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Reviewed/ Revised	8/2010, 4/2012, 9/2013, 10/2013, 12/2013, 10/2014, 10/2015, 8/2017, 9/2017, 1/2018, 7/2021, 9/2024
Section:	Clinical Care/Patient Rights

Adult Moderate Sedation / Analgesia

Purpose:

To delineate the Boston Medical Center (BMC) policy for moderate sedation / analgesia.

Policy Statement:

This policy is designed to provide specific recommendations for the safe care of patients during delivery of medications for moderate sedation / analgesia by non-anesthesiologists during diagnostic, therapeutic, or surgical procedures. Examples of such procedures include:

- Endoscopic examinations,
- Vascular and cardiac catheterizations,
- Diagnostic or interventional radiological procedures
- Other in-hospital procedures that are performed in procedure rooms and clinics, on patient care units, or in the emergency department.

Moderate sedation/analgesia must be provided in areas where resuscitation capabilities are available. In situations where it is anticipated that the required sedation will lead to loss of protective airway reflexes, such patients require a greater level of care than recommended by this policy. In addition, certain patients will not be candidates for moderate sedation/analgesia and will receive either no moderate sedation or will be intubated with airway control prior to sedation (refer to exceptions below).

Application:

This policy applies only to patients receiving moderate sedation/analgesia 15 years of age and older.

Exceptions:

This policy excludes:

- Preoperative medication of patients
- Patient controlled analgesia
- Post-operative or labor analgesia
- Pain management for angina pectoris
- Sedation in the intensive care unit (e.g., patients on ventilators)
- Sedation for treatment of insomnia
- Anxiolysis
- Pulmonary edema patients
- Drug or alcohol withdrawal or prophylaxis
- Treatment of seizure disorders
- Multiple trauma patients in the Emergency Department (ED)
- Pain management using a single medication at usual dose and frequency not reasonably expected to alter ventilatory and cardiovascular function (example dressing changes or burn care)

- Premedication with a standard dose given prior to procedures (i.e., diazepam PO, up to 10 mg) This premedication is not titrated to effect, as with moderate sedation, and is not reasonably expected to result in the loss of airway protective reflexes or a depression in consciousness
- Patients under 15 years of age (For these patients see *Policy #03.11.020 - Pediatric Moderate Sedation and Analgesia*)

Definitions

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.

Sedation and Analgesia (Moderate Sedation): A drug-induced depression of consciousness during which patients respond purposefully to verbal commands (note reflex withdrawal from a painful stimulus is not considered a purposeful response) 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 (DS): A drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully after 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 is inadequate. Cardiovascular function is generally maintained.

Anesthesia: Consists of general anesthesia and spinal or major regional anesthesia. It does not include local anesthesia.

In actuality, a continuum exists among moderate sedation, deep sedation, and general anesthesia. The patient's age and preexisting medical condition may significantly alter the dosing requirements for moderate sedation. If either deep sedation or general anesthesia is required for the procedure, skilled anesthesia personnel will be available for patient management.

Procedure:

1. **Credentialing and Privileging**
   - 1.1. Medical staff (Attending Physicians) will be credentialed and privileged according to the procedures described in the Medical Dental Staff Bylaws. Residents, fellows, physician assistants, and nurse practitioners are not authorized to independently administer moderate sedation and can do so only under the direct supervision of a privileged Attending Physician, who is responsible at all times for the administration of sedation and analgesia (moderate sedation).
     - 1.1.1. Attending Physician must:
       - 1.1.1.1. Submit a request to the Medical Staff Office for sedation and analgesia (moderate sedation) privileges.
       - 1.1.1.2. Document completion of training upon initial credentialing.
       - 1.1.1.3. Successfully complete an exam for initial and re-credentialing.
       - 1.1.1.4. Demonstrate proof of current certification in Advanced Cardiac Life Support (ACLS) for initial and re-credentialing.
       - 1.1.1.5. Demonstrate proof of capnography interpretation training.
     - 1.1.2. Education:
       The BMC Department of Anesthesia will be responsible for educational programs to instruct health care personnel in the proper use of sedation and analgesic agents and monitoring modalities.

Educational programs outside the BMC Department of Anesthesia will be evaluated individually by the Chief of Anesthesia to determine if they are acceptable substitutes.

1.1.3. Credentialing Records:
Records of the credentialing exam will be kept by the Medical Staff Office.

1.2. Registered Nurses (RN) authorized to administer medications for sedation and analgesia, assess and monitor and/or provide immediate pre-procedure, procedure and post-procedure care to patients receiving sedation and analgesia (moderate sedation) shall demonstrate and maintain competency in the following areas:

- Airway management
- Use of medication and dosages
- Pulse oximetry
- Cardiac monitoring equipment
- Arrhythmia recognition
- Capnography interpretation
- Basic Life Support (BLS)
- Advanced Cardiac Life Support (ACLS).
- Recognition and management of emergent situations

1.3. Registered Respiratory Therapist (RRT) authorized to participate in procedures involving sedation and analgesia providing that in addition to the privileged attending a second MD/DO is present to administer the medications. RRTs assess and monitor and/or provide immediate pre-procedure, procedure and post-procedure care to patients receiving sedation and analgesia (moderate sedation) shall demonstrate and maintain competency in the following areas:

- Airway management
- Pulse oximetry
- Cardiac monitoring equipment
- Arrhythmia recognition, if ACLS certified.
- Capnography interpretation
- BLS
- Recognition and management of emergent situations

2. Staffing

2.1. A minimum of two people must be involved in the care of patients undergoing sedation and analgesia (moderate sedation) during the entire procedure:

2.1.1. The physician, who performs the diagnostic, therapeutic, or surgical procedure, and

2.1.2. The monitor (MD/DO, RN, or RRT), who is the individual whose responsibility is directed only to the patient, to administer medication (MD/DO or RN only), to monitor the patient, and to observe the patient's response to both the sedation and the procedure.
The monitor should have no other significant responsibility from the time the sedation is initiated until the time when the recovery of the patient is judged complete or the care of the patient is transferred to personnel performing recovery care.

