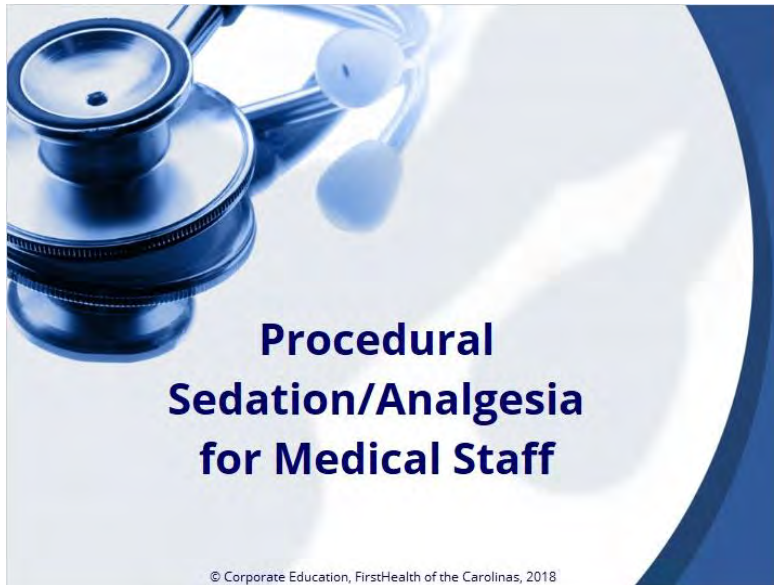


Procedural Sedation-Analgesia for Medical Staff

1. Procedural Sedation and Analgesia 2017

1.1 Procedural Sedation/Analgesia at MRH



1.2 Medical Credentialing

The image is a slide titled "Medical Staff Credentialing for Procedural Sedation & Analgesia". It features a blue header with a stethoscope graphic on the right. The main content is on a white background with a faint silhouette of a person's head. The slide lists "Initial Requirements for Medical Staff Credentialing" and provides two options, A and B, each with a list of requirements.

Medical Staff Credentialing for
Procedural Sedation & Analgesia

Initial Requirements for Medical Staff Credentialing

Option A (Must successfully complete all 3 requirements)

1. Basic Life Support (BLS)
2. Procedural Sedation/Analgesia for Medical Staff CBL
3. Basic EKG Interpretation CBL

Option B (Must successfully complete both requirements)

1. Advanced Cardiac Life Support (ACLS)
2. Procedural Sedation/Analgesia for Medical Staff CBL

1.3 Target Audience

Target Audience

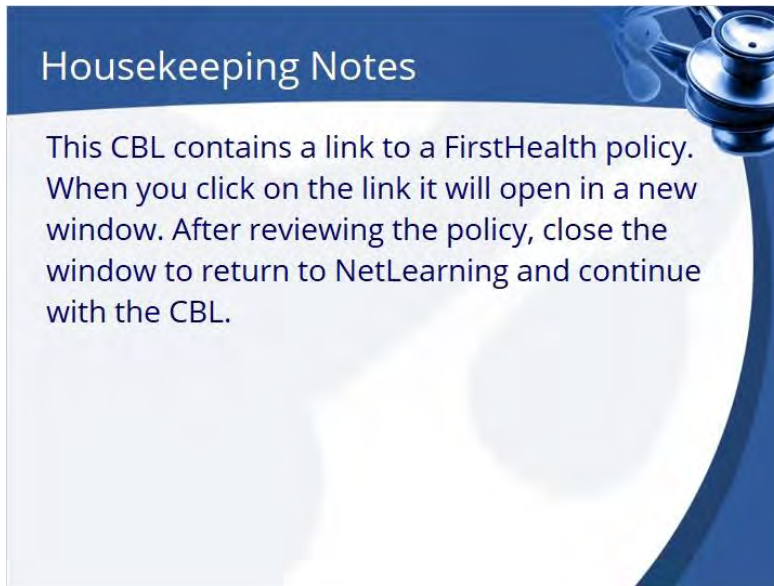
This CBL should be completed by privileged physicians or dentists who administer moderate and/or deep sedation.

1.4 Objectives

Objectives

- Examine the roles and requirements of physicians who participate in the administration of moderate and deep sedation
- Define four levels of sedation
- Describe the pre-sedation patient assessment
- List the monitoring requirements for pre, during and post procedure
- Utilize the discharge criteria to safely discharge patients
- Discuss appropriate administration routes, drug actions, drug interactions, side effects, contraindications, reversal agents and untoward effects of related pharmacological agents

1.5 Housekeeping Notes



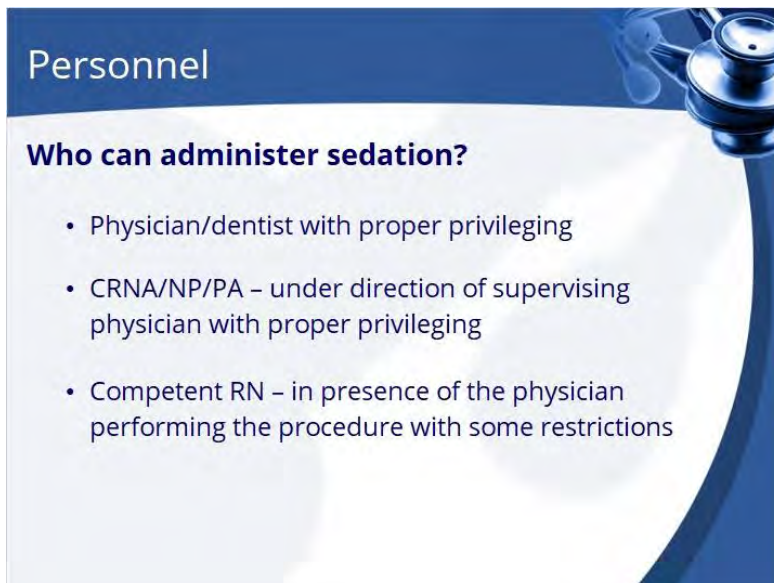
Housekeeping Notes

This CBL contains a link to a FirstHealth policy. When you click on the link it will open in a new window. After reviewing the policy, close the window to return to NetLearning and continue with the CBL.

