



John Muir Medical Center, Concord Campus
John Muir Medical Center, Walnut Creek Campus

MODERATE SEDATION: A PHYSICIAN TUTORIAL

Introduction:

The Joint Commission has mandated new moderate sedation guidelines, requiring non-anesthesiologists to demonstrate competence in patient monitoring and in the administration of sedatives and narcotics. The reasoning behind the new guidelines is that according to a large national study, the complication rates associated with moderate sedation by non-anesthesiologists are higher than rates associated with anesthesia given by anesthesiologists and anesthesia care teams.

Moderate Sedation is a state achieved by administration of medication to produce a controlled state of depressed consciousness. This involves the proper administration of drugs to obtund, dull or reduce the intensity of pain and awareness without loss of protective reflexes. Moderate Sedation of the patient is generally achieved when there is slurred speech but the patient is arousable and is able to respond.

The tutorial is organized as follows:

- Patient safety standards
- Sedative and narcotic properties and use
- Basic airway management
- Avoiding pitfalls
- A self study test

Patient Safety Standards:

Oxygen. If pre-procedure oxygen saturation is less than 95%, the patient receiving moderate sedation should have supplemental oxygenation. Pulse oximetry has demonstrated how quickly patients desaturate when given these drugs.

Pulse Oximetry. The biggest advance in monitoring and patient safety in recent years has been continuous pulse oximetry. Once patients are on the steep part of the oxygen-hemoglobin dissociation curve (around an oxygen saturation of 90%), they desaturate quickly. An alarm setting of 92% is therefore recommended. Pulse oximetry must be utilized on all patients receiving moderate sedation.

Respirations. Oximetry is not a substitute for periodic observation of the frequency and pattern of respirations. Patients will obstruct their airways several seconds before their oxygen saturations begin dropping. During and for a few minutes after administration of moderate sedation drugs are particularly useful times to observe or auscultate respirations.

ECG. Continuous ECK monitoring must be utilized on all patients receiving moderate sedation except for pediatric patients younger than 12 years without cardiopulmonary disease. Bradycardia and arrhythmias may occasionally occur with moderate sedation.

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Blood Pressure. This must be monitored at regular intervals as outlined in the moderate sedation policy because blood pressure often drops when moderate sedation agents are given, especially in dehydrated patients.

Intravenous Access. An IV line should be established on all patients, except for selected pediatrics cases, in which case personnel competent in securing pediatric IV access should be readily available.

Airway Supplies and Crash Cart. These items should be available, including suction and a ventilation bag and mask.

NPO Time. Current recommendations of the American Society of Anesthesiologists are as follows: no solid food or milk for 6-8 hours, but clear liquids are acceptable up to 2 hours prior to the procedure. Clear liquids actually help empty gastric acid from the stomach.

Trained personnel. An RN trained in ACLS and competent in basic emergency airway management must be in attendance during the procedure.

Sedatives, Narcotics and their Antagonists.

Drugs commonly used for moderate sedation are midazolam (Versed), diazepam (Valium), fentanyl (Sublimaze), morphine and meperidine (Demerol). When used intravenously, avoid the temptation to give too much too fast: all these drugs should be given incrementally, with enough time between each dose to allow for peak effect. Shorter acting agents such as midazolam and fentanyl may have to be repeated 20 to 30 minutes into the procedure. Recommended dose information is given in the Appendix to the Moderate Sedation Policy. A copy of the policy is included for your review.

Naloxone (Narcan) is a narcotic antagonist, and flumazenil (Romazicon) is a benzodiazepine antagonist. Both of these should be on hand during the administration of moderate sedation.

Diazepam. This drug is an excellent anxiolytic and mild amnestic. Severe liver disease and cimetidine will prolong its action. It is much less expensive than its potent cousin, midazolam, Diazepam can cause burning on injection, but this can be minimized by mixing it with 1 cc of 1% lidocaine (don't worry about the cloudy appearance) and injecting it into a freely-flowing IV.

Midazolam. This drug is two to four times as potent as diazepam. Its onset is rapid and duration of action shorter than diazepam's. Its amnesic effects can be marked. It is an excellent anxiolytic for children given orally or rectally, but should be given by personnel competent to handle pediatric airway and cardiopulmonary problems.

Fentanyl. This synthetic narcotic is very useful because its onset of action is much faster than morphine or meperidine. It is 100 times as potent as morphine. It will slow the respiratory rate, and cause mild bradycardia, itching and flushing. In large doses, its duration of action is prolonged, because fat acts as a reservoir for it. This is not generally a problem with doses used for moderate sedation.

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Morphine. Morphine's onset is slow (peak effect 20 minutes) and duration of action 3 to 4 hours. Side effects are similar to fentanyl's, in addition to nausea when patients are upright. It has a less potent metabolite, morphine glucuronide, which can accumulate in renal disease. In large doses it can cause hypotension.

Meperidine. This is about a tenth as potent as morphine. It is a synthetic narcotic structurally related to atropine (The Germans discovered it while working on an antidote for nerve gas during WWII), and can cause a mild tachycardia. It has an active metabolite, normeperidine, which can accumulate in renal failure, or when large doses are given, and can cause seizures. Meperidine should not be given to patients taking MAOI's.

Pediatric Sedation. Pediatric sedation should be administered by personnel competent to handle pediatric airway and cardio-pulmonary problems. Commonly used drugs are listed in the attached Moderate Sedation Policy.

Naloxone. This is a very effective narcotic antagonist. It should be used after stimulating the patient and clearing the airway have been attempted. The usual adult dose is 0.1 mg (1/4 cc) given every 1 to 3 minutes, to improve ventilation. Larger doses can cause pulmonary edema, or coronary ischemia if patients are undergoing painful procedures. Its duration of action is short, and it may have to be repeated every 20 to 30 minutes.

Flumazenil. It is an effective benzodiazepine antagonist. The usual adult dose is 0.2 mg given over 15-30 seconds, and can be repeated every 1 to 2 minutes. Since it can cause seizures, the maximum recommended dosage is 1 mg per hour. As with naloxone, try stimulation and airway manipulation first.

Agents used for moderate sedation by anesthesiologists only:
Thiopental, IV methohexital, alfentanil, propofol and sufentanil.

Airway Management

It is surprising how easily patients obstruct their airways after modest doses of moderate sedation drugs. They may still make ventilatory efforts, but won't be moving any air. If you are adequately sedating your patients, you should expect some mild airway obstruction much of the time, which is easily remedied. This is most likely to occur before the stimulus of the procedure has begun. A gentle jaw thrust or turning the head to one side is often all that is needed until the stimulus begins. In rare cases, bag and mask ventilation with a firm jaw thrust or an oral or nasal airway must be used, until antagonistic drugs take effect.

Remember, and O₂

Sat. of 90% is only a PaO₂ of 60.