2.2. A third individual should be present to assist with the procedure under certain "high risk" circumstances, such as particularly complex procedures or in situations requiring management beyond the capability of only two individuals. These "high risk" procedures should be defined by each individual department or service, which have staff administering moderate sedation.

2.3. All personnel involved in the administration and/or monitoring of moderate sedation shall demonstrate a clear and basic understanding of the pharmacology and side effects of medications used in conscious sedation. In addition, these personnel shall be trained in basic monitoring techniques and basic airway management.

2.4. The Department of Anesthesia will participate in the educational programs designed to help practitioners learn the proper use of sedative agents and monitoring modalities.

2.5. The Chair of Anesthesia or designee, Director of Quality and Patient Safety or designee, Chief Nursing Officer or designee, Director of Pharmacy or designee, Nursing Professional Development, and a non-Anesthesiology attending physician will serve as a reference source for any questions or problems that may arise regarding these guidelines for moderate sedation.

3. Available Equipment During and Post Procedure

3.1. Equipment

3.1.1. A positive pressure delivery system capable of administering 100% oxygen. Oxygen delivery systems such as nasal cannula, O2 masks, and a manual resuscitator;

3.1.2. Suction apparatus (portable or wall mounted) with catheter;

3.1.3. Automatic BP cuff - size appropriate cuff;

3.1.4. Pulse Oximeter;

3.1.5. ECG monitor with alarm during the procedure for all patients and post procedure for ASA III, and above;

3.1.6. Emergency Code Cart that includes drugs and equipment necessary to resuscitate an apneic and unconscious patient must be readily available;

3.1.7. Capnography is required for intra-procedure monitoring unless it interferes with the procedure (ie. EGD or TEE) or if the patient is on CPAP/BIPAP. An auto- titrating or manually set CPAP/BIPAP device for patients with diagnosed obstructive sleep apnea (OSA) (broncoscopy procedure is an exclusion). See Appendix B.

3.2. Emergency Medications

3.2.1. Reversal agents (Naloxone, Flumazenil);

3.2.2. Atropine

4. Patient Selection Criteria

4.1. The American Society of Anesthesiologists (ASA) guidelines for risk classification are utilized in the selection of patient to receive moderate sedation.

Class I:	A normally healthy patient
Class II:	A patient with mild systemic disease
Class III:	A patient with severe systemic disease that limits but is not incapacitating
Class IV:	A patient with severe systemic disease that is a constant threat to life
Class V:	A morbid patient who is not expected to survive with or without the operation/procedure

4.2. All patients should be carefully evaluated by the privileged Attending Physician and stratified in the proper ASA classification. Patients who are an ASA IV or ASA V might not be candidates for sedation administered by a non-anesthesiologist.

4.3. An anesthesia consultation should be considered under the following circumstances:

- Patient has limited head/range of motion;
- Patient has abnormal craniofacial anatomy;
- Patient is morbidly obese;
- Patient has a history of sleep apnea (Refer to Appendix B);
- Pregnant patients

4.4. Nurses may administer moderate sedation to patients with a cuffed or uncuffed tracheostomy tube.

4.5. Ambulatory patients must have a responsible, designated adult to escort them home. This must be established prior to starting the procedure.

5. Consent

5.1. The patient/guardian must be informed about the risks and alternatives of sedation as a component of the planned procedure. The informed consent for any short term therapeutic, diagnostic, or surgical procedure in which moderate sedation is to be employed will include the risks of sedation and the alternatives to sedation, as appropriate. Documentation of the consent for both the procedure and the administration of conscious sedation will be included in the patient's chart.

6. Nil Per Os "NPO" Guidelines

6.1. Patients undergoing sedation and analgesia (moderate sedation) for elective procedures should not drink fluids or eat solid foods for a sufficient period of time to allow for gastric emptying before their procedure (see below).

INGESTED MATERIAL	MINIMUM FASTING PERIOD (IN HOURS)
Clear liquids	2
Breast milk	4
Infant formula	6
Non-human milk	6
Light meal	6
High fat or protein content meal	Clinician may consider > 6

6.2. Medications as determined by attending physician, may be administered with a sip of water.

6.3. Gastric emptying may be influenced by many factors, including anxiety, abdominal pain, autonomic dysfunction (e.g., diabetes), pregnancy, and mechanical obstruction. Therefore, the suggestions listed do not guarantee that complete gastric emptying has occurred.

6.4. In urgent, emergent, or other situations when gastric emptying is impaired, the potential for pulmonary aspiration of gastric contents must be considered in determining the timing of the intervention and the degree of sedation/analgesia.

6.5. Note: If the patient requires an emergency procedure and he or she has not been NPO, moderate sedation may be dangerous. In such situations, alternative options to moderate sedation/analgesia must be considered by the attending physician who will determine if it will be:

- Delayed;

- Done judiciously to avoid unconsciousness and suppression of airway reflexes;
- Not administered; or
- Endotracheal intubation and general anesthesia.