Notes:

Include as necessary

1.6 Personnel



Personnel

Who can administer sedation?

- Physician/dentist with proper privileging
- CRNA/NP/PA – under direction of supervising physician with proper privileging
- Competent RN – in presence of the physician performing the procedure with some restrictions

1.7 Education Requirements/



Education Requirements/ Credentialing

- Physicians/dentists must be clinically privileged for sedation/analgesia under the medical staff privileging process.
 - Re-privileging is done at a minimum of every 2 years
- All hospital staff administering moderate sedation must be competent in sedation and be **ACLS and/or PALS** certified.

(If you need assistance with life support certification information, please contact the FHC Life Support Coordinator at 910-715-1584.)

1.8 Anesthetic Agents –



Anesthetic Agents – Special Requirements

Administration of anesthetic agents (e.g. propofol, thiopental, methohexital, ketamine, etomidate, etc.) require the presence of:

- Privileged physician or CRNA with the training and ability to rescue a patient from general anesthesia
- According to NC law, competent RNs may administer these medications
- Other appropriate personnel

Click [here](#) to see the Procedural Sedation/Analgesic policy and details about medications and dosages that are approved for RN administration.

A privileged physician or mid-level provider must administer any medication not on this list.

1.9 Moderate Sedation

Moderate Sedation

Moderate sedation* can be used for a range of treatments and diagnostic tests.

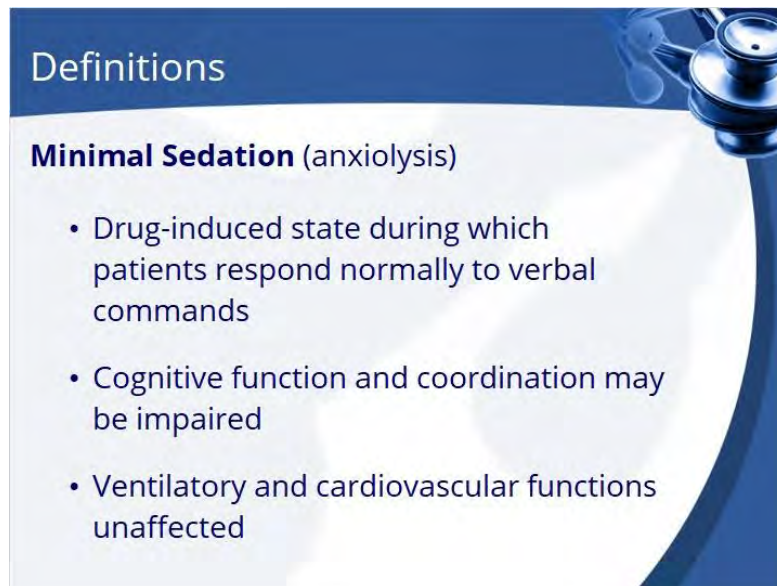
Sedation is a continuum; therefore, it is not always possible to determine how an individual will respond.

* Formerly known as conscious sedation

1.10 Definitions of



1.11 Definitions

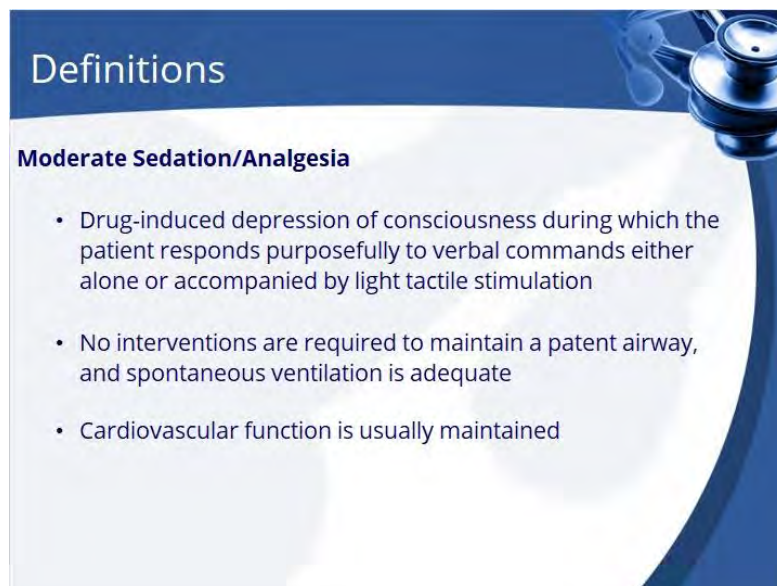


Definitions

Minimal Sedation (anxiolysis)

- Drug-induced state during which patients respond normally to verbal commands
- Cognitive function and coordination may be impaired
- Ventilatory and cardiovascular functions unaffected

