1946

Perioperative Nursing Care of the Patient Receiving Moderate Sedation/Analgesia
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AORN INDEPENDENT STUDY ACTIVITY
STUDY GUIDE WITH VIDEOTAPE

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INTENDED AUDIENCE
This independent study activity is intended for use by perioperative nurses who would like to prepare to manage the care of patients receiving moderate sedation/analgesia.

GUIDE FOR STUDY
This study guide is intended for use in conjunction with the video, “Managing the Patient Receiving Moderate Sedation/Analgesia” We suggest that you take the following steps to complete this activity.

1. Read the objectives for this educational activity and compare them with your own learning objectives.
2. View the video “Managing the Patient Receiving Moderate Sedation/Analgesia.”
3. Read the study guide, paying particular attention to those areas that reflect the objectives.
4. Consult a medication reference for more detailed information concerning specific medications.
5. Complete the post test.

PURPOSE/GOALS
This activity will provide perioperative nurses with basic knowledge related to the care and management of the patient receiving moderate sedation/analgesia.

OBJECTIVES
After reviewing the video and completing this study guide, the participant will be able to:

1. Define the levels of sedation inclusive of general anesthesia.
2. List medications most commonly administered during moderate sedation/analgesia.
3. Describe appropriate nursing care in the pre-procedural, procedural, and post-procedural stages of care for patients who receive moderate sedation/analgesia.
INTRODUCTION
Over the past decade, the administration of moderate sedation/analgesia, formerly referred to as conscious sedation or intravenous (IV) conscious sedation, by non-anesthesia care providers has gained in popularity in part as a result of increased initiatives to reduce costs, and increased ambulatory procedures. Another contributing factor is the advent of short-acting sedative and analgesic agents that can be safely administered by non-anesthesia care providers. This method of providing sedation and analgesia is now common practice during many types of invasive and surgical procedures across many inpatient and outpatient settings. In response to these changes, AORN has developed this study guide to provide the perioperative RN with the basic prerequisite knowledge related to the care and management of the patient receiving moderate sedation/analgesia.

The perioperative RN should be knowledgeable about the following in order to safely manage the care of the patient during moderate sedation/analgesia

- Scope of practice and the role of the perioperative RN
- Patient selection and assessment parameters
- Physiological monitoring
- Medication administration
- Emergency response
- Post procedure care and discharge readiness

This video and study guide package offers a means of acquiring the basic prerequisite knowledge to care for the patient during moderate sedation/analgesia in any setting.

LEVELS OF SEDATION
Moderate sedation/analgesia refers to a mild depression of consciousness achieved by the administration of sedatives, usually intravenously. Moderate sedation may or may not include the administration of a systemic analgesic, however, it is customary to administer local or regional anesthesia, hence the term sedation/analgesia. The hallmark of moderate sedation/analgesia is that the patient is able to maintain his or her airway and breathing without assistance, while exhibiting a mild depression of consciousness with minimal variations in vital signs (eg, heart rate, respiratory rate, blood pressure, oxygen saturation level). Additionally, patients experience decreased pain sensation, but respond appropriately to verbal and/or tactical stimulation.1

Sedation occurs on a continuum from minimal sedation (ie, anxiolysis, the relief of anxiety) to general anesthesia. The perioperative nurse who is administering moderate sedation/analgesia should be able to rescue patients whose level of sedation progresses to deep sedation; therefore, it is imperative that perioperative nurses caring for patients receiving moderate sedation/analgesia are able to recognize the various levels of sedation.
The three levels of sedation include
• minimal (ie, anxiolysis),
• moderate, and
• deep.
Each level can be recognized by observing for specific physiological effects caused by the medications.

**Minimal Sedation**
This level of sedation is usually induced by the administration of an anxiolytic agent. Anxiolytic medications are more commonly known as anti-anxiety agents (ie, medications that reduce anxiety) and include the benzodiazepine derivatives and a few less widely used non-benzodiazepines such as meprobamate and hydroxyzine hydrochloride. During minimal sedation, the patient experiences reduced anxiety, and possibly some cognitive and coordination impairment; however, the patient maintains his or her normal response to verbal stimulation. The patient’s airway, ventilations, and cardiovascular function is unaffected.¹,²

**Moderate Sedation/Analgesia**
At this level, the administration of sedatives, with or without an analgesic (usually given intravenously), are titrated to the desired effect, and produce a medically controlled depression of consciousness that allows the patient to tolerate unpleasant and otherwise painful procedures. In this state, the patient can still maintain adequate cardiopulmonary function, protective reflexes, and the ability to respond to verbal and/or tactile stimulation.¹,²

There are four distinct characteristics of moderate sedation/analgesia.

1. The patient is able to respond purposefully to verbal commands or light tactile stimulation.
2. The patient is able to maintain his or her own protective reflexes and communicate verbally.
3. The patient is able to maintain adequate, spontaneous ventilation.
4. The patient has minimal variations in vital signs.¹,²

**Deep Sedation/Analgesia**
At this level, the administration of medications induces either a medically controlled state of depressed consciousness or unconsciousness and therefore not easily aroused. The patient may be able to respond only to repeated and/or painful stimulation. The patient may require assistance in maintaining his or her airway, even though ventilation may be adequate. The patient’s reflexes and the ability to respond to verbal and/or tactile stimulation may be impaired.¹,²

**General Anesthesia**
General anesthesia is a medication-induced state of unconsciousness produced by the administration of anesthetic agents by an anesthesia care provider that results in some degree of muscular relaxation and the absence of pain sensation throughout the patient’s entire body. The patient cannot
be aroused even to painful stimulation, interventions to maintain the airway are often required, and ventilation is frequently inadequate, thus requiring ventilator assistance. The patient’s cardiovascular function also may be impaired. In contrast, moderate sedation/analgesia allows the patient to maintain some degree of consciousness, yet still provides enough muscle relaxation, anxiety reduction (ie, sedation), and intra-procedural amnesia to allow for a wide range of procedures.1, 2

The use of general anesthesia continues to be the anesthetic of choice for many surgical procedures. Its use comes with a greater potential for complications, however, and typically requires more risk management procedures and emergency protocols. An anesthesia care provider also must be present and provide constant physiological monitoring throughout the administration of anesthesia. In short, general anesthesia requires a longer recovery period, higher facility costs, higher and more expensive level of anesthesia care provider, and increased resource demands.

In today’s cost-conscious surgical environment, often involving outpatient and ambulatory procedures, moderate sedation/analgesia is more appealing because it can be administered by a non-anesthesia care provider, is short acting, and has a short recovery period. Benefits of moderate sedation/analgesia, such as cost savings and minimal patient recovery time have led to its increased use in the ambulatory surgery setting. The administration of moderate sedation/analgesia is not without risk, however, and not all patients or procedures are appropriate. The following sections will discuss appropriate patient selection and the complications that may arise.