7. Patient Management and Monitoring

7.1. Pre Procedure

Prior to the procedure and the initiation of sedation and analgesia (moderate sedation) it shall be validated that the patient is an appropriate candidate for sedation and analgesia (moderate sedation) utilizing the following criteria:

7.1.1. The patient's state of consciousness and medical condition are appropriate for use of sedation and analgesia (moderate sedation).

7.1.2. The patient has an individual sedation plan, which indicates medication to be used for sedation and analgesia (moderate sedation).

7.1.3. The patient has no allergies or sensitivities to the prescribed medication.

7.1.4. The patient's pertinent medical history.

7.1.5. Appropriate history and physical are documented in the patient's chart prior to the procedure:

- Actual or estimated weight in kilograms;
- Allergies and previous allergic reactions;
- Concurrent medications;
- Time of last oral intake;
- Pertinent medical history including history of tobacco, alcohol, or substance abuse;
- History of sedation/anesthesia problems;
- History of obstructive sleep apnea;
- Baseline vital signs including: blood pressure, heart rate, respiratory rate, and O2 Sat;
- Physical exam to include a minimal examination of:
  - General neurological status e.g., mental status, presence of absence of stroke deficits, etc.
  - Airway e.g., checking condition of teeth, range of neck motion, ability to open mouth
  - Pulmonary status
  - Cardiac status
- Physical status, e.g., ASA physical status documented.

7.1.6. The patient has a functioning IV line or saline lock.

7.1.7. The patient's oxygen requirements will be evaluated. The need for administration of supplemental oxygen should be considered for patients with a resting SA02 <90%, the elderly (age >70 years old) and for patients with significant heart, lung or kidney disease.

7.1.8. The patient has:

- been instructed in the concepts of sedation analgesia (moderate sedation)and about the sedation planned for the procedure, and
- been instructed to report any problems associated with the procedure or moderate sedation (e.g., pain, tender site, itching, difficulty breathing) to the individual responsible for monitoring the patient, and
- reviewed and received written post sedation/procedural instructions.

7.1.9. Non-OR universal protocol ("time out") is conducted immediately before starting the procedure as described in the Universal Protocol Policy.

7.2. <u>During the Procedure:</u>

7.2.1. Continuously monitor the patient and document the following items at the start of the procedure, at regular intervals (every 5-10 minutes) during the procedure and during initial recovery on the sedation record:

- Heart Rate
- Blood pressure
- Respiratory rate
- Oxygen saturation
- Cardiac Rhythm
- ETCO2
- Patient's responsiveness (level of consciousness) utilizing a BMC Sedation scale
- Pain score

7.2.2. Document all IV fluids, including blood products, and medications(s) administered including route, site, time, dosage, and initials of individual administering medication.

7.2.3. Record any oxygen therapy given in liters/minutes or Fi02 and means of oxygen therapy delivery (e.g. nasal prongs) at the beginning of the procedure and with any change.

7.2.4. The individual who monitors the patient shall inform the attending physician of any changes in the patient's physiological status from his/her baseline assessment and record its occurrence, interventions and outcome.

7.3. <u>Post-Procedure:</u>

7.3.1. The patient should be continuously monitored and the following criteria should be documented every 15 minutes post procedure until the patient attains the target recovery score **<u>and</u>** it has been 30 minutes from the last administration of moderate sedation medication.

- Heart rate
- Blood pressure
- Respiratory rate
- Oxygen saturation
- Cardiac rhythm
- Pain level
- Recovery Score

7.3.2. Patient's requiring reversal of narcotics or benzodiazepines will require a minimum recovery period of 2 hours following the administration of the reversal agent.

7.3.3. Discharge orders and follow-up care must be written by the physician.

7.3.4. <u>Recovery/Discharge Criteria</u>:

7.3.4.1. <u>Inpatient Criteria:</u> the following will be met for patients to be transferred to another unit or to end the recovery period:

- Recovery Score greater or equal to 8. A note will indicate reason for a score less than 10
- Vital signs and Oxygen saturation (O2 Sat) stable
- Swallow, cough, and gag reflexes are present (if their absence was the result of sedation analgesia (moderate sedation).
- Nausea and dizziness are minimal

- Dressing and/or procedure site checked
- Minimal pain managed by appropriate analgesics
- Patient alert
- Patient can sit unaided if appropriate to baseline and procedure
- Discharge order written, if applicable
- If patients are to be transferred for further recovery within the institution, they will be accompanied by a physician, PA, RN, or RRT to the designated recovery area by wheelchair or stretcher as applicable.

7.3.4.2. Outpatient Discharge Criteria: For outpatients the above criteria will be met in addition to the following:

- Recovery Score of 10 (or pre-procedure state).
- Hydration adequate/able to drink fluids.
- Voided or unable to void but comfortable.
- Patient and/or family given written discharge instructions which will include an explanation of anticipated limitation on activities (e.g., refrain from operating heavy machinery, driving a car), behavior (e.g., deferring important decisions) and diet (e.g., refraining from consuming alcohol for the next 24 hours).
- A 24 hour emergency contact (person/service).
- For patients discharged from the recovery area and the hospital, a discharge order is written by a qualified licensed independent practitioner.
- Ambulatory patients may not leave the hospital unless accompanied by a responsible, designated adult. A follow-up phone call is recommended, within 24 hours post procedure.