Avoiding Pitfalls

Sleep Apnea. Sedation in a patient with sleep apnea is very dangerous and extreme care should be utilized when administering sedatives and/or narcotics. It is not uncommon for an individual with sleep apnea to become apneic with the smallest

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dose of medication. The vast majority of sleep apnea patients are undiagnosed. The typical patient with sleep apnea is male, overweight and over the age of 40, but it also occurs in both sexes, thin individuals and in all age categories. Children with tonsillar hypertrophy are also at risk. Patients that are going to have moderate sedation should be asked about snoring, falling asleep easily or unexpectedly during the day, feeling groggy on awakening and if anyone has ever told them that they stop breathing in their sleep. Any of these symptoms should make one suspicious of sleep apnea and lead one to seriously reevaluate the sedation plan. Lower than usual doses of medications should be administered and increased vigilance of respiratory rate, airway patency and oxygen saturation should be employed.

Elderly Patients. In general, the elderly require lower doses of the moderate sedation drugs, due to reduced liver blood flow and other factors. The recovery time is also prolonged. Titrating drugs to effect, and using shorter acting agents if repeat doses are given, are recommended.

Liver Disease. All the moderate sedation drugs will have a prolonged effect in patients with severe liver disease (cirrhosis, acute hepatitis) Short-acting agents are recommended.

Other patient factors. Unless you are accustomed to dealing with patients who have significant cardiac or respiratory dysfunction, you should avoid doing moderate sedation in such patients (unstable angina, oxygen-dependency, uncompensated CHF). Morbid obesity, sleep apnea, and pregnancy also require special considerations. The effects of moderate sedation drugs will be exaggerated in patients already taking sedatives or analgesics, and cimetidine and certain antipsychotics will amplify the effects of moderate sedation drugs. With dehydration or sepsis, the hypotensive effects of these drugs can be pronounced, especially if patients are upright.

If you have reservations about sedating a particular patient, feel free to contact the appropriate specialist for input before beginning the procedure. Anesthesiologists are quite familiar with moderate sedation drug usage in a wide variety of patients and are happy to be of assistance.



Subject: PC - Moderate and Deep Sedation				
Applies to: upon approval by the applicable governing body(ies)	<input checked="" type="checkbox"/>	John Muir Medical Center – Concord	<input checked="" type="checkbox"/>	John Muir Medical Center – Walnut Creek
	<input type="checkbox"/>	John Muir Physician Network	<input type="checkbox"/>	John Muir Health Behavioral Health Center
	<input type="checkbox"/>	John Muir Health and all entities		

I. Purpose:

To provide the optimal level of care and safety for all patients receiving Moderate and Deep Sedation.

Definitions:

Anesthesia: Consists of general anesthesia and spinal or major regional anesthesia. It does *not* include local anesthesia. General anesthesia is a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired. May only be given by an Anesthesiologist.

Anesthesia and sedation: The administration to an individual, in any setting, for any purpose, by any route, moderate or deep sedation as well as general, spinal, or other major regional anesthesia. Because sedation to anesthesia is a continuum, it is not always possible to predict how a patient receiving medication with the intent to achieve sedation will respond. The patient may progress to different levels based on the patient’s response to the medications administered. Definitions of four levels of sedation and anesthesia include the following:

Minimal sedation (anxiolysis): A drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected. Minimal sedation is administered for the reduction of anxiety and pretreatment of potential pain and is excluded from this policy. In this stage the patient exhibits the following:

- Normal respirations

- Normal eye movement
- Normal cardiovascular function
- Intact protective reflexes
- Awake level of consciousness (The patient responds normally to verbal commands. Cognitive function and coordination may be impaired.)
- Amnesia may or may not be present

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

Moderate Sedation ("conscious sedation"): A drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation. Reflex withdrawal from a painful stimulus is not considered a purposeful response. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained. In this stage the patient exhibits the following:

- Able to maintain protective reflexes
- Able to maintain a patent airway independently and continuously
- Able to maintain spontaneous ventilation
- Able to respond appropriately to verbal commands (i.e. "open your eyes") and physical stimuli
- Cardiovascular function is usually maintained

II. Policy:

A. Locations for the administration of Moderate Sedation may include but are not limited to:

1. Emergency Department
2. Critical Care Units
3. Definitive Care / Progressive Care Units
4. Endoscopy
5. Birth Center and Intensive Care Nursery (Walnut Creek Campus)
6. Surgical Services
7. Diagnostic and Interventional Radiology, Angiography, Special Procedures
8. CT, Neuroscan
9. Clinical Decision Unit (CDU) – Walnut Creek campus
10. Cardiac Cath Lab which includes Electrophysiology Procedures
11. In unusual situations, Moderate Sedation may be performed in other areas as long as the policy and procedures are met, as they pertain to personnel, patient monitoring, documentation, equipment and emergency response.

B. Department of Anesthesiology has oversight responsibility for Moderate and Deep Sedation. Physicians administering Moderate Sedation must be qualified to manage patients at whatever level of sedation or anesthesia is achieved, either intentionally or unintentionally. Included in the qualifications of physicians providing moderate sedation are competency-based education, training and experience in:

1. Evaluating patients prior to ordering and administering Moderate Sedation
2. Performing the administration of Moderate Sedation to include methods and techniques required to rescue those patients who unintentionally slip into a deeper-than-desired level of sedation or analgesia. Specifically, Practitioners who are privileged to administer Moderate Sedation are qualified to rescue patients from general anesthesia, and are competent to manage a compromised airway and to provide adequate oxygenation and ventilation.

C. Physicians administering Deep Sedation must be qualified to manage patients at whatever level of sedation or anesthesia is achieved, either intentionally or unintentionally. Included in the qualifications of physicians providing deep sedation are competency-based education, training and experience in:

1. Evaluating patients prior to ordering and administering deep sedation.

Performing the administration of deep sedation to include methods and techniques required to rescue those patients who unintentionally slip into a deeper-than-desired level of sedation or analgesia. Specifically, Practitioners who are privileged to administer deep sedation are qualified to rescue patients from general anesthesia and are competent to manage a compromised airway and to provide adequate oxygenation and ventilation.

