

## APPENDIX D: Pediatric Propofol Guidelines for Emergency Department

### Purpose:

The purpose of this document is to define the guidelines for the Emergency Department physicians' administration, monitoring and recovery of pediatric patients receiving Propofol for procedural sedation in the Emergency Department.

### Characteristics of Propofol:

**Sedation:** Propofol is an intravenously administered sedative-hypnotic agent that causes rapid loss of consciousness with a short recovery time. It is a di isopropyl phenol and is structurally unrelated to other commonly used sedative agents.

**Analgesia:** Propofol is not an analgesic and the use of an additional agent for analgesia may be needed for painful procedures.

**Amnesia:** Complete amnesia is generally seen.

**Cardiovascular Stability:** Transient decreases in systolic blood pressure are often seen. This drop in pressure generally does not result in hemodynamic compromise or cardiovascular instability in patients with normal cardiac reserve.

**Airway reflexes:** Hypoxia, respiratory depression and apnea can be seen with Propofol. These effects are usually short lived, and appear to be dose and rate of administration dependent. **Respiratory complications can typically be managed by stimulation, airway repositioning, supplemental oxygen administration, and bag-mask ventilation.** Intubation is rarely necessary.

**Anti-emetic properties:** Propofol has intrinsic anti-emetic properties.

**Pharmacodynamics:** Hypnosis generally produced within 40-60 seconds, with the patient returning to consciousness 10-15 minutes following a therapeutic bolus dose.

### Potential Side Effects:

- Hypotension (17-30%)
- Hypoxia (5%)
- Upper airway obstruction requiring patient repositioning (3%)
- Apnea (0.8%)
- Bradycardia, seen with concomitant use of an opioid analgesic (1.2%)
- Movement, seen with lower doses (17%)
- Pain/burning/stinging at injection site(17.6%)Injecting a small amount of lidocaine, 1mg/kg IV, may decrease this side effect. This dose must be added to the cumulative dose of local anesthetic infiltration to avoid toxicity.

**Patient Selection:**

Hemodynamically stable patients, age 12 months and older, for whom alternative methods of sedation are contraindicated or who would benefit from the extremely short duration of Propofol sedation. If there are any concerns about appropriateness of the patient, anesthesia should be consulted for assistance with the sedation. Only patients who are ASA class I or II should be considered for Propofol procedural sedation in the Emergency Department. This document does not address patient selection for the use of Propofol for sedation of mechanically ventilated ICU patients.

**Contraindications:**

- Age <12months
- Respiratory depression (RR<10)
- Hypoxemia (room air baseline oxygen saturation less than 95%)
- Hypotension (BP more than 2 standard deviations from age appropriate norms)
- Cardiovascular disease
- Pulmonary infection or disease, including upper respiratory infection
- Abnormal craniofacial or airway anatomy
- Obesity (BMI > 95<sup>th</sup> percentile for age)
- History of obstructive sleep apnea (or history of significant snoring)
- Mitochondrial disease
- Baseline neurologic impairment that could lead to an increased aspiration risk

**Environmental Requirements / Monitoring:**

- Suction, oxygen, pulseoximetry, endtidal carbon dioxide and cardiac monitoring (including blood pressure monitoring) at bedside
- Age appropriate equipment for advanced airway management at bedside
- Secure IV access established
- Isotonic IV fluids hanging at bedside
- ***Attending physician present at the bedside throughout the sedation and is responsible for the sedation, not the procedure.***
- UNC Pediatric Sedation Guidelines must be followed:
  - The UNC Hospitals Pediatric Sedation Committee must appropriately privilege physicians providing Propofol pediatric procedural sedation.
  - Standard pre-procedural assessments must be completed and reviewed by the attending before medications are given.

**Pre-sedation:**

- Patients must undergo a pre-sedation assessment in accordance with the UNC Pediatric Sedation Guidelines.
- Written informed consent for deep sedation must be obtained from the patient or legal guardian.
- Pre-sedation level of consciousness and complete vital signs will be recorded in the medical record prior to administration of Propofol.

Note: Pediatric patients should be NPO according to the following guidelines\*:

- 2 Hours for **APPROVED** Clear Liquids
- 4 Hours for Breast Milk
- 6 Hours for Formula and Solids
- 8 Hours for heavy or fatty meals

**Approved Clear Liquids:**

Water, Apple Juice, Pedialyte, Sprite, Ginger Ale (Absolutely NO broth, jello or juice with pulp)

\*guidelines match the NPO guidelines used by the pediatric sedation service at NC Children's Hospital. For

children requiring urgent/emergent sedation who do not meet elective fasting guidelines, the risks of sedation and possible aspiration are as-yet unknown and must be balanced against the benefits of performing the procedure promptly.