8. Drug Dosage Guidelines

8.1. There must be a medication order specifying route and dosage to be administered to the patient signed by an appropriately privileged physician. Medication for the purpose of sedation and analgesia (moderate sedation) will not be administered without the direct presence of that physician.

8.2. A list of medications and dosages is provided which should serve as a guide for a safe range of drug administration for sedation and analgesia (moderate sedation). Dosages should always be titrated for desired therapeutic effect. Any drugs outside these guidelines must be approved by the Chief of Anesthesia Department or designee.

9. Performance Improvement (PI)

9.1. Each department/division involved in sedation and analgesia (moderate sedation) should participate in PI activities for its practice. The Chair of Anesthesia or Designee in coordination with the Director of Quality and Patient Safety shall assist departments in developing mechanisms to monitor their quality of conscious sedation services. The Joint Commission recommended sample size for quarterly review is:

- For population size of fewer than 30 cases sample 100% of available cases.
- For population size of 30 – 100 cases sample 30 cases.
- For population size of 101 – 500 cases sample 50 cases.
- For population size of >500 sample 70 cases.

9.2. Ultimately, however, monitoring and evaluating the quality of moderate sedation services is the responsibility of departments and the Patient Safety/Quality Council. The focus of

assessment activities involved but are not limited to:

- Documented American Society of Anesthesiologists (ASA) status
- Selection of appropriate procedures
- Assessment immediately prior to the procedure
- Documentation of monitoring during the procedure
- Provision of post procedure care including patient education.
- Ensuring patients discharged in the outpatient setting are discharged in the company of a responsible, designated adult.

10. Adult Moderate Sedation Medications Guidelines

Medication	Dosage	Dynamic	Comments
Benzodiazepine: Midazolam (Versed)	Initial dose: 1-3 mg IV bolus Rate not to exceed 1 mg/min Additional doses: Titrate in increments of 0.5 to 1 mg IV to desired effect. Elderly and/or debilitated: Initial dose: 0.5 - 1.5 mg IV bolus Additional Doses: Titrate in increments of 0.5 mg IV to desired effect.	Onset: 1-5 min Frequency: q3 – 15 min PRN Duration: up to 2 hours	• Slurred speech is good end point for sedation • Consider dosage reduction if using with other CNS drugs, including narcotics. • Use cautiously in elderly patients. Clearance of drug is decreased which increases incidence and duration of effects. • Consider at least a 50% dose reduction in patients on antiretrovirals, specifically ritonavir.
Benzodiazepine Antagonists: Flumazenil (Romazicon)	Give 0.2 mg IV over 15 sec. If the desired level of consciousness is not reached in 30-45 seconds a second dose of 0.2 mg may be given and repeated at 60 second intervals as needed (up to a maximum of 4 additional doses) for a cumulative total dose of 1 mg. In the event of resedation, repeated doses may be given. Maximum cumulative dose is no more than 3 mg in any one hour.	Onset: 1-3 min. Duration: 45 min.	• Obtain history of current Benzodiazepine use • May induce Benzodiazepine withdrawal seizure • Half-life of Benzodiazepine may be longer than half-life of Flumazenil, resulting in residual sedation, hypoventilation • Flumazenil is not intended for routine reversal of Benzodiazepine related to sedation, due to the risks of serious adverse effects, such as seizures • Patients requiring reversal of Benzodiazepine need extended monitoring in the recovery phase for minimum of 2 hours
Opioids: Fentanyl (Sublimaze)	Initial dose: 50-100 mcg IV bolus Rate not to exceed 50 mcg/min Additional doses: Titrate in increments of 25 mcg IV to desired effect.	Onset: 2 - 3 min. Frequency: q3- – 15 min PRN	• Consider dosage reduction when given with sedatives, including benzodiazepines. • Useful as adjunct for sedation • Beneficial for pain

		Duration: 30-60 min.	• Monitor for: a. Respiratory depression b. Orthostatic circulatory depression c. Chest wall rigidity (Fentanyl only) d. Nausea, vomiting, constipation, urinary retention e. Pruritis/urticaria (face, esp., nose may itch)
Meperidine (Demerol)	Initial dose: 12.5-25 mg IV bolus Rate not to exceed 25 mg/min Additional doses: Titrate in increments of 12.5-25 mg IV to desired effect Avoid in renal failure patients due to risk of CNS toxicity including seizure	Onset: 5-10 min. Frequency: q5 – 15 min PRN Duration: 1-2 hrs	• Consider dosage reduction when given with sedatives, including benzodiazepines. • Useful as adjunct for sedation • Beneficial for pain • Monitor for: a. Respiratory depression b. Orthostatic circulatory depression c. Nausea, vomiting, constipation, urinary retention d. Pruritis/urticaria (face, esp., nose may itch)
Morphine	Initial dose: 2-5 mg IV bolus. Rate not to exceed 1 mg/min. Additional doses: Titrate in increments of 2 mg IV	Onset: 5-10 min. Duration: 3-4 hrs.	• See Fentanyl comments.
Dissociative Agent: Ketamine	• Approved only for use by medical staff with Category I privileges in Emergency Medicine and Moderate sedation privileges as delineated in Policy #26.34.000 Ketamine, Propofol, & Etomidate for Adult Procedural Sedation in the Emergency Department		
Other Hypnotics: Etomidate	• Approved only for use by medical staff with Category I privileges in Emergency Medicine and Moderate sedation privileges as delineated in Policy #26.34.000 Ketamine, Propofol, & Etomidate for Adult Procedural Sedation in the Emergency Department		
Opioid Antagonist: Naloxone (Narcan)	IV: 0.2-0.4 mg In opiate dependent patients use doses of 0.1 – 0.2 mg Inject over 5 – 10 seconds. Repeat every 2-3 min if resp rate <12 or level of consciousness remains depressed. Total dose not to exceed 10 mg.	Onset: 1-3 min. Duration: 40-60 min.	• History of narcotic use important to obtain to prevent onset of withdrawal symptoms • Agitation due to return of pain • Increased sympathetic stimulation may raise BP, HR, and Temp • Patients requiring reversal of narcotics need extended monitoring in the recovery phase for a minimum of 2 hours