2. **Any physician outside the Emergency Department who administers and monitors deep sedation must be dedicated to that task; therefore, the practitioner who administers and monitors deep sedation must be different from the individual performing the diagnostic and/or therapeutic procedure.**
3. **The Emergency Department physician administering deep sedation may perform the diagnostic and/or therapeutic procedure with another physician, mid-level provider or a Registered Nurse and Respiratory Therapist in attendance.**

D. **An anesthesiologist will be present for the administration and monitoring of moderate and deep sedation for pediatric patients under the age of twelve (12) with the exception of the Pediatric Intensive Care Unit , Emergency Department and other designated locations where a Board Eligible/ Board Certified Physician in Pediatric Critical Care Medicine with John Muir Health (JMH) sedation privileges is performing the sedation. Patients 13-18 years of age will be considered on an individual basis per physician preference. In addition, the following will be assessed for pediatric patients:**

1. Patient size
2. Developmental age
3. Potential for airway complications
 - a. Mallampati Classification greater than 3
 - b. Cranio-facial malformations

Pediatric medication dosing: see Appendix B

Pediatric moderate and deep sedation guidelines: see Appendix E

E. Excluded from this policy are:

1. Patients receiving Minimal Sedation for the reduction of anxiety and pretreatment of potential pain.
2. Patients who are American Society of Anesthesiology (ASA) Class 4 or higher are not appropriate candidates for Moderate Sedation in the absence of an anesthesiologist or second physician privileged to perform Moderate Sedation. (See Appendix A)
3. Patients receiving Anesthesia as defined in the “Definitions” of this policy.
4. Drugs ordered for patients during intubation, while on ventilators and administered in the critical care setting, are done so per critical care standards.

F. Adequate Numbers of Personnel:

1. Sufficient numbers of qualified competent personnel (in addition to the Licensed Independent Practitioner performing the procedure) will be present for all procedures using Moderate/Deep Sedation.
2. Qualified individuals include physicians, registered nurses **and respiratory therapist. A qualified physician has been granted privileges as displayed on the John Muir Health Medical Staff Physicians Directory.**
3. One registered nurse (or a second physician not involved in the procedure) must have the primary responsibility of monitoring the patient’s vital signs and level of consciousness.
4. **In the Emergency Department, a respiratory therapist will provide continuous airway monitoring during administration of deep sedation.**
5. Due to the importance of managing the sedated patient, a second person is required to assist the physician with those procedures that are complicated either by the severity of the patient’s illness and/or the complexity of the technical requirements associated with the advanced diagnostic and therapeutic procedures.

6. Post procedure staffing must be adequate to allow consistent monitoring and care for all patients during the recovery period as outlined in the "Procedure" section G.

G. Responsibilities for Moderate/Deep Sedation

1. Physician Responsibilities:

- a. Has primary responsibility for managing patients requiring Moderate/Deep sedation
- b. Standard ASA NPO guidelines should be followed. See Appendix C for ASA pre procedure fasting guidelines for elective procedures
- c. Will review the History & Physical for accuracy and timeliness
- d. Will perform the pre-anesthesia evaluation immediately prior to surgery or a procedure requiring deep sedation
- e. Will perform a Pre-sedation assessment, including airway evaluation
- f. Is responsible for documenting the indications for the procedure
- g. Is responsible for documenting the plan for sedation.
- h. Will inform and document discussion with the patient regarding the risks, benefits and alternatives for the procedure and risks, benefits and alternatives to the sedation planned
- i. A signed consent for appropriate procedure(s) and for Moderate/Deep Sedation will be obtained
- j. Is responsible for determining and documenting the patient's ASA class
- k. Will perform the Pre-Induction assessment
- l. Is responsible for ordering the medication including dose and route (See appendices B1 and B2)
- m. Is responsible for knowing the pharmacokinetics of the drugs typically used for moderate sedation and potential effects on vital functions
- n. Will be in attendance throughout the procedure and sedation of patients
- o. Is responsible for managing the patient and airway if they transition from moderate to deep sedation
- p. Will provide procedural reports written or dictated immediately after the procedure. If dictated, a **brief note will be completed** that includes:
 - 1) name of the primary procedural physician and assistants
 - 2) findings
 - 3) technical procedures used
 - 4) specimens removed, if any
 - 5) estimated blood loss (presumed to be zero unless noted)

- 6) post-procedure diagnosis
 - q. Must write post procedure orders
2. Registered Nurse Responsibilities:
- a. Perform Pre-Sedation Nursing Assessment
 - b. Follow Universal Protocol
 - c. Establish IV access **and administer sedation medications as ordered by physician and verified with another Registered Nurse, physician or pharmacist**
 - d. Continuously monitor and assess patient throughout sedation procedure and recovery period
 - e. Report changes in patient condition to Physician
 - f. Maintain procedure record
 - g. Provide discharge teaching
 - h. Assess the availability and appropriateness of transportation following the procedure
 - i. Discharge patient
3. Registered Nurse Competencies:
- a. Airway Management including Bag/Mask Ventilation
 - b. Medication Administration including the use of reversal agents
 - c. Provider status:
 - 1) Adult patients – ACLS certification
 - 2) Pediatric patients – PALS or ENPC provider **without anesthesia present**
 - 3) Neonates – NRP provider **preferred (applies NICU, OR and ED RNs)**
 - d. Use of monitoring equipment (Pulse Oximeter, **end tidal CO2 when indicated**, NIBP, ECG monitor)
 - e. Recognition of physiologic changes in the patient condition
 - f. Responding to physiologic changes in patient condition
 - g. Documentation Requirements
 - h. Registered Nurses receive education through unit-based competency and sedation education module
 - i. Nursing competency is documented as part of the annual nursing evaluation process

4. **Respiratory Therapist Responsibilities:**

- a. **Monitoring and assessment of airway patency/function including bag/mask ventilation**
- b. **Oxygen administration**
- c. **Delivery of aerosolized medications, if indicated**
- d. **Mechanical ventilation, if required**
- e. **Documentation**

5. **Respiratory Therapist Competency:**

- a. **Intubation assist**
- b. **Ventilator management**
- c. **Techniques for administration of aerosolized medication**

6. **Additional Considerations**

A pre-procedure screening **ECG** should be considered for all patients >50 years of age, and all ASA Class III and IV patients.

III. Procedure:

A. Procedures which may require moderate sedation include but are not limited to:

1. Cardioversion
2. Insertion of invasive hemodynamic monitoring lines
3. Endotracheal intubation
4. Transesophageal echocardiography
5. Percutaneous Coronary Intervention
6. Invasive Endoscopy procedures
7. Bronchoscopy
8. Cardiac Device Implants
9. Electrophysiology and ablation procedures
10. Interventional radiology procedures

B. Procedures which may require deep sedation include but are not limited to:

1. Hip/shoulder dislocation
2. Fracture Reduction
3. Significant abscess drainage

C. Pre-Sedation Assessment

1. Before the administration of any sedation the following will be addressed and documented in the chart:

- a. Indications for the procedure
- b. Current Medications
- c. Allergies
- d. Vital signs (BP, HR, RR, O₂ Sat, **Cardiac rhythm strip**)
- e. Level of consciousness
- f. Pain score
- g. Assignment of the pre-procedure Modified Aldrete Score by nursing staff
- h. Patient stated or actual weight
- i. Evidence of verification of compliance with the NPO status
- j. Prior history of sleep apnea
- k. Prior history of esophageal reflux
- l. Previous response to anesthesia and/or sedation
- m. Plan for sedation is documented by the treating physician
- n. A review of abnormalities of the major organ systems, with a focused physical examination including vital signs, auscultation of the heart and lungs, and assessment of the airway
- o. Assignment and documentation of ASA Score by the treating physician
- p. Baseline health history and physical assessment
- q. Patient acuity is assessed to plan for the appropriate level of post procedure care
- r. For operative or invasive procedures, the site, patient, and procedure are accurately identified and communicated prior to administration of sedation
- s. Comprehensive Airway Assessment to be conducted by physician which includes:
 - 1) Internal inspection
 - (a) Oral Cavity inspection
 - (b) Temporomandibular joint
 - (c) Mallampati scale
 - 2) External
 - (a) Prior surgery or radiation
 - (b) Neck mobility
 - (c) A-O extension
 - 3) Obese Criteria
 - (a) Obese (BMI >35 kg/m²)
 - (b) Bearded

