NATIONWIDE CHILDREN'S
When your child needs a hospital, everything matters.℠

To the Medical Staff/Allied Health Professional of Nationwide Children's Hospital:

As many of you know, our medical practices in various areas are coming under closer scrutiny of credentialing organizations and licensing boards such as CMS (Center for Medicaid and Medicare Services). One area of incredible scrutiny is the practice of procedural sedation. In order to become compliant and proactive with such organizations, the direction of procedural sedation will be moved under the supervision of the Department of Anesthesiology & Pain Medicine. A major impetus for many of these changes has come from the American Academy of Pediatrics whose most recent publication on procedural sedation guidelines is now in its third edition (American Academy of Pediatrics; American Academy of Pediatric Dentistry, Coté CJ, Wilson S; Work Group on Sedation. Guidelines for monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures: an update. *Pediatrics* 2006;118:2587-2602).

To accomplish this task, a procedural sedation policy has been written and some standardization in practice and credentialing has been instituted. One of the key concepts of this new policy is the universal use of the term "procedural sedation" and avoidance of terms such as "conscious or deep sedation". These changes will be implemented when Medical Staff/Allied Health Professional privileges are renewed or when Medical Staff/Allied Health Professionals go through the initial credentialing process. These policies regulate the credentialing process of Medical Staff/Allied Health Professionals and procedural sedation process itself including preparation of the patient, equipment and facility requirements, monitoring during the procedure, and post-procedure recovery and monitoring.

The credentialing process will include:

1. Educational materials must be reviewed and mastered concerning the procedural sedation policy as well as all available sedative medications. Procedural sedation policy educational materials are prepared by the Sedation Committee and shall be reviewed and updated at least every two years.
2. Current ACLS or PALS or NRP verification and maintain recertification.
3. Procedural sedation and verification of airway management skills observed and verified by the Chief, Department of Anesthesiology & Pain Medicine or designee. These can be based on training and clinical experience in lieu of specific observation or demonstration.
4. Achievement of a passing score (80%) on the procedural sedation examination. This will be a 40 question test. More than one attempt will be allowed should the applicant not pass the test on the first attempt.
5. Complications of sedation (adverse drug reactions, incident reports or sedation audits) is included as part of ongoing Medical Staff/Allied Health Professional performance evaluation and reported to Leadership at least every six months.
6. ***New*** procedural sedation privilege requests: You are required to complete and document five (5) procedural sedation procedures proctored by a credentialed practitioner approved by the Chief, Department of Anesthesiology & Pain Medicine or designee.
7. ***Continuing*** procedural sedation privilege requests: You are required to complete and document five (5) procedural sedation procedures per year. ***Note:*** Practitioners who perform 50 procedural sedations with the 2 year credentialing cycle will NOT need to re-take the test.
8. Procedural sedation logs are required to include your name and/or signature; patient identifier; dates of procedures; levels of sedation.

NOTE: For those ***not interested*** in pursuing procedural sedation privileges, the Department of Anesthesiology & Pain Medicine manages a robust procedural sedation program which is available to provide sedation and general anesthesia for procedures throughout NCH. Brian Schloss, MD, Director of Procedural Sedation Services, can be reached at Brian.Schloss@nationwidechildrens.org to answer any questions.

We believe that these practices and policies will not only make us compliant with credentialing boards and licensing organizations, but also to ensure the safety and efficacy of our procedural sedation practices. I thank you for your cooperation with and understanding of these new regulations. Questions and comments to improve our process are welcomed (614-722-5817).

Thank you.

Joseph D. Tobias, MD
Chief, Department of Anesthesiology & Pain Medicine

NATIONWIDE CHILDREN'S HOSPITAL
COLUMBUS, OHIO

Name:
Department/Section:

Procedural Sedation Test

Note: Study modules and hospital policies are available at **www.nationwidechildrens.org/inhalation-anesthesia-procedural-sedation-materials** . You are required to achieve a passing score of 80% on the procedural sedation examination.

1. Simple measures to relieve airway obstruction include all of the following ***except:***
   - A. proper positioning of the head with avoidance of neck flexion (head tilt)
   - B. anterior displacement of the mandible (jaw thrust)
   - C. lifting the anterior portion of the mandible (chin lift)
   - D. turning the patient supine
   - E. placement of a nasal airway

2. Using the standard formula, the appropriate sized endotracheal tube (ID) for a 4 year old child would be:
   - A. 3 mm, cuffed
   - B. 4.5 mm, cuffed
   - C. 6 mm, cuffed
   - D. 7 mm, uncuffed
   - E. 7 mm, cuffed

3. Recommendation from the American Society of Anesthesiologists, the AAP Guidelines for Pediatric Sedation, and NCH policy allow for the intake of a clear liquids until _____ hours prior to elective procedural sedation.
   - A. 2 hours
   - B. 4 hours
   - C. 6 hours
   - D. 8 hours
   - E. Must be NPO after midnight

