

The University of Tennessee Medical Center

Patient Care

SUBJECT: SEDATION POLICY

Reviewed:

Revised: 5/02, 7/04, 6/05, 2/06, 4/06, 7/06, 8/07, 02/11, 03/11, 04/11, 05/11

Approved: Medical Executive Committee 4/06, 05/11
System Management Team 4/06, 8/07
Management Council 7/11

POLICY

The following information represents guidelines for moderate sedation administered to patients undergoing invasive, manipulative, or diagnostic procedures at The University of Tennessee Medical Center. The standards set forth below do not apply specifically to minimal sedation (anxiolysis). The decision whether anesthesia or sedation/analgesia is needed is dependent upon each unique clinical situation as determined by practitioner and patient. Deep sedation is administered at the University of Tennessee Medical Center primarily by anesthesia-trained providers. Because sedation is a continuum, providers are not always able to predict how an individual patient will respond. While intending to address moderate sedation, the following policies and procedures apply to patients who enter a state of deep sedation when moderate sedation was intended. "Rescue" from a deeper level of sedation than intended requires an intervention by a practitioner with expertise in airway management and advanced life support. The qualified practitioner will correct the adverse physiologic consequences of the deeper than intended level of sedation and return the patient to the originally intended level of sedation. All individuals who administer moderate sedation are trained in basic airway management. If these non-anesthesia providers believe that further expertise in airway management will be required, then the Department of Anesthesiology should be consulted. In addition, intentional deep sedation by non-anesthesia providers may be required for procedures of short duration to treat urgent/emergent clinical problems which are encountered in the various departments of the hospital. A physician who is trained to provide deep sedation and has the skill set to provide patient rescue via airway management must be present to provide this deep sedation.

DEFINITIONS OF SEDATION

1. Minimal sedation (anxiolysis)

Minimal sedation is defined as a drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected.

2. Moderate sedation ("conscious sedation")

Moderate sedation is defined as a drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained.

3. Deep sedation

Deep sedation is defined as a drug-induced depression of consciousness during which patients cannot be easily aroused, but respond purposefully following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired.

Patients may require assistance in maintaining a patent airway and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained.

4. Anesthesia

The term "Anesthesia" includes both general anesthesia and conductive anesthesia but does not include local anesthesia. General anesthesia is a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired.

GOALS

1. To guard the patient's safety and welfare
2. To minimize physical discomfort, pain, or anxiety
3. To minimize negative psychological responses to treatment by providing sedation and analgesia, and to maximize the potential for amnesia
4. To control behavior
5. In some children and uncooperative adults, to expedite the conduct of procedures which are not particularly uncomfortable but which require that the patient not move
6. To return the patient to a state in which safe discharge, as determined by recognized criteria, is possible for outpatients or to return inpatients to pre-sedation status

This **policy does not apply** to minimal sedation or for sedation used for therapeutic management of pain control, mechanically ventilated patients in the intensive care unit, seizures, or patients under the immediate and direct management of the Department of Anesthesiology. Responsibility for implementation of this policy has been assigned to the Chief Medical Officer.

LOCATION

The administration of sedation and the recovery of patients post sedation are restricted to the following locations to ensure that patients undergoing sedation receive a consistent standard of care:

Emergency Department
Intensive Care Units
Endoscopy
Operating Room, Pre-op Units, Post Anesthesia Recovery Unit
Cardiovascular Recovery (CVR)
Cardiac Catheterization Lab
Endovascular Suite
Radiology - CT Scan, MRI, Ultrasound, Work Hall, PET, Interventional Radiology
Progressive Care Unit
Day Surgery
Endovascular Recovery

Outpatients

Patients coming in for procedures that require sedation are scheduled Monday – Friday 8 am to 5:30 PM. Procedures are scheduled with Centralized Scheduling or the individual departments. Areas that accept patients requiring sedation are Endoscopy Lab, Radiology Department, Cardiac Catheterization Lab, Cardiovascular Recovery, and Endovascular Suite. Patients will register in Outpatient Registration and are escorted to the designated department. When Anesthesia is scheduled to provide sedation, Centralized Scheduling or the individual departments will contact

the Anesthesia department by calling 9106. Outpatients requiring sedation, who come in after hours or on weekends, will have sedation provided by the individual departments. When this is not possible, the Anesthesia Department will be contacted for assistance. Patients will be recovered in the area where the procedure was performed or transferred to PACU as indicated.