- (c) Elderly (>55 y.o.)
 - (d) Snorers
 - (e) Edentulous
- t. For patients with any of the following, consider consultation with an anesthesiologist prior to moderate or deep sedation
- 1) ASA equal or > 3
 - 2) Malampati classification >
 - 3) Cranio-facial Malformations
 - 4) Body mass index > **36**
 - 5) Airway obstruction
 - 6) Severe snoring (obstructive sleep apnea)
 - 7) Poorly controlled asthma
 - 8) Chronic pulmonary problems
 - 9) Poorly controlled gastroesophageal reflux
 - 10) Failed sedation history
 - 11) Polypharmacy history
 - 12) Complex/ new procedure requiring greater than normal concentration/vigilance
- u. **Assess patient's risk for aspiration of gastric contents as described in the ASA Practice Guidelines for Preoperative Fasting. In urgent, emergent, or other situations where gastric emptying is impaired, the potential for pulmonary aspiration of gastric contents must be considered in determining:**
- 1) **The target level of sedation**
 - 2) **Whether the procedure should be delayed**
 - 3) **Whether the sedation care should be transferred to an anesthesiologist for the delivery of general anesthesia with endotracheal intubation**
2. Venous access will be established for all cases using IV medications.
3. The RN and/or Physician will perform patient and family teaching. This will include:
- a. Review of the pain scale and the patient's responsibility to inform staff of their pain status and any unexpected changes they might experience
 - b. Orienting the patient to the procedure area and equipment
 - c. Review of the discharge instructions

D. Pre-Induction Assessment

The attending physician performs a pre-induction patient assessment, incorporating Vital signs and O₂ sat, which are obtained and reported to the physician immediately before the administration of Sedation. This assessment, including pre-induction vital signs, must be documented in the patient's record.

E. Required supplies/equipment/medications

1. The following needs to be available in the procedure room:

- a. Supplemental Oxygen (nasal cannula, masks, connecting equipment) and positive pressure ventilation equipment
- b. **Emergency airway equipment (oral and nasal airways, self-inflating resuscitation bag)**
- c. Monitoring equipment (**ECG, noninvasive blood pressure, pulse oximetry, end tidal CO₂ monitor when indicated**)
- d. Suction equipment

2. The following needs to be immediately available:

- a. Crash cart with defibrillator **and laryngoscope with blades**
- b. Reversal agents as appropriate for the medication(s) administered

3. During the procedure

Oxygenation, ventilation and circulation will be continuously monitored, assessed and documented:

- a. **Continuous ECG** monitor
- b. Pulse Oximetry
- c. **End tidal CO₂ should be considered for all patients receiving deep sedation and for patients whose ventilation cannot be observed during moderate sedation (e.g. surgical drape obscures chest)**
- d. Oxygen will be initiated at 1-2 liters/minute and titrated thereafter to maintain baseline, pre-sedation and oxygen saturation
- e. IV site name and amounts of IV fluids and fluids when utilized
- f. All medications and dosages of agents used for moderate sedation
- g. Technique(s) used and patient position(s), including the insertion /use of any intravascular or airway devices
- h. Vital Signs (BP, HR, RR, O₂ Sat, Pain Score, and Level of Consciousness). Assessment and documentation will consist of these vital signs prior to

sedation, at a minimum of every 5 minutes thereafter and more often as needed, until completion of procedure.

- i. Any complications, adverse reactions, or problems occurring during moderate or deep sedation including time and description of symptoms, vital signs, treatments rendered, and the patient's response to treatment will be documented
- j. The physician will be notified when there is deviation from baseline:
 - 1) BP 30% above or below baseline
 - 2) SPO2 of less than 90%
 - 3) Respiratory Rate less than 8 breaths/minuteOther observed complications

F. Pain scale assessment of pain level

1. For Sedated Patients: Colorado Behavior Numerical Pain Scale (CBNPS)

- a. Level 0: Restful, no facial expression
- b. Level I: Moaning, frowning, restless
- c. Level II : Facial grimacing, protective body positioning
- d. Level III : Resistive, crying out
- e. Level IV : Yelling, tossing
- f. Level V : Combative

2. For Alert Patients: Pain Scale (0-10 rating)

- a. 0: None
- b. 1-3: Mild
- c. 4-6: Moderate
- d. 7-10: Severe

3. Level of Consciousness Scale

- a. Level 1: Alert, responding
- b. Level 2: Drowsy, respond to voice
- c. Level 3: Stuporous, arouse with difficulty
- d. Level 4: Coma, respond to deep pain & deep reflexes, non-verbal
- e. Level 5: No responses

G. Post Procedure

1. The physician supervising the sedation is responsible for assessing the patient's stability during the recovery period.
2. Monitor VS (BP, HR, RR, O₂ Sat, **end tidal CO2 when available**, Pain Score and Level of Consciousness) every 15 minutes post-sedation until the patients level of consciousness and vital signs have returned to their pre-sedation

baseline or a decision is made for transfer to another level of care as condition requires.

3. Post-anesthesia evaluation will be clearly documented including respiratory rate, airway patency, oxygen saturation, **end tidal CO2 when available**, cardiovascular function including pulse rate and blood pressure, mental status, temperature, pain, nausea and vomiting, and postoperative hydration.
4. The Modified Aldrete score will be utilized to evaluate the patient's stability for transfer or discharge. Patients are required to reach a score "**8**" if their baseline score was \geq "**8**".
 - a. If the post procedure Aldrete score is less than "**8**", or "0" in any area, the primary procedural physician must be notified, unless same scores as baseline.
 - b. A score of "2" must be reached for respiratory stability (if the baseline was a "2")
 - c. The primary procedural physician must be contacted for patients who do not reach these scoring parameters to decide the disposition plan.
5. Inpatients **receiving sedation** may be returned to their inpatient unit **when patient reaches a score of "8" or returns to their baseline Aldrete score.**
6. **Outpatients receiving sedation may return to a Phase II recovery area when Aldrete score of "8" or pre procedure baseline is achieved.**
7. The following criteria should be met and documented prior to discharge:
 - a. Thirty minutes must have elapsed since the last dose of the Moderate/Deep Sedative medication was given.
 - b. The patient will:
 - 1) Ambulate, if able, without dizziness, consistent with developmental age level and pre-procedure ability as appropriate to procedure performed
 - 2) Be alert and oriented to person and place (or as on admission)
 - 3) Have stable serial vital signs (**every** 15 minutes) until the patient is at pre-procedure level of consciousness and has returned to their baseline pre-sedation Aldrete score
 - 4) Takes oral fluids, if appropriate. Absence of vomiting, minimal nausea after oral fluids
 - 5) Void following genitourinary or gynecological procedures or administration of radiographic contrast media as appropriate
 - 6) Does not display any signs of complication or adverse reactions specific to the procedure or medications
 - c. Pain is at baseline or stable and responsive to medication