4. All of the following are true regarding the laryngeal mask airway ***except:***
   - A. It can be used in the cannot intubate/cannot ventilate scenario
   - B. The size can be judged based on the patient's weight
   - C. It can be used in children less than 1 year of age
   - D. It protects the airway from aspiration
   - E. It is placed blindly by placement into the oropharynx

5. All of the following suggest the potential of difficult endotracheal intubation or bag-valve-mask ventilation ***except:***
    A. A large tongue
    B. A small mouth
    C. A long thyromental distance
    D. Recessed mandible
    E. Limited extension or flexion of the neck

6. Release of endogenous catecholamines and maintenance of blood pressure is generally seen with:
    A. Propofol
    B. Fentanyl
    C. Midazolam
    D. Dexmedetomidine
    E. Ketamine

7. Recommendation from the American Society of Anesthesiologists, the AAP Guidelines for Pediatric Sedation, and NCH policy allow for the intake of a light meal (for example: toast and clear liquid) until _____ hours prior to elective procedural sedation.
    A. 2 hours
    B. 4 hours
    C. 6 hours
    D. Must be NPO after midnight

8. All of the following are true regarding nitrous oxide ***except:***
    A. It has a pungent smell which is distressing to pediatric patients
    B. It can lead to inactivation of methionine synthetase
    C. When used as the sole agent, it causes minimal respiratory and cardiac depression
    D. It diffuses into and expands gas-containing closed spaces in the body (obstructed bowel, pneumothorax, middle ear, pneumocephalus)
    E. To prevent environmental pollution, exhaled gases should be scavenged

9. According to the NCH policy, level 3, or deep sedation is best described as:
    A. Normal response to verbal commands
    B. Patient is easily arousable and responds to verbal commands
    C. Patient cannot be easily aroused or respond purposefully to repeated painful stimuli.
    D. Patients are not arousable, even to intense stimuli.

10. Sedation levels are based on:
    A. The age of the patient
    B. The medication administered
    C. The route of delivery of the medication
    D. The physiologic response of the patient to the sedation
    E. The patient's pulse oximetry reading

11. A patient who is otherwise free of any co-morbid diseases would be classified as an American Society of Anesthesiologists class:
    A. I
    B. II
    C. III
    D. IV
    E. V

12. Which of the following ***is not*** considered a clear liquid?
    A. Water
    B. Pedialyte
    C. 7-Up or Sprite
    D. Broth or Jell-O
    E. Apple juice

13. Which of the following neuromuscular blocking agents has the most rapid onset?
    A. Pancuronium
    B. Cis-atracurium
    C. Succinylcholine
    D. Vecuronium
    E. Curare

14. Which neuromuscular blocking agent is contraindicated in patients with a history of malignant hyperthermia:
    A. Pancuronium
    B. Cis-atracurium
    C. Succinylcholine
    D. Rocuronium
    E. Vecuronium

15. Which medication can be administered via the intraosseous route?
    A. Pancuronium
    B. Cis-atracurium
    C. Succinylcholine
    D. Rocuronium
    E. All of the above

16. Controlled hypertension or asthma would make a patient's ASA classification:
    A. I
    B. II
    C. III
    D. IV
    E. V

17. Anesthesia consultation prior to sedation may be indicated for all of the following ***except:***
    A. History of airway compromise during sedation or general anesthesia
    B. Known respiratory compromise or hemodynamic instability
    C. Obstructive sleep apnea
    D. ASA physical status ≥ 4
    E. Patient with hypertension controlled on medication

18. The acronym SOAPME is used in the AAP sedation guidelines. It used to remind one of the set-up prior to procedural sedation.
    The "S" refers to:
    A. Suction
    B. Sedation
    C. Set-up
    D. Serial monitoring
    E. Some medications

19. Which of the following medications may depress adrenal function?
    A. Ketamine
    B. Midazolam
    C. Fentanyl
    D. Etomidate
    E. Propofol

20. Which of the following is defined as a patient that is non-arousable even to intense stimuli, ability to maintain airway is often impaired, hemodynamics may be impaired?
    A. Level 1 - Anxiolysis
    B. Level 2 – Moderate Sedation
    C. Level 3 – Deep Sedation
    D. Level 4 – General Anesthesia

21. Which local anesthetic agent has the greatest cardiotoxic potential?
    A. Lidocaine
    B. Ropivacaine
    C. Bupivacaine
    D. Chloroprocaine
    E. Prilocaine

22. Bradycardia unrelated to hypoxemia may occur with:
    A. Ketamine
    B. Midazolam
    C. Propofol
    D. Etomidate
    E. Dexmedetomidine

23. Emergence delirium or hallucinations may occur with:
    A. Ketamine
    B. Midazolam
    C. Thiopental
    D. Etomidate
    E. Dexmedetomidine

24. Significant pain during intravenous injection most commonly occurs with:
    A. Ketamine
    B. Dexmedetomidine
    C. Fentanyl
    D. Morphine
    E. Propofol