Patients receiving sedation are discharged in the company of an individual who accepts responsibility for the patient.

Inpatients in non-approved areas that require sedation will be transported to the Post Anesthesia Care Unit for the procedure and recovery. A physician with proficiency in the delivery of sedation will be responsible for sedation of these patients.

PROCEDURE

All moderate sedation will be ordered and supervised by a qualified physician/dentist. He/she will assume the responsibility of the patient until patient meets discharge criteria and/or returns to pre-sedation status.

The licensed professional nurse (RN) responsible for managing the care of patients receiving moderate sedation will complete and maintain competency in the skill.

The chairman or medical director of each department administering moderate sedation will be responsible for ensuring that departmental policies and procedures are applicable and consistent with this hospital policy.

Emergency equipment must be immediately available to every location where moderate sedation is administered or recovery occurs, and includes at least the following: defibrillator, suction device, oxygen, airway management tools, emergency drugs, intubation equipment, and EKG monitor.

All patients must have an intravenous access secured prior to administration of moderate sedation. Children under age 8 may receive only chloral hydrate up to a dose of 100 mg/kg or only oral midazolam up to a dose of 0.5 mg/kg without an intravenous access.

INPATIENT PROCEDURE KEYPOINTS

1. The physician will write an order for the procedure that requires sedation. Areas approved for the use of sedation will follow the Sedation Policy and document on the Sedation Record. Non-approved areas will arrange for procedure to be done in PACU
2. Schedule procedures in Post Anesthesia Care Unit by calling 9106. When possible, procedures should be scheduled for early morning hours.
3. The nurse on the nursing unit will complete the necessary consent forms, document the NPO status, and complete the pre-procedure checklist. The RN who will provide the sedation will complete the Pre-Invasive Procedure Patient Identification & Site Marking Checklist when the patient arrives in the procedure area or PACU.
4. IV access of a minimum of a 22G must be available prior to administering sedation. See Sedation policy dosing chart for exclusions for pediatric patients
5. All necessary trays / supplies / medications will be provided by PACU or procedure area. Medications, monitoring equipment and additional supplies will be available prior to sending for the patient. Time out will be completed prior to initiating the procedure and when the physician arrives.

6. If unstable, the patient may be transported to PACU by Transport, with a nurse.
7. PACU or procedure area staff will recover the patient and then return the patient to the nursing unit when sedation release criteria are met according to the hospital Administrative Sedation Policy. Report will be called to the nurse prior to return of the patient.
8. Staff where the procedure was performed will be responsible for placing any appropriate procedure charge in order charge system.

PRE-PROCEDURE ASSESSMENT:

All patients requiring sedation provide:

- Preprocedural education, according to patient's plan of care
- Preprocedural treatment and services, according to patient's plan for care
- Assess the patient's anticipated needs in order to plan for the postprocedure care

All patients requiring moderate sedation will have a preprocedure evaluation and assessment including, but not limited to:

1. History and physical performed by a physician/dentist
2. Current medications, including any allergies
3. Prior history of adverse reaction to sedation or anesthesia
4. NPO status
5. Proper consent forms signed
6. Level of consciousness
7. Vital signs: heart rate, blood pressure, respiratory rate, oxygen saturation, pain score, temperature when applicable

The physician will document on the sedation form that the patient is a suitable candidate for planned sedation based on physical assessment. A verbal order does not suffice. A preprocedural evaluation such as the ASA Physical Status Classification may be utilized. An example of the American Society of Anesthesiology Physical Status Classification is shown below.

