Thin Catheter Surfactant Administration Guideline

Recommended Population

- Infants born at or greater than 25 weeks gestational age
- First 48 hours after birth
- Respiratory distress syndrome (RDS) on non-invasive support (CPAP, NIPPV, or HFNC)
- Clinical decision to provide surfactant without plans to initiate invasive mechanical ventilation (Contraindications; pH <7.2, CO_2 >65, frequent apnea)

Equipment

- 16G 133 mm Angiocath
- Measuring tape
- White medical tape
- Suction catheter and tubing
- Syringe for surfactant
- Bag and mask
- NeoView (infants <1000g) or CMAC (infants >=1000g) video laryngoscope
- Backup traditional laryngoscope
- Airway box, in case procedure is converted to intubation
- Neck roll (if indicated)

Surfactant (Poractant alfa/ Curosurf)

- Initial dose: 2.5 mL/kg birth weight
- Repeat dose (after 12 hours from the first dose surfactant): 1.25mL/kg birth weight

Pre-medication

- Atropine (0.02mg/kg/dose), IV
- Oral/buccal 24% sucrose (Sweet-ease) or breast milk can be used for comfort/analgesia
- Routine use of sedatives is not recommended

Procedure

1. Medical team to prepare catheter
    a. Remove inner needle stylet from catheter
    b. Measure anticipated depth of catheter insertion relative to the gum (recommend weight + 5.5cm)
    c. Apply a narrow piece of tape around the catheter at this position. This will serve as a landmark for the appropriate tube position
    d. If desired, shape catheter manually to add curvature
2. Respiratory therapist to prepare surfactant in a 3-5mL syringe
3. Airway provider to perform time-out

4. Prepare infant
    a. Position infant with head to the side of the bed, to be easily accessible by airway provider
    b. Remove the Flexi trunk mask and place a RAM canula. Attach RAM canula to the blender and run 6-8L of flow & FiO2
5. Confirm suction catheter, bag/mask, and airway box are ready and accessible
6. Administer pre-medication, Atropine and/or Sweet-ease
7. Thin catheter surfactant administration procedure
    a. Perform video laryngoscopy with NeoView or CMAC
    b. Insert angiocath and advance between the vocal cords (roughly 1-2cm)
    c. Remove laryngoscope
    d. Hold the angiocath manually, with the marker at the gums
    e. No routine X-Ray prior to surfactant administration.
    f. Attach the syringe to the catheter
    g. Administer surfactant in 4 aliquots of total dose over 1-2 minutes, dripping each in over 10-15 seconds and allow infant to recover physiologically between each aliquot
    h. Consider aspirating the orogastric tube and replacing surfactant if concerns for surfactant reflux
    i. Remove catheter
    j. Reposition infant in bed
8. Once the thin catheter is in place, remove the RAM cannula and hold the BCPAP mask over the nose
9. If infant has prolonged bradycardia at any point, team has the option to remove the catheter and perform PPV
10. The attempt should be abandoned if there is severe bradycardia or desaturation, or if >3 attempts are required. At that point, the infant should be intubated with an endotracheal tube

Post-Procedure

- Establish monitoring plan for labs, X-rays as indicated
- Medical provider to reassess infant at least hourly for the first 3 hours post-procedure

Documentation:

- Medical provider to complete procedure note in EPIC

References

- Kakkilya V. Gautham S. Should less invasive surfactant administration (LISA) become routine practice in US neonatal units? Pediatr Res 2022 Aug 19;1-11.

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