

# ***Moderate Sedation in Radiology/Special Procedures***

***2.0 Contact Hours***

***Presented by:***

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# Moderate Sedation in Radiology/Special Procedures

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Objectives:

After completing this course, the learner will be able to:

1. Describe the different levels of sedation.
2. Discuss the competency and education necessary for registered nurses to administer conscious sedation.
3. Describe the intra-procedure process for monitoring moderate sedation.
4. Discuss the pre- and post-procedure process for monitoring moderate sedation.

According to the American Society of Anesthesiologists (ASA) and the Joint Commission (JC), moderate sedation is a drug-induced depressed level of consciousness achieved with the administration of sedatives, hypnotics, and/or opioids. During this altered state of consciousness, the patient retains protective airway reflexes, independently and continuously maintains a patent airway and spontaneous ventilation, and can respond purposefully and appropriately to physical and verbal stimuli.<sup>1,2</sup>

Each state board of nursing deals with the administration of conscious sedation differently. Many state boards do not have a specific position statement and just require education and competency. Others do have position statements. However, no state board has determined that it is not within the scope of practice for a registered nurse. Registered nurses in Medical Imaging Special Procedures/Angiography must know the different levels of sedation/analgesia and must be competent with nursing care before, during, and after procedures, as the patient could progress to a deeper level of sedation than intended at any time during the procedure. This not-always-predictable change in patient status may require support while the sedation is reversed to the desired level.

The goal of moderate sedation is to achieve an altered state of consciousness with minimal risk and obtain relief of pain and anxiety. Opioids such as fentanyl and morphine, as well as benzodiazapines such as midazolam (Versed) and diazepam (Valium), produce a reduced level of anxiety, analgesia and a minimally depressed level of consciousness, and in many cases, amnesia.

The special procedure nurse's role in moderate sedation is to monitor the effects of the sedatives given and relieve patient anxiety. The nurse should not have any other duties

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<sup>1</sup> JCAHO. Comprehensive Accreditation Manual for Hospitals: The Official Handbook. Oakbrook Terrace, IL: JCAHO, 2005.

<sup>2</sup> ASA. Practice guidelines for sedations and analgesia by non-anesthesiologists: AN updated report by the ASA task force on sedation and analgesia by non-anesthesiologists. *Anesthesol.* 2002;96:1004-1017.

while monitoring the patient. Assessment of the patient includes monitoring airway and gas exchange, cardiovascular response, level of consciousness, and control of pain and anxiety.

It is common practice for acute care hospitals to have policies regarding moderate sedation. These policies provide guidelines for clinicians providing care for patients receiving sedation in conjunction with invasive, manipulative, or diagnostic procedures. These policies, however, do not apply to medication administered for pain control, seizure control, sedation for mechanical ventilation, or emergency intubation.

## **Definitions**

Sedation occurs on a continuum from light sedation to general anesthesia and is the result of individual response and the identified intent of sedation. Progression from one level of sedation to another is related to the medications administered, the routes, the dosage and the patient's current clinical health status. The clinician managing the care of the patient who has received sedation must be able to define and recognize the various levels of sedation and be able to provide the appropriate corresponding care.

Because sedation is a continuum, it is not always possible to predict how an individual patient will respond. Hence, practitioners intending to produce a given level of sedation should be able to rescue patients whose level of sedation becomes deeper than initially intended. Individuals administering moderate sedation/analgesia (conscious sedation) should be able to rescue patients who enter a state of deep sedation/analgesia, while those administering deep sedation/analgesia should be able to rescue patients who enter a state of general anesthesia.

***Minimal Sedation (Anxiolysis)*** is 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.

***Moderate Sedation/Analgesia (Conscious Sedation)*** is a drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function and protective reflexes are usually maintained. In acute care hospitals, moderate sedation may be administered in the following areas: Medical Imaging, Cardiac Catheterization Labs, Surgical Services, Intensive Care Units, and Emergency Rooms.

***Deep Sedation / Anesthesia*** is a drug induced depression of consciousness during which patients cannot easily be aroused but can 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. Deep sedation/anesthesia is restricted to use by anesthesiologists or Certified

Registered Nurse Anesthesists (CRNAs) where anesthesia policies and procedures will apply.

**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. Anesthesia is restricted to use by anesthesiologists or CRNAs where anesthesia policies and procedures will apply.