Class I	A normal healthy patient
Class II	A patient with mild systemic disease
Class III	A patient with severe systemic disease
Class IV	A patient with severe systemic disease that is a constant threat to life
Class V	A moribund patient who is not expected to survive without the operation

In the following situations, the physician should consider consultation with an anesthesiologist prior to sedation:

1. Patient does not fulfill NPO criteria and requires emergency diagnostic exam or procedure
2. Severe cardiopulmonary, neurologic, or other organ system disease which may present a significant hazard with the administration of sedation
3. Potential difficult airway management
 - Habitus:** Excessive facial hair, receding chin, or significant obesity especially involving the neck and facial structures (body mass index > 35)
 - Head and Neck:** Short neck, limited neck extension, decreased hyoid-mental distance (< 3 cm in an adult), neck mass, cervical spine disease or trauma, tracheal deviation, dysmorphic facial features (e.g., Pierre-Robin syndrome)

- **Mouth:** Small opening (< 3 cm in an adult); protruding incisors; loose or capped teeth; dental appliances; high, arched palate; macroglossia; tonsillar hypertrophy; nonvisible uvula
 - **Jaw:** Micrognathia, retrognathia, trismus, or significant malocclusion
 - **Obstructive sleep apnea**
 - **Immobilization of the head and neck**
 - **Mallampati Class IV airway**
4. Patient taking medication that may adversely react with sedatives or analgesics (i.e. MAO inhibitors)
 5. Prior history of adverse reaction to sedation or anesthesia

The initial physical status assessment, an airway evaluation and the immediate reassessment of the patient's physical status must be documented in the medical record prior to the start of sedation.

NOTE: The patient will be re-evaluated immediately before administering sedation.

MONITORING DURING PROCEDURE

Monitoring of the patient is to be performed throughout the procedure and will include documentation of the following vital signs:

- Heart rate
- Blood pressure
- Respiratory rate
- Oxygen saturation
- End-tidal CO₂ *

Vital signs should be recorded:

1. Prior to initiation of sedation
2. After the administration of sedative/hypnotics
3. Every 5 minutes during the procedure
4. Immediately after completion of procedure
5. Prior to discharge

Level of Consciousness

The patient's level of consciousness will be assessed continually throughout the procedure and documented prior to the procedure, at 10 minute intervals during the procedure, at the completion of the procedure and prior to discharge.

*For deep sedation and moderate sedation whose ventilation cannot be directly observed; End-tidal CO₂ measurement may not be indicated during bronchoscopy.

If the suggested maximum dosages of drugs used for analgesia and sedation are exceeded, the physician must be notified and the notification documented in the sedation record.

NOTE: The patient will be re-evaluated immediately before administering sedation.

POSTPROCEDURE ASSESSMENT

Postprocedure documentation must include:

- Heart rate
- Blood pressure
- Respiratory rate
- Oxygen saturation
- Pain score
- Level of consciousness

Postprocedure observation must occur in a suitable location. Monitoring and documentation will continue every 10 minutes for 1 hour after the last dose of sedation or until patient meets discharge criteria and/or returns to pre-sedation status. Patients receiving reversal agents will be monitored for a minimum of 2 hours. If discharged, the patient or responsible person must be provided verbal and written instructions regarding diet, medications, activities, and signs or symptoms of complications with course of action to take if any complication develops.

Patients who receive sedation as outpatients are discharged in the company of an individual who accepts responsibility for the patient.

Adult Postprocedure/Postsedation Recovery Score

Patient Sign	Criterion	Score
Consciousness	Awake, responds easily, A&O x 3 (or returned to baseline)	3
	Responds readily, but easily falls asleep	2
	Arousable, but not readily	1
	Not responding	0
Respiratory	Breathes easily with adequate volume	3
	Slightly decreased rate and/or volume	2
	Labored or limited respiration	1
	Apnea or inadequate ventilation	0
Circulatory	BP and pulse within baseline limits	2
	BP and pulse approaching baseline limits	1
	Abnormally high or low BP and/or abnormally fast or slow pulse	0
Activity	Able to move extremities voluntarily or on command (or returned to baseline)	2
	Voluntary movement – nonpurposeful	1
	Unable to lift head or move extremities	0

Adult score for discharge is 10 or when released by a physician/dentist.