1.12 Definitions

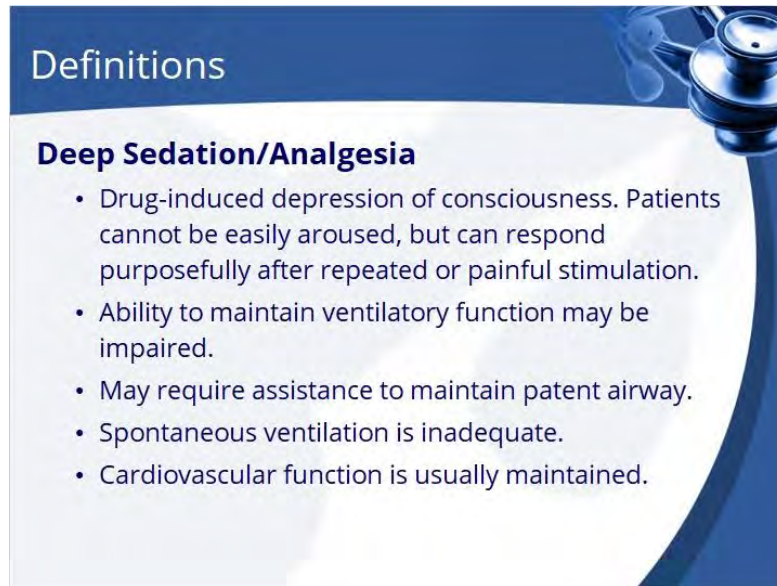


Definitions

Moderate Sedation/Analgesia

- Drug-induced depression of consciousness during which the patient responds 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 is usually maintained

1.13 Definitions

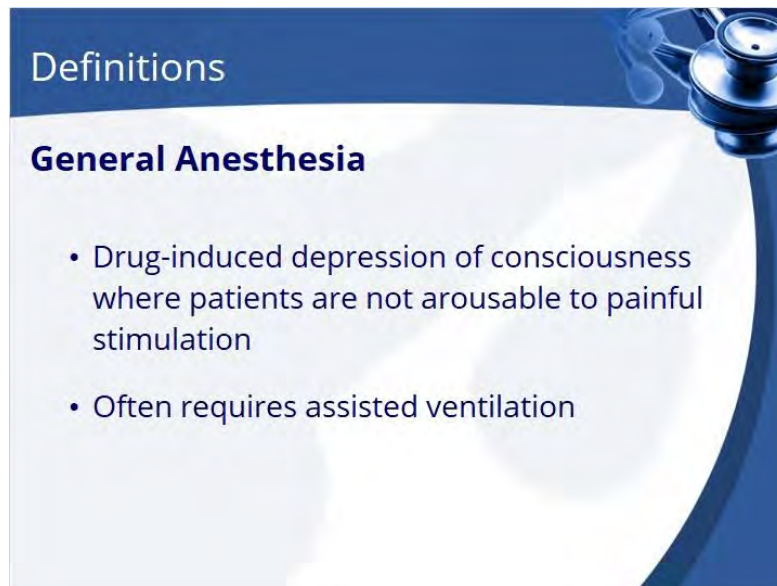


Definitions

Deep Sedation/Analgesia

- Drug-induced depression of consciousness. Patients cannot be easily aroused, but can respond purposefully after repeated or painful stimulation.
- Ability to maintain ventilatory function may be impaired.
- May require assistance to maintain patent airway.
- Spontaneous ventilation is inadequate.
- Cardiovascular function is usually maintained.

1.14 Definitions



Definitions

General Anesthesia

- Drug-induced depression of consciousness where patients are not arousable to painful stimulation
- Often requires assisted ventilation

1.15 Pre-procedure



1.16 Pre-sedation Assessment

A blue stethoscope is positioned in the upper right corner of a white circular area. The text "Pre-sedation Assessment" is written in a white, sans-serif font in the center of the circle. The background of the slide is a gradient of light blue to white.

Pre-sedation Assessment

- All patients requiring moderate sedation will have a pre-sedation assessment that is performed by the physician or an approved LIP (Licensed Independent Practitioner).
 - The Mallampati Classification and the ASA Classification is to be performed by the physician. (These are located on page 2 of the Sedation and Analgesia Documentation Form)
 - If the physician is unable to immediately document the Mallampati and ASA pre-procedure, he or she will communicate to the competent RN to document and then ensure attestation at the end of the procedure.


Continued on next slide.

ASA (Slide Layer)

ASA

The American Society of Anesthesiologist (ASA). The ASA adopted a five category physical status classification for assessing a patient before surgery. A sixth category was added later.

1. A normal healthy patient
2. A patient with mild systemic disease
3. A patient with severe systemic disease
4. A patient with severe systemic disease that is a constant threat to life
5. A moribund patient who is not expected to survive with or without the operation
6. A declared brain-dead patient whose organs are being removed for donor purposes.



Mallampati Score (Slide Layer)

Mallampati Score

Technique



- The score is assessed by asking the patient, in a sitting posture, to open his or her mouth and to protrude the tongue as much as possible. The anatomy of the oral cavity is visualized; specifically, the assessor notes whether the base of the uvula, faucial pillars (the arches in front of and behind the tonsils) and soft palate are visible. Scoring may be done with or without phonation. Depending on whether the tongue is maximally protruded and/or the patient asked to phonate, the scoring may vary.

Modified Mallampati Scoring:

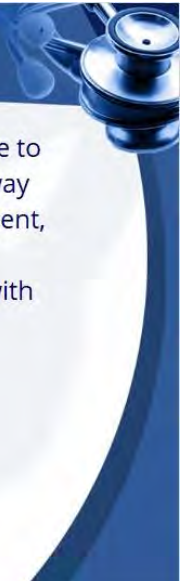
- Class I: Soft palate, uvula, fauces, pillars visible.
- Class II: Soft palate, uvula, fauces visible.
- Class III: Soft palate, base of uvula visible.
- Class IV: Only hard palate visible.

Clinical significance

- While Mallampati classes I and II are associated with relatively easy intubation, classes III and IV are associated with increased difficulty.



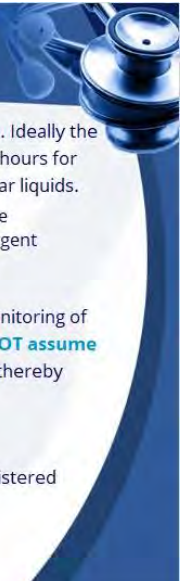
1.17 Pre-sedation Assessment



Pre-sedation Assessment

The physician or approved LIP will communicate to the competent RN, upon completion of the airway assessment/pre-sedation immediate reassessment, whether or not the patient is an appropriate candidate to undergo the planned procedure with sedation. The RN will document the results accordingly.