- d. Patient or responsible person is able to verbalize understanding of written discharge instructions addressing post procedure and post Sedation issues
- e. There is a responsible adult available to accompany and transport the patient home
- f. A minimum of 2 hours must elapse after the last administration of reversal agents naloxone (Narcan) or flumazenil (Romazicon) to ensure that patients do not become re-sedated after reversal effects have abated.

H. Quality Management/Reporting Requirements

- 1. All locations that participate in the delivery of and/or the recovery from sedation will perform ongoing monitoring of process and outcome indicators as directed by the Quality Management Department.
- 2. Documentation using a Patient Safety Alert via Remote Data Entry (RDE) will be completed/ submitted for all cases in which:
 - a. Reversal agents such as naloxone (Narcan) or flumazenil (Romazicon) are used
 - b. Patient condition following moderate/deep sedation requires unanticipated transfer to a higher level of care (i.e. Med-Surg to ICU)
 - c. Any unplanned admission following moderate/deep sedation of an outpatient
 - d. There is an unexpected outcome related to Moderate/Deep Sedation (such as hemodynamic instability or aspiration)
 - e. **Use of assistance with ventilation requiring bag-valve-mask ventilation for laryngeal or endotracheal airways**
 - f. **Prolonged period of oxygen desaturation (<85% for 3 minutes)**
 - g. **Failure of patient to return to Aldrete score of "8" or pre-sedation baseline within 30 minutes**

IV. Patient/Family Education:

Written instructions must be provided and reviewed and must include:

- A. Safe and effective use of medications
- B. Pain medication
- C. Age appropriate activity restrictions including caution when using household appliances and instructing patient not to drive nor operate mechanical or electrical devices for the next 24 hours
- D. Follow up care and course of action if a complication develops

- E. Name and phone number of attending physician performing the procedure to contact in the case of emergency.
- F. Instruct patient not to make important decisions or drink alcoholic beverages for the next 24 hours.

V. Documentation:

- A. History and physical examination and update as per the rules and regulations of the medical staff and medical center policy.
- B. Pre-anesthesia evaluation must be performed immediately prior to any inpatient or outpatient surgery or procedure requiring deep sedation.
- C. Practitioner Certification form and Verification of Consent form signed and witnessed consent **form** for procedure and sedation is completed.
- D. The plan for sedation/analgesia, completed airway assessment and the disposition of the patient in relationship to the level of post procedure monitoring and recovery must be identified prior to sedation.
- E. Documentation should include:
 - 1. Post-procedure vital signs, including pain assessment, and temperature, level of consciousness, medications administered, fluids, and/or blood administered
 - 2. Unusual events and their management
 - 3. All interventions and subsequent patient response recorded at regular intervals
 - 4. All medications administered including time, dosage, route, and response
 - 5. Type and amount of fluids and blood products infused
 - 6. Patient assessment, status
 - 7. Disposition of the patient upon completion of the procedure

VI. Relevant Hyperlinks: N/A

Reference/Regulations:							
2014 AORN Recommended Practice for Managing the Patient Receiving Moderate Sedation/Analgesia pages 411-420							
<i>Practice Guidelines for Sedation and Analgesia by non-Anesthesiologists. Anesthesiology. V97, No 4, Apr 2002, 1004-1017.</i>							
Salmore, R. (2002). Development of a new pain scale: Colorado behavioral numerical pain scale for sedated adult patients undergoing gastrointestinal procedures. <i>Gastroenterology Nursing, 25(6)</i> , 257-262.							
CMS Manual System Pub 100-07 State Operations Provider Certification; May 21, 2010; Transmittal 59							
Gastroenterology 2007;133:675-501 (DOI:10.1053).Copyright ^a 2008 by the American Society for Gastrointestinal Endoscopy 0016-5107							
“Precedex.” <u>Mosby’s 2010 Intravenous Medications.</u> 26th ed. 2010							
Shukry, Mohanad & Miller, Jeffrey A. “Update on Dexmedetomidine:Use in Nonintubated Patients Requiring Sedation for Surgical Procedures.” <u>Therapeutics and Clinical Risk Management.</u> 6 (2010): 111-121.							
Sponsor(s) Name & Title:				Origination Date:			
Sue Ellen Thompson Cross campus Director, Angio /Cardiac Cath Lab				October 2006			
Supersedes: (with last approval date)							
SPM SA-77.00; GPM B-84.00; PCSM 401							
Record of Review Dates							
Review <i>Only</i> Dates:			Revision Dates:				
			5/10, 8/11, 10/12, 9/14, 4/15				
List Committee, Medical Staff, etc. Reviews: (with approval date)							
Record of Approval Dates							
PPRC:	12/4/14	Admin:	12/17/14	MEC- WC:	1/5/15	MEC- CC:	1/6/15
Operations Council:	1/30/15	Board:	4/07, 12/10, 1/12, 2/15				

Appendix A

American Society of Anesthesiologists Classification of Physical Status.

- Class 1 A normal, healthy individual. Examples: No organic, physiologic, biochemical or psychiatric disturbance.
- Class 2 A patient with mild systemic disease. Examples: Heart disease that only slightly limits physical activity, essential hypertension, diabetes mellitus, anemia, extremes of age, obesity, chronic bronchitis.
- Class 3 A patient with severe systemic disease that limits activity but is not incapacitating.
Examples: Heart disease that usually limits activity, poorly controlled essential hypertension, diabetes with vascular complications or insulin dependent, chronic pulmonary disease that limits activity, angina pectoris, history of prior myocardial infarction, morbid obesity.
- Class 4 A patient with an incapacitating systemic disease that is a constant threat to life. Examples: Congestive heart failure, persistent angina pectoris or unstable/rest angina, advanced pulmonary, renal, or hepatic dysfunction.
- Class 5 A moribund patient who is not expected to survive 24 hours with or without surgery.