Responsibility:

Anesthesiology, Medical Staff, Nursing

Forms:

None

Other Related Policies:
03.11.020 - Pediatric Moderate Sedation And Analgesia
26.34.000 Ketamine, Propofol, & Etomidate for Adult Procedural Sedation in the Emergency Department

References:
Lippincott Nursing Procedures, 8th Ed. (2019). Wolters Kluwer: Philadelphia
Massachusetts Board of Registration in Nursing

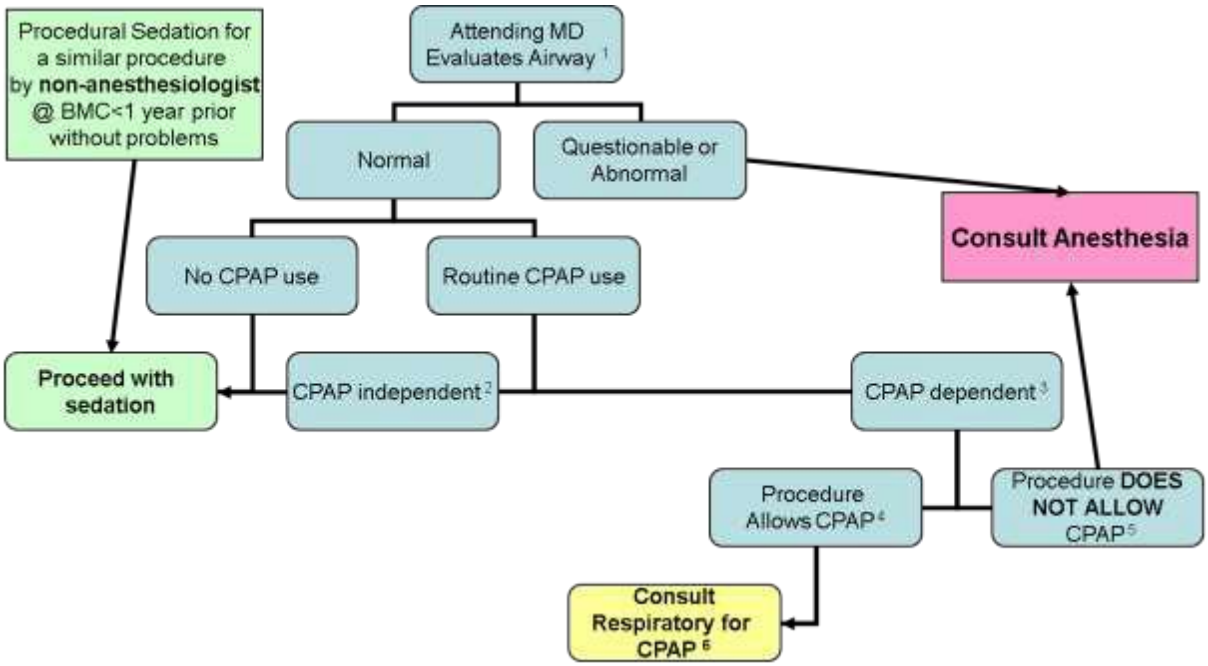
Initiated by: Anesthesia Department / Gastroenterology Department
Contributing Departments:
Nursing Education, Respiratory

APPENDIX A
RECOVERY SCORE

MODIFIED ALDRETE SCORING SYSTEM – Post Anesthesia Scoring System							
Patient must meet the required score of ≥ 8 for inpatients and 10 for outpatients or return to pre-op baseline status in order to meet discharge criteria.							
Criterion		**Score: Maximum score = 10**					
		Adm	**15**	**30**	**45**	**60**	**D/C**
Consciousness	Fully awake **2**						
	Aroused by verbal stimulus **1**						
	Not aroused by verbal stimulus **0**						
Respirations	Takes full breaths and can cough **2**						
	Takes only shallow breaths or has dyspnea **1**						
	Cannot breath without assistance (apnea) **0**						
Circulation	Within 20 mm Hg of pre-op value **2**						
	20 to 50 mm Hg different from pre-op value **1**						
	≥ 50 mm Hg different from pre-op value **0**						
Oxygenation	>94% blood oxygen saturation (SpO_2) on room air **2**						
	Needs supplemental O_2 to maintain SpO_2 > 94% **1**						
	$SpO_2 \leq 94\%$ on supplemental O_2 **0**						
Activity	Can move all 4 extremities on request **2**						
	Can move 2 extremities on request **1**						
	Cannot move any extremities on request **0**						
Total Score							

