sec	1 min	8-10 min	Hypotension, Contraindicated with allergy to eggs or soybean oil
	Etomidate (Amidate) For DEEP SEDATION ONLY. Physician must have Deep privileges	<u>Initial:</u> 0.1-0.3 mg/kg <u>Titrate:</u> 0.05mg/kg every 3-5min	<u>Initial:</u> 0.1-0.15 mg/kg <u>Titrate:</u> 0.05mg/kg every 3-5min	30-60 sec		15 min
Dissociative Anesthetics						
Ketamine For DEEP SEDATION ONLY. Physician must have Deep privileges	<u>Initial:</u> 1-1.5 mg/kg <u>Max single dose =</u> <u>100mg.</u> <i>Reduce dose to</i> <i>0.5mg/kg if also</i> <i>giving propofol</i> <u>Titrate:</u> 0.25-0.5 mg/kg every 5-10 min	<u>Initial:</u> 1-2 mg/kg Slow (1-2min) <u>Titrate:</u> 0.25-0.5 mg/kg every 5-10 min	1-2 min	2-3 min	15-30 min	Creates "trance- like" state, may cause increased ICP, produces heavy secretions, emergence delirium, double vision, nystagmus
	IM Dosing 2-4 mg/kg		3-4 mg/kg	2-5 min	5-10 min	15-45 min

***Note: This is a reference tool. For specific details, please refer to Up to Date.**

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Addendum F**Example of Airway Assessment Procedures for Sedation and Analgesia**

Positive pressure ventilation, with or without endotracheal intubation, may be necessary if respiratory compromise develops during sedation/analgesia. This may be more difficult in patients with atypical airway anatomy. Also, some airway abnormalities may increase the likelihood of airway obstruction during spontaneous ventilation. Factors that may be associated with difficulty in airway management are:

History

Previous problems with anesthesia or sedation

Stridor, snoring, or sleep apnea

Dysmorphic facial features (e.g., Pierre-Robin syndrome, trisomy 21)

Advanced rheumatoid arthritis

Physical Examination

Habitus

Significant obesity (especially involving the neck and facial structures)

Head and Neck

Short neck, limited neck extension, decreased hyoid-mental distance (<3 cm in an adult), neck mass, cervical spine disease or trauma, tracheal deviation

Mallampati Score

Mouth

Small opening (<3 cm in an adult); edentulous; protruding incisors; loose or capped teeth; high arched palate; macroglossia; tonsillar hypertrophy; non-visible uvula

Jaw

Micrognathia, retrognathia, trismus, significant malocclusion

Source: Practice Guidelines for Sedation and Analgesia by Non-Anesthesiologist. Anesthesiology (2002).