Modified Aldrete Score

Parameter	Description of Patient	Score
Activity Level	Moves all extremities voluntarily/on command	2
	Moves 2 extremities	1
	Cannot move extremities	0
Respirations	Breathes deeply and coughs freely	2
	Is dyspneic, with shallow, limited breathing	1
	Is apneic	0
Circulation (BP)	BP \pm20% of pre-anesthetic level	2
	BP \pm20%-49% of pre-anesthetic level	1
	BP \pm50% of pre-anesthetic level	0
Consciousness	Is fully awake	2
	Is arousable on calling	1
	Is not responding	0
Oxygen saturation	Has level >92% when breathing room air	2
	Requires supplemental oxygen to maintain level >90%	1
	Has level <92% with oxygen supplementation	0

From: *Evidence-Based Practice of Anesthesiology*

Agents And Usual Adult Dosages

Moderate Sedation Agents					
Medication	Usual Adult Dose/Frequency	Onset	Duration	Usual Max Dose	Comments
Midazolam IV	<ul style="list-style-type: none"> Age 18-60 years: 1-5 mg IV over 2 minutes. Titrate in 1 mg increments to max. total dose of up to 0.2 mg/kg when used without an opioid; ~dose 30% when given with an Opioid. Age > 60 years &/or poor risk: 0.5-1.5 mg IV over 2-3 minutes to maximum total dose of up to 0.1 mg/kg when used without an Opioid; ~dose 33-50% when given with an Opioid. 	2 min.	30 min.	5 mg/hr	<ol style="list-style-type: none"> Dilution of 1 mg/ml recommended. Pain to injection site (less than with valium). Produces anxiolytic, sedative, hypnotic skeletal muscle relaxant & anticonvulsant effects. 3-4 times more potent on milligram basis than diazepam. Capable of producing all levels of CNS depression from mild sedation to respiratory depression to coma. Anterograde amnesia occurs within 1-5 minutes & persists for 20-40 minutes. Respiratory depression in elderly or when combined with opioids. Hypotension when combined with opioids.
Diazepam IV	<ul style="list-style-type: none"> Age 18-60 years: 2.5 mg IV over 3-5 minutes to maximum of 0.2 mg/kg if opioids not administered. Age >60 &/or poor-risk: 1.5 mg IV over 3-5 minutes to max. of 0.1 mg.kg if opioids not administered. 	2-5 min.	1-2 hours	15 mg/2hr	<ol style="list-style-type: none"> Accumulation effect likely to occur in elderly & in patients with congestive heart failure and liver disease. Respiratory depression in elderly or when combined with opioids. Hypotension when combined with opioids.

Moderate Sedation Agents

Medication	Usual Adult Dose/Frequency	Onset	Duration	Usual Max Dose	Comments
Fentanyl IV	<ul style="list-style-type: none"> Age: 18-60 years: 25-50 mcg over 1-2 minutes to max of 100 mcg/hr. Age:>60 &/or poor-risk: 12.5 mcg IV over 1-2 minutes to max of 50 mcg/hr. 	1-2 min.	20-30 min.	200 mcg/hr	<ol style="list-style-type: none"> Apnea, hypotension, nausea, vomiting, muscle rigidity. Concomitant CNS, depressants potentiate side effects. 100 mcg equal to 10 mg morphine or 75 mg meperidine. Respiratory depressive effects similar to morphine. Maximal respiratory depression at 5-10 minutes with sensitivity of respiratory center normalizing within 1-2 hours. Exhibits minimal hypnotic action and histamine release rarely occurs. Rapid IV push of > 100 mcg may cause chest wall muscle rigidity.
Morphine IV	<ul style="list-style-type: none"> Age: 18-60 years: 1-2 mg IV over 2 minutes every 5 minutes to maximum of 0.1 mg/kg. ***this is too restrictive. Lois has some guidelines Age>60 years &/or poor-risk: 0.5-1 mg IV over 2 minutes every 5 minutes to maximum of 7.5 mg. 	5-15 min.	3-4 hours	10 mg/hr	<ol style="list-style-type: none"> Apnea, hypotension, nausea, vomiting. Concomitant CNS, depressants potentiate side effects. Maximal respiratory depression within 7 minutes; with return to normal within 2-3 hours; respiratory minute volume may be subnormal for 4-5 hours. Occasionally causes pruritis after administration due to release of histamine.

MODERATE SEDATION AGENTS AND USUAL ADULT DOSAGES (CONTINUED)

Medication	Usual Adult Dose/Frequency	Onset	Dura-tion	Usual Max Dose	Comments
Hydromorphone (Dilaudid)	<ul style="list-style-type: none"> • Opioid Naïve patients: 0.2mg to 0.6mg IV over 1- 2 minutes • May repeat 0.5mg dose in 15 minutes x 1 if needed. • ≥65 y/o: total dose of 1mg IV over 2 hrs • <65y/o: total dose of 2mg IV over 2hrs • Opioid tolerant patients: 1-2mg IV over 1-2 minutes • Higher doses may be needed for patients on chronic opioid therapy. 	Within 5 min.			<ol style="list-style-type: none"> 1. 1 mg hydromorphone IV equal to 6.5 mg morphine IV. 2. Respiratory depressant effect of 1.5 mg equivalent to 10 mg. morphine. 3. Duration of analgesia: 4-5 hours.
Precedex IV (Dexmedetomidine)	<p>In Interventional Radiology Procedures:</p> <ul style="list-style-type: none"> • No Loading Dose <p>In Critical Care Units for post-op CABG or alcohol withdrawal patients:</p> <ul style="list-style-type: none"> • Loading Dose: 1 mcg/kg over 10 minutes • Infusion: Start at 0.1 mcg/kg/hr • Usual Range: 0.2-0.7 mcg/kg/hr 	5-10 min	60-120 min	0.7 mcg/kg/hr	<ol style="list-style-type: none"> 1. Titrate to desired level of sedation in 0.1 mcg/kg/hour increments every 15 minutes. 2. Monitor for: <ol style="list-style-type: none"> a. ECG changes, atrial fibrillation b. CNS changes, movement, jerkiness, tremors, dizziness, LOC, pupil reaction c. Respiratory dysfunction or depression 3. Provide adequate pain, sedation or anxiety control. 4. Contraindications: history of advanced heart block (2nd or 3rd degree), presence of septic syndrome, ARDS

Medication	Usual Adult Dose/Frequency		Onset	Dura-tion	Usual Max Dose	Comments
Methohexital (Brevital)*	1-2mg/kg in < 65 yr	One time	<1 min.	5 min.	N.A.	Possible Side Effects: 1. Unconsciousness 2. Respiratory depression 3. Bronchospasm
Etomidate*	0.1-0.2mg/kg for moderate sedation (some go up to 0.4mg/kg)	One time	<1 min.	5 min.	N.A.	Possible Side Effects: 1. Unconsciousness 2. Involuntary myoclonic movements 3. Little to no cardiovascular side effects Does not produce analgesia

Deep Sedation Agents

Medication	Usual Adult Dose	Frequency	Onset	Dura-tion	Usual Max Dose	Comments
Methohexital (Brevital)*	1-2 mg/kg	One time	<1 min.	5 min.	N.A.	Possible Side Effects: 4. Unconsciousness 5. Respiratory depression 6. Bronchospasm

Deep Sedation Agents

Medication	Usual Adult Dose	Frequency	Onset	Duration	Usual Max Dose	Comments
Etomidate*	0.3 mg/kg	One time	<1 min.	5 min.	N.A.	Possible Side Effects: 4. Unconsciousness 5. Involuntary myoclonic movements 6. Little to no cardiovascular side effects Does not produce analgesia
Propofol *	Age <55 y.o.; 2-2.5 mg/kg (40 mg IV every 10 seconds) Age ≥55 y.o. 1-1.5 mg/kg (20 mg IV every 10 seconds)	One time	<1 min.	3-10 min.	N.A.	Possible Side Effects: 1. Unconsciousness 2. Involuntary myoclonic movement 3. Bradyarrhythmia; hypotension 4. Seizures

*Therapeutic doses may vary with individual patients and some may require amounts significantly less or well in excess of these typical maximum doses. If higher doses are required, they should be titrated with attention to proper monitoring techniques.

