### PICU Sedation and Analgesia Weaning Guideline

**Patient on infusion for <5 days:**
- Sedation should be turned off prior to extubation and patient closely monitored for signs of withdrawal for the next 48hrs
- Wean infusion by 50% of dose in 1st 24hrs
- Wean by further 50% in the next 24hrs and then stop

**On infusion for 5-9 days:**
- For patients on very high sedation or Fentanyl infusion, consider weaning by 10% of original dose every 12hrs
- Wean infusion by 10% of original dose every 12hrs
- If on both opioids and benzodiazepine, wean every 6hrs in an alternating fashion

**On infusion for 10-14 days:**
- For patients on very high sedation or Fentanyl infusion, wean by 10% of original dose every 24hrs
- Wean infusion by 10% of original dose every 24hrs
- If on both opioids and benzodiazepine, wean every 12hrs in an alternating fashion

**On infusion for >15 days:**
- Wean infusion by 10% of original dose every 24hrs
- If on both opioids and benzodiazepine, wean every 12hrs

Monitor for withdrawal symptoms, complete WAT-1 score

If withdrawal present (WAT-1 score ≥3)
- Give bolus IV dose 50-100mcg/kg of Morphine +/- 50-100mcg/kg of Midazolam
- If symptoms persist consider increasing infusion to previous higher rate before symptoms of withdrawal appeared
- Consider Clonidine enterally if not already on (up to 5 mcg/kg/dose 8 hourly)
- May consider Chloral Hydrate if not already on (10-50 mg/kg prn, 6-8 hourly; administer lowest effective dose) and Alimemazine (2mg/kg prn, max 8 hourly)
- Restart weaning when withdrawal symptoms have been adequately controlled for 24hrs as below

<table>
<thead>
<tr>
<th>On infusion for 5-9 days</th>
<th>Wean infusion by 10% of original dose every 12hrs</th>
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<tbody>
<tr>
<td>On infusion for 10-14 days</td>
<td>Wean infusion by 10% of original dose every 24hrs</td>
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<tr>
<td>On infusion for &gt;15 days</td>
<td>Wean infusion by 5% of original dose every 24hrs</td>
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Continue monitoring for withdrawal, if symptoms present then wean in a slower fashion; if weaning well and very sleepy, consider faster weaning.
**Weaning from IV sedation to oral:**
Consider conversion to oral medication if tolerating oral feeds

**Morphine:**
Total IV dose of Morphine in 24 hours X 3 = total Oramorph dose in 24 hrs → Divide into 4 hourly doses
To wean off IV Morphine:
1. Give 1st oral dose, wean infusion by 50% 30mins after dose
2. Give 2nd oral dose, turn infusion off 30min after dose

**Benzodiazepines:**
Total IV infusion dose of Midazolam in 24 hours divided by 12 = Total enteral Lorazepam dose
Divide into 6 hourly doses
To wean off IV Midazolam:
3. Wean infusion by 50% 30mins after 1st oral dose
4. Turn infusion off 30min after 2nd oral dose

**Weaning oral sedation:**
Continue to wean oral medications and monitoring as IV weaning rate above (i.e 5-10% of original dose every 12-48hrs)
For patients on Morphine:
Once a dose of 100 mcg/kg/dose is maintained for 24hr, then wean frequency of dosing every 24hrs (i.e 4hrly -> 6hrly -> 8hrly -> 12hrly -> once daily then stop)

**Wean Chloral Hydrate followed by Clonidine after Morphine and Midazolam is weaned off**

**Chloral Hydrate:**
Symptoms of withdrawal include paradoxical agitation, anxiety, and tremor.
If given regularly for: 5 – 10 days - reduce dose by 20% every 24 hours
>10 days – reduce dose by 10% every 24 hours
If symptoms of withdrawal appear consider increasing dose to previous higher dose before symptoms of withdrawal appeared for 24-48 hours and start weaning again.

**Clonidine:**
Converting IV Clonidine infusion to oral Clonidine (100% bio-availability): Reduce IV infusion to 1 mcg/kg/hr then commence on enteral clonidine 5mcg/kg/dose 8 hrly. If dose of IV Clonidine is less than 0.7 mcg/kg/hr – calculate total dose of clonidine in 24 hrs and divide into 8hrly doses and give enterally.
If Clonidine given for:
<5 days – no weaning is necessary
5 – 10 days - reduce dose by 20% every 24 hours
>10 days – reduce dose by 10% every 24 hours
Monitor Blood Pressure 6 hourly while weaning Clonidine. If blood pressure increases by 50% from the previous 24 hours consider slowing the rate of weaning and increase dose to previous higher dose before symptoms of withdrawal appeared for 24-48 hours and start weaning again.

**References:**
1. The Children’s Hospital in Philadelphia PICU sedation/analgesia weaning pathway
2. Sedation and analgesia withdrawal guidelines, Nottingham’s Children’s Hospital, Nottingham University Hospitals NHS Trust 2013

**Dr V Gandhi; Dr S Manna; April 2016 Review : April 2019**