1.18 Other Recommendations



Other Recommendations

- The patient should be NPO for the time specified by the physician. Ideally the patient should be NPO for 8 hours after consuming fatty foods; 6 hours for light meals or formula; 4 hours for breast milk and 2 hours for clear liquids.
 - NPO status should be evaluated by a physician to determine the appropriateness of using moderate sedation in urgent or emergent situations.
- The RN responsible for sedation/analgesia administration and monitoring of the client receiving moderate or deep sedation/analgesia **does NOT assume other responsibilities** which would leave the client unattended, thereby jeopardizing the safety of the client.
- Additional staffing (in addition to the physician/LIP) is based on patient acuity, procedure and the potential response to administered medications.

1.19 Other Recommendations

Other Recommendations

- The Physician, CRNA, NP/PA ordering RN administered moderate procedural sedation/analgesia is physically present in the procedure area and immediately available.
- The Physician, CRNA, NP/PA ordering RN administered moderate procedural sedation/analgesia is physically present at the bedside throughout the time deep sedation/analgesia is administered.
- Back-up personnel who are experts in airway management, emergency intubations and advanced life support **MUST** be available.
- Informed Consent for moderate or deep sedation is required prior to performing the procedure, except in emergencies.

1.20

Monitoring Requirements


- An IV line is required in adult patients.
 - Pediatric patients at discretion of physician.
- **"Time-Out"** must be conducted immediately prior to starting procedure.
- Always re-evaluate patient status prior to giving sedation.
- Supplemental oxygen must be available. Administer to maintain saturation at baseline or higher.
 - Recommend minimum of 3 liters be **ordered** and administered during and after procedure as appropriate.

Time-Out (Slide Layer)

Time-Out

Universal Protocol 01.03.01 – A time-out is performed immediately prior to starting procedures.

- The purpose of the time-out immediately before starting the procedure is to conduct a final assessment that the correct site, positioning and procedure are identified, and all relevant documents, related information, and necessary equipment are available.
- The time-out is consistently started by a designated member of the team and includes active communication among all relevant members of the procedure team. It is conducted in a standardized fail-safe mode (that is, the procedure is not started until all questions or concerns are resolved).
- A time-out must be performed before starting any procedure including those performed at the bedside such as central line insertions.



1.21 During Procedure



1.22

Monitoring Requirements

Monitor and document the following:

- Blood pressure, respiratory rate and heart rate/rhythm, prior to and every 5 minutes.
- **Exception** – During MRI, patient will be continuously monitored via pulse oximetry along with respiratory rate and adequacy of ventilation. Patient assessment including vital signs will be done during procedure at intervals and with any sign of distress.

Ensure immediate on-site availability of age and size appropriate resuscitative equipment.

1.23 Post Procedure



1.24

Monitoring Requirements


- Blood pressure, pulse, respiratory rate and O₂ saturation every 15 minutes until patient meets discharge criteria. Record temperature prior to discharge.
- Patient response, including verbal or nonverbal indications of pain, to care provided throughout the sedation procedure will be documented in the medical record.

1.25

Post-Sedation Assessment

Post sedation/anesthesia assessment is only completed when an anesthesiologist or CRNA is involved in the case and performing the duties of anesthesia. This assessment should be documented accordingly when performed.

1.26

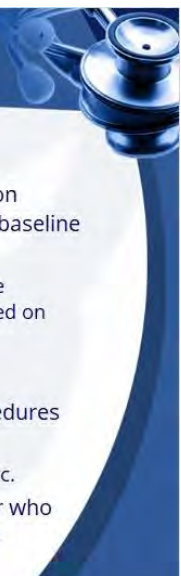


Discharge Criteria

All patients

- Are to be discharged by a qualified LIP or according to pre-approved criteria. Physician ordering sedation is responsible for determining if that patient is ready to be discharged or returned to the unit.
- Nurses will provide post-procedure instructions for patient and/or family.
- If patients are given a reversal agent, they must be monitored for at least **90 minutes** after agent is given.
- Patient's status is assessed on admission and before discharge from the post-sedation area.

1.27



Discharge Criteria

All Patients

- Must have a minimum post procedure score of 8 on the **Modified Aldrete Scale** or meet pre-procedure baseline prior to discharge
 - Patients not obtaining established minimum will be discharged or returned to the patient care unit based on physician assessment and orders


Outpatients

- Must meet discharge criteria established for procedures prior to discharge
 - e.g. able to void, no bleeding, no active vomiting, etc.
- Must be discharged with a responsible adult driver who can remain with the patient **for at least six hours**

Untitled Layer 1 (Slide Layer)

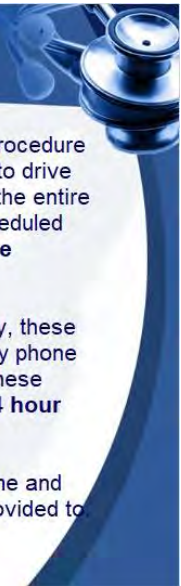
The Modified Aldrete Score is calculated by adding the following criteria:
Activity + Respiration + Circulation + Consciousness + Oxygen Saturation =
Modified Aldrete Score.