Pediatric Postprocedure/Post Sedation Recovery Score

Patient Sign	Criterion	Score
Consciousness	Awake (or returned to baseline)	2
	Responding to stimuli	1
	Not responding	0
Respiratory	Breathes easily with adequate volume	3
	Slightly decreased rate and/or volume	2
	Labored or limited respiration	1
	Apnea or inadequate ventilation	0
Circulatory	BP and pulse within baseline limits	2
	BP and pulse approaching baseline limits	1
	Abnormally high or low BP and/or abnormally fast or slow pulse	0
Activity	Moving limbs purposefully (or returned To baseline)	2
	Moving limbs nonpurposefully	1
	Not moving	0

Pediatric score for discharge is 9 or when released by a physician/dentist.

PERSONNEL REQUIREMENTS

Competency

Physicians, oral surgeons, and nurses supervising, administering, and/or monitoring moderate or deep sedation are required to have proficiency in the delivery of sedation.

1. These individuals are required to be familiar with proper dosages, administration, adverse reactions, and interventions for adverse reactions and overdoses of medications administered for sedation.
2. These individuals must assess total patient care requirements or parameters, including but not limited to respiratory rate, oxygen saturation, blood pressure, heart rate, end-tidal capnography and level of consciousness.
3. Any physician requesting sedation privileges must pass the sedation competency examination. (Anesthesiologists, nurse anesthetists, and oral surgeons are excluded by virtue of their training.) Any nurse administering moderate sedation must complete the UTMC **Nursing E-learning** Sedation Module annually and should have current ACLS or other age comparable certifications (i.e., PALS, NRP), review of sedation policy, and observation of staff documentation through medical record audits.
4. A sufficient number of staff, in addition to the person performing the procedure, will be present to perform the procedure, monitor and recover the patient.
5. The person administering the medication must be qualified to manage the patient at what ever level of sedation or anesthesia is achieved, either intentionally or unintentionally.
6. The administration of general anesthetic or neuromuscular blocking agents by registered nurses who are not qualified anesthesia providers is prohibited by the state of Tennessee except in the following circumstances:
 - To secure an airway in an emergency life-threatening situation
 - To provide muscle relaxation and sedation for a patient with a secured airway
 Examples would include: etomidate, methohexital, ketamine, propofol, thiopental (general anesthetic agents) & succinylcholine, vecuronium, pancuronium, rocuronium and atracurium (neuromuscular blocking agents).

7. Individual department chairmen delineate privileges for physicians to supervise or administer moderate or deep sedation.

Policy Clarifications

1. Recommendations are guidelines only and should not substitute for physician judgment or specific patient safety requirements.
2. This policy will not apply to intubated, sedated, mechanically ventilated (not in the active weaning process) patients who undergo invasive, manipulative, or diagnostic procedures in the Critical Care Units at UTMCK.
3. This policy does not apply to patients undergoing mild sedation (anxiolysis) such as the oral administration of a benzodiazepine prior to a MRI scan.
4. Higher doses of sedative drugs are often required during bronchoscopy.
5. An example of intentional deep sedation by non-anesthesia provider would be an emergency medicine physician who administers deep sedation to assist with a shoulder reduction in the emergency room or a trauma surgeon who administers deep sedation prior to tracheal intubation.

ADDENDUMS:

- Inpatient Keypoints Table
- SEDATION POLICY DOSING - RECOMMENDATIONS FOR ADULT AND PEDIATRIC PATIENTS

Addendum:

