**SUMMARY**

The guideline included the addition of dexmedetomidine at a starting dose of 0.2 mcg/kg/hour either the day before tracheostomy change (typically postoperative day 4) or when the desired level of sedation was not easily attained with an opioid and benzodiazepine without paralysis.

No loading dose was given to avoid potential risk for hypotension or bradycardia.

When dexmedetomidine was added on postoperative day 4, the morphine dose was reduced 50%. When the ENT surgeon evaluated the ostomy site on postoperative day 5 and changed the tracheostomy tube, morphine was discontinued. Dexmedetomidine was adjusted as often as every hour in 0.1 mcg/kg/hour increments as necessary to maintain desired level of sedation. Midazolam was reduced 50% on postoperative day 5-6 with ideal plan to discontinue on postoperative day 7-8, although some patients needed a slower midazolam wean in scenarios where the dexmedetomidine needed to be increased to higher doses (>0.6 mcg/kg/hour) to maintain sedation goals. Once the midazolam was discontinued, the dexmedetomidine was weaned q6-8 hours by 0.1 mcg/kg/hour as long as patient did not exhibit signs of dexmedetomidine withdrawal such as agitation, tachycardia or elevated blood pressure.

**NICU Tracheostomy postoperative Analgesia and Sedation Wean Plan**

1. **POD 0**
2. ANALEGESIA and SEDATION: Initiate analgesia and sedation per standard doses per NICU post op analgesia guideline or a modified dosing regimen if patient currently receiving chronic analgesia or sedation (not opiate naïve).
3. Determine from ENT service duration of paralysis and date of 1st Tracheostomy change
4. PARALYSIS: Begin vecuronium at 0.1 mg/kg/hour
5. **POD 1-3**
6. Titrate analgesia and sedation + vecuronium to prevent movement of head, neck and trunk as able utilizing prn medication (opiate & benzodiazepine) options
   1. Goal NPASS sedation score is -5 unless modified per APN/physician.
7. ESCALATION GUIDELINES: In most cases, avoid increasing background infusions until PRN’s are being used consistently q2hrs or more frequently for 8-12hrs before increasing background infusions.
   * 1. Frequent PRN dosing defined as > 6 doses each of both opioid & benzodiazepine in 12 hours or 12 doses total over a 12 hour period
     2. RN to notify APN/physician if infant receives 3 or more doses of either morphine or midazolam within a 8 hour period to evaluate for treatable causes of agitation
     3. Decisions for increasing background infusion will be determined in AM rounds when possible
   1. If opioid and benzodiazepine infusions are increased to twice the dose received while paralyzed – consider adding dexmedetomidine
      1. If reach dexmedetomidine dose of 0.5 mcg/kg/ hour, evaluate infant for other treatable causes of agitation
8. PARALYSIS: Paralysis is usually discontinued POD 1 to 3. It is not uncommon for sedation need to increase to maintain the desired level of movement.
   1. If skin breakdown – opiate may need escalated
   2. If BPD - inflammatory response to surgery may result in higher sedation need to provide ventilator compliance
   3. if midazolam doses >0.3 mg/kg/ hour and/or morphine >0.25 mg/kg/ hour in addition to dexmedetomidine doses >0.6 mcg/kg/ hour are unsuccessful at maintaining desired level of movement, resume paralysis until tracheostomy tube is changed
9. **Day 4** – add dexmedetomidine 0.2 mcg/kg/ hour, if needed to maintain desired level of sedation. Advance by 0.1 mcg/kg/ hour q1hrs as needed to maintain desired sedation
   1. Opiate de-escalation – assumes no pain source
      1. If opiate naïve prior to surgery, decrease morphine 50%
      2. If receiving opiate prior to surgery, decrease morphine 50% of the amount added for post op analgesia from baseline
   2. Paralysis - Consider stopping paralysis if not already done so and titrate sedation (+) dexmedetomidine q1 hour to desired level of sedation that prevents movement of head, neck and trunk.
10. **Day 5** – Trach change
    1. If tracheostomy site well healed – Discontinue vecuronium if not already done so:
       1. DC morphine
          1. infants with stoma breakdown may require a slower wean but would prefer to advocate for the use of PRN intermittent morphine to maintain comfort and continue weaning morphine infusion to off as planned in above guideline as wound heals
       2. up to 12 hours after morphine discontinuation - decrease midazolam 50% or if receiving a benzodiazepine prior to surgery decrease 50% of the amount added for post-op sedation
          1. due to inflammatory response generated by a surgical procedure, infants with lung disease may need a slower wean of midazolam and/or dexmedetomidine
11. **Day 6** – Discontinue midazolam – continue midazolam 0.1 mg/kg/dose IV q1 hour prn agitation x 24-48 hours or lorazepam 0.1 mg/kg/dose IV q6 hours PRN
    1. If receiving benzodiazepine prior to surgery, reduce to pre-surgical dose and formulation of benzodiazepine (lorazepam or diazepam)
    2. ~12 hours after midazolam is discontinued, wean dexmedetomidine by 0.1 mcg/kg/ hour q4hrs as tolerated until off
       1. due to inflammatory response generated by a surgical procedure, infants with lung disease may need a slower wean of midazolam and/or dexmedetomidine
       2. for infants on dexmedetomidine longer than 3 days, wean by 0.1 mcg/kg/hour q6 to q12hrs as tolerated

Abbreviations:

POD= Post operative day