MODERATE / DEEP SEDATION

PURPOSE: To outline the management of patients receiving moderate / deep sedation.

SUPPORTIVE DATA: Moderate / deep sedation shall be administered only in approved areas as defined by Medical Center policy #905. Two levels of procedural sedation are defined below:

- Moderate sedation is produced by the administration of pharmacologic agents that minimally depress the level of consciousness (LOC). It allows the patient the ability to maintain an independent and continuous patent airway and respond appropriately to physical stimulation and verbal commands.
- Deep sedation is a controlled state of depressed consciousness from which the patient is not easily aroused and may be accompanied by a partial or complete loss of protective airway reflexes, e.g., cough, gag.

Complete recovery from moderate / deep sedation is defined as return to baseline physiologic status.

The registered nurse managing the care of the patient receiving moderate / deep sedation shall have no other responsibilities that would leave the patient unattended or compromise continuous monitoring.

This protocol does not apply to medications used for the management of pain control, seizures, or the administration of pre-op medications.

Only the following drugs by any route (oral, intramuscular, intravenous or rectal) may be used for moderate / deep sedation:

- diazepam
- midazolam
- morphine
- meperidine
- etomidate*
- lorazepam
- fentanyl
- ketamine
- propofol*
- methohexitol *
- nitrous oxide / oxygen

* Deep Sedation Agents

Capnography (end tidal CO2) while not routinely required should be used when personnel are unable to visualize respiratory efforts, or when administering deep sedation (outside of the ICU).

ASSESSMENT:

1. Assess the following prior to initiation of moderate / deep sedation:
   - Verify patient's stated full name (first and last) matches patient identiband,
   - Medical record number (MRN), and medical record. If necessary have patient state birthdate, name of month, day and year
   - Vital signs (VS)
   - Level of consciousness (LOC)
   - Cough, gag/swallow reflex
   - Heart rate and rhythm (ECG monitor)
   - Oxygen saturation (pulse oximetry)
   - Pain level
   - Emotional state
   - I.V. patency (I.V. is required only if patient is receiving I.V. sedation)
   - Time of last oral intake (NPO status)
   - Pregnancy status

- End Tidal CO2 (Pediatric ICU and Pediatric Oncology for deep sedation and as ordered)

2. Ensure a final verification process is conducted with a "time out" or "pause" to actively communicate correct patient, site or implant if applicable, procedure by procedure team.
   - Reconcile differences if applicable
3. Reassess the following, a minimum of every 5 minutes during procedure and every 15 minutes following the procedure until complete recovery:
   - Airway patency, including need for suctioning
   - Blood pressure, pulse, respirations
   - Oxygen saturation
   - LOC
   - Heart rhythm
   - Pain level
   - End Tidal CO2 (Pediatric ICU and Pediatric Oncology for deep sedation and as ordered)
4. Assess for complications during procedure and recovery to include:
   - Respiratory distress, e.g. retractions, nasal flaring, accessory muscle use
   - Inability to swallow secretions/loss of protective reflexes
   - Respiratory rate less than 10 per minute or shallow respirations (adult)
   - Oxygen saturation less than 92% (adult), less than 95% (pediatrics) or rapidly decreasing from baseline
   - Bradycardia
   - Agitation, combativeness, decreasing LOC
   - Hypotension or drop in systolic BP greater than 20 mmHg from baseline
   - Inadequate perfusion (skin cool, pale, diaphoretic) Pediatrics: mottled skin, weak peripheral pulses, capillary refill greater than 2 seconds
5. Assess Aldrete Score prior to discharge (see attachment).

SAFETY:

6. Ensure final verification process is conducted
7. Intervene immediately if complications occur. (See attached table)
8. Ensure that the following are:
   - In the room:
     - Naloxone and flumazenil (for procedures that use opioid analgesics/benzodiazepines respectively)
       (Calculate dosages for pediatric patients prior to procedure)
     - Bag-Valve-Mask device
     - Emergency power outlet
     - Oxygen source
     - Suction
   - Immediately available
     - CPR cart
     - Telephone
9. Provide a safe environment to include:
   - Side rails up (if applicable)
   - Verify NPO status before procedure

REPORTABLE CONDITIONS:

10. Notify physician immediately for:
    - Significant change in VS, heart rhythm such as:
        - Heart rate less than 60 or greater than 100 per minute (or bradycardia/tachycardia as determined by age appropriate normal)
    - Respiratory depression
    - Oxygen saturation
        - Less than 90 or 10% drop from baseline (adult)
        - Less than 90 or 5% drop from baseline (pediatrics)
    - Loss of protective reflexes
    - Secretions uncontrolled by simple suctioning
    - Vomiting
    - Excessive drowsiness/unresponsiveness/combativeness
    - Persistent pain
    - Tissue perfusion changes with cyanosis, mottled skin, or clamminess
    - Aldrete score less than 10

PATIENT/ FAMILY TEACHING:

