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Owner	Patricia Dodson: Clin Nurse Education Spec
Policy Area	Nursing
Applicability	UNC Medical Center

Management of the Pediatric Patient Receiving Dexmedetomidine (Restricted)

I. Description

Outlines the nursing care for safe and therapeutic administration of dexmedetomidine to the pediatric patient for moderate procedural sedation.

II. Policy

Dexmedetomidine is an alpha agonist that provides sedation and has mild analgesic properties. It is 1700 times more selective for alpha2 receptors than for alpha1 receptors. Dexmedetomidine has a short half-life of 1.5–3 hours after IV dosing. This is a significantly shorter half-life than that of pentobarbital and chloral hydrate. This short-half life makes dexmedetomidine easier to titrate, provides for a faster recovery and may be associated with fewer prolonged sedation related adverse events.

Dexmedetomidine provides sedation and analgesia with no accompanying change in resting ventilation. Dexmedetomidine actually mimics some aspects of natural sleep and is described as inducing a deep sleep like state. The EEG during dexmedetomidine sedation resembles stage II sleep. (1). It has been shown to produce dose-dependent decreases in blood pressure and heart rate as a result of its alpha2 agonist effect on the sympathetic ganglia with resulting sympatholytic effects. The induced sinus bradycardia in an otherwise hemodynamically stable patient does not warrant treatment and, in fact, the treatment of sinus bradycardia in children receiving dexmedetomidine has led to exaggerated hypertension. (2) Dexmedetomidine can produce hypertension when administered rapidly or repeat bolus doses are given, and this appears to occur more frequently in younger children. An overall incidence of hypertension with high dose dexmedetomidine has been reported to be 4.9% in children 0-18 years old. The highest incidence (8.5%) occurred in patients 0-6 months of age. (3)

Dexmedetomidine is most commonly used as a sedative for adults on ventilators and is limited to use as

a continuous IV infusion for no more than 24 hours. Evidence supports findings that dexmedetomidine is a safe and effective choice for pediatric moderate procedural sedations. (3, 4) When used as the sole IV agent, dexmedetomidine can be used to achieve moderate procedural sedation.

WARNING:	**The following medical conditions are contraindications for the use of dexmedetomidine as moderate procedural sedation. Presence of these conditions indicates the need for an anesthesiology consult prior to sedation.** • **Active, uncontrolled gastroesophageal reflux or vomiting - an aspiration risk** • **current (or within past 3 months) history of apnea requiring an apnea monitor** • **active current respiratory issues that are different from the patient's baseline status (e.g. pneumonia, asthma exacerbation, bronchitis, respiratory syncytial virus)** • **unstable cardiac status (life threatening arrhythmias, abnormal cardiac anatomy, significant cardiac dysfunction) - exceptions can be made on a case by case review for children undergoing cardiac heart catheterizations or echocardiograms** • **craniofacial anomaly which could hinder effectively establishing a mask airway for positive pressure ventilation if needed** • **current use of digoxin** • **Moya Moya disease** • **r/o or new onset stroke (< 6 months prior to sedation)** • **impaired cerebral vasculature regulation and intracranial vascular malformations** • **uncontrolled hypertension** • **patients < 3months of age**
KEY POINT:	**Moderate procedural sedation using dexmedetomidine is restricted to the PSCT for sedation on children undergoing procedures.**

III. Patient Care

1. Assessment
    a. Assess the following prior to administration, every 5 minutes throughout the procedure, then every 15 minutes until patient returns to pre-sedation level of consciousness:
        - vital signs, including heart rate, blood pressure, respiratory rate
        - oxygen saturation
        - end tidal CO_2 ($ETCO_2$)

KEY	**If necessary, monitors may be sequentially applied as the**

POINT:	**patient becomes more sedated. Pulse oximeter should be the first monitor applied.** **Blood pressure must be measured and recorded every 5 minutes throughout the sedation. This differs from the monitoring requirements for moderate sedation as outlined in Pediatric Sedation for non-Anesthesiologists policy.**

b. Assess arousal score

c. Assess IV site for patency and viability.

2. Notify p**hysician or licensed practitioner**
   - immediately if the patient develops hemodynamic instability at anytime during the sedation.
   - non-sinus bradycardia or sinus bradycardia associated with significant hypotension

WARNING:	**Sinus bradycardia is a common side effect, but non-sinus bradycardia or sinus bradycardia associated with significant hypotension requires immediate physician or licensed practitioner evaluation and discontinuation of the bolus or infusion.**

   - RR 30% < baseline
   - systolic BP 20% change from baseline
   - diastolic BP 20% change from baseline
3. Nursing Care
   - Follow VS as stated in EPIC Orderset.
4. Safety
   a. Ensure the following resuscitative equipment is available in the sedation room prior to administration:
      - suction source and Yankauer suction catheter
      - appropriate size face mask and manual ventilation bag (MVB)
      - oxygen source (capable of delivering 15L/min for a minimum of 60 minutes)

   b. Ensure an emergency code cart is easily accessible in the procedure suite.

   c. Follow monitoring, transfer, transport and discharge guidelines as per the Pediatric Sedation for Non-Anesthesiologist and the Transferring Pediatric Patients to Inpatient Units section in the Admission and Transfer of a Patient policies.
5. Patient/Caregiver Teaching
   a. Explain purpose of procedure and need for frequent monitoring.

   b. Reinforce risks and benefits of sedation.

NOTE:	**Parents/caregivers should be notified that pediatric patients are at risk**

	for airway obstruction should the head fall forward while the child is secured in a car seat.

c. Instruct parent/caregiver and provide written instructions on post-procedure diet, medication, activity level, and emergency contact numbers if patient is discharged from an outpatient setting following moderate procedural sedation.

6. Documentation
    - Anesthesia Record in EPIC
        - implementation of dexmedetomidine protocol
        - additional interventions
        - assessment findings
        - interventions and patient responses/outcomes
        - reported conditions
        - patient/caregiver teaching and level of understanding

IV. References

Inserra, E., Colella, U., Caredda, E., Diplomatico, M., Puzone, S., Moschella, S., Capristo, C., Tedeschi, G., Caranci, F., Cirillo, M., Miraglia Del Giudice, E., & Montaldo, P. (2022). Safety and effectiveness of intranasal dexmedetomidine together with midazolam for sedation in neonatal MRI. Paediatric anaesthesia, 32(1), 79–81. https://doi.org/10.1111/pan.14307

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V. Related Policies

Admission and Transfer of a Patient

Arousal Score

Pediatric Sedation for Non-Anesthesiologist

VI. Responsible for Content

Pediatric Sedation Leadership Team, Nursing Policy Committee

Approval Signatures

Step Description	Approver	Date
Policy Stat Administrator	Kimberly Novak-Jones: Nurse Educator	08/2023
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