Procedure Keypoints Table

INPATIENT PROCEDURE

1. The physician will write an order for the procedure that requires sedation. Areas approved for the use of sedation will follow the Administrative Sedation Policy and document on the Sedation Record. Non-approved areas will arrange for procedure to be done in PACU.
2. Schedule procedures in **Post Anesthesia Care Unit by calling 9106**. When possible, procedures should be scheduled for early morning hours.
3. The nurse on the nursing unit will complete the necessary consent forms, document the NPO status, and complete the pre-procedure checklist. The RN who will provide the sedation will complete the Pre-Invasive Procedure Patient Identification & Site Marking Checklist when the patient arrives in the procedure area or PACU.
4. IV access of a minimum of a 22G must be available prior to administering sedation. See Sedation policy for exclusions for pediatric patients
5. All necessary trays / supplies / medications will be provided by PACU or procedure area. Medications, monitoring equipment and additional supplies will be available prior to sending for the patient. Time out will be completed prior to initiating the procedure with physician involvement.
6. If **unstable**, the patient may be transported to PACU by Transport, **with** a nurse.
7. PACU or procedure area staff will recover the patient and then return the patient to the nursing unit when sedation release criteria are met according to the hospital Administrative Sedation Policy. Report will be called to the nurse prior to return of the patient.
8. Staff where the procedure was performed will be responsible for placing any appropriate procedure charge in order charge system.

Reference(s):
Practice Guidelines for Sedation and Analgesia by Non-Anesthesiologists. April 2002;
96 (4):1004-1017

UNIVERSITY OF TENNESSEE MEDICAL CENTER AT KNOXVILLE
SEDATION POLICY
DOSING RECOMMENDATIONS FOR ADULT AND PEDIATRIC PATIENTS +
Drug Dosage Comments Onset Duration

Benzodiazepines *

Midazolam (Versed) **Pediatric**

PO 0.25 - 0.5 mg/kg. Not to exceed 15 mg.
Intranasal 0.2 mg/kg intranasally; may repeat in 5-15
minutes.

IV 0.05 - 0.2 mg/kg. May follow with continuous
infusion 0.06 - 0.12 mg/kg/hr.

Adult

IV Initial dose should be 1 mg; additional doses of <
2.5 mg may be given at intervals of > 2 minutes.

Usual dose < 5 mg.

*Initial dose should be reduced to 0.5 mg for
patients > 60 years of age or patients who are
debilitated or chronically ill; additional doses of <
1.25 mg may be given in these patients.*

Preferred benzodiazepine agent

Infuse bolus over 2-3 minutes.

PO 30-45 min

IV 1-5 min

30 min-

2 hr

Diazepam (Valium) **Pediatric**

PO 0.2 - 0.3 mg/kg. Max 5 - 10 mg.

IV 0.05 - 0.1 mg/kg. Max 5 mg.

Adult

IV 1.25 - 2.5 mg. May repeat at 5 minute intervals to a
max of 0.1 - 0.2 mg/kg.

Do not exceed 1 - 2 mg/min IVP; max
conc 5 mg/ml.

PO 45-60 min

IV 5 min

6-8 hr

Lorazepam (Ativan) **Pediatric**

PO 0.02 - 0.05 mg/kg. Max 2 mg.

IV 0.01 - 0.04 mg/kg. Max 1 - 2 mg.

Adult

PO/IV 0.5 - 2 mg. Max 4 mg.

IVP 2 mg/min or 0.05 mg/kg over 2-5
min; max conc 4 mg/ml.

PO 60 min

IV 15-30 min

6-12 hr

* The maintenance dose should be 25% of the dose required to reach sedation. Reduce the dose
by 30% if a concomitant
narcotic or CNS depressant is given.

Opiate Agonists

Fentanyl **Pediatric**

IV 1 - 2 mcg/kg/dose. Max 4 mcg/kg.

Lozenge 5 mcg/kg

Adult

IV 25 - 50 mcg q 3-5 minutes. Max 2 - 3 mcg/kg.

Slow IVP over 2-3 minutes; max conc
50 mcg/ml.

IV 3-5 min 30 min-1hr

Hydromorphone

(Dilaudid)

Adult

IV 0.5 – 1mg Max 2 - 4 mg

IV 5 min 2-3 hr

Morphine **Pediatric**

IV 0.05 - 0.1 mg/kg q 3-4 hr. Max 10 - 15 mg.

Adult

PO/IV 2.5 - 5 mg Max 10 - 20 mg.