For use by qualified Emergency Department physicians and adherence to the following:

1. A physician, nurse and a respiratory therapist must be present for each patient receiving etomidate, methohexital or propofol.
2. The nurse has primary responsibility for medication administration, assessment and monitoring.
3. The respiratory therapist has primary responsibility for airway assessment and management.

Reversal Agents Usual Adult Dosages

Medication	Usual Adult Dose	Frequency	Onset	Duration	Usual Max Dose	Comments
Flumazenil (Romazicon) IV	0.2 mg over 15 seconds	After 45 seconds, may repeat 0.2 mg @ 60 second intervals up to max of 4 additional doses (or 1 mg).	45 seconds	20 minutes	1 mg	To reverse the effects of benzodiazepams (i.e. midazolam (Versed), diazepam (Valium)).
Naloxone (Narcan) IV	0.1-0.4 mg	q5-10 min.	1-2 minutes	60-90 minutes	10 mg	To reverse the effects of narcotics.

Agents Used For **Moderate** Sedation And Analgesia By Anesthesiologist Only:
 Thiopental Alfentanil Sufentanil

Moderate sedation and analgesia in pediatrics

References:

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Marx: Rosen's Emergency Medicine: Concepts and Clinical Practice, 5th edition. Chapter 183 – Sedation and Analgesia for Procedures.

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Mudd, S. Intranasal Fentanyl for Pain Management in Children: A Systematic Review of the Literature. *J Pediatr Health Care*. 2011;25(5):316-322.
Yealy DM, Ellis JH, et al. Intranasal Midazolam as a Sedative for Children During Laceration Repair. *Am J Emerg Med* 1992; 10: 584-587
<http://intranasal.net/sedation/default.htm>, accessed 7-21-14

Medication	Dose	Frequency	Onset	Duration	Usual Max Dose	Comments
Sedative – Hypnotic Agents						
Lorazepam (Ativan™)	0.05 mg/kg/dose IV		1 to 5 min	3 to 4 hrs	Max single dose = 2mg	
	0.05 mg/kg/dose IM		10 to 20 min	3 to 6 hrs	Max single dose = 4mg	
	0.05 mg/kg/dose oral		30 to 60 min	3 to 6 hrs	Max single dose = 4mg	
Midazolam (Versed™)	0.05 to 0.1 mg/kg/dose IV		1 to 3 min	1 to 2 hrs	0.4mg/kg	Reduce dose when used in combination with opioids. May produce paradoxical excitement. Monitor closely for oversedation.
	0.1-0.2 mg/kg/dose IM		5 to 10 min	1 to 2 hrs	10 mg	
	0.5 mg/kg/dose oral		10 to 30 min	1 to 2 hrs	20 mg	
	0.5 mg/kg/dose rectal		10 min	1 to 2 hrs	20 mg	
	Intranasal: 0.2 - 0.4mg/kg for anxiety 0.2mg/kg for seizure control		10-20 minutes	20-40 minutes	Max: 10mg	If used within 30 minutes of an opioid –follow Moderate to Deep Sedation policy
Pentobarbital (Nembutal™)	1 to 3 mg/kg/dose IV		IV: 1 to 10 min	1 to 4 hrs	Max: 6mg/kg or 150 mg	Avoid rapid IV push in patients with hypovolemia or cardiac dysfunction. Contraindicated in patients with porphyria. Monitor closely for oversedation.
	2 to 6 mg/kg/dose IM		IM: 10-25 min			

Medication	Dose	Frequency	Onset	Duration	Usual Max Dose	Comments
Analgesics						
Fentanyl (Sublimaze™)	1-2 mcg/kg/dose IV over 3 to 5 minutes		1 to 2 min	0.5 to 1 hr		Chest wall rigidity with high boluses (>5 mcg/kg) but can occur with low doses. Reduce dose if combined with midazolam.
	Intranasal: For ≤31kg only: 1.75 mcg/kg	Once	10-20 minutes	0.5-1 hr	Max: 50mcg	Intranasal: If given within 30 minutes of benzodiazepine-follow Moderate to Deep Sedation policy
SUfentaNYL (Sufenta™)	For >31kg only: 0.7mcg/kg intranasal	Once	10-20 minutes	0.5-1 hour	Max: 50 mcg	Intranasal: If given within 30 minutes of benzodiazepine follow Moderate to Deep Sedation Policy

Medication	Dose	Frequency	Onset	Duration	Usual Max Dose	Comments
Morphine	0.1mg/kg/dose IV		5 to 10 min	3 to 4 hrs		
	0.1-0.2 mg/kg/dose IM or subcutaneous		10 to 30 min	4 to 5 hrs		
	0.3-0.5mg/kg/dose oral		30 to 60 min	4 to 5 hrs		
***Ketamine	0.25-0.5mg/kg/dose IV bolus	May repeat w ½ dose every 10 min prn.	1 minute	5 to 15 min	Max 2mg/kg over 20 minutes	See comments below for restrictions and contraindications.
	2 to 3mg/kg/dose IM		5 to 15 minutes	30 to 90 minutes		
	4 to 6mg/kg/dose oral or rectal		20 to 45 minutes	60 to 120+ minutes		
Precedex IV Bolus Continuous IV Infusion: Intranasal:	1-3 mcg/kg 0.3 – 1.5 mcg/kg/hr 3 mcg/kg	Titrate to desired clinical effect				Do not discontinue abruptly titrate infusion rate so patient wakes slowly

Medication	Dose	Frequency	Onset	Duration	Usual Max Dose	Comments
Propofol						
Procedural sedation and loading dose	1mg – 3mg/kg IV	Individualized and titrate to intended effect	Immediate			Administer over 20 to 30 seconds Monitor for apnea/ Hypotension and or cardiovascular depression
Continuous Infusion:	Protected airway: 0-100 mcg/kg/min IV					Less than 24 hours
	Non-Protected Airway 0 – 200 mcg/kg/min IV					Less than 2 hours

***May be used only in the Emergency Department by an Anesthesiologist, Emergency Department physician or Pediatrician and the ordering physician must be present when the drug is administered.