11. Instruct patient/family regarding the following:
    - Purpose of medication
    - Anticipated side effects
    - Notify nurse for the following:
        - Nausea/vomiting
        - Difficulty breathing
        - Dizziness/loss of consciousness/seizures/agitation
        - Persistent pain
    - Discharge instructions
        - Emergency phone numbers, follow-up appointments, written discharge instructions
        - Warning signs of the side effects of sedation medication
        - Activity limitations/restrictions
        - Pain management
        - Diet

DISCHARGE CRITERIA:

12. Ensure the following criteria are assessed/met prior to discharge:
    - VS/perfusion status within normal limits (WNL) for age
    - Return to baseline neurologic function
    - Oxygen saturation WNL
    - Minimal or no nausea/vomiting
    - Minimal or no dizziness
    - Pain adequately controlled (pain less than 4 on 1-10 scale for adult or modify for pediatrics)
    - Return to pre-procedure mobility level
    - Aldrete score greater than 10
13. Attempt to discharge to the care of an escort or responsible person
14. Give patient pre-printed Post Moderate Sedation Discharge Instructions form

ADDITIONAL PROTOCOLS:

15. Refer to the following as indicated:
    - Confused Patient
    - Falls/Injury Prevention
    - Intravenous Therapy
    - Pain Management

DOCUMENTATION:

16. Document in accordance with “documentation standards”
17. Record the following:
    - Procedure sedation monitoring
    - Post-procedure recovery monitoring
    - Medication administration
    - Procedural sedation discharge

DESIRED OUTCOMES, COMPLICATIONS AND INTERVENTIONS
Interdependent (requires physician order for dependent functions[*].

Desired Outcome	Complications	Signs/Symptoms of Complications	Nursing Interventions
Airway patency is maintained (independently/ continuously)	Airway obstruction	• Partial obstruction: - Snoring sounds - Retractions, nasal flaring, neck muscle use - Accumulation of secretions/ gurgling sounds • Complete obstruction: - Severe retractions - Apnea - Bradycardia - Cyanosis	• Maintain patient airway: - Head tilt-chin lift or jaw thrust maneuver - Insert oral airway if needed (loss of gag reflex) - Suction as needed
Adequate oxygenation is maintained	Hypoventilation/ hypoxia	• Decreased SpO_2 (adult: < 92%, peds: < 95%) • Decreasing level of consciousness (e.g., agitation, combativeness) • Tachycardia → bradycardia • Tachypnea → apnea	• Administer high flow oxygen by mask • Bag-Valve-Mask resuscitation as needed * • Reversal agents (e.g., naloxone) • Prepare for intubation
Hemodynamic stability is maintained	Hypotension	• Decreased peripheral pulses • Skin cool, pale, diaphoretic, mottled (peds) • Delayed capillary refill (peds) • Decreasing level of consciousness • Tachycardia → bradycardia	• Supine position with legs elevated * • Fluid challenge * • Vasopressor agents (e.g., dopamine)
Relaxation is attained and maintained	Agitation	• Increased motor activity • Restlessness • Combativeness • Uncooperativeness	• Consider hypoxia or pain as the cause • Verbal interventions * • Increase sedative/pain medication
Appropriate response to verbal stimuli/ response to stimulation easily obtained	Deep sedation, compromised protective reflexes	• Difficult to arouse • Inability to follow commands	* • Reversal agents (e.g., naloxone, flumazenil) • Prepare for intubation

* Requires physician's order.

Aldrete Recovery Score

Purpose: This score sets the standard for post-sedation discharge criteria.

Scoring:

1. Goal: Aldrete Recovery Score of 10 (12 for child under age 8)
2. Any score of less than 10 (adult) or 12 (child under age 8), consult with a physician.

Discharge/Transfer Assessment

Criteria	Definitions
Activity	2 - Able to move 4 extremities 1 - Able to move 2 extremities 0 - Able to move 0 extremities
Respiration	2 - Able to deep breath/cough 1 - Dyspnea or limited breathing or tachypneic 0 - Apnea or mechanically ventilated
Cardiovascular	2 - BP ± 20% pre-anesthetic level 1 - BP ± 20-49% pre-anesthetic level 0 - BP ± 50% pre-anesthetic level
Oxygen Saturation	2 - Saturation >92% on room air 1 - Needs oxygen to maintain saturation >90% 0 - Saturation <90% with oxygen
Patient Response	2 - fully awake 1 - arousable on calling 0 - not responding

Additional Aldrete Score Criteria for Pediatric Patients <8 years old	
Criteria	**Definitions**
Pediatric patients (<8 years) must score an additional 2 points to meet discharge criteria.	2 - < 12 months of age – strong cry 2 - > 12 month of age – awake, verbally responsive and strong cry 1 - Drowsy, weak cry 0 - Not responsive

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REFERENCES:

LAC+USC Moderate/Deep Sedation Provider Course (2014).

Consult: LAC+USC Department of Anesthesia