Appendix B

Moderate Sedation for Patients with OSA



1. Airway Evaluation (If the patient does not meet **ALL** the criteria below, he/she may have a difficult airway):
   - ☐ Mouth opening of 2-3 fingerbreadths
   - ☐ Good range of motion on flexion and extension of the neck
   - ☐ Absence of large tongue (macroglossia)
   - ☐ At least 3 fingerbreadths between tip of the mandible and thyroid notch
   - ☐ BMI < 35
   - ☐ No previous history of difficult intubation
2. CPAP use not routine. Functions well without CPAP. Does not take CPAP on trips.
3. Requires CPAP for sleep. Always brings on trips. Pulmonary Hypertension.
4. Colonoscopy, cardiac catheterization, electrophysiology, interventional radiology.
5. ERCP, EGD, TEE.
6. Respiratory Therapy sets up an auto-titrating BMC CPAP with patient's settings if known or at a titration setting of 4cmH2O-20cmH2O if patient's settings unknown.

Adult Moderate Sedation Policy Explained

Rafael Ortega, MD
Department of Anesthesiology

Objective

- The purpose of this presentation is to explain:

Boston Medical Center's
Adult Moderate Sedation Policy

Policy Statement

The policy is designed to provide specific recommendations for the safe care of patients (15 years of age or older) during the delivery of medications(s) for sedation and analgesia, known as moderate sedation, by non-anesthesiologists during diagnostic, therapeutic, or surgical procedures.

Procedures Under Moderate Sedation

- Endoscopic examinations
- Vascular and cardiac catheterizations
- Radiological procedures
- Other procedures performed in clinics, patient care units, or in the emergency department

Moderate Sedation Definition

Moderate sedation can be described as a state, which allows patients to tolerate procedures while maintaining adequate cardiopulmonary function and the ability to respond purposely to verbal commands or physical stimuli.

Exclusions

- Preoperative medications
- Patient controlled analgesia
- Post operative or labor analgesia
- Pain Management (dressings, burns or angina)
- Sedation in the intensive care unit
- Sedation for treatment of insomnia
- Anxiolysis
- Pulmonary edema
- Drug or alcohol withdrawal or prophylaxis
- Treatment of seizure disorders
- Multiple trauma patients in the ER
- Premedication with a standard dose

Definitions

	Minimal Sedation (Anxiolysis)	Moderate Sedation/Analgesia ("Conscious Sedation")	Deep Sedation /Analgesia	General Anesthesia
Responsiveness	Normal Response to verbal stimulation	Purposeful response to verbal or tactile stimulation	Purposeful response following repeated or painful stimulation	Unarousable even with painful stimulus
Airway	Unaffected	No intervention required	Intervention may be required	Intervention often required
Spontaneous Ventilation	Unaffected	Adequate	May be inadequate	Frequently inadequate
Cardiovascular Function	Unaffected	Usually maintained	Usually maintained	May be impaired

Dosing Requirements

- Age
- Weight
- Preexisting medical condition
- Deep sedation or general anesthesia requires skilled anesthesia personal

Credentialing

- Attending Physicians credentialed according to the procedures described in the Medical Dental Staff Bylaws
- Residents, fellows, physician assistants, and nurse practitioners **ARE NOT** authorized to independently administer moderate sedation and can do so only under the direct supervision of a credentialed Attending Physician

Credentialing Procedure

- Request to Credentials Committee
- Completion of training
- Complete a written post test
- Proof of certification in ACLS

Credentialing Records

- Records of the educational preparation of physicians and/or individuals monitoring the patient are kept by the individual departments
- Educational programs outside the BMC Department of Anesthesia are evaluated individually by the Chief of Anesthesia to determine if they are acceptable substitutes

Recredentialing

- ACLS certification
- Recredentialing follows procedures described in the Medical Dental Staff Bylaws and is the responsibility of the individual physician
- Successful completion of the sedation and analgesia test is required

Registered Nurses

- Airway management
- Use of medication and dosages
- Pulse oximetry
- Cardiac monitoring equipment
- Arrhythmia recognition

Staffing

- Two people must be involved:
  - The physician
  - The Monitoring physician, RN, or Respiratory Therapist *(Bronchoscopy Suite)*
- Third individual to assist under "high risk" circumstances

Staffing Requirements

- All personnel shall demonstrate understanding of the pharmacology and side effects of medications
- Training in basic monitoring techniques and basic airway management
- The means for notifying additional support staff services such as Respiratory Therapy and "Code Blue" pages should be posted in procedure/sedation area

Equipment

- Bag valve device (Ambu) and other O2 delivery systems such as nasal cannula and masks
- Suction catheter or cannula
- Oral and nasal airways
- Automatic BP monitor
- Pulse Oximeter
- Capnography
- EKG monitor
- Emergency Code Cart
- Reversal agents
- Atropine

Selection of Patients

The American Society of Anesthesiologist (ASA) risk classification is used in the selection of patients to receive moderate sedation.

Risk Classification

- Class I: A normally healthy patient
- Class II: A patient with mild systemic disease
- Class III: A patient with severe systemic disease that limits but is not incapacitating
- Class IV: A patient with severe systemic disease that is a constant threat to life
- Class V: A morbid patient who is not expected to survive with or without the operation/procedure

Consultation With Anesthesiologist

- Patients with an ASA classification greater than 3
- Patient has limited range of head/neck motion
- Abnormal craniofacial anatomy
- Morbid obesity
- History of sleep apnea
- During pregnancy

Escort

Ambulatory patients MUST HAVE a responsible, designated adult to escort them home.