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

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

Conscious sedation policies apply to all patient populations, whenever sedation is utilized, throughout an organization, with the exception of the following:

- Use of those agents necessary in emergent procedures / interventions where the airway and/or protective reflexes are mechanically or otherwise monitored or protected (i.e. ventilator patients, and for intubation in an emergent situation).
- Patients that require unusual doses of those agents used in order to obtain minimal to normal pharmacological response (i.e. seizures, high pain threshold, or anxiolytics administered on a routine and regular basis).

### **Settings for Administration of Moderate Sedation**

Moderate sedation may be administered in Medical Imaging, Cardiac Catheterization Lab, Surgical Services, Intensive Care, Critical Care, and Emergency Room by a physician or a registered nurse who is clinically competent to administer the approved medications and provide the appropriate standard of care for the level of sedation produced.

### **Credentials, Competency, and Education for Physicians Practicing in the Radiology Department**

Physicians ordering moderate sedation must be specifically privileged as per Medical Staff privileging requirements. Physicians administering deep sedation or anesthesia must be credentialed as anesthesiologists. Competency is normally reassessed every two years at a minimum, and based on Medical Staff Bylaws and organizational policies.

The Department of Anesthesiology, as delegated by the facility's Medical Executive Committee, is usually responsible for the development of standards of practice for moderate sedation in collaboration with other departments that provide service within the organization.

### **Competency and Education for Registered Nurses Administering Moderate Sedation in Radiology**

The registered nurse is allowed by state law and institutional policy to administer sedation and analgesia. The health care facility should have in place an educational/credentialing mechanism which includes a process for evaluating and documenting the individual's competency relating to the management of patients receiving sedation and analgesia; evaluation and documentation should occur on a periodic basis.

The registered nurse managing and monitoring the care of patients receiving sedation and analgesia must be able to:

- Demonstrate the acquired knowledge of anatomy, physiology, pharmacology, cardiac arrhythmia recognition and complications related to sedation and analgesia sedation and medications.
- Assess the total patient care requirements before and during the administration of sedation and analgesia, including the recovery phase.
- Understand the principles of oxygen delivery, transport and uptake, respiratory physiology, as well as understand and use oxygen delivery devices.
- Recognize potential complications of sedation and analgesia sedation for each type of agent being administered.
- Possess the competency to assess, diagnose, and intervene in the event of complications and institute appropriate interventions in compliance with orders or institutional protocols.
- Demonstrate competency, through ACLS or PALS, in airway management and resuscitation appropriate to the age of the patient.
- Understand the legal ramifications of providing this care and maintain appropriate liability insurance.<sup>3</sup>

### ***Moderate Sedation***

#### *Pre-procedure Verification Process:*

- Verify physician order prior to procedure or test.
- Verify that any informed consent (including the risks, benefits, and alternatives, and the patient's understanding) has been obtained and documented by the

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<sup>3</sup> AANA – Policy Guidelines in the Administration of Sedation and Analgesia. American Association of Nurse Anesthetists. June, 1996; Revised June, 2003.

- physician prior to the anesthesia, procedure, or test.
- Educate the patient and/or family concerning the objective of sedation, anticipated changes in behavior during and post sedation, and activity restrictions post procedure.
  - Initiate venous access prior to the anesthesia, procedure or test.
  - Verify that the patient has had nothing by mouth (NPO) for several hours prior to the test (according to facility policy or physician order), except in emergent/urgent situations, if in the physician's opinion the risk of delay would cause harm or detriment to patient care.

*Pre-procedure Assessment:*

During this process, the registered nurse assesses the patient for risk factors and helps to reduce the patient's anxiety related to the procedure. The medical record should be thoroughly reviewed and the patient is asked about any previous reactions to sedation or anesthetics. Things to assess for:

- Any cardiovascular problems – i.e., chest pain.
- History of smoking, COPD, asthma.
- Renal or hepatic dysfunction – Recent (within 2 weeks) BUN and creatinine results should be on the chart.
- History of diabetes.
- Prescription or over-the-counter medications, and when last taken.
- Allergies.

*Intra-procedure:*

To ensure patient safety and avoid complications, compliance with Joint Commission (JC), statutory, and professional standards of care should be adhered to.