Use of Moderate Sedation/Analgesia
The use of general anesthesia and moderate sedation/analgesia both require continuous physiological monitoring of the patient. The difference is that moderate sedation/analgesia can be safely administered by a non-anesthesia care provider (eg, an RN trained in the administration of moderate sedation/analgesia), while the person caring for a patient receiving deep sedation or general anesthesia should be monitored by a certified nurse anesthetist (CRNA) or an anesthesiologist (ie, MD). Moderate sedation/analgesia is appropriate for a broad range of surgical and invasive procedures outside of the traditional OR (eg, emergency department, endoscopy, interventional radiology, critical care, ambulatory surgery centers). In general, moderate sedation/analgesia allows for a larger number of procedures that can be performed with a shorter recovery time and reduced cost per procedure for both the patient and facility.

Complications that may arise during moderate sedation/analgesia include respiratory depression, airway obstruction, hypotension, hypertension, myocardial ischemia, dysrhythmia, and adverse medication reaction(s). Implementation
of AORN’s recommended practices for managing the patient receiving moderate sedation/analgesia may minimize the risk of such adverse events, provide a means for observation during the initial stages, and enable immediate corrective action.

**SCOPE OF PRACTICE**

“The perioperative registered nurse administering moderate sedation/analgesia must practice within the scope of nursing practice as defined by his or her state…”

The administration of medications, and the interventions taken must fall within the legal confines of the scope of practice of the RN as defined by state and local laws and regulations under which that RN practices. The RN who administers moderate sedation/analgesia should be supervised by a licensed, independent practitioner who has the prerequisite knowledge and training and is credentialed in the administration of moderate sedation/analgesia. Most facilities have a formal process in place for credentialing (ie, granting privileges) to licensed, independent practitioners, thereby granting physicians and other licensed, independent practitioners with privileges in the administration of moderate sedation/analgesia. The RN is both legally and ethically obligated to stay informed of any changes or revisions to his or her state and local declaratory rulings and other guidelines as they relate to the administration of moderate sedation/analgesia by a non-anesthesia care provider.

**PATIENT SELECTION**

Not all patients are appropriate for RN-administered moderate sedation/analgesia. Certain patients (eg, those with underlying, unstable medical conditions, the critically ill) will be better served by an anesthesia care provider who is qualified to administer monitored anesthesia care and licensed to convert to general anesthesia should the situation warrant that level of sedation. It is important to note that monitored anesthesia care is not defined by the medications administered nor the level of sedation, but by the level of the provider who is providing the sedation/analgesia or anesthesia.

The RN who is administering moderate sedation/analgesia should assess the patient to determine whether the patient is appropriate for RN-administered sedation/analgesia using predetermined selection criteria as established by the facility. The American Society of Anesthesiologists’ (ASA) Physical Status Classification system is recommended as a means of classifying the patient’s overview physiological status (Table 1) and of determining the patient’s appropriateness for non-anesthesiologist administered moderate sedation/analgesia. Those patients whose status is I, II and medically stable III are usually considered appropriate candidates for RN-administered moderated sedation/analgesia.²,³
<table>
<thead>
<tr>
<th>ASA Physical Status Classification</th>
<th>Definition</th>
<th>Physiological Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Stable, healthy adult</td>
<td>Absence of any psychological, metabolic, or medical conditions; a normal healthy adult</td>
</tr>
<tr>
<td>II</td>
<td>Mild systemic disease</td>
<td>Cardiovascular disease, asthma, chronic bronchitis, obesity, diabetes; well-controlled medical conditions</td>
</tr>
<tr>
<td>III</td>
<td>Severe systemic disease</td>
<td>Cardiovascular or respiratory disease that limits activity; severe diabetes with systemic complications; history of myocardial infarctions, angina, or poorly controlled hypertension; medically stable and in no acute distress</td>
</tr>
<tr>
<td>IV</td>
<td>Sever systemic and is critical ill</td>
<td>Severe cardiac, respiratory, renal, hepatic, or endocrine disease that are in medically unstable and the systemic illness(s) and are a threat to life</td>
</tr>
<tr>
<td>V</td>
<td>Moribund patient</td>
<td>Surgery is performed as a last recourse; major multiple system failure; patient is not expected to live without the surgery</td>
</tr>
<tr>
<td>VI</td>
<td>Declared brain dead</td>
<td>Organ donor whose organs are being removed for transplant purposes</td>
</tr>
</tbody>
</table>

Adapted from *Physical Status Classification System American Society of Anesthesiologists*
Consultation with an anesthesia care provider is strongly recommended for patients who present with any of the following medical conditions.

- History of respiratory or hemodynamic instability
- Prior experiences with physiological problems during sedation or anesthesia
- Severe sleep apnea
- Airway-related issues
- One or more significant co-morbidities
- Pregnancy
- Inability to communicate effectively (e.g., impaired cognition, verbal ability)
- Inability to cooperate or remain still (e.g., mentally challenged)
- Multiple medication allergies
- Multiple medication regimens, that may adversely interact with sedation and analgesia medications
- Current substance use (e.g., street drugs, herbal supplements, non-prescribed prescription medications)
- Unstable ASA Physical classification of III or greater

The patient selection process involves interpretation of data derived from the following.

- Preprocedure history and physical (H&P). This provides knowledge of the patient’s past medical history and current medications that may pose a potentially dangerous interaction with the medications used for moderate sedation/analgesia (e.g., chronic opioid use).
- Laboratory tests or blood tests. Each facility should define what pre-anesthesia laboratory studies are required depending on the patient’s age, overall physical health, and procedure planned. Typically, there are no recommended laboratory tests for a patient with an ASA physical classification of I or II.
- Electrocardiogram and chest x-ray depending on the patient’s age and history.

Extremes of age, history of hypersensitivity, severe systemic disease such as cardiac or renal insufficiency, pulmonary emphysema, and chronic obstructive pulmonary disease exemplify the types of patients who would benefit from further consultation with an anesthesia care provider.
“Patient selection for moderate sedation/analgesia should be based on established criteria developed through interdisciplinary collaboration among health care professionals.”

**PATIENT ASSESSMENT**

The RN who is managing the care of the patient expected to receive moderate sedation/analgesia must perform a pre-sedation assessment. Typically, the pre-sedation assessment involves reviewing the patient’s H&P (ie, both the Joint Commission and Centers for Medicare and Medicaid Services (CMS) have specific guidelines related to the requirement for a pre-anesthesia H&P), reviewing the patient’s physiological systems, educating the patient, and obtaining informed consent. The pre-sedation assessment determines whether the patient meets the criteria as established by the facility for RN-administered moderate sedation/analgesia and provides the information needed to identify desired outcomes and plan for potential interventions.