Consent

- The patient must be informed about the risks and alternatives of sedation as a component of the planned procedure
- The informed consent for any short term therapeutic, diagnostic, or surgical procedure in which moderate sedation is to be employed will include the risks of sedation and the alternatives to sedation
- Documentation of the consent for both the procedure and the administration of moderate sedation must be included in the patient's chart

NPO GUIDELINES

- Patients undergoing moderate sedation for elective procedures should not drink fluids or eat solid foods for a sufficient period of time to allow gastric emptying before their procedure
- Solids and Non-clear Liquids: NPO for 6 hours
  Clear Liquids: NPO for 2 hours
- Medications may be administered with a sip of water

Gastric Emptying

- Anxiety
- Abdominal Pain
- Autonomic Dysfunction
- Pregnancy
- Mechanical Obstruction
- NPO guidelines do not guarantee complete gastric emptying

Non- NPO Situations

- When patient requires emergency procedure and is not NPO, conscious sedation might be dangerous
  - Delayed
  - Executed judiciously to avoid unconsciousness and the suppression of airway reflexes
  - Not Administered
  - Consider general anesthesia for emergencies

Management During Sedation

Prior to the procedure and the initiation of moderate sedation validate that the patient is an appropriate candidate.

Appropriate Candidate Criteria

- The patient's state of consciousness and medical condition appropriate for using moderate sedation
- Individual sedation plan indicating medication must be documented in sedation record
- A sedation order is signed or cosigned by the Physician
- No allergies or sensitivities to prescribed medications

Appropriate Candidate Criteria (cont…)

- The Appropriate history and physical exam are documented in the patient's chart prior to the procedure:
  - -Actual or estimated weight in kg
  - -Allergies and previous allergic reaction
  - -A list of concurrent medications
  - -Time of last oral intake
  - -Pertinent medical history including history of tobacco, alcohol, or substance abuse
  - -History of sedation/anesthesia problems
  - -Baseline vital signs including blood pressure, heart rate, respiratory rate, and O_2 saturation
  - - Physical Exam
    - - ASA status
    - - General neurological status
    - - Examination of airway
    - - Pulmonary and Cardiac statu

Preoperative Airway Physical Examination

Table 1. Components of the Preoperative Airway Physical Examination

Airway Examination Component	Nonreassuring Findings
1. Length of upper incisors	Relatively long
2. Relation of maxillary and mandibular incisors during normal jaw closure	Prominent "overbite" (maxillary incisors anterior to mandibular incisors)
3. Relation of maxillary and mandibular incisors during voluntary protrusion of cannot bring	Patient mandibular incisors anterior to (in mandible front of) maxillary incisors
4. Interincisor distance	Less than 3 cm
5. Visibility of uvula	Not visible when tongue is protruded with patient in sitting position (e.g., Mallampati class greater than II)
6. Shape of palate	Highly arched or very narrow
7. Compliance of mandibular space	Stiff, indurated, occupied by mass, or nonresilient
8. Thyromental distance	Less than three ordinary finger breadths
9. Length of neck	Short
10. Thickness of neck	Thick
11. Range of motion of head and neck	Patient cannot touch tip of chin to chest or cannot extend neck

Other Pre-Procedure Items

- Functioning IV line or saline lock
- Oxygen requirements evaluated: it should be considered when hemoglobin oxygen saturation <90%, in the elderly and for patients with significant heart, lung or kidney disease
- Instructed on moderate sedation

Other Pre-Procedure Items (cont…)

- Report any problems associated with the procedure
- Confirm that the patient has reviewed and received written instructions
- A “time out” is conducted before starting the procedure

During the Procedure

- Monitor and document vital signs every 5-10 minutes:
  - Heart Rate
  - EKG Rhythm
  - Blood Pressure
  - Respiratory Rate
  - O_2 Sat. (continuous)
  - End tidal CO_2 (Capnography)
  - Patient's Responsiveness

During the Procedure (cont…)

- Document IV fluids, including blood products, and medications(s) administered, route, site, time, dosage, and initials of individual administering medication
- Record oxygen therapy in liters/minutes or FiO_2 and means of oxygen therapy
- The individual who monitors the patient shall inform the MD of any changes in the patient's physiological status from his/her baseline assessment and record its occurrence, interventions and outcome

Post-Procedure

- Patient's vital signs every 5-10 minutes for a minimum of 30 minutes following the last dose of medication administered
- After 30 minutes vital signs recorded every 15 minutes, until discharge criteria are met to end the recovery period. The patient must be observed for a minimum of 30 minutes post procedure
- Recovery Score documented at end of procedure and every 15 minutes until the target score met
- Patient's requiring reversal will require a recovery period of 2 hours following administration of the reversal agent
- Discharge orders and follow-up care must be written by the physician

Recovery Score

Respiration	Able to breath deeply and cough freely Dyspnea or limited breathing Apneic	2 1 0
Circulation	BP ± 20% of pre-anesthetic level BP ± 21-49% of pre-anesthetic level BP ± 50% of pre-anesthetic	2 1 0
Level of Consciousness	Fully awake Arousable on calling/responds to stimuli Not responding	2 1 0
Activity	Moves all extremities Moves 2 extremities Unable to move extremities	2 1 0
O_2 SAT	Adult Only O_2 SAT>92% on room air O_2 supplement to maintain O_2 SAT>90% O_2 SAT<90% even with O_2 supplement	2 1 0

