IREDELL HEALTH SYSTEM

Midazolam (Versed)	
Approved by: Becky Quate, VPN Warren Mills, Director of Anesthesiology Kathy Lail, Director of Critical Care Toni Fortner, Chief Nurse Anesthetist Laura Rollings, PharmD, BCPS, BCGP	Last Revised/Reviewed Date: 02/2021
Department of Medicine Department of Surgery P&T Committee	Date: 02/2016 Date: 02/2016 Date: 02/2021

Background:

Definitions: For the purpose of this policy, the following terms and definitions apply:

- ***Minimal sedation*** *(anxiolysis)* – 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. This level of sedation does not trigger the Moderate Sedation policies.

- ***Moderate sedation/analgesia*** *("conscious sedation")* – A drug-induced depression of consciousness during which patients respond purposefully to verbal commands, (note, reflex withdrawal from a painful stimulus is not considered a purposeful response) – 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.

Policy:

PERSONNEL:
Each provider who uses midazolam for Moderate Sedation (see link at end of policy) must be approved to deliver moderate sedation. Providers approved to perform moderate (conscious) sedation will have this listed in their privileges. The nurse will check the provider's privileges electronically prior to administering midazolam for moderate sedation. If the provider does not have privileges to perform moderate (conscious) sedation, the provider may not perform moderate (conscious) sedation.

EQUIPMENT AND MONITORING:
Patients receiving midazolam must have oxygen at 2 liters per minute at minimum, with continuous cardiac monitoring and oxygen saturation via pulse oximetry. Baseline vital signs, oxygen saturation and cardiac rhythm must be documented prior to administration of midazolam.

Each location approved for administration of midazolam and its respective recovery site (if physically separate from the sedation site) must have the following minimum equipment present and in working order:

- Cardiac monitor with alarm capabilities
- Pulse oximeter with alarm capabilities
- Blood pressure measurement deice with alarm capabilities
- Suction capabilities with appropriate devices, attachments and tubing
- A high pressure oxygen source capable of delivering 15 L/min inspiratory flow rate for at least 30 minutes
- A self-inflating reservoir bag-valve0mask system capable of both supporting ventilation as well as delivering >90% oxygen concentration at the above flow rates
- Capnography equipment (only for moderate sedation cases)

Each clinical area and its respective area (if physically separate from the procedural sedation area) must have a fully stocked age- and size-appropriate emergency resuscitation cart consistent with current Medical Center Code.

ADMINISTRATION:

The following areas are approved for the administration of midazolam with the designated levels of sedation:

Areas of Service	**Minimal Sedation**	**Moderate Sedation**	**Mechanical Ventilation**	**Oral midazolam syrup in Pediatric patients**
Operating Room	X	X	X	X
Operating Room - Birthplace & C-section room	X	X		
OR Holding Room	X	X		
PACU/Pain Management Room	X	X		
Endoscopy	X	X		X
Emergency Department	X	X	X	X
Critical Care	X	X	X	
Cardiac Cath Lab	X	X		
Outpatient Surgery	X	X		X
Lithotripsy Unit	X	X		
Radiology	X	X		X

FOR *MINIMAL SEDATION*:

Midazolam may be administered intravenously to adult patients, as an anxiolytic, in dosages up to 2 mg by an RN who has completed the competency requirements for management of moderate sedation. A provider dose not need to be present during administration of midazolam when used for minimal sedation (anxiolysis).

In addition to obtaining baseline vital signs as detailed above, vital signs must be monitored every 5 minutes x3 then, every 10 minutes x2.

FOR *MODERATE SEDATION*:
Refer to "Policy and Procedure for Moderate (Conscious) Sedation" for complete instructions.

Midazolam may be given intravenously to adult patients as ordered by the approved provider who must be in attendance during administration. Midazolam should be administered slowly, over at least 2 minutes, and time allowed, an additional 2 minutes to fully evaluate the sedative effect.

The initial dose should not exceed 2.5 mg in a normal healthy adult. (A total of greater than 5 mg is typically not necessary.) The maximum total dosage should not exceed 12 mg, and any patient who requires more than 12 mg will have their case reviewed by the appropriate Continuous Quality Improvement (CQI) committee. Lower doses may be necessary for patients greater than 60 years old, debilitated patients or patients receiving concomitant narcotics or other CNS depressants.

FOR *MECHANICALLY VENTILATED* PATIENTS:
Midazolam may be given by slow intravenous push over several minutes as ordered by the provider. Subsequent infusion should not exceed 10 mg per hour.

Refer to "Critical Care/Emergency Department Adult Infusion Guidelines" for dosing parameter guidelines.

In addition to obtaining baseline vital signs as detailed above, patients shall be on continuous cardiac monitoring for rate and rhythm. Vital signs such as heart rate, blood pressure, respirations and oxygen saturation shall be monitored and documented at least every 2 hours x3, then every 4 hours thereafter, unless there are changes in dose/rate or patient condition. It is not required for the provider to be present in the department while the patient is intubated and receiving midazolam.

FOR *ORAL MIDAZOLAM SYRUP IN PEDIATRIC* PATIENTS:
Oral midazolam syrup provides safe and effective anxiolysis in pediatric patients prior to surgical procedures that require anesthesia as well as before diagnostic, therapeutic or endoscopic procedures that may not require anesthesia.

A single dose of 0.25 - 0.5 mg/kg with a maximum dose of 20 mg is indicated for pre-procedure anxiolysis in children (6 months to 16 years). Individualization of dosage is required, especially in conjunction with other CNS depressants. In obese pediatric patients, the dose should be calculated based on ideal body weight. Time to onset of effect is most frequently reported as 10 – 20 minutes. Oral midazolam syrup should not be mixed with any liquid prior to administration. The dosage must be independently verified by two licensed personnel and this must be documented.

The patient/family should be informed of side effects to expect such as drowsiness, amnesia, and/or euphoria.

Monitor the oxygen saturation continuously or as tolerated by the child. All pediatric patients receiving oral midazolam shall be monitored by direct visual observation for a minimum of 45 minutes from the time the medication was administered. If the child becomes drowsy, they should be positioned to lie in a bed. If the child falls asleep, a continuous oxygen saturation should be monitored. Particular care should be taken with pediatric patients to assure prevention of falls.

The patient must meet the Medical Staff-approved discharge criteria or have a provider's order prior to discharge.

REVERSAL AGENTS:
In cases where a reversal agent has been administered the patient will be monitored for a minimum of 2 hours. Patients may be monitored for longer times as recommended by the provider. See reversal agents chart below:

REVERSAL AGENTS	
Flumazenil (Romazicon)	**Adult Dose:** 0.2 mg every 1 minute PRN, up to 1 mg, over 5 minutes **Pediatric Dose:** 0.01 mg/kg over 15 seconds. Repeat every 1 minute PRN up to 0.05 mg/kg or 1 mg, whichever is lower.
Naloxone (Narcan)	**Adult & Pediatric Dose:** Dilute one amp (0.4 mg) in 10 mL for 0.04 mg/mL concentration. Administer 1 mL (0.04 mg). May repeat every 1 minute PRN.

INITIAL EFFECTIVE DATE: 07/1999
DATES REVISIONS EFFECTIVE: 08/2006, 11/2011, 02/2016, 02/2021
DATES REVIEWED (no changes):