Contraindications: < 3 months, history of airway instability, tracheal surgery, or tracheal stenosis; procedures involving stimulation of the posterior pharynx; active pulmonary infection or disease (including active upper respiratory tract infection); cardiovascular disease, including angina, heart failure or hypertension; substantial head injury, CNS masses or hydrocephalus; glaucoma or acute globe injury; psychosis; porphyria; and thyroid disorder or use of thyroid medication.

Hypersalivation can be minimized with concurrent atropine of 0.01mg/kg IM or IV; minimum of 0.1mg and max of 0.5mg.

Repeat doses titrated to length of procedure and for production of “stare/nystagmus”.

Reversal Agents (Antagonist) Usual Pediatric Dosage

Medication	Dose	Frequency	Onset	Duration	Usual Max Dose	Comments
Naloxone (Narcan™)	Age 0 to 5 or weighing less than 20kg 0.1mg/kg IV, IM, Subcutaneous or ET	Every 2 to 3 minutes until clinical response and then at 1 to 2 hour intervals as needed	IV: 2 min	IV: 20 to 40 min	Max 2mg per dose	
	IM: 10 to 15 min		IM: 60 to 90 min			
	Age greater than 5 years or weighing more than 20 kg. 2mg/dose IV or IM					
	Intranasal 0.4mg x once May repeat x 1 if needed, 0.2mg in each nostril	May repeat	2 minutes	30-60 minutes	<5 yrs or <20 kg: 0.1 mg/kg >5 yrs or >20 kg: 2 mg/dose max	See Intranasal Delivery of Medications in the Emergency Department
Flumazenil (Romazicon™)	0.01mg/kg/dose IV	May be 0.005-0.01mg/kg (max dose 0.2mg) repeated every 1 minute Doses may be repeated in 20 minutes up to max 3mg in 1 hour.	1 to 2 min	30 to 60 min	Max per dose = 0.2mg Max cumulative=1mg	Do not use in patients receiving long-term benzodiazepines, or tricyclic antidepressants.
	Intranasal 0.4mg x once May repeat x 1 if needed,	May repeat	2 minutes	30-60 minutes	<5 yrs or <20 kg: 0.1 mg/kg	See Intranasal Delivery of Medications in the Emergency Department

Medication	Dose	Frequency	Onset	Duration	Usual Max Dose	Comments
	0.2mg in each nostril				>5 yrs or >20 kg: 2 mg/dose max	

ASA Pre-Procedure Fasting Guidelines

Summary of American Society of Anesthesiologists Pre-Procedure Fasting Guidelines^{2*}

Ingested Material Minimum Fasting Period[†]

Clear liquids [‡]	2 h
Breast milk	4 h
Infant formula	6 h
Nonhuman milk [§]	6 h
Light meal __	6 hr

Solid food 8hr

* These recommendations apply to healthy patients who are undergoing elective procedures. They are not intended for women in labor. Following the Guidelines does not guarantee a complete gastric emptying has occurred.

[†] The fasting periods apply to all ages.

[‡] Examples of clear liquids include water, fruit juices without pulp, carbonated beverages, clear tea, and black coffee.

[§] Since nonhuman milk is similar to solids in gastric emptying time, the amount ingested must be considered when determining an appropriate fasting period.

{} A light meal typically consists of toast and clear liquids. Meals that include fried or fatty foods or meat may prolong gastric emptying time. Both the amount and type of foods ingested must be considered when determining an appropriate fasting period.

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Appendix D

Mallampati Scale: The Mallampati classification relates tongue size to pharyngeal size. This test is performed with the patient in sitting position, the head held in a neutral position, the mouth wide open, and the tongue protruding to the maximum. The subsequent classification is assigned based upon the pharyngeal structures that are visible:

Class I – Visualization of the soft palate, fauces, uvula, and anterior and posterior pillars.

Class II – Visualization of the soft palate, fauces, and uvula.

Class III – Visualization of the soft palate and the base of the uvula.

Class IV – Soft palate is not visible at all.

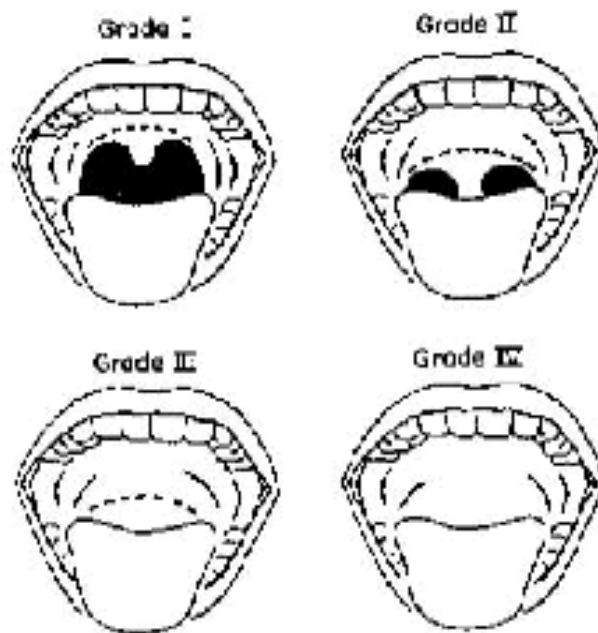
The classification assigned by the clinician may vary if the patient is in the supine position (instead of sitting). If the patient phonates, this falsely improves the view. If the patient arches his/her tongue, the uvula is falsely obscured.

A Class I view suggests ease of intubation and correlates with a laryngoscopic view Grade I 99 to 100% of the time.

Class IV view suggests a poor laryngoscopic view, Grade III or IV 100% of the time.

Refer to Figure 1 (attached) for a visual depiction of the Mallampati Classification.

Revision: April 1, 2009 ACS NSQIP 4-21



Appendix E

Pediatric Patients: Moderate and Deep Sedation Medications will be administered by a Board Eligible/ Board Certified Pediatric Critical Care Medicine Physician with JMH sedation privileges.

- a. Moderate and Deep Procedural Sedation: Utilization of Dexmedetomidine, Propofol and Ketamine for procedures including special imaging
 - 1) Locations: Pediatric Intensive Care Unit, designated pediatric treatment rooms, imaging suites, Emergency Department or locations with pediatric code blue and rapid response situations.
 - 2) An anesthesiologist is required for sedation of a pediatric patients less than age 2 years receiving propofol without a protective airway
Personel:
 - (1) Protected airway: Minimal 1 RN and 1 MD
 - (2) Non-protected airway greater than age 2 years: Minimal 1 RT, 1 RN and 1 MD
- b. Moderate and Deep Non Procedural Sedation: Utilization of Dexmedetomidine, Propofol and Ketamine for maintaining a sedated state when mechanically ventilated.