**Analgesia:**

For patients requiring analgesia who have not previously received opioid medications or for whom pain control is inadequate prior to initiation of sedation, fentanyl may be administered in small doses (example 0.5-1 mcg/kg to a maximum of 100 mcg) as a slow IV infusion over 1-2 minutes approximately 5 minutes prior to initiation of Propofol sedation. No additional opioids or benzodiazepines may be administered until the patient is fully recovered from the sedation and back at their neurologic baseline due to the increased risk of respiratory depression, apnea and hypotension.

The administration of local anesthetic should be employed when appropriate.

**Propofol Administration:**

**Propofol will be administered by a qualified physician with privileges to administer Propofol.**

Propofol will be administered as follows:

Propofol 1mg/kg( to a maximum of 50mg) will be given as a slow IV infusion over 1-2 minutes. Additional doses of 0.5-1mg/kg (but not more than 25 mg/dose) may be given if the initial dose does not achieve adequate sedation or if repeated doses are necessary to accomplish a longer procedure. An interval of 2-4 minutes should be allowed between doses to allow for the full effect of each dose to be seen. Supplemental oxygen, unless medically contraindicated, will be administered throughout the procedure to keep oxygen saturation above 92% or at pre-sedation oxygen saturation.

If an antiemetic is needed, ondansetron should be used at a dose of 0.16mg/kg IV to a maximum dose of 8 mg IV.

**Interactive Monitoring:**

- UNC Pediatric Sedation guidelines must be strictly followed
- Patient airway and respirations will be directly observed by a licensed health care provider until recovery is well established (UNC Hospitals Arousal Scale of 4 or greater)
- Drapes must be positioned, when possible, such that airway and chest motion can be visualized
- Occasional head repositioning may be needed for optimal airway patency

**Mechanical Monitoring:**

- UNC Pediatric Sedation Guidelines must be strictly followed
- Continuous cardiopulmonary monitoring and pulse oximetry with end tidal carbon dioxide monitoring until recovery is well established
- Blood pressure measured every 5 minutes until recovery is well established

**Discharge Criteria:**

- Strict adherence to UNC Pediatric Sedation Guidelines discharge criteria
- Return to pretreatment level of verbalization and awareness
- Return to pretreatment level of neuromuscular activity

**Discharge Instructions:**

- Patient must be discharged to the care of a responsible adult
- Written post sedation instruction sheet given to caregiver

**Quality Assurance:**

All cases of Propofol sedations will be logged and reported as per UNC Pediatric Sedation Policy and will be reviewed as per the UNC Pediatric Sedation Committee's protocol.

## **Training Requirements for Non-Anesthesia Attending Physicians Administering Propofol in the Emergency Department for Pediatric Procedural Sedations**

Attendings and subspecialty residents from the Emergency Department must apply to receive privileges to administer Propofol for pediatric procedural sedation.

All physicians administering Propofol in the above areas will meet all the credentialing requirements of the UNC Pediatric Sedation Committee, including Pediatric Advance Life Support active certification.

All physicians administering Propofol in the above areas must have pediatric advance airway skills. This includes, but is not limited to, skills in bag mask ventilation, LMA insertion, use of oral and nasal airways and endotracheal intubation. All physicians must also be able to demonstrate the ability to recognize and appropriately intervene when patients have difficulty with oxygenation or ventilation while under sedation.

For physicians who are board certified or board eligible in Pediatric Emergency Medicine, Emergency Medicine, and Pediatric Critical Care the above requirement will have been met during their training. Physicians who have not managed 10 pediatric airways in the past 12 months may be asked to spend 1 day in the operating rooms with a pediatric anesthesiologist managing pediatric airways.

Attending Physicians who do not meet the requirements listed above are required to spend forty hours on the pediatric anesthesia service with a minimum of 5 LMA placements, 10 endotracheal intubations, and 10 bag valve mask ventilations. These physicians will not be privileged to administer Propofol until they have completed this 40-hour training period and the division of pediatric anesthesiology confirms that these training requirements have been met.

Active Pediatric ED subspecialty residents who have spent time in the operating room as part of their training will be deemed skilled in pediatric advance airway management.

All physicians administering Propofol in the above areas must complete the LMS Propofol for pediatric procedural sedation module, which reviews the pharmacology and pharmacokinetics of the drug including indications, contraindications, and potential side effects. The Pediatric Sedation Committee will be responsible for this learning module.

Subspecialty residents who are granted privileges may only administer Propofol for deep sedations with appropriate supervision by an attending physician who has privileges to use Propofol for deep sedations in pediatrics.