	2	1	0
Activity	Able to move 4 extremities voluntarily or on command	Able to move 2 extremities voluntarily or on command	Unable to move extremities voluntarily or on command
Respiration	Able to breathe deeply and cough freely	Dyspnea or limited breathing	Apneic
Circulation	Blood Pressure within 20% of pre-anesthetic level	Blood Pressure +/- 20% of pre-anesthetic level	Blood Pressure +/- 50% of pre-anesthetic level
Consciousness	Fully Awake	Arousable on calling	Not responding
Oxygen Saturation	Able to maintain oxygen saturation greater than 92% on room air	Needs oxygen inhalation to maintain oxygen saturation greater than 90%	Oxygen saturation less than 90% even with oxygen supplement



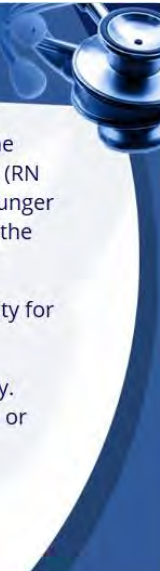
1.28 Discharge Criteria

Discharge Criteria



- Any outpatient receiving sedation or anesthesia for a procedure must have an adult, someone 18 years of age or older to drive them home. The driver must stay at the hospital during the entire procedure. The driver will be verified at the time of scheduled arrival. **If a driver is not present the procedure will be canceled.**
- If a patient utilizes transportation provided by the county, these patients must have someone delegated and available by phone for hospital staff to provide discharge instructions to. These patient will be scheduled for early times and kept for a **4 hour minimum** post procedure.
- The nurse discharging the patient will document the name and contact information that the discharge information is provided to.

1.29 RN/LPN Role in Regional Anesthesia



RN/LPN Role in Regional Anesthesia

- During regional anesthesia if the provider performing the procedure needs mechanical assistance from the nurse (RN or LPN) to attach and/or push the medication syringe plunger while the provider maintains appropriate positioning of the delivery device, the nurse may provide the “third hand.”
- In this situation, the nurse is **NOT** accepting responsibility for administration of regional anesthesia.
- The provider retains full responsibility and accountability. (This is not permitted in the administration of moderate or deep sedation because the RN may not have other responsibilities other than monitoring the patient.)

North Carolina Board of Nursing

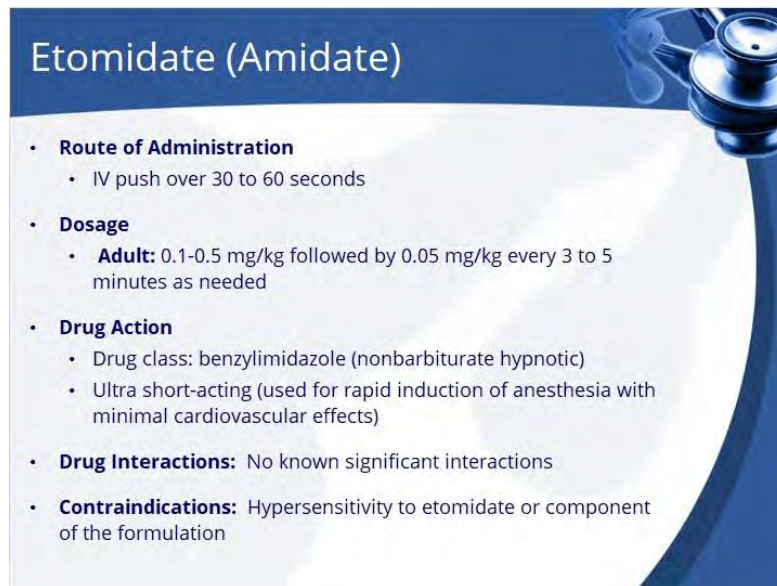
1.30 Pharmacology of Sedation, Analgesia, and Anesthetic Agents



Pharmacology of Sedation, Analgesia, and Anesthetic Agents

This part of the CBL will review appropriate administration routes, drug actions, drug interactions, side effects, contraindications, reversal agents (as applicable), and untoward effects.

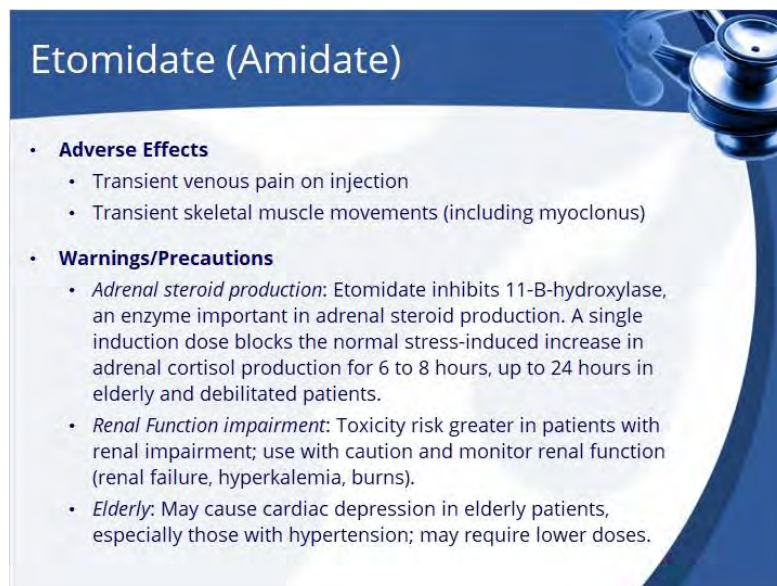
1.31 Etomidate (Amidate)



Etomidate (Amidate)

- **Route of Administration**
 - IV push over 30 to 60 seconds
- **Dosage**
 - **Adult:** 0.1-0.5 mg/kg followed by 0.05 mg/kg every 3 to 5 minutes as needed
- **Drug Action**
 - Drug class: benzylimidazole (nonbarbiturate hypnotic)
 - Ultra short-acting (used for rapid induction of anesthesia with minimal cardiovascular effects)
- **Drug Interactions:** No known significant interactions
- **Contraindications:** Hypersensitivity to etomidate or component of the formulation