Recovery / Discharge

- Recovery Score greater or equal to 8. If the score is less than 10, a note will indicate reason
- Vital signs and O2 Sat stable
- Swallow, cough, and gag reflexes are present
- Nausea and dizziness are minimal
- Dressing and/or procedure site checked

Recovery / Discharge (cont…)

- Minimal pain managed by appropriate analgesics
- Patient alert
- Patient can sit unaided if appropriate to baseline and procedure
- Discharge order written, if applicable
- If patients are to be transferred for further recovery within the institution, they will be accompanied by a MD, PA, or RN to the designated recovery area

Outpatient Discharge

- Recovery Score of 10 (or pre-procedure state)
- Hydration adequate/able to drink fluids
- Voided or unable to void but comfortable
- Patient and/or family given written discharge instructions which will include an explanation of anticipated limitation on activities
- 24 hour emergency contact (person/service)

Outpatient Discharge (cont…)

- For patients discharged from the recovery area and the hospital, a discharge order is written by a qualified licensed independent practitioner
- Ambulatory patients may not leave the hospital unless accompanied by a responsible, designated adult
- A follow-up phone call is recommended, within 24 hours post procedure

Drug Dosage Guidelines

- Medications will not be administered without the direct presence of the credentialed physician
- Written and signed physician medication order
- A list of medications and dosages is provided in the written policy document to serve as a guide for a safe range of drug administration for moderate sedation
- Dosages should always be titrated for desired therapeutic effect. Any drugs outside these guidelines must be approved by the Chief of Anesthesia Department or designee

Performance Improvement

Each department/division involved in moderate sedation should participate in Performance Improvement activities for its practice. The Department of Anesthesia will assist departments in developing mechanisms to monitor their quality of moderate sedation services. The Joint Commission recommended sample size for quarterly review is detailed in the written policy document.

Contact Information

For more information contact:

Department of Anesthesiology
Atrium Building
Boston Medical Center
617-638-6950

Adult Moderate Sedation Credentialing Exam

True/False

1) The Adult Moderate Sedation Policy is designed to provide specific recommendations for the safe care of patients 12 years or older.

2) During moderate sedation a patient should maintain adequate cardiopulmonary function; however, the ability to respond to verbal commands is greatly reduced.

3) Residents and fellows are authorized to administer moderate sedation independently; however, physician assistants and nurse practitioners require the supervision of a credentialed Attending Physician.

4) Staffing for moderate sedation requires only the attending physician to be involved.

5) An ASA class III patient is one with severe systemic disease that limits but is not incapacitating.

6) Consultation with an Anesthesiologist is needed for all patients with an ASA classification greater than lll.

7) Unless requested by the patient, it is not necessary for ambulatory patients to have a designated adult to escort them home.

8) Moderate sedation must include documentation in the patient's chart of informed consent.

9) The NPO guidelines for moderate sedation allow patients to drink clear liquids 2 hours before a procedure.

10) An emergency procedure in a patient who is not NPO cannot be performed with moderate sedation.

Select the best answer for each question

---

11) Gastric emptying is delayed by:

A.) Anxiety
B.) Autonomic Dysfunction
C.) Pregnancy
D.) Mechanical Obstruction
E.) All of the above

12) Which of the following features suggests a difficult airway?

A.) High arched and narrow palate
B.) Short lower incisors
C.) Both
D.) None

13. A 52-year-old man scheduled for a colonoscopy has a history of noninsulin dependent diabetes and hypertension which is well controlled. His history is otherwise unremarkable. He would best be classified as:

A.) ASA 1
B.) ASA 2
C.) ASA 3
D.) ASA 4
E.) ASA 5

14. Which of the following is NOT a common side effect of fentanyl?

A.) Respiratory depression
B.) Orthostatic hypotension
C.) Nausea
D.) Itchy nose
E.) Hives

15. Which of the following is CORRECT regarding naloxone?

A.) It is a partial opioid agonist
B.) A single dose may be inadequate.
C.) It reverses some benzodiazepines
D.) It is ineffective against Demerol (meperidine)
E.) It reverses respiratory depression but not the analgesia

16. Which of the following is CORRECT regarding gastric emptying?

A.) It is unaffected by pregnancy
B.) It is unaffected by diabetes
C.) It is unaffected by abdominal pain
D.) It is unaffected by anxiety
E.) It is unaffected by arterial hypertension

17. Which of the following DOES NOT require monitoring and documentation during moderate sedation?

A.) Heart rate
B.) EKG rhythm
C.) Blood Pressure
D.) Temperature
E.) Respiratory rate

18.) Which of the following is considered a clear liquid?

A.) Water
B.) Apple juice
C.) Cranberry juice
D.) Seven Up
E.) All of the above

19.) Which of the following does NOT require a consultation with an anesthesiologist?

A.) Limited range of head/neck motion
B.) Abnormal craniofacial anatomy
C.) Morbid obesity
D.) History of sleep apnea
E.) Uncontrolled hypertension

20.) Which of the following is required to administer moderate sedation?

A.) Pulse Oximeter
B.) Defibrillator
C.) Both
D.) None

Adult Moderate Sedation Credentialing Exam
Answer Sheet

Name: _____ Date: _____

1. _____
2. _____
3. _____
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21. Further Instructions:
View the link below for education on Capnography
https://journals.lww.com/anesthesia-analgesia/fulltext/2023/11000/capnography__video_in_clinical_anesthesia.6.aspx

Score _____ Pass Fail

Passing score is 80%