25. Respiratory depression is least with which opioid?
    A. Fentanyl
    B. Remifentanil
    C. Morphine
    D. Meperidine
    E. In equipotent doses, respiratory depression is the same

26. What is the most appropriate dose of intranasal midazolam for a 20 kg child?
    A. 0.1 mg
    B. 1 mg
    C. 6 mg
    D. 20 mg

27. Cardiac arrest following succinylcholine is likely related to:
    A. Hypercalcemia
    B. Hyperkalemia
    C. Hyponatremia
    D. Hypocalcemia
    E. Hypokalemia

28. Chest wall rigidity and the inability to ventilate may occur with the large, rapid doses of:
    A. Fentanyl
    B. Morphine
    C. Dexmedetomidine
    D. Hydromorphone
    E. Midazolam

29. Which of the following has the shortest duration of action?
    A. Hydromorphone
    B. Dexmedetomidine
    C. Morphine
    D. Fentanyl

30. Which characteristic most accurately distinguishes the pediatric from adult airway?
    - A. The pediatric airway is larger in diameter.
    - B. The larynx in infants is located in a more posterior position.
    - C. The epiglottis in young children is relatively short and narrow.
    - D. In children younger than 8-10 years of age, the narrowest portion of the airway is below the glottis at the level of the cricoid cartilage.

31. Which of the following statements applies to flumazenil?
    - A. It should be given to patients receiving benzodiazepines for seizure control
    - B. It can be used to reverse the effects of morphine
    - C. It can be used to reverse the effects of dexmedetomidine
    - D. It's duration of action is 30-45 minutes, and repeat doses may be needed
    - E. The duration of action is greater than 90 minutes

32. Which of the following areas should be reviewed as part of the pre-sedation history:
    - A. Allergies
    - B. Vital signs
    - C. Last oral intake of liquids and solids
    - D. Previous sedation history
    - E. Review of systems focused on pulmonary, cardiac, renal and hepatic function.
    - F. All of the above

33. Reasons to post-pone elective sedation include all of the following ***except***:
    - A. A history of asthma
    - B. Active wheezing
    - C. Fever greater than 101.5^{o}C
    - D. Croup-like symptoms
    - E. Copious, purulent nasal discharge

34. Common risk factors for OSA (obstructive sleep apnea) include all of the following ***except***:
    - A. Obesity
    - B. Adenotonsillar hypertrophy
    - C. Upper airway problems
    - D. Syndromes with midface hypoplasia
    - E. Premature birth

35. Children at high risk for adverse events with sedation include all of the following ***except:***
    - A. History of OSA
    - B. Morbidly obese children
    - C. Children with cleft lip and/or cleft palate
    - D. Children with asymptomatic heart disease
    - E. Infants less than 37 weeks EGA who are less than 60 weeks post-conception.

36. Which statement most accurately describes naloxone?
    - A. It is a long acting agent
    - B. It reverses benzodiazepine-induced sedation
    - C. It can be used to reverse ketamine sedation
    - D. It's duration of action is 30-45 minutes, and repeat doses may be required

37. According to NCH policy, all children undergoing procedural sedation need to have vital signs monitored and documented at least every ___ minutes:
    - A. 1
    - B. 2
    - C. 5
    - D. 10
    - E. 15

38. All of the following statements regarding pulse oximetry are correct ***except***:
    - A. It evaluates carbon dioxide elimination
    - B. It requires pulsatile blood flow
    - C. It does not provide direct information regarding ventilation
    - D. A 15-20 second delay is common in detection of oxygen desaturation
    - E. It is affected by poor peripheral perfusion

39. Which of the following is a common side effect of ketamine:
    - A. Decrease in heart rate
    - B. Decrease in intracranial pressure
    - C. Increase in oral secretions
    - D. Adrenal suppression

40. According to the AAP sedation guidelines, it is common for children to pass from the intended level of sedation to a deeper unintended level of sedation, making the concept of rescue essential to safe sedation. Practitioners of sedation must have the skills to rescue the patient from a deeper level than that intended for the procedure.
    - A. True
    - B. False

Procedural Sedation Test

IMPORTANT: Medical Staff/Allied Health Professionals requesting first time procedural sedation privileges are required to complete and document five (5) procedural sedation procedures proctored by a credentialed physician approved by Dr. Joseph Tobias, Chief, Department of Anesthesiology & Pain Medicine or designee. ***YOU*** are responsible for contacting Dr. Joseph Tobias to arrange for a proctor within six months from your appointment/reappointment date. Contact information for Dr. Joseph Tobias:

- ♦Office - (614) 722-5817
- ♦Email address joseph.tobias@nationwidechildrens.org

Signature **Date**

Procedural Sedation Test Score:

❒**Achieved passing score of** **/40**
❒**Did not achieve passing score** **/40**

Return To:

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700 Children's Drive
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