- The physician selects and prescribes the medication. The dosage, route, time of administration, and the effect of medication(s) administered are documented.
- Monitoring includes:
  - a) Continuous pulse oximetry.
  - b) Vital signs (pulse rate, B/P) and level of consciousness.
  - c) Cardiac monitoring. Additional cardiac rhythm strips may be obtained for the patient record when changes in cardiac rhythm occur.
- The registered nurse monitors and provides nursing care throughout the procedure as well as through the recovery phase. The physician must be physically present during the administration of moderate conscious sedation and the nurse shall have no other responsibilities that would prevent her from responding to assessment changes in the patient requiring intervention. Additional personnel should be available to assist if needed. JC mandates that in addition to the licensed independent practitioner performing the procedure, sufficient numbers of

- qualified staff need to be present to evaluate the patient, help with the procedure, provide the sedations, and monitor and recover the patient.<sup>4</sup>
- Monitoring for potential adverse reaction to the medication(s) is continuous. Signs or symptoms of reaction will be reported to the physician.
  - Emergency / resuscitative equipment, including oxygen, is immediately available and there is immediate access to personnel who are experts in airway management and advanced life support.
  - Reversal agents must be immediately available.
  - Exception: Any monitor that interferes with the accuracy or reliability of any diagnostic procedure (e.g., MRI) can be removed at the discretion of the physician. The registered nurse monitoring the patient will maintain close observation of the patient in this instance.

*Post- procedure:*

- The patient must be monitored by a Registered Nurse with the previously described education and competency.
  - Monitoring will include vital signs (pulse & respiration rate, B/P), SaO<sub>2</sub> and level of pain if applicable every 15 minutes until an Aldrete score of 8 or a score within 2 points from baseline has been achieved.
1. Criteria for In-Patient Transfer: the patient may be transferred to the receiving unit upon a physician's order and/or when the following criteria have been met:
    - Aldrete score of 8 or a score within 2 points from baseline has been achieved. Patients with abnormal mental status and children should be returned to their baseline score.
    - Stable vital signs and within 20% range of pre-procedure or within the intended target range.
    - Oxygen saturation level of 92% or greater on room air or supplemental oxygen, as ordered by the physician, or return to baseline.
    - Protective reflexes (cough, swallow, blink or gag) intact.
    - If reversal agents have been given, the patient must be monitored for re-sedation for an additional 2 hours, as the duration of the medication is longer than that of the reversal agents.
    - A verbal report should be given to the staff nurse on the receiving unit. Documentation should include to whom report has been given.
    - Patients are transported with cardiac monitoring, pulse oximetry and oxygen.
    - *During emergent situations, patients may be transferred from the procedural area to an area with equal ability to provide the level of care needed for management of patients that have undergone moderate sedation. Patients are transported with cardiac monitoring, pulse oximetry and oxygen.*
  2. Criteria for Outpatient Transfer or Discharge: Ambulatory Care patients should

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<sup>4</sup> JCAHO. Comprehensive Accreditation Manual for Hospitals: The Official Handbook. Oakbrook Terrace, IL: JCAHO; 2005.

have:

- Aldrete score of 8 or a score within 2 points from baseline has been achieved. Patients with abnormal mental status and children should be returned to their baseline score.
- Stable vital signs and within 20% range of pre-procedure.
- Oxygen saturation level of 92% or greater on room air or supplemental oxygen, as ordered by the physician, or return to baseline.
- Protective reflexes (cough, swallow, blink or gag) intact
- If reversal agents have been given, the patient must be monitored for re-sedation for an additional 2 hours, as the duration of the medication is longer than that of the reversal agents.
- Pain and nausea controlled
- Able to ambulate appropriate to developmental level and pre-procedure ability or post-procedural expectation.
- Able to tolerate fluids.
- No excessive bleeding or drainage
- It is recommended that a responsible adult accompany the patient home. Patients who have received sedation should not drive themselves home. (Hospital transport may be indicated.)
- Written and verbal instructions will be provided to the patient and caregiver. Instructions will include but are not limited to: diet, medications, activity level, possible complications and actions to follow, follow-up appointments, resources to contact should problems/questions arise.
- Any variation to the above criteria relating to the patient's physical condition will be by written order of the physician.

Radiology nursing is rapidly expanding and includes different exciting areas that are appealing to many nurses. Procedures that were done previously in the operating room, such as endografts, are currently being performed in Radiology. This means that the demands and responsibilities of a radiology/special procedures nurse require special training. The radiology nurse must be well versed in the care of critical patients, as well as performing conscious sedation.