IVP over at least 5 minutes; max
conc 5 mg/ml.

IV 10-15 min 2-3 hr

+ **Recommendations are guidelines only and should not substitute for physician judgment or specific patient safety requirements.**

**UNIVERSITY OF TENNESSEE MEDICAL CENTER AT KNOXVILLE
SEDATION POLICY
DOSING RECOMMENDATIONS FOR ADULT AND PEDIATRIC PATIENTS +
Drug Dosage Comments Onset Duration**

Miscellaneous

Butorphanol (Stadol) **Adult**

IM 1 - 4 mg q 3-4 hr

IV 0.5 - 2 mg q 3-4 hr

IM 30-60 min

IV 4-5 min

2.5-4 hr

Propofol (Diprivan) **Adult**

IV 0.5 mg/kg. May repeat.

Continuous infusion: 25-100 mcg/kg/min

Must be administered by a physician
unless used to secure an airway in
an emergency life-threatening
situation or to provide sedation for a
patient with a secured airway

IV 30 sec-

1min

5-10 min

Etomidate (Amidate) **Adult**

IV 0.05 - 0.1 mg/kg. May repeat.

Must be administered by a physician
unless used to secure an airway in
an emergency life-threatening
situation or to provide sedation for a
patient with a secured airway

IV 20 sec-

1min

4-10 min

Pentobarbital

(Nembutal)

Pediatric

IV 1 - 3 mg/kg. Max 100 - 200 mg.

Adult

PO/IV 100mg. Max 400 mg.

Administer over 10-30 minutes (not >
50 mg/min); max conc. 50 mg/ml.

IV 1 min

PO 15 min

IV 15 min

PO 3-4 hr

Chloral Hydrate **Pediatric**

PO/PR 25 - 75 mg/kg. Max 0.5 - 1 gm.

PO/PR 30-60

min

4-8 hr

Ketamine **Pediatric**

IV 1 mg/kg. Max 4 mg/kg.

Combine with an anticholinergic and
a long-acting benzodiazepine to

prevent hypersalivation and emergent reactions.

Must be administered by a physician unless used to secure an airway in an emergency life-threatening situation or to provide sedation for a patient with a secured airway

IV 2-4 min 20-60 min

Reversal Agents

Naloxone (Narcan) **Pediatric**

IV/SC/IM/ET 0.1 - 0.2 mg/kg up to 1 year old. All other pediatric patients - 0.01 mg/kg. Every 2- 3 minutes as needed to max 2 mg.

Adult

IV/SC/IM/ET 0.4 - 1 mg q 2-3 minutes as needed to max 2 mg.

IVP over 30 seconds as undiluted drug; ET dilute in 1-2 ml NS.

Repeated doses usually necessary.

IV 2-3 min

IM,SC, ET

2- 5 min

20-60 min

Flumazenil

(Romazicon)

Pediatric

IV 0.01 mg/kg, then 0.005 mg/kg to max 1 mg.

Adult

IV 0.2 mg. May repeat every minute to max 1 mg.

Infuse over 15 seconds.

Reversal effects may wear off before effects of benzodiazepines.

IV 1-3 min Usually

< 1 hr

NPO Recommendations for Non-Intubated Patients +

Gastric emptying may be influenced by many factors, including anxiety, pain, abnormal autonomic function (e.g., diabetes), pregnancy, and mechanical obstruction. Therefore, the suggestions listed do not guarantee that complete gastric emptying has occurred. Unless contraindicated, pediatric patients should be offered clear liquids until 2-3 hr before sedation to minimize the risk of dehydration.

Solids and Nonclear Liquids * Clear Liquids

Adults 6-8 hr or none after midnight ** 2-3 hr

Children older than 36 months 6-8 hr 2-3 hr

Children aged 6-36 months 6 hr 2-3 hr

Children younger than 6 months 4-6 hr 2 hr

* This includes milk, formula, and breast milk (high fat content may delay gastric emptying).

** There is no data to establish whether a 6-8 hr fast is equivalent to an overnight fast before sedation/analgesia.

+