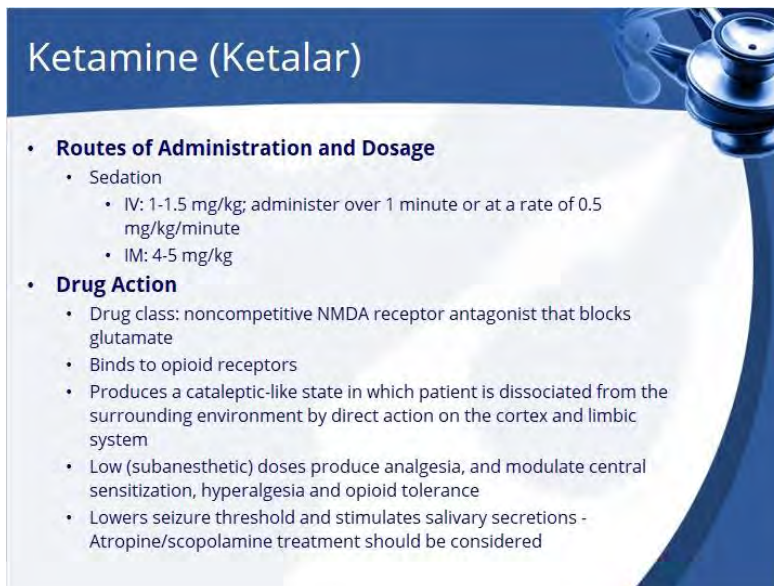
1.32 Etomidate (Amidate)



Etomidate (Amidate)

- **Adverse Effects**
 - Transient venous pain on injection
 - Transient skeletal muscle movements (including myoclonus)
- **Warnings/Precautions**
 - *Adrenal steroid production:* Etomidate inhibits 11-B-hydroxylase, an enzyme important in adrenal steroid production. A single induction dose blocks the normal stress-induced increase in adrenal cortisol production for 6 to 8 hours, up to 24 hours in elderly and debilitated patients.
 - *Renal Function impairment:* Toxicity risk greater in patients with renal impairment; use with caution and monitor renal function (renal failure, hyperkalemia, burns).
 - *Elderly:* May cause cardiac depression in elderly patients, especially those with hypertension; may require lower doses.

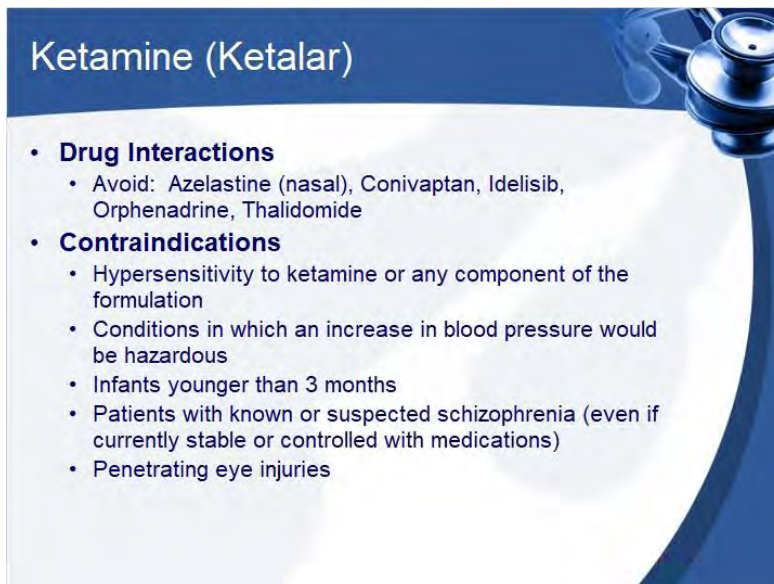
1.33 Ketamine (Ketalar)



Ketamine (Ketalar)

- **Routes of Administration and Dosage**
 - Sedation
 - IV: 1-1.5 mg/kg; administer over 1 minute or at a rate of 0.5 mg/kg/minute
 - IM: 4-5 mg/kg
- **Drug Action**
 - Drug class: noncompetitive NMDA receptor antagonist that blocks glutamate
 - Binds to opioid receptors
 - Produces a cataleptic-like state in which patient is dissociated from the surrounding environment by direct action on the cortex and limbic system
 - Low (subanesthetic) doses produce analgesia, and modulate central sensitization, hyperalgesia and opioid tolerance
 - Lowers seizure threshold and stimulates salivary secretions - Atropine/scopolamine treatment should be considered

1.34 Ketamine (Ketalar)



Ketamine (Ketalar)

- **Drug Interactions**
 - Avoid: Azelastine (nasal), Conivaptan, Idelisib, Orphenadrine, Thalidomide
- **Contraindications**
 - Hypersensitivity to ketamine or any component of the formulation
 - Conditions in which an increase in blood pressure would be hazardous
 - Infants younger than 3 months
 - Patients with known or suspected schizophrenia (even if currently stable or controlled with medications)
 - Penetrating eye injuries

1.35 Ketamine (Ketalar)

Ketamine (Ketalar)

- **Adverse Effects**
 - Increased blood pressure, heart rate, and cardiac output - Concurrent use of benzodiazepines, inhaled anesthetics, and propofol OR administration of ketamine as a continuous infusion may reduce these effects
 - Increased intracranial pressure, increased intraocular pressure, increased cerebrospinal pressure
 - Emergence psychosis - Pretreatment with a benzodiazepine reduces incidence of psychosis by >50%
 - CNS depression
- **Warnings/Precautions**
 - *Cardiovascular disease:* Use with caution in patients with coronary artery disease, catecholamine depletion, hypertension and tachycardia.
 - *Respiratory depression:* (less effect than other agents used for sedation) May result from rapid IV administration or overdose; resuscitative equipment should be available during use.
 - *Thyroid disorders:* A patient with a thyroid disorder or receiving thyroid medication is considered a relative contraindication due to the enhanced sympathomimetic effect produced by ketamine.

