

19th Annual Mud Season Nursing Symposium

Moderate Sedation for the Non-Anesthesia Provider

Timothy R. Lyons, M.D.
26 March 2011

Moderate Sedation

The purpose is to provide patients with the benefits of sedation and analgesia while minimizing the associated risks.

Providing the benefits of sedation and analgesia for what reason?

- ❖ To allow patients to tolerate unpleasant procedures by relieving anxiety, discomfort or pain
- ❖ To expedite the conduct of a procedure that may not be uncomfortable but requires the patient not move

It is vitally important to understand that...

Sedation is a dynamic process.

Four basic levels in the Sedation Continuum

- Minimal Sedation- Anxiolysis
 - Moderate Sedation- Conscious Sedation
 - Deep Sedation
 - General Anesthesia

Minimal Sedation- Anxiolysis

- Responsiveness
- Airway
- Spontaneous ventilation
- Cardiovascular function
- Normal response to verbal stimulation
- Unaffected
- Unaffected
- Unaffected

Moderate Sedation

- Responsiveness
- Airway
- Spontaneous ventilation
- Cardiovascular function
- Purposeful response to verbal or tactile stimulation
- No intervention required
- Adequate
- Usually maintained

Deep Sedation

- Responsiveness
- Airway
- Spontaneous ventilation
- Cardiovascular function
- Purposeful response to repeated or painful stimulation
- Intervention may be required
- May be inadequate
- Usually maintained

General Anesthesia

- Responsiveness
- Airway
- Spontaneous ventilation
- Cardiovascular function
- Unarousable even with painful stimulation
- Intervention often required
- Frequently inadequate
- May be impaired

Minimal Sedation- Anxiolysis

A single, oral sedative or analgesic medication administered in doses appropriate for the unsupervised treatment of insomnia, anxiety or pain.

Moderate Sedation

the depressed level of consciousness which allows the patient the ability to independently and continuously maintain an airway and respond appropriately to physical stimulation and verbal command.

With Regard to Moderate Sedation, Deep Sedation and General Anesthesia...

These sedation practices may result in cardiac or respiratory depression which must be rapidly recognized and managed to avoid the risk of hypoxic brain injury, cardiac arrest or death.

Conversely, inadequate sedation or analgesia may result in undue patient discomfort or injury from lack of cooperation or adverse physiological response to stress.

Because it is not always possible to predict how a specific patient will respond to sedation and analgesic medication, the practitioner needs to be able to rescue patients whose level of sedation has become deeper than intended.

Guidelines

- ✓ Patient evaluation
- ✓ Pre-procedure preparation
- ✓ Monitoring
- ✓ Recording of monitored parameters
- ✓ Availability of an individual for patient monitoring
- ✓ Training of personnel
- ✓ Availability of emergency equipment

Guidelines

continued...

- ✓ Intravenous access
- ✓ Use of supplemental oxygen
- ✓ Combination of sedative-analgesic agents
- ✓ Titration of intravenous sedative-analgesic medications
- ✓ Anesthetic induction agents used for sedation and analgesia
- ✓ Reversal agents
- ✓ Recovery care

Patient Evaluation

Clinicians administering sedation should be familiar with aspects of the patient's medical history that may affect or alter the patient's response to the sedative or analgesic agents used.

Patient Evaluation

- Abnormalities of major organ systems
- Previous experience with sedation as well as general anesthesia
- Drug allergies
- Current medications
- Potential drug interactions
- Tobacco, alcohol or substance abuse history
- Time and nature of last oral intake

Patient Evaluation

Patients should, also, undergo a focused physical examination, including auscultation of heart and lungs, airway evaluation and vital signs.

Pre-procedure laboratory studies should be guided by the patient's underlying medical condition.

These evaluations need to be confirmed immediately before sedation is begun.

Pre-procedure preparation

Patients should be informed of and agree to administration of sedation and analgesia, including its benefits, risks, limitations and alternatives.

Patients undergoing sedation and analgesia for elective procedures should not drink fluids or eat solid food for a sufficient period of time to allow for gastric emptying.

Monitoring

- ❖ Level of consciousness
- ❖ Pulmonary ventilation
- ❖ Oxygenation
- ❖ Hemodynamics

Recording of Monitored Parameters

- ✓ Before the beginning of procedure
- ✓ After administration of sedative or analgesic agents
- ✓ At regular intervals during the procedure
- ✓ During initial recovery
- ✓ Before discharge

Availability of an individual for patient monitoring

A designated individual, other than the person performing the procedure, should be present to monitor the patient. During deep sedation, this individual should not have any other responsibilities. However, during moderate sedation, this person can assist with minor, interruptible tasks when the patient is stable and monitoring is maintained.

Training of personnel

- Individuals responsible for patients receiving sedation or analgesia should understand the pharmacology of the agents used, as well as their antagonists.
- Individual monitoring the patient should be able to recognize associated complications.
- At least one person knows how to establish an airway and provide positive pressure ventilation.

Availability of emergency equipment

Appropriate emergency equipment should be immediately available whenever sedation capable of causing cardiopulmonary depression is given. This equipment should include pharmacologic antagonists and airway adjuncts.

Intravenous access

In patients receiving moderate sedation, vascular access should be maintained throughout the procedure and until the patient is no longer at risk for cardiopulmonary depression.

Use of supplemental oxygen

If hypoxemia is anticipated or develops during moderate sedation, supplemental oxygen should be administered.

Combination of sedative-analgesic agents

Combinations of sedative and analgesic agents may be administered as appropriate for the procedure being performed and the condition of the patient.

Combination of sedative-analgesic agents

Ideally, each component should be administered individually to achieve the desired effect.

Titration of intravenous sedative and analgesic medications

Intravenous sedative and analgesic drugs should be given in small, incremental doses that are titrated to the desired end points of sedation and analgesia. Sufficient time must elapse between doses to allow the effect of each dose to be assessed before subsequent doses are given.

Anesthetic induction agents used for sedation and analgesia

Even if moderate sedation is intended, patients receiving these agents should receive care consistent with that required for deep sedation. Therefore, providers administering these drugs should be qualified to rescue patients from any level of sedation, including general anesthesia.

Reversal agents

Specific antagonists should be available when opiates and benzodiazepines are administered.

Before their use, patients should:

- be encouraged or stimulated to breathe deeply
- receive supplemental oxygen
- receive positive pressure ventilation

After reversal, patients should be observed long enough to ensure that sedation and cardiopulmonary depression do not recur once the effect of the antagonist dissipates.

Reversal agents

The use of sedation regimens that include routine reversal of sedative or analgesia agents is discouraged.

Recovery care

Following the administration of moderate sedation, patients should be observed in an appropriately staffed and equipped area until they are near their baseline level of consciousness and are no longer at risk for cardiopulmonary depression.

Recovery care

Oxygenation should be monitored periodically until patients are no longer at risk for hypoxemia.

Ventilation and circulation should be monitored at regular intervals until patients are suitable for discharge.

Discharge Criteria

- Patients should be alert and oriented
- Vital signs should be stable and within acceptable limits.
- Sufficient time should have elapsed after last dose of reversal agent to ensure the patient does not become re-sedated as the reversal effects wear off.
- Outpatients should be discharged in the presence of a responsible adult who will accompany them home and be able to report any post-procedure complications
- Outpatients and their escorts should be provided with written instructions and a phone number to be called in case of an emergency.

Qualities of the Ideal Medication...

- ✓ Provide Analgesia
- ✓ Provide Amnesia
- ✓ Short-acting
- ✓ Easily Titrated
- ✓ Safe Therapeutic Window
- ✓ Reversible
- ✓ Inexpensive
- ✓ No Side Effects

What Medications Can Be Used??

What Medications Are Used Most Commonly??

Opiates

Benzodiazepines

Why?

Qualities of the Ideal Medication...

- ✓ Provide Analgesia
- ✓ Provide Amnesia
- ✓ Short-acting
- ✓ Easily Titrated
- ✓ Safe Therapeutic Window
- ✓ Reversible
- ✓ Inexpensive
- ✓ No Side Effects

Propofol

- Also known as Diprivan®
- Highly potent induction agent
- Outside the OR, it can be used in the ICU setting for intubated patients
- ASA has recommended that it not be used by non-anesthesia providers

Anesthetic induction agents used for sedation and analgesia

Even if moderate sedation is intended, patients receiving these agents should receive care consistent with that required for deep sedation. Therefore, providers administering these drugs should be qualified to rescue patients from any level of sedation, including general anesthesia.

What are the Risks??

The greatest risk, when providing moderate sedation, is going beyond our desired endpoint.

When we go beyond moderate sedation...

- ⌘ Respiratory depression
- ⌘ Hypoxia
- ⌘ Obstructed airway
- ⌘ Respiratory arrest or Apnea

Treatment

- Open and maintain airway
- Stimulate patient
- Ventilate as needed
- Reverse sedation with Narcan or Romazicon

Prevention

- ✓ Always give Oxygen... by mask if necessary
- ✓ Titrate the medication
- ✓ When in doubt, give less medication
- ✓ Be cautious with patients at higher risk
- ✓ Be aware of the airway

Discussion