The pre-sedation assessment provides baseline data and identifies patient risk factors. The RN who will be administering sedation/analgesia and monitoring the patient should conduct the assessment and review data collected from numerous sources. The pre-sedation assessment should include, but is not limited to,

- verification of informed consent inclusive of risks, benefits, and alternatives to moderate sedation/analgesia;
- review of medical history;
- assessment of the cardiac and respiratory systems, including vital signs;
- verification of height and weight;
- verification of pregnancy test results, as indicated;
- review of the current patient medication list inclusive of over-the-counter, herbals, and supplements, as well as medications taken within the last 48 hours including any as-needed medications especially opioids or other narcotics;
- review of history of substance use/abuse;
- review of history of tobacco and alcohol use;
- verification of any known allergies and sensitivities;
- confirmation of time and components of last oral intake, per ASA fasting guidelines allow the intake of clear liquids up to 2 hours before the administration of sedation/anesthesia and up to 6 hours for breast and non-human milk, infant formula. A light meal is defined as toast and clear liquids;4
- assessment of the patient’s ability to tolerate and maintain the required position for the duration of the procedure; and
- verification that the patient has a responsible adult to transport and accompany him or her upon discharge from the facility.
In addition, the RN who will be managing the patient during the administration of moderate sedation/analgesia should assess the patient’s airway for any risk factors that are indicative of difficult mask ventilation. A depressed respiratory effort is a common side effect of moderate sedation/analgesia that may require support of the patient’s airway and mechanical ventilation using a positive-pressure bag-mask. The pre-sedation assessment should include, but is not limited to, the following risk factors.

- Age > 55 years
- Obesity, especially of the face, neck and tongue
- Missing teeth
- Presence of a beard
- History of snoring or sleep apnea
- Presence of stridor

The RN should consult with an anesthesia care provider to develop a plan of care for the patient who presents with severe obstructive sleep apnea. The administration of sedatives in patients with central sleep apnea may inhibit the brain’s signal to breathe. In addition to consultation with an anesthesia care provider, the following interventions should be taken when providing care to patients with sleep apnea during the administration of moderate sedation/analgesia.

- Patients with severe central sleep apnea should be managed by an anesthesia care provider.
- Patients should be positioned in the lateral or semi-Fowlers position, if possible.
- Patients who routinely use a continuous positive airway pressure (CPAP) machine for sleeping, should have one available during the procedure and recovery.
- Patients should be monitored continuously for airway, pulse oximetry, respirations, and positioning to facilitate an open airway and to assist in respiratory efforts.

**INFORMED CONSENT**

In addition to meeting the physical assessment requirements, the patient must also understand an explanation of the procedure to be performed and the benefits and risks associated with the use of moderate sedation/analgesia. The physician who is responsible for providing informed consent may do one of the following.

- Request that the patient sign a consent form. Depending on facility policy, the patient may be asked to sign either two separate forms—one for the procedure and one for the moderate sedation/analgesia—or one form that encompasses both the procedure and moderate sedation/analgesia. In both cases, the facility should follow the guidelines as set forth by the facility’s accrediting body.
• Or the physician may make an appropriate note in the patient’s medical record, providing an explanation of the procedure and the use of moderate sedation/analgesia, including the physician’s discussion with the patient inclusive of the risk, benefits and alternatives.

Regardless of the means of obtaining informed consent, documentation must be present to indicate that the patient received an explanation and has expressed their willingness to undergo the procedure with moderate sedation/analgesia. The role of the RN managing the care of the patient receiving moderate sedation/analgesia in the informed consent may include

- confirming that the patient is aware that he or she will receive moderate sedation/analgesia by an RN;
- confirming that the patient understands what moderate sedation/analgesia means (eg, will not loose consciousness, but will be sedated and provided pain relief);
- asking the patient whether he or she has any questions about the procedure and/or the administration of moderate sedation/analgesia; and
- checking that informed consent is signed and/or that there is appropriate documentation of the process.

NURSING RESPONSIBILITY
Recommendation IV from AORN’s Recommended Practices for Managing the Patient Receiving Moderate Sedation/Analgesia states that “The perioperative registered nurse monitoring the patient receiving moderate sedation/analgesia should have no other responsibilities that would require leaving the patient unattended or would compromise continuous monitoring during the procedure.”

A designated RN who is not performing the circulating role during the procedure should continually monitor the patient during the administration of moderate sedation/analgesia. An additional perioperative RN should be assigned to perform as the circulating RN during the procedure. In addition, the supervising licensed independent practitioner should remain immediately available during the procedure and recovery of the patient.

MEDICATION ADMINISTRATION
Safe administration of moderate sedation/analgesia medications requires knowledge of recommendations for usual and maximum dosages, onset and duration of action, expected effects, contraindications, medication incompatibilities, and proper response to adverse medication reactions. The RN administering and monitoring the patient receiving moderate sedation/analgesia should be able to differentiate between sedative, analgesic and anesthetic agents. Sedatives given in large dosages may result in the patient progressing to
deep sedation or general anesthesia. The absorption rate of medications given other than intravenously is unpredictable.\textsuperscript{2}

Medications used to achieve and maintain the patient in moderate sedation/analgesia fall into three categories - benzodiazepines, opioids, and non-opioids. A combination of sedatives and analgesics are typically administered to achieve and maintain a patient in a state of moderate sedation/analgesia. In combination, these medications produce an effect that is not attainable with the use of either medication alone. Each medication should be administered separately in incremental doses and titrated to the desired effect (ie, moderate sedation/analgesia). The ideal medications for moderate sedation/analgesia have a rapid onset, are short acting, and have a known antagonist.

**Benzodiazepines**
Benzodiazepines are sedatives that are believed to affect the limbic, thalamic, and hypothalamus levels of the central nervous system. Medications in this category facilitate gamma-amino-butyric acid (GABA) neuro-transmission to produce sedative and anticonvulsant effects. Benzodiazepines also affect lysine inhibitory pathways to relax muscles and depress fear and anxiety. The most commonly used benzodiazepines are Diazepam and Midazolam.

**Midazolam**
This medication is a newer generation of the benzodiazepines than diazepam. For use in achieving moderate sedation, a one milligram (mg) per one milliliter (ml) concentration is preferred to the 5 mg/ml concentration. Midazolam is three to four times more potent than diazepam, but has a much shorter half-life. Because of these factors, it is usually preferred over diazepam.

**Diazepam**
This medication is one of the first generations of benzodiazepines to be used for moderate sedation. Its major disadvantage is pain at the injection site that is caused by its solubility in certain alcohols and benzoic acid. Diazepam must be injected slowly into larger veins and should not be mixed with other solutions and medications as it may precipitate. Additionally, it demonstrates prolonged effects that result from being metabolized in the liver. Prolonged effects contribute to its diminished use in moderate sedation.

Table 2 compares the characteristics of midazolam and diazepam.
**Opioids**

Opioids are synthetic narcotics that resemble the naturally occurring opiates, and bind to or otherwise affect the opiate receptors on the surface of the cell. Medications in this category bind with opioid receptors to decrease pain sensation and general awareness. Opioids are administered as adjuncts to sedatives to increase the patient’s pain threshold. The three most common opioids used for moderate sedation/analgesia are fentanyl, morphine sulfate, and meperidine.

**Fentanyl**

Fentanyl is a short-acting, potent narcotic analgesic. Typically as the dose is increased, there is simultaneous respiratory depression. This means that there is a need for this medication to be administered in small increments (ie, titrated). Administering medications using the titration method allows for potential side effects to be observed more easily and treated (ie, reversed) more readily. Fentanyl is a more powerful medication than morphine and Meperidine HCl (ie, Demerol). Dosage comparisons indicate that 100mcg of Fentanyl is equal to 10 mg of morphine or 75 mg Demerol.

**Morphine Sulfate**

Morphine sulfate is a narcotic analgesic that is a principal medical alkaloid of opium. This medication acts on the patient’s brain, resulting in decreased pain sensation and reduced emotional response to pain.

**Meperidine HCl (Demerol)**

Demerol is a synthetic narcotic analgesic that acts like morphine; however it is not as potent as Morphine Sulfate.

Table 3 provides a comparative look at these opioids.
<table>
<thead>
<tr>
<th>Properties</th>
<th>Dose</th>
<th>Onset</th>
<th>Effect</th>
<th>Half-life</th>
<th>Contraindications</th>
<th>Possible Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short acting</td>
<td>Intravenously (IV), dose must be individualized based on age</td>
<td>1 to 5 minutes after injection</td>
<td>&lt; 2 hours</td>
<td>1 to 4 hours; prolonged with cirrhosis, CHF, obesity and elderly</td>
<td>Benzodiazepine hypersensitivity</td>
<td>Respiratory (especially if given with narcotics) laryngo/broncho-spasm, dyspnea, hyperventilation, wheezing, shallow respirations, airway obstruction</td>
</tr>
<tr>
<td>Adults: IV Initial 0.5 - 2 mg for at least 2 minutes; Slowly titrate to desired effect using repeated doses every 2 - 3 minutes;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Narrow angle glaucoma</td>
<td></td>
</tr>
<tr>
<td>Recommended total dose for adults is 2.5 - 5 mg; decreased in elderly patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Untreated open angle glaucoma</td>
<td></td>
</tr>
<tr>
<td>Infants &lt; 6 months: there is limited information on the safety and dosing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cimetidine slows benzodiazepine clearance</td>
<td></td>
</tr>
<tr>
<td>6 months to 5 years of age: initial dose of 0.05 - 1 mg/kg; total dose of 0.6 mg/kg may be required; recommended maximum dose 6 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cardiovascular bigeminy, premature ventricular contractions, vasovagal response, brady or tachycardia, node rhythm</td>
<td></td>
</tr>
<tr>
<td>Children 6 to 12 years of age: initial dose of 0.025 to 0.05 mg/kg; total dose of 0.4 mg/kg/kg may be required; recommended maximum dose 10 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Central Nervous System CNS retrograde amnesia, euphoria, nystagmus, pinpoint pupils, cyclic movements of the eyelids, seizure-like activity, ataxia, dizziness, dysphoria, slurred speech, paresthia</td>
<td></td>
</tr>
<tr>
<td>Children 12 to 16 years of age: dose as adults</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hypersensitivity allergic reactions including anaphylaxis, hives, rash, pruritis</td>
<td></td>
</tr>
<tr>
<td>Elderly: decrease dose by ~ 30% if narcotics and other central nervous system depressants are given concurrently; 0.5 mg; no more than 1.5 mg for 2 minutes; if additional dose is needed, give no more than 1 mg for 2 minutes; total recommended dose ≤ 35 mg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 2 Continued
Diazepam$^6$(p515-520)

<table>
<thead>
<tr>
<th>Properties</th>
<th>Dose</th>
<th>Onset</th>
<th>Effect</th>
<th>Half-life</th>
<th>Contraindication</th>
<th>Possible Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid Onset Short Acting</td>
<td>Administer in small increments (0.1 mg) at 1 minute intervals for each 5 mg to achieve desired effect (ie, moderate sedation); 2 to 10 mg or less IV immediately before procedure; Maximum 20 mg; may repeat in 3 to 4 hours as needed; Adolescents: 10 mg; may repeat 2.5 mg as needed; Children: 0.04 to 0.3 mg/kg every 2 to 4 hours for a maximum of 0.6 mg/kg within 8 hours; Dosage of narcotics should be reduced by $\approx \frac{1}{3}$ when diazepam is added</td>
<td>Almost immediate</td>
<td>20-30 minutes</td>
<td>20-50 hours</td>
<td>Hypersensitivity to benzodiazepines; Narrow angle glaucoma; Not for use in infants &lt; 6 months of age or &lt; 30 days of age</td>
<td>Respiratory apnea, asthma, depressed respiratory rate; Cardiovascular hypotension, vasodilatation; CNS agitation, amnesia, anxiety, ataxia, confusion, dizziness, drowsiness, emotional liability, euphoria, seizure, slurred speech, somnolence; GI changes in salvation, constipation, diarrhea, nausea; Ocular blurred vision, diplopia; Local phlebitis, pain at injection site; Skin rash</td>
</tr>
</tbody>
</table>
## Table 3 Opioids

**Fentanyl**\(^6\) *(p712-718)*

<table>
<thead>
<tr>
<th>Properties</th>
<th>Dose</th>
<th>Onset</th>
<th>Effect</th>
<th>Half-Life</th>
<th>Contraindications</th>
<th>Possible Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agonist actions at the mu receptor within the central nervous system (CNS); increases pain threshold, alters pain perception, and inhibits ascending pain pathways</td>
<td>Dosage should be titrated to pain relief or prevention</td>
<td>Almost immediate</td>
<td>0.5 to 1 hour</td>
<td>2 to 4 hours</td>
<td>Hypersensitivity to fentanyl or any component of the formulation; increased intracranial pressure; severe respiratory disease or depression inclusive of acute asthma unless patient is on mechanical ventilation; paralytic ileus; server renal or liver disease pregnancy</td>
<td>Cardiovascular hypotension, bradycardia</td>
</tr>
<tr>
<td>Lipid-soluble; redistributes in muscle and fat</td>
<td>IV 25 to 50 mcg; may repeat every 3 to 5 minutes to desired effect; maximum dose of 500 mcg for 4 hours; higher doses may be used for major procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 to 100 times as potent as morphine</td>
<td>Patient opiate tolerance may require higher doses</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Less hypotensive effect than morphine because of the lack of histamine release</td>
<td>Children 1 to 12 years of age: 1 to 2 mcg/kg/dose; may repeat at 30 to 60 minute intervals</td>
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<tr>
<td>May cause muscular rigidity at high doses</td>
<td>Children 18 to 36 months: may require 2 to 3 mcg/kg/dose</td>
<td></td>
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<tr>
<td></td>
<td>Children &gt; 12 years of age: may be dosed as adults</td>
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</tbody>
</table>
**Table 3 Continued**
**Morphine Sulfate**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Dose</th>
<th>Onset</th>
<th>Effect</th>
<th>Half-Life</th>
<th>Contraindications</th>
<th>Possible Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narcotic analgesic</td>
<td>0.01 to 0.15 mg/kg; opiate-naïve patients, 2 to 10 mg IV administered slowly over 4 to 5 min; a strength of 2.5 to 15 mg may be diluted in 4 to 5 mL of sterile water for injection</td>
<td>5 to 10 minutes</td>
<td>4 hours</td>
<td>2 to 4 hours</td>
<td>Hypersensitivity to morphine and/or any of its components, increased intracranial pressure, severe respiratory depression, acute or severe asthma, paralytic ileus.</td>
<td>Respiratory depression, suppression of cough reflex</td>
</tr>
<tr>
<td>Pure opioid agonist, binds to the mu receptor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cardiovascular hypotension in patients with acute MI; peripheral circulation collapse, cardiac arrest</td>
<td></td>
</tr>
<tr>
<td>Its primary action is in the brain through transitory stimulation before depression of the CNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CNS depression, sedation, drowsiness, convulsions</td>
<td></td>
</tr>
<tr>
<td>Provides analgesia and respiratory depression by causing inhibition of ascending pain pathways</td>
<td></td>
<td></td>
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</tbody>
</table>

**Possible Complications**

- Respiratory depression, suppression of cough reflex
- Cardiovascular hypotension in patients with acute MI; peripheral circulation collapse, cardiac arrest
- CNS depression, sedation, drowsiness, convulsions
<table>
<thead>
<tr>
<th>Properties</th>
<th>Dose</th>
<th>Onset</th>
<th>Effect</th>
<th>Half-Life</th>
<th>Contraindications</th>
<th>Possible Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narcotic analgesic</td>
<td>5 to 10 mg every 5 minutes, titrated to desired effect</td>
<td>~ 5 minutes</td>
<td>2 to 4 hours</td>
<td>2.5 to 4 hours; liver disease 7 to 11 hours</td>
<td>Not recommended for management of chronic pain</td>
<td>Respiratory depression, suppression of cough reflex</td>
</tr>
<tr>
<td>Its effects on the CNS and smooth muscle organs resemble those of morphine</td>
<td>Use of a 10 mg/ml concentration is recommended</td>
<td></td>
<td></td>
<td></td>
<td>Patient using monoamine oxidase (MAO) inhibitors within past 14 days</td>
<td>Cardiovascular hypotension, peripheral circulatory collapse, cardiac arrest</td>
</tr>
<tr>
<td>It primarily acts as an analgesic and a sedative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Opioid hypersensitivity</td>
<td>CNS drowsiness, severe convulsions, disorientation</td>
</tr>
<tr>
<td>The Anesthesiology &amp; Critical Care Medicine (ACCM) &amp; Society for Critical Care Medicine (SCCM) guidelines for analgesia recommend against using meperidine repetitively</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Respiratory depression</td>
<td>GI dry mouth, constipation, biliary tract spasm</td>
</tr>
<tr>
<td>who need immediate pain relief because of the rapid onset</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>History of convulsions</td>
<td></td>
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</table>
Non-narcotic Analgesic

Ketorolac tromethamine (Toradol®) is a non-steroidal anti-inflammatory drug (NSAID) that may be used for moderate to severe pain and acute pain that requires opioid-level analgesia. The 30 mg/ml concentration that is intended for intramuscular (IM) and intravenous (IV) injection contains alcohol.

Table 4 provides further detail on this medication.

### Table 4 Non-narcotic Analgesics

<table>
<thead>
<tr>
<th>Properties</th>
<th>Dose</th>
<th>Onset</th>
<th>Effect</th>
<th>Half-Life</th>
<th>Contraindications</th>
<th>Possible Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-steroid anti-inflammatory drug (NSAID); a potent analgesic that does not possess any sedative or anxiolytic activities</td>
<td>Non-narcotic analgesic</td>
<td>30 mg concentration intended for IM or IV injection contains alcohol</td>
<td>Management of moderate to severe, acute pain requiring opioid level analgesia</td>
<td>Inhibits prostaglandin synthesis by decreasing the activity of the enzyme, cyclooxygenase, which results in decreased formation of prostaglandin precursors</td>
<td>IV 65 years of age and older or weight &lt; 50 kg: 15 mg IV as a single dose or 15 mg IV every 6 hr; maximum dose is 60 mg/day</td>
<td>IM/IV 0.5 hr</td>
</tr>
</tbody>
</table>
Antagonist
There are two antagonists, also referred to as reversal agents, that the RN administering moderate sedation/analgesia should have immediately available. These two agents are frequently referred to as reversal agents because of their ability to reverse respiratory depression. Flumazenil is the benzodiazepine antagonist, and naloxone hydrochloride is the opioid antagonist.

Flumazenil
This benzodiazepine antagonist competitively inhibits the GABA receptor sites. It reverses the effects of sedation and hypnosis without disturbing amnesia and anxiolysis. It does not reverse the effects of opioids.

Naloxone hydrochloride
This opioid antagonist has its greatest affinity for the mu receptor. It acts by competing with the opioids for the mu, kappa, and sigma opiate receptor sites in the central nervous system, thereby reversing sedation and respiratory depression caused by opioids.

Table 5 lists the various characteristics of these two antagonists.
### Table 5 Antagonists

**Flumazenil**<sup>6</sup>(p739-741)

<table>
<thead>
<tr>
<th>Properties</th>
<th>Dose</th>
<th>Onset</th>
<th>Effect</th>
<th>Half-Life</th>
<th>Contraindications</th>
<th>Possible Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitively inhibits activity at the benzodiazepines recognition site on the GABA/benzodiazepine receptor sites</td>
<td>Initial 0.2 mg IV for 15 seconds; may repeat at 1 minute intervals Maximum total cumulative dose 1 mg (ie, usual dose 0.6-1 mg) In event of resedation, a repeat dose may be given at 20 min intervals (1mg/20min) Maximum dose is 3 mg/hour</td>
<td>1 to 3 minutes</td>
<td>~ 1 hour</td>
<td>7 to 15 minutes</td>
<td>Hypersensitivity to flumazenil or benzodiazepines When benzodiazepines have been given to help control life-threatening conditions (eg, intracranial pressure or status epilepticus) In the presence of serious cyclic antidepressant overdose</td>
<td>Re-sedation with hypoventilation may occur and require repeated doses; occurs more frequently with a large single dose Withdrawal induced seizures, dizziness, pain at injection site, headache, diaphoresis, abnormal-blurred vision Flumazenil does not reverse respiratory depression or hypoventilation or cardiac depression Use with caution in patients with a history of panic attacks, may induce an attack Use with caution in patients with an ethanol and/or drug dependence Safety and efficacy is not known for children less than 1 year of age</td>
</tr>
</tbody>
</table>
Table 5 Continued
Naxolone (Narcan®)\(^6\)(p 1200-1202)

<table>
<thead>
<tr>
<th>Properties</th>
<th>Dose</th>
<th>Onset</th>
<th>Effect</th>
<th>Half-Life</th>
<th>Contraindications</th>
<th>Possible Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid antagonist, competes and displaces narcotics at opioid receptor sites; Complete or partial reversal of opioid depression, including respiratory depression induced by natural and synthetic opioids; including propoxyphene, methadone and certain mixed agonist-antagonist analgesics; nalbuphine, pentazocine, and butorphenol</td>
<td>IV preferred 0.4 to 2 mg every 2 to 3 minutes as need; may repeat every 20 to 60 minutes If no response after 10 mg, question if opioid depression</td>
<td>~ 2 minutes</td>
<td>20 to 60 minutes</td>
<td>Neonates 1.2 to 3 hours Adults 1 to 1.5 hours</td>
<td>Use with caution in patients with known cardiovascular disease due to the known association between Naxolone and pulmonary edema Use with caution in patients taking cardiovascular meds with known side effects of hypotension, pulmonary edema or arrhythmias, Naxolone may exaggerate these side effects</td>
<td>May precipitate withdrawal in patients opiate addiction Recurrence of respiratory depression is possible after 1.2 to 3 hours, observe patient until there is no reasonable risk for recurrent respiratory depression</td>
</tr>
</tbody>
</table>

Birth to 5 years of age or < 20 kg: 0.1 mg/kg, repeat every 2 to 3 minutes; may need repeated doses every 20 to 60 minutes

> 5 years of age or > 20 kg: 2 mg/dose; if no response, repeat every 2 to 3 minutes
Buprenorphine products
Buprenorphine (Buprenex® Subutex®) and buprenorphine-naloxone (Suboxone®) are gaining in popularity in the treatment of opioid addiction. Both of these medications are partial agonists at the mu opioid receptor. The following recommendations apply to patients who are receiving either of these medications for the treatment of opioid addiction and who are scheduled for an elective procedure in which acute pain (eg, two hours to two weeks, intra- or post-procedure) is anticipated and the pain may not be adequately treated with a non-opioid analgesic.

- Temporarily discontinue buprenorphine products for 24 to 36 hours before administering moderate sedation/analgesia.
- Administer opioid analgesics, titrated to the desired effect. Patients who are opioid-dependent and who have previously been on buprenorphine products may need higher doses of opioid analgesics because buprenorphine products are mu agonist and can effectively block the analgesic properties of opioids that are used to treat acute pain.
- Do not administer opioid analgesics to patients who have taken buprenorphine products within the past 24 hours.
- Discontinue opioid analgesics when the acute pain has diminished or when the patient’s pain can be managed by non-opioid analgesics.
- Allow patients to experience mild to moderate opioid withdrawal before the re-induction of buprenorphine therapy.
- Reintroduce patients to buprenorphine therapy when the opioid analgesics are no longer needed. According to the Drug Addiction Treatment Act of 2000 (DATA 2000), a prescription for buprenorphine products for the treatment of opioid addiction is limited to physicians who meet specific requirements to be considered addiction specialists.
- Administer single doses of opioid analgesics (e.g., dental extraction), which may be effective even when buprenorphine products have not been held. Patients should be cautioned to avoid buprenorphine products during this acute opioid treatment period because the opioid analgesic is likely to occupy the mu receptors, thus blocking the effect of buprenorphine products.
PATIENT MONITORING
Safe and competent patient monitoring requires that the RN monitoring the patient receiving moderate sedation/analgesia have no other responsibilities during the procedure (ie, this nurse should not circulate or perform other duties in addition to administering medications and monitoring the patient) that would divert his or her attention from the patient. A perioperative nurse who is adequately trained in the administration of moderate sedation/analgesia, as well as the use and interpretation of basic physiological monitoring data (eg, electrocardiogram), and the use and IV titration of medications for moderate sedation/analgesia is imperative to prevent complications and ensure optimal patient outcomes.

Continuous monitoring provides meaningful clinical data that allows the nurse caring for the patient to adjust the plan of care based on the patient’s response to the procedure and the medications used for moderate sedation/analgesia. At a minimum, the nurse should continuously monitor the patient’s:

- heart rate and rhythm via electrocardiogram (ECG);
- oxygenation level via pulse oximetry;
- respiratory rate and ventilation;
- blood pressure;
- level of consciousness;
- comfort level (eg, pain scale); and
- skin condition.

Oxygenation
Perhaps the most important physiological function to maintain at an optimal level is airway and breathing. If the patient’s airway and breathing are compromised, all other vital physiological functions may be adversely affected as well. Therefore, it is imperative that the patient’s airway be maintained to promote adequate ventilation and oxygenation throughout the procedure.

Supplemental oxygen should be available at all times during the procedure. The method of administration and the flow rate of oxygen will be based on achievement of an optimal oxygen saturation level as measured by pulse oximetry. The optimal oxygen saturation level for any individual patient is determined by measuring his or her resting oxygen saturation level before the administration of any sedative or analgesic. Patients who are anxious may breathe shallow, hypoventilate, or hold their breath. Although patients with chronic obstructive pulmonary disease, asthma, or other respiratory disease may normally present with a lower oxygen saturation level than patients without respiratory disease, it is difficult to apply a general range of percentages to indicate a normal oxygen saturation level.

Nurses should
- use caution when interpreting a patient’s restlessness as discomfort because hypercapina and hypoxia can manifest as restlessness;
• understand that administering supplemental oxygen will not prevent apnea;
• acknowledge that patients who are restless or agitated without changes in oxygen saturation readings may be over medicated and a patient may be over sedated and have inadequate analgesic effect; and
• use capnography to monitor end tidal carbon dioxide when the patient’s ventilations can not be directly observed during the procedure (eg, during a Magnetic Resonance Imaging (MRI) procedure).²

Vital signs
It is recommended that a set of vital signs be taken:
• before the start of the procedure,
• after the administration of any medication, and
• at least every five minutes throughout the procedure.

The frequency of vital signs should take into consideration the condition of the patient, type and amount of medication given, and the length of the procedure.²

Level of consciousness
Monitoring the patient’s ability to respond to verbal stimulation should be part of the continuous monitoring of the patient receiving moderate sedation/analgesia. The desired effect being that the patient can be easily aroused by verbal or light tactile stimulation. Having a conversation with the patient and asking him or her to respond to simple verbal commands during the procedure allows you to determine if the patient is breathing normally. The use of conversation and verbal commands may not be appropriate for all patients and in all situations, therefore situational awareness should direct your use of verbal and/or tactile stimulation. Conversation, when appropriate, can provide the patient with both assurance and diversion from the discomfort of the procedure.²

Routine equipment
Routine equipment should be age and size appropriate, and immediately available in the procedure room. It is imperative that this equipment not only be in proper working condition, but that the nurse monitoring the patient be knowledgeable in how to use it and how to interpret the readings. Equipment should include:
• suction,
• mechanical airways (eg, oral, nasal, mask ventilation devices),
• non-invasive blood pressure monitoring device,
• pulse oximetry,
• electrocardiograph, and
• benzodiazepine and opioid antagonists.²
Emergency equipment
In addition to the routine equipment previously mentioned, an emergency resuscitation cart should be immediately available. Although the administration of moderate sedation/analgesia with the use of short-acting medications is very safe when carefully titrated by a competent provider, respiratory or cardiovascular depression or hypotension are common side effects of benzodiazepines and opioids. Therefore, the following items are recommended to be included on the emergency cart.

• Resuscitation medications
• Intravenous access equipment
• Intravenous fluids
• Life support equipment
• Defibrillator
• Endotracheal intubation equipment
• Mechanical positive bag-valve mask device

POSTPROCEDURE MONITORING
The same monitoring parameters that were used during the procedure also should be used during the postprocedure recovery period. The time it takes the patient to return to their preprocedure baseline (eg, recovery) will depend on the amount and type of medications administered, the procedure performed, and facility policy. Following are some recommended postprocedure monitoring parameters.

• Heart rate and rhythm
• Level of consciousness
• Blood pressure
• Cardiac monitoring
• Oxygenation using pulse oximetry
• Ventilation by direct observation

Complications and Emergency Response
With the administration of moderate sedation/analgesia comes the potential for complications or emergency situations. The nurse managing the care of the patient should be able to employ appropriate interventions that will decrease the risk of complications (eg, IV titration in small increments), be knowledgeable in the management of complications and emergency situations that may arise, and be vigilant in monitoring for early detection of these situations. Responding to complications or emergencies should be addressed in the facility policies and procedures, which must be followed precisely.

Complications that may present during the administration of moderate sedation/analgesia usually result from over sedation. If over sedation occurs, the patient will exhibit symptoms that typically involve respiratory and cardiovascular functions. Appropriate intervention for such complications must occur swiftly. The nurse should know the type of intervention required and when to employ it. General interventions include:
• notifying the physician immediately;
• withholding subsequent doses until the patient is stabilized;
• maintaining the patient’s airway and support ventilation;
• initiating cardiopulmonary resuscitation, as indicated; and
• administering antagonist medications(s)\(^8\) as directed by the physician in attendance.

**DISCHARGE READINESS**
Each facility should have discharge criteria in place. Patients should be able to maintain their own wakefulness for a minimum of 20 minutes without any stimulation before they are considered safe for discharge as an outpatient. Criteria for transfer of care from the postprocedure area to an inpatient unit may be less stringent, yet clearly delineate when a patient can be assessed as safe to be transferred to another level of care. The patient should meet the facility discharge criteria (e.g., Aldrete Recovery Scoring, Sedation Scale)

Discharge criteria may include, but are not limited to
• return to preprocedure, baseline level of consciousness;
• stable vital signs;
• two hours should lapse since the last administration of an antagonist;
• absence of protracted nausea;
• intact protective reflexes;
• adequate pain control, and
• return of sensory and motor function.\(^2\)

Patients and their caregivers should be given adequate patient/family education to safely care for the patient at home and know when and who to contact should an adverse event occur or another issue or question arises.\(^2\)

**COMPETENCY**
A competent provider can demonstrate that he or she has the knowledge and skill set to safely administer moderate sedation/analgesia, monitor the patient during the procedure, interpret physiological monitor readings (e.g., heart rate and rhythm, pulse oximetry) and initiate an emergency response should the patient slip into deep sedation and/or require an intervention to support his or her respiratory and cardiovascular systems. The following knowledge and skill set related to the administration of moderate sedation/analgesia should include, but not be limited to:
• patient selection and assessment;
• proficient use of physiological monitoring equipment;
• pharmacology of the medications used;
• airway management;
• continuous positive airway pressure (CPAP) use;
• basic dysrhythmia recognition and management;
• emergency response and management;
• advanced cardiac life support (ACLS) and pediatric advanced life support (PALS) according to the population(s) served; and
• recognition of complications associated with the administration of moderate sedation/analgesia.2

“The perioperative registered nurse should at a minimum have the ability to manage a compromised airway and to provide adequate oxygenation and ventilation.”2(468) A provider who can offer bag-, valve-, and mask-ventilation and who is trained in ACLS with resuscitation skills should be able to be at the bedside within five minutes from the time they are called.2

DOCUMENTATION
Documented care provided to the patient during the administration of moderate sedation/analgesia should allow for clear communication and collaboration across the continuum of care. The information documented and the frequency should be consistent with the facility’s policies and procedures, as well as meet the requirements of accreditating and regulatory bodies (eg, CMS, Joint Commission, department of health). Documentation should include, but is not limited to:

• name, dose, route, time, and effects of all medications;
• pain scale;
• patient’s level of consciousness (LOC);
• ventilation and oxygenation status;
• vital signs at intervals dependent on the type and quantity of medication administered;
• procedure start and end times; and
• condition of the patient.2