1.36 Propofol (Diprivan)

Propofol (Diprivan)

- **Route of Administration**
 - IV
- **Dosage**
 - Sedation: 1mg/kg initially then repeat with 0.5 mg/kg q 3 min
- **Drug Action**
 - Drug class: IV hypnotic/sedative agent
 - Does not have any analgesic effects
- **Contraindications:** Hypersensitivity to egg or soy products
- **Reversal Agents**
 - N/A
- **Warnings/Precautions**
 - Respiratory depression/apnea
 - Hypotension

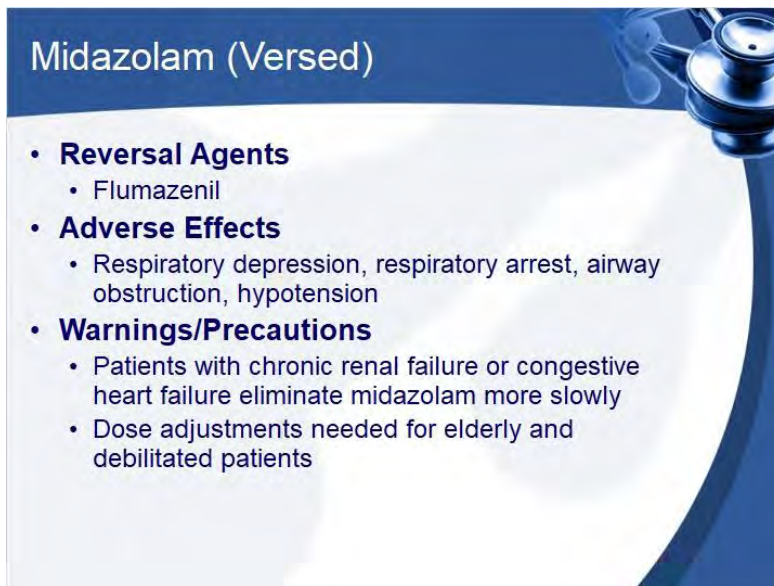
1.37 Midazolam (Versed)



Midazolam (Versed)

- **Route of Administration and Dosage**
 - IV, IM or Intranasal
 - Refer to Procedural Sedation/Analgesia Policy for suggested dosage
- **Drug Actions**
 - Drug class: short acting benzodiazepine CNS depressant
- **Drug Interactions**
 - Contraindicated with fosamprenavir and potent 3A4 inhibitors
 - Avoid IM Olanzapine – additive adverse events
- **Contraindications**
 - Acute narrow-angle glaucoma
 - Patients with open-angle glaucoma who are not receiving appropriate therapy

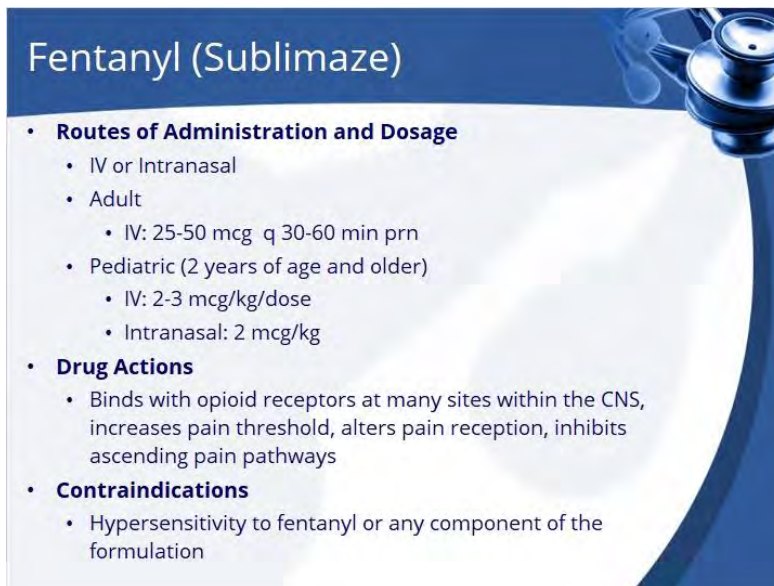
1.38 Midazolam (Versed)



Midazolam (Versed)

- **Reversal Agents**
 - Flumazenil
- **Adverse Effects**
 - Respiratory depression, respiratory arrest, airway obstruction, hypotension
- **Warnings/Precautions**
 - Patients with chronic renal failure or congestive heart failure eliminate midazolam more slowly
 - Dose adjustments needed for elderly and debilitated patients

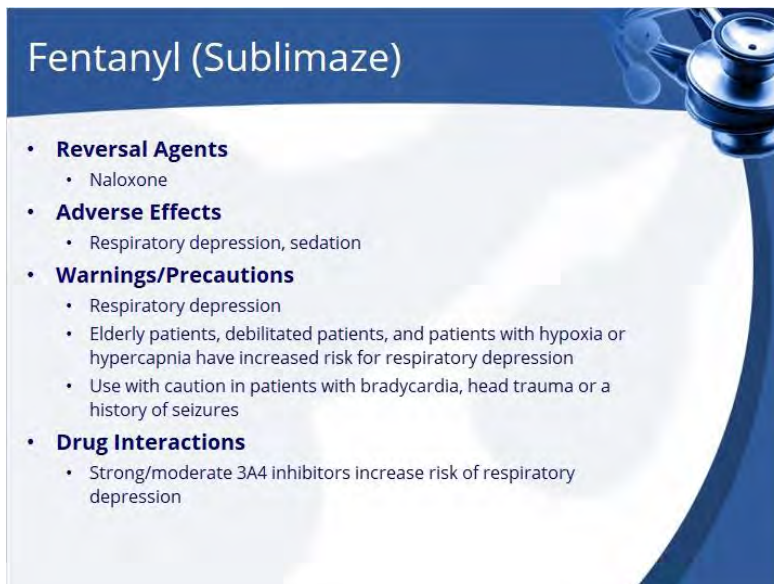
1.39 Fentanyl (Sublimaze)