POLICIES AND PROCEDURES
Just as patient care documentation during moderate sedation/analgesia should meet the requirements of accrediting and regulatory bodies, so should the facility’s policies and procedures. Policies and procedures for managing patients receiving moderate sedation/analgesia should include, but not be limited to:

• criteria defining which patients are appropriate for RN-administered moderate sedation/analgesia;
• competency requirements (eg, education, training, skill sets) for personnel;
• staffing requirements;
• monitoring requirements;
• criteria for anesthesia consultation;
• medication administration and dosage guidelines;
• recovery and discharge criteria;
• documentation;
emergency response procedures; and
transfer of care policies and procedures for when the patient’s acuity or level of care falls outside the capabilities or scope of practice of the perioperative RN.²

QUALITY IMPROVEMENT
A quality improvement process should be in place so that outcome indicators can be assessed for individual patients, providers, and in the aggregate. “Structure, process, and clinical outcomes performance measures should be identified that can be used to improve patient care and that also monitor compliance with facility policy and procedure, national standards and regulatory requirements.”²(469)

The following process indicators are recommended and may be universally measured across the continuum of care for patients undergoing moderate sedation/analgesia.

1. Consent for sedation and the procedure.
2. Compliance with ASA pre-sedation fasting guidelines.
3. History and physical completed.
4. Airway assessment completed.
5. Documentation of factors requiring an anesthesia consult.
6. Documentation of ASA physical classification.
7. Documentation of an anesthesia intervention if required (eg, bag mask ventilation, loss of protective reflexes).
8. Antagonist used.
9. Providers credentialed to perform the procedure and in compliance with facility policy and procedures.
10. Adherence to physiological monitoring policy and procedures.²

CONCLUSION
Moderate sedation/analgesia is a safe and effective alternative to general anesthesia, provided the appropriate patient selection criteria are employed, and the RN monitoring the patient has demonstrated competency and has no other responsibilities during the procedure. Adherence to AORN’s “Recommended Practices for Managing the Patient Receiving Moderate Sedation/Analgesia” is critical in ensuring that safe patient care is provided.
REFERENCES:


POST TEST

1. Which of the following is not a characteristic of moderate sedation/analgesia?
   a. Patient needs assistance with their ventilation.
   b. Patient is able to maintain their own airway.
   c. Patient is able to maintain their blood pressure.
   d. Patient is able to respond to verbal stimulation.

2. Which level of sedation is usually induced by the administration of an anxiolytic agent?
   a. Moderate sedation/analgesia
   b. Deep sedation
   c. Minimal sedation
   d. General anesthesia

3. Using the ASA Physical Status Classification system, which of the following patients would NOT be appropriate for RN-administered moderate sedation/analgesia?
   a. Healthy adult
   b. Well controlled diabetic
   c. Asthma patient with no acute distress
   d. Patient with multiple system failure

4. Which of the following patient conditions warrants an anesthesia consult?
   a. Insulin dependent diabetic
   b. Controlled hypertension
   c. Severe sleep apnea
   d. Latex allergy

5. A drug-induced state in which the patient cannot be easily aroused and may require assistance with their airway and ventilation is called what?
   a. Anxiolysis
   b. Moderate sedation
   c. Deep sedation
   d. General anesthesia

6. Which of the following is NOT a risk factor for difficult airway management using positive-pressure bag mask ventilation?
   a. Missing teeth
   b. Presence of beard
   c. Snoring or sleep apnea,
   d. Age < 55 years
7. Which of the following is true regarding informed consent for moderate sedation/analgesia?
   a. The RN is responsible for obtaining informed consent before any procedure involving moderate sedation/analgesia.
   b. Informed consent indicates that the patient is aware that they will be receiving moderate sedation/analgesia from an RN.
   c. Two consent forms are needed—one for the procedure and one for moderate sedation/analgesia.
   d. Risks, benefits, and alternatives to moderate sedation/analgesia do not need to be included in the informed consent.

8. True or False:
   The perioperative RN monitoring the patient receiving moderate sedation/analgesia may also perform as the circulator for the procedure.
   a. True
   b. False

9. The ideal medications for moderate sedation/analgesia should have which of the following characteristics?
   a. short acting
   b. multiple side effects
   c. unstable absorption rate
   d. long acting

10. Which of the following sedatives is preferred because of its short half-life?
    a. Diazepam
    b. Valium
    c. Midazolam
    d. Morphine

11. Which of the following is a non-narcotic analgesic?
    a. Fentanyl
    b. Morphine
    c. Meperidine HCl
    d. Ketorolac

12. The most common side effect of both benzodiazepines and opioids is _________.
    a. Bradycardia
    b. Hypotension
    c. Respiratory depression
    d. Emotional depression

13. True or False:
   A medication that is an antagonist is referred to as a reversal agent because it has the ability to reverse the effects of another medication.
   a. True
   b. False
14. Which of the following medications is a known antagonist for benzodiazepines?
   a. Flumazenil
   b. Naxlonone
   c. Buprenorphine
   d. Morphine

15. Which of the following medications is a known opioid antagonist?
   a. Flumazenil
   b. Naxlonone
   c. Buprenorphine
   d. Morphine

16. According to the American Society of Anesthesiologists’ Fasting Guidelines, how many hours before the administration of moderate sedation/analgesia are patients allowed to have clear liquids?
   a. 2 hours
   b. 4 hours
   c. 6 hours
   d. 8 hours

17. For patients currently taking Buprenorphine for the treatment of opioid addiction, how long before the administration of moderate sedation/analgesia should the last dose of Buprenorphine be taken?
   a. 8 to 12 hours
   b. 12 to 24 hours
   c. 24 to 36 hours
   d. 36 to 74 hours

18. The ideal oxygenation saturation level as assessed by pulse oximetry should be _________.
   a. > 95%
   b. 97 – 100%
   c. ± 30% of presedation baseline
   d. Determined by presedation baseline

19. Vital signs should be assessed at all of the following times, except
   a. Every 5 minutes during the procedure
   b. Every 15 minutes during the procedure
   c. Before the start of the procedure
   d. After the administration of medications

20. To ensure a safe discharge from the recovery area, the patient should be able to maintain his or her own wakefulness for how long without being stimulated?
   a. 10 minutes
   b. 20 minutes
   c. 30 minutes
   d. 45 minutes
Perioperative Nursing Care of the Patient
Receiving Moderate Sedation/Analgesia

POST TEST ANSWER KEY

1. A
2. C
3. D
4. C
5. C
6. D
7. B
8. B
9. A
10. C
11. D
12. C
13. A
14. A
15. B
16. A
17. C
18. D
19. B
20. B

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