Fentanyl (Sublimaze)

- **Routes of Administration and Dosage**
 - IV or Intranasal
 - Adult
 - IV: 25-50 mcg q 30-60 min prn
 - Pediatric (2 years of age and older)
 - IV: 2-3 mcg/kg/dose
 - Intranasal: 2 mcg/kg
- **Drug Actions**
 - Binds with opioid receptors at many sites within the CNS, increases pain threshold, alters pain reception, inhibits ascending pain pathways
- **Contraindications**
 - Hypersensitivity to fentanyl or any component of the formulation

1.40 Fentanyl (Sublimaze)



Fentanyl (Sublimaze)

- **Reversal Agents**
 - Naloxone
- **Adverse Effects**
 - Respiratory depression, sedation
- **Warnings/Precautions**
 - Respiratory depression
 - Elderly patients, debilitated patients, and patients with hypoxia or hypercapnia have increased risk for respiratory depression
 - Use with caution in patients with bradycardia, head trauma or a history of seizures
- **Drug Interactions**
 - Strong/moderate 3A4 inhibitors increase risk of respiratory depression

1.41 Reversal Agents




1.42 Flumazenil (Romazicon)

Flumazenil (Romazicon)

- **Indication and Routes of Administration**
 - **Reversal of conscious sedation and general anesthesia**
 - IV: initial: 0.2 mg over 15 seconds; may repeat up to 4 doses at 1 minute intervals; max cumulative dose: 1 mg
 - **Suspected benzodiazepine overdose**
 - **Adult**
 - IV: initial: 0.2 mg over 30 seconds; if desired level of consciousness not obtained 30 seconds after dose; may give 0.3 mg over 30 seconds
 - May repeat 0.5 mg doses over 30 seconds at 1 minute intervals; max cumulative dose: 3 mg
 - **Pediatric**
 - IV: initial: 0.01 mg/kg over 15 seconds (max: 0.2 mg)
 - May repeat doses (max 4) of 0.01 mg/kg at 1 minute intervals; max cumulative dose: 1 mg or 0.05 mg/kg whichever is lower


1.43 Flumazenil (Romazicon)



Flumazenil (Romazicon)

- **Drug Actions**
 - Competitively inhibits the activity at the benzodiazepine receptor site on the GABA/benzodiazepine receptor complex
- **Drug Interactions**
 - May diminish effects of non-benzodiazepine hypnotics
- **Side Effects**
 - Vomiting

1.44 Flumazenil (Romazicon)



Flumazenil (Romazicon)

- **Contraindications**
 - Hypersensitivity to flumazenil, benzodiazepines, or any component of formulation
 - Patients given benzodiazepines for control of potentially life-threatening conditions (e.g. control of intracranial pressure or status epilepticus)
 - Patients showing signs of serious cyclic-antidepressant over dosage
- **Adverse Effects**
 - Seizures
 - Palpitations, flushing, vasodilation
 - Ataxia, dizziness, vertigo, insomnia, anxiety, agitation, nervousness
 - Xerostomia (dry mouth)
- **Warnings/Precautions**
 - *Boxed Warning:* Patients on benzodiazepines for long-term sedation, tricyclic antidepressant overdose patients, concurrent major sedative-hypnotic drug withdrawal, recent therapy with repeated doses of parenteral benzodiazepines, or seizure activity, may develop seizures

1.45 Naloxone (Narcan)

Naloxone (Narcan)

- **Routes of Administration**
 - **Opioid overdose** (eg. propoxyphene, methadone, nalbuphine, butorphanol, pentazocine)
 - Adult: IV; IM; SubQ: Initial: 0.4 to 2 mg; may repeat doses every 2 to 3 minutes; consider other causes if response not observed after 10 mg total
 - Intranasal (Narcan Nasal Spray): 4 mg as a single dose; may repeat every 2 to 3 minutes in alternating nostrils until medical assistance becomes available; slower onset than IV or IM
 - Pediatric (5 years and older or greater than 20 kg): 2 mg; may repeat every 2 to 3 minutes
 - **Reversal of respiratory depression with therapeutic opioid doses**
 - Adult: IV; IM; SubQ: Initial: 0.04 to 4 mg; may repeat until desired response; consider other causes if response not observed after 0.8 mg total
 - Pediatric: 0.001 to 0.015 mg/kg/dose; may repeat as needed

1.46 Naloxone (Narcan)

Naloxone (Narcan)

- **Post-operative reversal**
 - Adult: IV: 0.1 to 0.2 mg every 2 to 3 minutes until desired response; may repeat doses within 1 to 2 hour intervals
 - Pediatric: IV: 0.005 to 0.01 mg/kg; may repeat every 2 to 3 minutes
- **Drug Actions:**
 - Drug class: pure opioid antagonist
 - Displaces opioids at opioid receptor
- **Drug Interactions**
 - Avoid:
 - Methylnatrexone: increase risk of opioid withdrawal
 - Naloxegol: increase risk for opioid withdrawal

1.47 Naloxone (Narcan)

Naloxone (Narcan)

- **Contraindications**
 - Hypersensitivity to naloxone or any component of the formulation
- **Adverse Effects** - occur secondarily to withdrawal of opioid analgesia and sedation
 - Tachycardia, hypo- or hypertension, cardiac arrest
 - Irritability, agitation, convulsions
 - GI disturbances
- **Warnings/Precautions**
 - Acute opioid withdrawal: tachycardia, hypertension, fever, sweating, nausea and vomiting, diarrhea

1.48 Exit

Exit

We hope this online course has been both informative and helpful.

Feel free to review the screens of this course until you are confident about your knowledge of the material presented. You will only have **two** attempts to pass the test with 80% or better.

When you're ready, click on the **Take the Test** button. Upon successful completion of the test your score will be recorded and the course will appear on your transcript as 1 contact hour.

Notes: