# Pediatric Critical Care Guide

## Contents

<table>
<thead>
<tr>
<th>Color</th>
<th>Weight Range</th>
<th>Intubation Sedation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRAY</strong></td>
<td>3 kg – 4 kg – 5 kg</td>
<td>3–5 kg</td>
</tr>
<tr>
<td><strong>Pink</strong></td>
<td>6 kg – 7 kg</td>
<td>6–7 kg</td>
</tr>
<tr>
<td><strong>Red</strong></td>
<td>8 kg – 9 kg</td>
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<tr>
<td><strong>Purple</strong></td>
<td>10 kg – 11 kg</td>
<td>10–11 kg</td>
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<tr>
<td><strong>Yellow</strong></td>
<td>12 kg – 14 kg</td>
<td>12–14 kg</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>15 kg – 18 kg</td>
<td>15–18 kg</td>
</tr>
<tr>
<td><strong>Blue</strong></td>
<td>19 kg – 23 kg</td>
<td>19–23 kg</td>
</tr>
<tr>
<td><strong>Orange</strong></td>
<td>24 kg – 29 kg</td>
<td>24–29 kg</td>
</tr>
<tr>
<td><strong>Green</strong></td>
<td>30 kg – 36 kg</td>
<td>30–36 kg</td>
</tr>
</tbody>
</table>
**Fentanyl (10 mcg/mL):**

1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. DO NOT INJECT INTO BAG USING FILTER NEEDLE.
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

**Midazolam for > 5kg (1mg/mL):**

1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

**Dosing Reference:**
Fentanyl (10mcg/ml) – bolus dose 1.2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr. Midazolam (1mg/ml) – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.05-0.2mg/kg/hr.

### PROVIDER DOSING GUIDELINES

All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:

- **Start Fentanyl infusion and give q15 minute boluses for the first hour.** Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- **After an infusion has been started and several boluses have been given, reassess the level of sedation.** If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- **May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.**
- If **hypotension is a concern**, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

**REMEMBER:**

- Use boluses to rapidly increase the level of sedation.
- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
- May use lower doses of either medication if sedation is adequate.
- Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.
- Fentanyl and Midazolam are NOT compatible with Bicarbonate.

### Mediation and Dosing Guidelines

<table>
<thead>
<tr>
<th>DRUG</th>
<th>3 kg</th>
<th>4 kg</th>
<th>5 kg</th>
<th>6-7 kg</th>
<th>8-9 kg</th>
<th>10-11 kg</th>
<th>12-13 kg</th>
<th>14 kg</th>
<th>15-16 kg</th>
<th>17-18 kg</th>
<th>19-20 kg</th>
<th>21-23 kg</th>
<th>24-29 kg</th>
<th>30-36 kg</th>
<th>&gt;36 kg</th>
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</thead>
<tbody>
<tr>
<td>FENTANYL</td>
<td>10 mcg/mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolus</td>
<td>3 mcg</td>
<td>4 mcg</td>
<td>5 mcg</td>
<td>6 mcg</td>
<td>8 mcg</td>
<td>10 mcg</td>
<td>12 mcg</td>
<td>14 mcg</td>
<td>15 mcg</td>
<td>17 mcg</td>
<td>20 mcg</td>
<td>22 mcg</td>
<td>30 mcg</td>
<td>33 mcg</td>
<td>50-100 mcg</td>
</tr>
<tr>
<td>Infusion</td>
<td>3–9 mcg/hr</td>
<td>4–12 mcg/hr</td>
<td>5–15 mcg/hr</td>
<td>6–21 mcg/hr</td>
<td>8–27 mcg/hr</td>
<td>10–33 mcg/hr</td>
<td>12–39 mcg/hr</td>
<td>14–45 mcg/hr</td>
<td>15–45 mcg/hr</td>
<td>17–50 mcg/hr</td>
<td>20–60 mcg/hr</td>
<td>22–70 mcg/hr</td>
<td>25–75 mcg/hr</td>
<td>30–90 mcg/hr</td>
<td>3–9 mL/hr</td>
</tr>
<tr>
<td>MIDAZOLAM</td>
<td>1 mg/mL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolus</td>
<td>See Page 4 (back of gray resuscitation sheet)</td>
<td>0.3 mcg</td>
<td>0.4 mcg</td>
<td>0.5 mcg</td>
<td>0.6 mcg</td>
<td>0.7 mcg</td>
<td>0.8 mcg</td>
<td>0.9 mcg</td>
<td>1 mcg</td>
<td>1 mcg</td>
<td>1.5 mcg</td>
<td>2 mcg</td>
<td>2 mcg</td>
<td>2 mcg</td>
<td></td>
</tr>
<tr>
<td>Infusion</td>
<td>0.3–1.2 mg/hr</td>
<td>0.4–1.6 mg/hr</td>
<td>0.5–2 mg/hr</td>
<td>0.6–2 mg/hr</td>
<td>0.7–2.8 mg/hr</td>
<td>0.8–2.8 mg/hr</td>
<td>0.9–3 mg/hr</td>
<td>1–3 mg/hr</td>
<td>1–3 mg/hr</td>
<td>1–4 mg/hr</td>
<td>1–4 mg/hr</td>
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MSEC: 04-26-18 pediatric critical care guide-050819.pdf Form #: YK00439_v5.ped Rev. Date: 05-08-19
### RESUSCITATION

<table>
<thead>
<tr>
<th>Dose (mg/kg)</th>
<th>3 kg</th>
<th>4 kg</th>
<th>5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epinephrine IV/IO 0.1 mg/mL</td>
<td>0.03</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>Epinephrine ET 0.1 mg/mL</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Atropine (0.1 mg/mL)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Atropine ET (0.4 mg/mL)</td>
<td>0.15</td>
<td>0.2</td>
<td>0.25</td>
</tr>
<tr>
<td>Sodium Bicarbonate 4.2%</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lidocaine 2%</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lidocaine 2% ET</td>
<td>9</td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>

#### Defibrillation
- 1st dose: 6 J
- 2nd dose: 12 J
- 3rd dose: 20 J

#### Cardiopulmonary Resuscitation (CPR)
- Resuscitation: See Table "Sedation of The Intubated Pediatric Patient" reverse side (printed) or next page (PDF)
- Pressor drips: See Table "Sedation of The Intubated Pediatric Patient" reverse side (printed) or next page (PDF)

### POST INTUBATION SEDATION

**Sedation of The Intubated Pediatric Patient**

**Induction agents**: 
- Midazolam
- Fentanyl
- Vecuronium
- Lorazepam
- Propofol
- Ketamine

**Maintenance agents**: 
- Propofol
- Midazolam
- Fentanyl
- Vecuronium
- Ketamine

### OVERDOSE

<table>
<thead>
<tr>
<th>Dose (mg/kg)</th>
<th>3 kg</th>
<th>4 kg</th>
<th>5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dextrose (infuse over 3 min with fluids)</td>
<td>6 mL D25</td>
<td>8 mL D25</td>
<td>10 mL D25</td>
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</tbody>
</table>

### SEIZURE

<table>
<thead>
<tr>
<th>Dose (mg/kg)</th>
<th>3 kg</th>
<th>4 kg</th>
<th>5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorazepam (Ativan)</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Diazepam (Valium)</td>
<td>0.6</td>
<td>0.8</td>
<td>1</td>
</tr>
<tr>
<td>Levetiracetam (Keppra)</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Phenytoin Load</td>
<td>60 mg PE</td>
<td>80 mg PE</td>
<td>100 mg PE</td>
</tr>
<tr>
<td>Phenobarbital Load</td>
<td>60 mg</td>
<td>80 mg</td>
<td>100 mg</td>
</tr>
</tbody>
</table>

### STEROIDS

- Dexamethasone for upper airway edema: 2.5 mg
- Prednisolone for bronchospasm: 1 mg
- Methylprednisolone for bronchospasm: 1 mg

### RESUSCITATION

**FLUIDS**

<table>
<thead>
<tr>
<th>Dose (mL)</th>
<th>3 kg</th>
<th>4 kg</th>
<th>5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalloid (NS or LR)</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Blood (PRBC)</td>
<td>30</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

### BLOOD PRESSURE MONITORING

- Cuff sizes: 3 kg: 10-10.5 cm, 4 kg: 11-11.5 cm, 5 kg: 12-12.5 cm
- Equipment: BP cuff

### EQUIPMENT

- E.T Tube: 3.5 Cuffed
- Suction Catheter: 6 French
- NG Tube: 5-8 French
- Cuff: Pediatric
- Infant/Child

### VENTILATION

- BVM: Infant/Child
- Oral Airway: 50 mm
- Glidescope: GVL 1-2

### ANTI-INFECTIVE THERAPY

**Antibiotics**

<table>
<thead>
<tr>
<th>Dose (mg/kg)</th>
<th>3 kg</th>
<th>4 kg</th>
<th>5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone (100 mg/kg)</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>Vancomycin (20 mg/kg)</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Acyclovir (20 mg/kg)</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

### PRESSOR DRIPS

- Norepinephrine 0.1-2 mcg/kg/min
- Epinephrine 0.1-1 mcg/kg/min

### URODYNAMIC MONITORING

- Urinary Catheter
- Urinary Catheter
- Intravesical Catheter
- Vascular Access

### RESUSCITATION

- Intubation: See Table "Sedation of The Intubated Pediatric Patient" reverse side (printed) or next page (PDF)
- Steroids: See Table "Sedation of The Intubated Pediatric Patient" reverse side (printed) or next page (PDF)
- Steroids: See Table "Sedation of The Intubated Pediatric Patient" reverse side (printed) or next page (PDF)

### RESUSCITATION

- All doses of medication are IV/IO unless otherwise noted
- May not be included in weight-based cart, but available in ER supplies and emergency airway red box.
MIXING

Fentanyl (10mcg/mL):
1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50 mL 0.9% Sodium Chloride Bag, leaving 40 mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. DO NOT INJECT INTO BAG USING FILTER NEEDLE.
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

Midazolam for ≤ 5kg (0.5mg/mL):
1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 5mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 45mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 5mL (25mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

PROVIDER DOSING GUIDELINES
All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:
- Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.
- If hypotension is a concern, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

REMEMBER:
- Use boluses to rapidly increase the level of sedation.
- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
- May use lower doses of either medication if sedation is adequate.
- Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.
- Fentanyl and Midazolam are NOT compatible with Bicarbonate.

<table>
<thead>
<tr>
<th>DRUG</th>
<th>3 kg</th>
<th>4 kg</th>
<th>5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 mcg</td>
<td>4 mcg</td>
<td>5 mcg</td>
</tr>
<tr>
<td>FENTANYL 10 mcg/mL</td>
<td>0.3 mL</td>
<td>0.4 mL</td>
<td>0.5 mL</td>
</tr>
<tr>
<td>Bolus</td>
<td>3–9 mcg/hr</td>
<td>4–12 mcg/hr</td>
<td>5–15 mcg/hr</td>
</tr>
<tr>
<td>Infusion</td>
<td>0.3–0.9 mL/hr</td>
<td>0.4–1.2 mL/hr</td>
<td>0.5–1.5 mL/hr</td>
</tr>
<tr>
<td>MIDAZOLAM 0.5 mg/mL</td>
<td>0.5 mg</td>
<td>0.5 mg</td>
<td>0.6 mg</td>
</tr>
<tr>
<td>Bolus</td>
<td>1 mL</td>
<td>1 mL</td>
<td>1.2 mL</td>
</tr>
<tr>
<td>Infusion</td>
<td>0.5–1.2 mg/hr</td>
<td>0.5–1.6 mg/hr</td>
<td>0.6–2 mg/hr</td>
</tr>
<tr>
<td></td>
<td>1–2.4 mL/hr</td>
<td>1–3.2 mL/hr</td>
<td>1.2–4 mL/hr</td>
</tr>
</tbody>
</table>

Dosing Reference:
- **Fentanyl (10mcg/ml)** – bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr. **Midazolam (0.5mg/ml)** – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.1-0.2mg/kg/hr.

MSEC: 04-26-18   pediatric critical care guide-050319.pdf Form #: YK00439_v5.ped Rev. Date: 05-03-19
Patient's Admission weight ________ kg

RESUSCITATION
- Epinephrine IV/IO 0.1mg/mL
  - 0.065 mg (0.65mL)
- Epinephrine ET 0.1mg/mL
  - 0.65 mg (6.5 mL)
- Atropine (0.1 mg/mL)
  - 0.13 mg (1.3 mL)
- Atropine ET (0.4 mg/mL)
  - 0.35 mg (0.9 mL)
- Sodium Bicarbonate 4.2%
  - 6.5 mEq (13 mL)
- Lidocaine 2%
  - 6.5 mg (0.33 mL)
- Lidocaine 2% ET
  - 20 mg (1 mL)
- Defibrillation
  - 1st dose: 14 Joules
  - 2nd dose: 28 Joules
  - 3rd dose: 28-60 Joules
- Cardioversion
  - 1st / 2nd Dose: 4J / 8J
- Adenosine (3mg/mL)
  - 1st dose: 0.65 mg (0.22 mL)
  - 2nd dose if needed: 1.3 mg (0.43 mL)
- Amiodarone (50 mg/mL)
  - 32 mg (0.64 mL)
- Calcium Chloride 10%
  - 130 mg (1.3 mL)
- Magnesium Sulfate (1 gm/2 mL)
  - 325 mg (0.65 mL)
- Dextrose (infuse over 3 min with fluids)
  - 13 mL D25

SEIZURE
- Lorazepam (Ativan)
  - 0.7 mg
- Diazepam (Valium)
  - 1.3 mg
- Levetiracetam (Keppra)
  - 130 mg
- Fosphenytoin Load
  - 130 mg-PE
- Phenobarbital Load
  - 130 mg

Alternative agents
- Diazepam (Valium) – RECTAL
  - 3.2 mg
- Midazolam (Versed) IM
  - 1.3 mg

OVERDOSE
- Dextrose (infuse over 3 min.)
  - 13 mL D25
- Naloxone
  - 0.65 mg
- Flumazenil
  - 0.065 mg
- Glucagon
  - 0.5 mg

ICP
- Hypertonic Saline 3%
  - 26 mL
- Mannitol 20% IV Solution
  - (1gm/kg) (must filter)
  - 33 mL

FLUIDS
Volume Expansion
- Crystalloid (NS or LR)
  - 130 mL
- Blood (PRBC)
  - 65 mL
Maintenance
- D5NS +20 mEq KCl/L
  - 27 mL/HR

INTUBATION
PREMEDICATIONS
- Atropine
  - 0.14 mg (For under 1 year old or as needed for bradycardia)

INDUCTION AGENTS (must use both medications together)
- Midazolam: 0.7 mg

AND
- Fentanyl: 20 mcg

PARALYTIC AGENTS
- Rocuronium: 7 mg

POST INTUBATION SEDATION
See Table “Sedation of The Intubated Pediatric Patient” reverse side (printed) or next page (PDF)

ANTIBIOTICS
- Ceftriaxone (100 mg/kg)
  - 650 mg
- Vancomycin (20 mg/kg)
  - 130 mg
- Acyclovir (20 mg/kg)
  - 130 mg
- Meropenem
  - 280 mg
- Ceftazidime
  - 350 mg
- Ceftazidime
  - 130 mg

STERIODS
- Dexamethasone for bronchospasm/anaphylaxis/fluid & catacholamine resistant shock
  - 14 mg
- Dexamethasone for upper airway edema
  - 3.5 mg
- Dexamethasone for suspected bacterial meningitis
  - 1 mg
  - Recommendation is due to the high incidence of Hib/Ha infection in this region.
  - IT MUST BE GIVEN BEFORE OR CONCURRENT WITH THE FIRST DOSE OF ANTIBIOTICS.

PRESSOR DRIPS

<table>
<thead>
<tr>
<th>Dose</th>
<th>Mixing Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norepinephrine 0.1–2 mcg/kg/min</td>
<td>0.6 x Wt in kg = # mg to add to 100 mL D5W</td>
</tr>
<tr>
<td></td>
<td>1 mL/hr of this concentration = 0.1 mcg/kg/min</td>
</tr>
<tr>
<td>Epinephrine 0.1–1 mcg/kg/min</td>
<td>0.6 x Wt in kg = # mg to add to 100 mL D5W</td>
</tr>
<tr>
<td></td>
<td>1 mL/hr of this concentration = 0.1 mcg/kg/min</td>
</tr>
</tbody>
</table>

EQUIPMENT
- E.T Tube
  - 3.5 Cuffed
- E.T Insertion Length
  - 10.5 – 11 cm
- Stylet
  - 6 French
- Suction Catheter
  - 8 French
- Laryngoscope
  - 1 Straight
- BVM
  - Infant/Child
- Oral Airway
  - 50 mm
- Glidescope
  - GVL 1–2
- *Nasopharyngeal Airway
  - 14 French
- BP Cuff
  - Infant/child

*May not be included in weight-based cart, but available in ER supplies and emergency airway red box.

All doses of medication are IV/IO unless otherwise noted.
### Medication and Dosing Guidelines

#### MIXING

**Fentanyl (10mcg/mL):**

1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50 mL 0.9% Sodium Chloride Bag, leaving 40 mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. DO NOT INJECT INTO BAG USING FILTER NEEDLE.
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

**Midazolam for > 5kg (1mg/mL):**

1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

#### Provider Dosing Guidelines

All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:

- Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.
- If hypotension is a concern, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

#### REMEMBER:

- Use boluses to rapidly increase the level of sedation.
- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
- May use lower doses of either medication if sedation is adequate.
- Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.
- Fentanyl and Midazolam are NOT compatible with Bicarbonate.

#### Dosing Reference:

- **Fentanyl** (10mcg/ml) – bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr.
- **Midazolam** (1mg/ml) – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.05-0.2mg/kg/hr.
Patient’s Admission weight ________ kg

RESUSCITATION

- Epinephrine IV/I0 0.1mg/mL 0.085 mg (0.85mL)
- Epinephrine ET 0.1mg/mL 0.085 mg (0.5 mL)
- Epi-Pen Jr. 1 injection
- Atropine (0.1 mg/mL) 0.17 mg (1.7 mL)
- Atropine ET (0.4 mg/mL) 0.45 mg (1.1 mL)
- Sodium Bicarbonate 4.2% 8.5 mL (17 mL)
- Lidocaine 2% 8.5 mg (0.43 mL)
- Lidocaine 2% ET 26 mg (1.3 mL)
- Defibrillation
  1st dose 17 Joules
  2nd dose 33 Joules
  3rd dose 33 - 80 Joules
- Cardioversion
  1st / 2nd Dose 5J / 10J
- Adenosine (3 mg/mL)
  1st dose 0.85 mg (0.28 mL)
  2nd dose if needed 1.7 mg (0.56 mL)
- Amiodarone (50 mg/mL) 42 mg (0.84 mL)
- Calcium Chloride 10% 170 mg (1.7 mL)
- Magnesium Sulfate (1 gm/2 mL) 425 mg (0.85 mL)
- Dextrose (infuse over 3 min with fluids) 17 mL D25

SEIZURE

- Lorazepam (Ativan) 0.9 mg
- Diazepam (Valium) 1.7 mg
- Levetiracetam (Keppra) 170 mg
- Phenytoin Load 170 mg-PE
- Phenobarbital Load 170 mg
- Alternative agents
  - Midazolam (Versed) (5mg/ml) IN 2 mg = 0.4 mL (0.2 mL / naris)
  - Diazepam (Valium) – RECTAL 4.2 mg
  - Midazolam (Versed) IM 2 mg

OVERDOSE

- Dextrose (infuse over 3 min.) 17 mL D25
- Naloxone 0.85 mg
- Flumazenil 0.085 mg
- Glucagon 0.5 mg

ICP

- Hypertonic Saline 3% 34 mL
- Mannitol 20% IV Solution (1gm/kg) (must filter) 43 mL

FLUIDS

Volume Expansion

- Crystalloid (NS or LR) 170 mL
- Blood (PRBC) 85 mL
- Maintenance
  - D5NS +20 mEq KCl/L 35 mL/HR

INTUBATION

PREMEDICATIONS

- Atropine 0.18 mg (For under 1 year old or as needed for bradycardia)

INDUCTION AGENTS (must use both medications together)

- Midazolam: 0.9 mg
- Fentanyl: 25 mcg

PARALYTIC AGENTS

- Rocuronium 9 mg

POST INTUBATION SEDATION

See Table “Sedation of The Intubated Pediatric Patient” reverse side (printed) or next page (PDF)

ANTIBIOTICS

- Ceftriaxone (100 mg/kg) 850 mg
- Vancomycin (20 mg/kg) 170 mg
- Acyclovir (20 mg/kg) 170 mg
- Meropenem 360 mg
- Cefepime 450 mg

STEROIDS

- Solumedrol for bronchospasm/anaphylaxis/fluid & catecholamine resistant shock 18 mg
- Dexamethasone for upper airway edema 4.5 mg
- Dexamethasone for suspected bacterial meningitis. 1.3 mg

Recommendation is due to the high incidence of Hib/Ha in infection in this region.
IT MUST BE GIVEN BEFORE OR CONCURRENT WITH THE FIRST DOSE OF ANTIBIOTICS.

PRESSOR DRIPS

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<tr>
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<td>Norepinephrine 0.1–2 mcg/kg/min</td>
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<tr>
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<td>0.6 x Wt in kg = # mg to add to 100 mL D5W 1 mL/hr of this concentration = 0.1 mcg/kg/min</td>
</tr>
</tbody>
</table>

EQUIPMENT

- E.T Tube…………………. 3.5 Cuffed "LMA…………………. 1.5"
- E.T Insertion Length…… 10.5 – 11 cm "O2 Mask……………….. Pediatric NRB"
- Stylet…………………. 6 French "ETCO2……………….. Pediatric"
- Suction Catheter……….. 8 French "Urinary Catheter……… 8 French"
- Laryngoscope…………….. 1 Straight "Chest Tube……………. 10 – 12 French"
- BVM…………………. Child "NG Tube…………………. 5 – 8 French"
- Oral Airway…………….. 50 mm "Vascular Access………… 22 - 24 Ga"
- Glidescope…………….. GVL 2 "Intraosseous……………. 15 Ga"
- *Nasopharyngeal Airway 14 French "BP Cuff……………….. Infant/Child"

*May not be included in weight-based cart, but available in ER supplies and emergency airway red box.

All doses of medication are IV/I0 unless otherwise noted.
Medication and Dosing Guidelines

MIXING

**Fentanyl (10mcg/mL):**
1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50 mL 0.9% Sodium Chloride Bag, leaving 40 mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. **DO NOT INJECT INTO BAG USING FILTER NEEDLE.**
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

**Midazolam for > 5kg (1mg/mL):**
1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. **PHARMACIST MUST** be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

**PROVIDER DOSING GUIDELINES**
All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:
- **Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.**
- **After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.**
- **May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.**
- **If hypotension is a concern, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.**
- **Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.**

**REMEMBER:**
- **Use boluses to rapidly increase the level of sedation.**
- **Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.**
- **May use lower doses of either medication if sedation is adequate.**
- **Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.**
- **Fentanyl and Midazolam are NOT compatible with Bicarbonate.**

**Dosing Reference:**
- **Fentanyl (10mcg/ml) – bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr.**
- **Midazolam (1mg/ml) – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.05-0.2mg/kg/hr.**

<table>
<thead>
<tr>
<th>DRUG</th>
<th>Dose Range</th>
<th>Volume Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fentanyl</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 mcg/mL</td>
<td>Bolus: 8 mcg 0.8 mL</td>
<td>Infusion: 8–27 mcg/hr 0.8–2.7 mL/hr</td>
</tr>
<tr>
<td></td>
<td><strong>8–9 kg</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Midazolam</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 mg/mL</td>
<td>Bolus: 0.4 mg 0.4 mL</td>
<td>Infusion: 0.4–1.6 mg/hr 0.4–1.6 mL/hr</td>
</tr>
</tbody>
</table>
### Pediatric Critical Care Guide

**Patient’s Admission weight ________ kg**

---

### Resuscitation

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epinephrine IV/IO</td>
<td>0.1 mg (1mL)</td>
</tr>
<tr>
<td>Epinephrine ET</td>
<td>1 mg (10 mL)</td>
</tr>
<tr>
<td>Atropine (0.1 mg/mL)</td>
<td>0.2 mg (2.1 mL)</td>
</tr>
<tr>
<td>Atropine ET (0.4 mg/mL)</td>
<td>0.5 mg (1.3 mL)</td>
</tr>
<tr>
<td>Sodium Bicarbonate</td>
<td>10 mEq (20 mL)</td>
</tr>
<tr>
<td>Lidocaine 2%</td>
<td>10 mg (0.5 mL)</td>
</tr>
<tr>
<td>Lidocaine 2% ET</td>
<td>30 mg (1.5 mL)</td>
</tr>
</tbody>
</table>

### Defibrillation

- 1st dose: 20 Joules
- 2nd dose: 40 Joules
- 3rd dose: 40-100 Joules

### Cardioversion

- 1st / 2nd Dose: 5J / 10J

### Adenosine (3 mg/mL)

- 1st dose: 1 mg (0.33 mL)
- 2nd dose if needed: 2.1 mg (0.7 mL)

### Amiodarone (50 mg/mL)

- 50 mg (1 mL)

### Calcium Chloride 10%

- 210 mg (2.1 mL)

### Magnesium Sulfate (1 gm/2 mL)

- 550 mg (1.1 mL)

### Dextrose (infuse over 3 min with fluids)

- 21 mL D25

---

### Seizure

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorazepam (Ativan)</td>
<td>1 mg</td>
</tr>
<tr>
<td>Diazepam (Valium)</td>
<td>2 mg</td>
</tr>
<tr>
<td>Levretacetaem (Keppra)</td>
<td>210 mg</td>
</tr>
<tr>
<td>Fosphenytoin Load</td>
<td>210 mg-PE</td>
</tr>
<tr>
<td>Phenobarbital Load</td>
<td>210 mg</td>
</tr>
</tbody>
</table>

### Alternative agents

- Midazolam (Versed) (5mg/ml) IN: 2 mg = 0.4 mL (0.2 mL / naris)
- Diazepam (Valium) – RECTAL: 5 mg
- Midazolam (Versed) IM: 2.5 mg

### Overdose

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dextrose (infuse over 3 min.)</td>
<td>21 mL D25</td>
</tr>
<tr>
<td>Naloxone</td>
<td>1 mg</td>
</tr>
<tr>
<td>Flumazenil</td>
<td>0.1 mg</td>
</tr>
<tr>
<td>Glucagon</td>
<td>0.5 mg</td>
</tr>
</tbody>
</table>

### ICP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertonic Saline 3%</td>
<td>42 mL</td>
</tr>
<tr>
<td>Mannitol 20% IV Solution (1gm/kg) (must filter)</td>
<td>53 mL</td>
</tr>
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### Fluids

<table>
<thead>
<tr>
<th>Volume Expansion</th>
<th>Dose</th>
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</thead>
<tbody>
<tr>
<td>Crystalloid (NS or LR)</td>
<td>210 mL</td>
</tr>
<tr>
<td>Blood (PRBC)</td>
<td>105 mL</td>
</tr>
</tbody>
</table>

### Maintenance

<table>
<thead>
<tr>
<th>D5NS +20 mEq KCl/L</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43 mL/HR</td>
</tr>
</tbody>
</table>

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### Intubation

#### Premedications
- Atropine: 0.2 mg (For under 1 year old or as needed for bradycardia)

#### Induction Agents (must use both medications together)
- Midazolam: 1 mg
- Fentanyl: 30 mcg

#### Paralytic Agents
- Rocuronium: 11 mg

### Post Intubation Sedation

See Table “Sedation of The Intubated Pediatric Patient” reverse side (printed) or next page (PDF)

### Antibiotics

- Ceftriaxone (100 mg/kg): 1000 mg
- Vancomycin (20 mg/kg): 210 mg
- Acyclovir (20 mg/kg): 210 mg
- Meropenem: 440 mg
- Cefepime: 550 mg

### Steroids

- Solumedrol for bronchospasm/anaphylaxis/fluid & catacholamine resistant shock: 22 mg
- Dexamethasone for upper airway edema: 6 mg
- Dexamethasone for suspected bacterial meningitis: 1.6 mg

Recommendation is due to the high incidence of Hib/Ha infection in this region.

**IT MUST BE GIVEN BEFORE OR CONCURRENT WITH THE FIRST DOSE OF ANTIBIOTICS.**

### Pressor Drips

<table>
<thead>
<tr>
<th>Dose</th>
<th>Mixing Instructions</th>
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<tr>
<td>Norepinephrine 0.1–2 mcg/kg/min</td>
<td>0.6 x Wt in kg = # mg to add to 100 mL D5W 1 mL/hr of this concentration = 0.1 mg/kg/min</td>
</tr>
<tr>
<td>Epinephrine 0.1–1 mcg/kg/min</td>
<td>0.6 x Wt in kg = # mg to add to 100 mL D5W 1 mL/hr of this concentration = 0.1 mg/kg/min</td>
</tr>
</tbody>
</table>

### Equipment

- E.T Tube: 4.0 cuffed
- E.T Insertion Length: 11-12 cm
- Stylet: 6 French
- Suction Catheter: 10 French
- Laryngoscope: 1 Straight
- BVM: Child
- Glidescope: 60 mm
- Nasopharyngeal Airway: Child
- BP Cuff: Child

6 *May not be included in weight-based cart, but available in ER supplies and emergency airway red box.
Medication and Dosing Guidelines

**Fentanyl (10mcg/mL):**
1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50 mL 0.9% Sodium Chloride Bag, leaving 40 mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. DO NOT INJECT INTO BAG USING FILTER NEEDLE.
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

**Midazolam for > 5kg (1mg/mL):**
1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

**PROVIDER DOSING GUIDELINES**
All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:
- Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.
- If hypotension is a concern, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

**REMEMBER:**
- Use boluses to rapidly increase the level of sedation.
- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
- May use lower doses of either medication if sedation is adequate.
- Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.
- Fentanyl and Midazolam are NOT compatible with Bicarbonate.

**Dosing Reference:**
- Fentanyl (10mcg/ml) – bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr. Midazolam (1mg/ml) – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.05-0.2mg/kg/hr.
Patient’s Admission weight __________ kg

**RESUSCITATION**
- Epinephrine IV/IO 0.1mg/mL: 0.13mg (1.3 mL)
- Epinephrine ET 0.1mg/mL: 1.3 mg (13 mL)
- Epi-Pen Jr: 0.26mg (2.6 mL)
- Atropine (0.1 mg/mL): 0.65 mg (1.7 mL)
- Atropine ET (0.4 mg/mL): 13mEq (26 mL)
- Sodium Bicarbonate 4.2%: 13 mg (0.65 mL)
- Lidocaine 2%: 40 mg (2 mL)
- Defibrillation:
  - 1st dose: 26 Joules
  - 2nd dose: 52 Joules
  - 3rd dose: 52-130 Joules
- Cardioversion:
  - 1st / 2nd Dose: 7 J / 14 J
- Adenosine (3 mg/mL):
  - 1st dose: 1.3 mg (0.43 mL)
  - 2nd dose if needed: 2.6 mg (0.86 mL)
- Amiodarone (50 mg/mL): 65 mg (1.3 mL)
- Calcium Chloride 10%: 260 mg (2.6 mL)
- Magnesium Sulfate (1 gm/2 mL): 650 mg (1.3 mL)
- Dextrose (infuse over 3 min with fluids): 26 mL D25

**SEIZURE**
- Lorazepam (Ativan): 1.3 mg
- Diazepam (Valium): 2.6 mg
- Levetiracetam (Keppra): 260 mg
- Phosphenytoin Load: 260 mg-PE
- Phenobarbital Load: 260 mg

**Alternative agents**
- Midazolam (Versed) (5mg/ml) IN: 3 mg = 0.6 mL (0.3 mL / naris)
- Diazepam (Valium) – RECTAL: 6.5 mg
- Midazolam (Versed) IM: 3 mg

**OVERDOSE**
- Dextrose (infuse over 3 min.): 26 mL D25
- Naloxone: 1.3 mg
- Flumazenil: 0.13 mg
- Glucagon: 0.5 mg

**ICP**
- Hypertonic Saline 3%: 52 mL
- Mannitol 20% IV Solution: 65 mL
- (1gm/kg) (must filter)

**FLUIDS**
- Volume Expansion:
  - Crystalloid (NS or LR): 260 mL
  - Blood (PRBC): 130 mL
- Maintenance:
  - D5NS +20 mEq KCL: 48 mL/Hr

**INTUBATION**

**PREMEDICATION**
- Atropine: 0.25 mg (For under 1 year old or as needed for bradycardia)

**INDUCTION AGENTS (must use both medications together)**
- Midazolam: 1.4 mg
- AND
  - Fentanyl: 40 mcg

**PARALYTIC AGENTS**
- Rocuronium: 14 mg

**POST INTUBATION SEDATION**
See Table “Sedation of The Intubated Pediatric Patient” reverse side (printed) or next page (PDF)

**ANTIBIOTICS**
- Ceftriaxone (100 mg/kg): 1300 mg
- Vancomycin (20 mg/kg): 260 mg
- Acyclovir (20 mg/kg): 260 mg
- Meropenem: 560 mg
- Cefepime: 700 mg

**STEROIDS**
- Solumedrol for bronchospasm/anaphylaxis/fluid & catecholamine resistant shock: 26 mg
- Dexamethasone for upper airway edema: 7 mg

Recommendation is due to the high incidence of Hib/HIA infection in this region. IT MUST BE GIVEN BEFORE OR CONCURRENT WITH THE FIRST DOSE OF ANTIBIOTICS.

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</tr>
<tr>
<td>1 mL/hr of this concentration = 0.1 mcg/kg/min</td>
<td></td>
</tr>
<tr>
<td>Epinephrine 0.1–1 mcg/kg/min</td>
<td>0.6 x Wt in kg = # mg to add to 100 mL D5W</td>
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**EQUIPMENT**
- E.T Tube: 4.0 cuffed
- ET Insertion Length: 13.5 cm
- Stylet: 6 French
- Suction Catheter: 10 French
- Laryngoscope: 2 Straight
- BVM: Child
- Oral Airway: 60 mm
- Glidescope: GVL 2.5-3
- *Nasopharyngeal Airway: 20 French
- *LMA: 2
- *ETCO2: Pediatric
- *Urinary Catheter: 10 French
- *Chest Tube: 20-24 French
- *NG Tube: 10 French
- *Vascular Access: 18-22 Ga
- *Intraosseous: 15 Ga
- *BP Cuff: Child

*May not be included in weight-based cart, but available in ER supplies and emergency airway red box.

**ALL Doses of medication are IV/IO unless otherwise noted**
Medication and Dosing Guidelines

MIXING

**Fentanyl (10mcg/mL):**
1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. DO NOT INJECT INTO BAG USING FILTER NEEDLE.
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

**Midazolam for > 5kg (1mg/mL):**
1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

**Provider Dosing Guidelines**
All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:

- Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.
- If **hypotension is a concern**, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

**REMEMBER:**
- Use boluses to rapidly increase the level of sedation.
- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
- May use lower doses of either medication if sedation is adequate.
- Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.
- Fentanyl and Midazolam are NOT compatible with Bicarbonate.

**Dosing Reference:**
- **Fentanyl (10mcg/ml)** – bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr.
- **Midazolam (1mg/ml)** – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.05-0.2mg/kg/hr.

<table>
<thead>
<tr>
<th>DRUG</th>
<th>12-13 kg</th>
<th>14 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fentanyl 10 mcg/mL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolus</td>
<td>12 mcg</td>
<td>14 mcg</td>
</tr>
<tr>
<td></td>
<td>1.2 mL</td>
<td>1.4 mL</td>
</tr>
<tr>
<td>Infusion</td>
<td>12–39 mcg/hr</td>
<td>14–45 mcg/hr</td>
</tr>
<tr>
<td></td>
<td>1.2–3.9 mL/hr</td>
<td>1.4–4.5 mL/hr</td>
</tr>
<tr>
<td><strong>Midazolam 1 mg/mL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolus</td>
<td>0.6 mg</td>
<td>0.7 mg</td>
</tr>
<tr>
<td></td>
<td>0.6 mL</td>
<td>0.7 mL</td>
</tr>
<tr>
<td>Infusion</td>
<td>0.6–2 mg/hr</td>
<td>0.7–2.8 mg/hr</td>
</tr>
<tr>
<td></td>
<td>0.6–2 mL/hr</td>
<td>0.7–2.8 mL/hr</td>
</tr>
</tbody>
</table>
**RESUSCITATION**

- **Epinephrine IV/IO 0.1mg/mL**: 0.17 mg (1.7mL)
- **Epinephrine ET 0.1mg/mL**: 1.7 mg (17 mL)
- **Epi-Pen Jr.**
- **Atropine (0.1 mg/mL)**
  - 1 injection
- **Atropine ET (0.4 mg/mL)**
  - 0.33 mg (3.3 mL)
- **Sodium Bicarbonate 4.2%**
  - 16.5 mL (33 mL)
- **Lidocaine 2%**
  - 17 mg (0.85 mL)
- **Lidocaine 2% ET**
  - 50 mg (2.5 mL)
- **Defibrillation**
  - 1st dose: 33 Joules
  - 2nd dose: 66 Joules
  - 3rd dose: 66-160 Joules

- **Cardioversion**
  - 1st / 2nd Dose: 8 J / 16 J

- **Adenosine (3 mg/mL)**
  - 1st dose: 1.7 mg (0.56 mL)
  - 2nd dose if needed: 3.3 mg (1.1 mL)

- **Amiodarone (50 mg/mL)**
  - 80 mg (1.6 mL)

- **Calcium Chloride 10%**
  - 330 mg (3.3 mL)

- **Magnesium Sulfate (1 gm/2 mL)**
  - 850 mg (1.7 mL)

- **Dextrose (infuse over 3 min with fluids)**
  - 33 mL D25

**SEIZURE**

- **Lorazepam (Ativan)**: 1.7 mg
- **Diazepam (Valium)**: 3.3 mg
- **Levetiracetam (Keppra)**
  - 330 mg
- **Fosphenytoin Load**
  - 330 mg
- **Phenobarbital Load**
  - 330 mg

**Alternative agents**

- **Midazolam (Versed) (5mg/ml) IN**
  - 4 mg = 0.8 mL (0.4 mL / naris)
- **Diazepam (Valium) – RECTAL**
  - 8 mg
- **Midazolam (Versed) IM**
  - 4 mg

**OVERDOSE**

- **Dextrose (infuse over 3 min.)**
  - 33 mL D25
- **Naloxone**
  - 1.6 mg
- **Flumazenil**
  - 0.16 mg
- **Glucagon**
  - 0.5 mg

**ICP**

- **Hypertonic Saline 3%**
  - 68 mL
- **Mannitol 20% IV Solution**
  - (1gm/kg) (must filter)
  - 85 mL

**FLUIDS**

**Volume Expansion**

- **Crystalloid (NS or LR)**
  - 325 mL
- **Blood (PRBC)**
  - 165 mL

**Maintenance**

- **D5NS +20 mEq KCl/L**
  - 55 mL/Hr

**INTUBATION**

**PREMEDICATIONS**

- **Atropine**
  - 0.35 mg (For under 1 year old or as needed for bradycardia)

**INDUCTION AGENTS (must use both medications together)**

- **Midazolam**: 1.8 mg
- **Fentanyl**: 50 mcg

**PARALYTIC AGENTS**

- **Rocuronium**: 18 mg

**POST INTUBATION SEDATION**

See Table “Sedation of The Intubated Pediatric Patient” reverse side (printed) or next page (PDF)

**ANTIBIOTICS**

- **Ceftriaxone (100 mg/kg)**
  - 1700 mg
- **Vancomycin (20 mg/kg)**
  - 340 mg
- **Acyclovir (20 mg/kg)**
  - 340 mg
- **Meropenem**: 720 mg
- **Cefepime**: 900 mg

**STEROIDS**

- **Solumedrol for bronchospasm/anaphylaxis/fluid & catecholamine resistant shock**: 34 mg
- **Dexamethasone for upper airway edema**: 9 mg
- **Dexamethasone for suspected bacterial meningitis**: 2.7 mg

Recommendation is due to the high incidence of Hib/Ha infection in this region.

**IT MUST BE GIVEN BEFORE OR CONCURRENT WITH THE FIRST DOSE OF ANTIBIOTICS.**

**PRESSOR DRIPS**

<table>
<thead>
<tr>
<th>Dose</th>
<th>Mixing Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norepinephrine 0.1–2 mcg/kg/min</td>
<td>0.6 x Wt in kg = # mcg to add to 100 mL D5W 1 mL/hr of this concentration = 0.1 mcg/kg/min</td>
</tr>
<tr>
<td>Epinephrine 0.1–1 mcg/kg/min</td>
<td>0.6 x Wt in kg = # mcg to add to 100 mL D5W 1 mL/hr of this concentration = 0.1 mcg/kg/min</td>
</tr>
</tbody>
</table>

**EQUIPMENT**

- **E.T Tube**
  - 4.5 - 5.0 Cuffed
- **E.T Insertion Length**
  - 14 - 15 cm
- **Stylet**
  - 6 French
- **Suction Catheter**
  - 10 French
- **Laryngoscope**
  - 2 Straight
- **BVM**
  - Child
- **NG Tube**
  - 10 French
- **Oral Airway**
  - 60 mm
- **Glidescope**
  - GVL 2.5-3
- ***Nasopharyngeal Airway**
  - 22 French
- ***Urinary Catheter**
  - 10 - 12 French
- ***ETCO2**
  - Adult
- ***Respirator**
  - 18 - 22 Ga
- ***Vascular Access**
  - 15 Ga
- ***BP Cuff**
  - Child

*May not be included in weight-based cart, but available in ER supplies and emergency airway red box.

All doses of medication are IV/IO unless otherwise noted.
Medication and Dosing Guidelines

MIXING

Fentanyl (10mcg/mL):
1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. DO NOT INJECT INTO BAG USING FILTER NEEDLE.
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

Midazolam for > 5kg (1mg/mL):
1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

PROVIDER DOSING GUIDELINES

All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:

- Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.
- If hypotension is a concern, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

REMEMBER:
- Use boluses to rapidly increase the level of sedation.
- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
- May use lower doses of either medication if sedation is adequate.
- Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.
- Fentanyl and Midazolam are NOT compatible with Bicarbonate.

Dosing Reference:
Fentanyl (10mcg/ml) – bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr. Midazolam (1mg/ml) – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.05-0.2mg/kg/hr.

<table>
<thead>
<tr>
<th>DRUG</th>
<th>15-16 kg</th>
<th>17-18 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FENTANYL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolus</td>
<td>15 mcg 1.5 mL</td>
<td>17 mcg 1.7 mL</td>
</tr>
<tr>
<td>Infusion</td>
<td>15–45 mcg/hr 1.5–4.5 mL/hr</td>
<td>17–50 mcg/hr 1.7–5 mL/hr</td>
</tr>
<tr>
<td><strong>MIDAZOLAM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolus</td>
<td>0.8 mg 0.8 mL</td>
<td>0.9 mg 0.9 mL</td>
</tr>
<tr>
<td>Infusion</td>
<td>0.8–2.8 mg/hr 0.8–2.8 mL/hr</td>
<td>0.9–3 mg/hr 0.9–3 mL/hr</td>
</tr>
</tbody>
</table>
**RESUSCITATION**

- **Epinephrine IV/IO 0.1mg/mL**
  - 0.21 mg (2.1mL)
- **Epinephrine ET 0.1mg/mL**
  - 2.1 mg (21 mL)
- **Epi-Pen Jr.**
  - 1 injection
- **Atropine (0.1 mg/mL)**
  - 0.42 mg (4.2 mL)
- **Atropine ET (0.4 mg/mL)**
  - 1.0 mg (2.5 mL)
- **Sodium Bicarbonate 4.2%**
  - 21 mEq (42 mL)
- **Lidocaine 2%**
  - 20 mg (1 mL)
- **Lidocaine 2% ET**
  - 60 mg (3 mL)
- **Defibrillation**
  - 1st dose: 40 Joules
  - 2nd dose: 80 Joules
  - 3rd dose: 80-200 Joules
- **Cardioversion**
  - 1st / 2nd Dose: 11 J / 22 J
- **Adenosine (3 mg/mL)**
  - 1st dose: 2.1 mg (0.7 mL)
  - 2nd dose if needed: 4.2 mg (1.4 mL)
- **Amiodarone (50 mg/mL)**
  - 105 mg (2.1 mL)
- **Calcium Chloride 10%**
  - 420 mg (4.2 mL)
- **Magnesium Sulfate (1 gm/2 mL)**
  - 1050 mg (2.1 mL)
- **Dextrose (infuse over 3 min with fluids)**
  - 21 mL D50

**SEIZURE**

- **Lorazepam (Ativan)**
  - 2 mg
- **Diazepam (Valium)**
  - 4.2 mg
- **Levetiracetam (Keppra)**
  - 420 mg
- **Fosphenytoin Load**
  - 420 mg-PE
- **Phenobarbital Load**
  - 420 mg

**Alternative agents**

- **Midazolam (Versed) (5mg/ml) IN**
  - 4.5 mg = 0.9 mL (0.5 mL to first naris, 0.4 to other)
- **Midazolam (Versed) – RECTAL**
  - 10 mg
- **Midazolam (Versed) IM**
  - 4.5 mg

**OVERDOSE**

- **Dextrose (infuse over 3 min.)**
  - 21 mL D50
- **Naloxone**
  - 2 mg
- **Flumazenil**
  - 0.2 mg
- **Glucacon**
  - 1 mg

**ICP**

- **Hypertonic Saline 3%**
  - 84 mL
- **Mannitol 20% IV Solution**
  - (1gm/kg) (must filter)
  - 105 mL

**FLUIDS**

**Volume Expansion**

- **Crystallloid (NS or LR)**
  - 420 mL
- **Blood (PRBC)**
  - 210 mL

**Maintenance**

- **D5NS +20 mEq KC/l**
  - 63 mL/HR

**INTUBATION**

**PREMEDICATIONS**

- **Atropine**
  - 0.4 mg (For under 1 year old or as needed for bradycardia)

**INDUCTION AGENTS (must use both medications together)**

- **Midazolam: 2.3 mg**
- **AND**
- **Fentanyl: 55 mcg**

**PARALYTIC AGENTS**

- **Rocuronium: 23 mg**

**POST INTUBATION SEDATION**

See Table “Sedation of The Intubated Pediatric Patient” reverse side (printed) or next page (PDF)

**ANTIBIOTICS**

- **Ceftriaxone (100 mg/kg)**
  - 2000 mg
- **Vancomycin (20 mg/kg)**
  - 420 mg
- **Acyclovir (20 mg/kg)**
  - 420 mg
- **Meropenem**
  - 920 mg
- **Cefepime**
  - 1150 mg
- **Acyclovir**
  - 420 mg

**STEROIDS**

- **Solumedrol for bronchospasm/anaphylaxis/fluid & catacholamine resistant shock**
  - 42 mg
- **Dexamethasone for upper airway edema**
  - 11 mg
- **Dexamethasone for suspected bacterial meningitis.**
  - 3.4 mg

Recommendation is due to the high incidence of Hib/Ha infection in this region.

**IT MUST BE GIVEN BEFORE OR CONCURRENT WITH THE FIRST DOSE OF ANTIBIOTICS.**

**PRESSOR DRIPS**

**Dose**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Mixing Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norepinephrine</td>
<td>0.6 x Wt in kg = # mg to add to 100 mL D5W</td>
</tr>
<tr>
<td>Epinephrine</td>
<td>0.6 x Wt in kg = # mg to add to 100 mL D5W</td>
</tr>
</tbody>
</table>

**EQUIPMENT**

- **E.T Tube**
  - 5.0 - 5.5 cuffed
- **E.T Insertion Length**
  - 16.5 cm
- **Stylet**
  - 6 French
- **Suction Catheter**
  - 10 French
- **Laryngoscope**
  - 2 Straight or Curved
- **O2 Mask**
  - Pediatric NRB
- **ETCO2**
  - Adult
- **Urinary Catheter**
  - 10-12 French
- **Chest Tube**
  - 24-32 French
- **NG Tube**
  - 12-14 French
- **BVM**
  - Child
- **O2 Mask**
  - Infant/Adult
- **Glucocon**
  - 2.5-3
- **Nasopharyngeal Airway**
  - 24 French

*May not be included in weight-based cart, but available in ER supplies and emergency airway red box.

All doses of medication are IV/IO unless otherwise noted.
MIXING

Fentanyl (10mcg/mL):
1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. DO NOT INJECT INTO BAG USING FILTER NEEDLE.
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

Midazolam for > 5kg (1mg/mL):
1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

PROVIDER DOSING GUIDELINES

All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:
- Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.
- If hypotension is a concern, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

REMEMBER:
- Use boluses to rapidly increase the level of sedation.
- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
- May use lower doses of either medication if sedation is adequate.
- Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.
- Fentanyl and Midazolam are NOT compatible with Bicarbonate.

Dosing Reference:
Fentanyl (10mcg/ml) – bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr. Midazolam (1mg/ml) – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.05-0.2mg/kg/hr.
Patient’s Admission weight ________ kg

**RESUSCITATION**
- **Epinephrine IV/IO 0.1mg/mL**: 0.27 mg (2.7mL)
- **Epinephrine ET 0.1mg/mL**: 2.7 mg (27 mL)
- **Epi-Pen Adult**: 1 injection
- **Atropine (0.1 mg/mL)**: 0.5 mg (5 mL)
- **Atropine ET (0.4 mg/mL)**: 1 mg (2.5 mL)
- **Sodium Bicarbonate 4.2%**: 27 mEq (54 mL)
- **Lidocaine 2%**: 27 mg (1.35 mL)
- **Lidocaine 2% ET**: 80 mg (4 mL)
- **Defibrillation**
  - 1st dose: 53 Joules
  - 2nd dose: 106 Joules
  - 3rd dose: 106-250 Joules
- **Cardioversion**
  - 1st / 2nd Dose: 13 J / 26 J
- **Adenosine (3 mg/mL)**
  - 1st dose: 2.7 mg (0.9 mL)
  - 2nd dose if needed: 5.4 mg (1.8 mL)
- **Amiodarone (50 mg/mL)**: 130 mg (2.6 mL)
- **Calcium Chloride 10%**: 530 mg (5.3 mL)
- **Magnesium Sulfate (1 gm/2 mL)**: 1350 mg (2.7 mL)
- **Dextrose (infuse over 3 min with fluids)**: 27 mL D50

**SEIZURE**
- **Lorazepam (Ativan)**: 2.7 mg
- **Diazepam (Valium)**: 5.3 mg
- **Levetiracetam (Keppra)**: 530 mg
- **Fosphenytoin Load**: 530 mg-PE
- **Phenobarbital Load**: 530 mg
- **Alternative agents**
  - **Midazolam (Versed) (5mg/ml) IN**: 5.5 mg = 1.1 mL (0.6 mL to first naris, 0.5 to other)
  - **Diazepam (Valium) – RECTAL**: 10 mg
  - **Midazolam (Versed) IM**: 5.5 mg

**OVERDOSE**
- **Dextrose (infuse over 3 min.)**: 27 mL D50
- **Naloxone**: 2 mg
- **Flumazenil**: 0.2 mg
- **Glucagon**: 1 mg

**ICP**
- **Hypertonic Saline 3%**: 108 mL
- **Mannitol 20% IV Solution (1gm/kg) (must filter)**: 135 mL

**FLUIDS**
**Volume Expansion**
- **Crystalloid (NS or LR)**: 530 mL
- **Blood (PRBC)**: 270 mL

**Maintenance**
- **D5NS +20 mEq KCl/L**: 68 mL/HR

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**INTUBATION**

**PREMEDICATIONS**
- **Atropine**: 0.5 mg (For under 1 year old or as needed for bradycardia)

**INDUCTION AGENTS (must use both medications together)**
- **Midazolam**: 2.9 mg
  - **Naloxone**: 2 mg
- **Fentanyl**: 85 mcg

**PARALYTIC AGENTS**
- **Rocuronium**: 29 mg

**POST INTUBATION SEDATION**

**ANTI-BIOTICS**
- **Ceftriaxone (100 mg/kg)**: 2000 mg
- **Vancomycin (20 mg/kg)**: 540 mg
- **Acyclovir (20 mg/kg)**: 540 mg
- **Meropenem**: 1160 mg
- **Cefepime**: 1450 mg

**STEROIDS**
- **Solumedrol for bronchospasm/anaphylaxis/fluid & catcholamine resistant shock**: 58 mg
- **Dexamethasone for upper airway edema**: 14 mg
- **Dexamethasone for suspected bacterial meningitis**: 4 mg

Recommendation due to the high incidence of Hib/Ha infection in this region.

**PRESSOR DRIPS**

<table>
<thead>
<tr>
<th>Dose</th>
<th>Mixing Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norepinephrine 0.1–2 mcg/kg/min</td>
<td>0.6 x wt in kg = # mg to add to 100 mL D5W 1 mL/hr of this concentration = 0.1 mcg/kg/min</td>
</tr>
<tr>
<td>Epinephrine 0.1–1 mcg/kg/min</td>
<td>0.6 x wt in kg = # mg to add to 100 mL D5W 1 mL/hr of this concentration = 0.1 mcg/kg/min</td>
</tr>
</tbody>
</table>

**EQUIPMENT**

| E.T Tube              | 5.5 Cuffed                        | LMA .................................................. 2.5
|-----------------------|-----------------------------------|-----------------------------------------------|
| E.T Insertion Length  | 17-18 cm                          | O₂ Mask................................................. Pediatric NRB
| Stylet.................. | 6-8 French                        | *ETCO₂............................................. Adult
| Suction Catheter...... | 10 French                         | *Urinary Catheter.............................. 12 French
| Laryngoscope.......... | 2 Straight or Curved               | *Chest Tube..................................... 28-32 French
| BVM..................... | Child                             | NG Tube........................................... 14-18 French
| Oral Airway............ | 80 mm                             | Vascular Access................................. 18-20 Ga
| Glidescope............. | GVL 2.5-3                         | Intraosseous....................................... 15 Ga
| *Nasopharyngeal Airway 26 French |

*LMA* May not be included in weight-based cart, but available in ER supplies and emergency airway red box.
MIXING

Fentanyl (10mcg/mL): 
1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50 mL 0.9% Sodium Chloride Bag, leaving 40 mL in the bag. (This is a crucial step for achieving an accurate concentration.) 
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. DO NOT INJECT INTO BAG USING FILTER NEEDLE. 
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag. 
5. Pull Boluses from this infusion bag NOT from Fentanyl vials/ampules.

Midazolam for > 5kg (1mg/mL): 
1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.) 
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag. 
4. Pull Boluses from this infusion bag NOT from Midazolam vials/ampules.

PROVIDER DOSING GUIDELINES

All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:
- Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- May give Fentanyl and/or Midazolam boluses every 10-15 minutes (or sooner) as needed.
- If hypotension is a concern, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

REMEMBER:
- Use boluses to rapidly increase the level of sedation.
- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
- May use lower doses of either medication if sedation is adequate.
- Fentanyl, Midazolam, and pressors may be run together in the same line. However, DO NOT give a bolus in the same line as a pressor, as this would bolus the pressor as well.
- Fentanyl and Midazolam are NOT compatible with Bicarbonate.

Dosing Reference:
Fentanyl (10mcg/ml) – bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr. Midazolam (1mg/ml) – bolus dose 0.05-0.1 mg/kg (max dose 2 mg/bolus); infusion dose range 0.05-0.2mg/kg/hr.

<table>
<thead>
<tr>
<th>DRUG</th>
<th>24–29 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FENTANYL</strong></td>
<td></td>
</tr>
<tr>
<td>10 mcg/mL</td>
<td></td>
</tr>
<tr>
<td>Bolus</td>
<td>30 mcg</td>
</tr>
<tr>
<td></td>
<td>3 mL</td>
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<tr>
<td>Infusion</td>
<td>25–75 mcg/hr</td>
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<tr>
<td></td>
<td>2.5–7.5 mL/hr</td>
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<tr>
<td><strong>MIDAZOLAM</strong></td>
<td></td>
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<tr>
<td>1 mg/mL</td>
<td></td>
</tr>
<tr>
<td>Bolus</td>
<td>1.5 mg</td>
</tr>
<tr>
<td></td>
<td>1.5 mL</td>
</tr>
<tr>
<td>Infusion</td>
<td>1–4 mg/hr</td>
</tr>
<tr>
<td></td>
<td>1–4 mL/hr</td>
</tr>
</tbody>
</table>
RESUSCITATION
- Epinephrine IV/Io 0.1mg/mL 0.33 mg (3.3mL)
- Epinephrine ET 0.1mg/mL 3.3 mg (33 mL)
- Epi-Pen Adult 1 injection
- Atropine (0.1 mg/mL) 0.5 mg (5 mL)
- Atropine ET (0.4 mg/mL) 1 mg (2.5 mL)
- Sodium Bicarbonate 4.2% 33 mEq (66 mL)
- Lidocaine 2% 33 mg (1.65 mL)
- Lidocaine 2% ET 100 mg (5 mL)
- Defibrillation
  1st dose 66 Joules
  2nd dose 130 Joules
  3rd dose 130-300 Joules
- Cardioversion
  1st / 2nd Dose 17 J / 34 J
- Adenosine (3 mg/mL)
  1st dose 3.3 mg (1.1 mL)
  2nd dose if needed 6.6 mg (2.2 mL)
- Amiodarone (50 mg/mL) 165 mg (3.3 mL)
- Calcium Chloride 10% 660 mg (6.6 mL)
- Magnesium Sulfate (1 gm/2 mL) 1650 mg (3.3 mL)
- Dextrose (infuse over 3 min with fluids) 33 mL D50

SEIZURE
- Lorazepam (Ativan) 3.3 mg
- Diazepam (Valium) 6.6 mg
- Levetiracetam (Keppra) 660 mg
- Fosphenytoin Load 660 mg-PE
- Phenobarbital Load 660 mg
- Alternative agents
  - Midazolam (Versed) (5mg/ml) IN 6.5 mg = 1.3 mL (0.7 mL to first naris, 0.6 to other)
  - Diazepam (Valium) – RECTAL 10 mg
  - Midazolam (Versed) IM 6.5 mg

OVERDOSE
- Dextrose (infuse over 3 min.) 33 mL D50
- Naloxone 2 mg
- Flumazenil 0.2 mg
- Glucagon 1 mg

ICP
- Hypertonic Saline 3% 132 mL
- Mannitol 20% IV Solution (1gm/kg) (must filter) 165 mL

FLUIDS
- Crystalloid (NS or LR) 660 mL
- Blood (PRBC) 330 mL
- Maintenance
  - D5NS +20 mEq KCl/L 73 mL/HR

INTUBATION
- PREMEDICATIONS
  - Atropine 0.5 mg (For under 1 year old or as needed for bradycardia)
- INDUCTION AGENTS (must use both medications together)
  - Midazolam: 3.6 mg
  - AND
  - Fentanyl: 100 mcg

PARALYTIC AGENTS
- Rocuronium: 36 mg

POST INTUBATION SEDATION
See Table “Sedation of The Intubated Pediatric Patient” reverse side (printed) or next page (PDF)

ANTIBIOTICS
- Ceftriaxone (100 mg/kg) 2000 mg
- Vancomycin (20 mg/kg) 660 mg
- Acyclovir (20 mg/kg) 660 mg
- Meropenem 1440 mg
- Cefepime 1800 mg

STEROIDS
- Solumedrol for bronchospasm/anaphylaxis/fluid & catecholamine resistant shock 70 mg
- Dexamethasone for upper airway edema 18 mg
- Dexamethasone for suspected bacterial meningitis. 5 mg
  - Recommendation is due to the high incidence of Hib/Ha infection in this region.

PRESSOR DRIPS

EQUIPMENT
- E.T Tube ................. 6 - 6.5 Cuffed LMA ....................... 3
- E.T Insertion Length ...... 18.5-19.5 cm O2 Mask ..................... Pediatric/Adult
- Styllet ..................... 6-8 French Suction Catheter......... 10-12 French
- Laryngoscope .............. 3 Straight or *ETCO2 .................... Adult
- Curved *Urinary Catheter ........ 12 French
- BVM ........................... Adult *Chest Tube ............... 32-38 French
- Oral Airway ............... 80 mm Vascular Access ........ 16 -20 Ga
- Glidescope .................. GVL 3 *Nasopharyngeal Airway 26 French
- Glidescope .................. 15 Ga BP Cuff ................ Small Adult
- NG Tube .................... 16-18 French
- Glidescope .................. *May not be included in weight-based cart, but available in ER supplies and emergency airway red box.

All doses of medication are IV/Io unless otherwise noted
**Medication and Dosing Guidelines**

**Fentanyl (10mcg/mL):**
1. Remove 250mcg/5mL ampules of Fentanyl and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST must be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Using a Filter Needle, draw 10mL (500mcg) from the Fentanyl ampules. **DO NOT INJECT INTO BAG USING FILTER NEEDLE.**
4. Remove and discard the filter needle, replace with a regular needle, and inject the 10mL (500mcg) Fentanyl into the 0.9% Sodium Chloride Bag.
5. Pull Boluses from this infusion bag **NOT from Fentanyl vials/ampules.**

**Midazolam for > 5kg (1mg/mL):**
1. Remove 10mg/2mL vials of Midazolam and one 50mL bag of 0.9% Sodium Chloride from the Pyxis machine. PHARMACIST MUST be called if this concentration is not available.
2. Withdraw and discard 10mL from the 50mL 0.9% Sodium Chloride Bag and discard, leaving 40mL in the bag. (This is a crucial step for achieving an accurate concentration.)
3. Withdraw 10mL (50mg) from the Midazolam vials and inject into the 0.9% Sodium Chloride Bag.
4. Pull Boluses from this infusion bag **NOT from Midazolam vials/ampules.**

**Provider Dosing Guidelines**
All dose adjustments must be ordered by the provider. Post intubation, titrate infusions and dosing to meet patient sedation needs as follows:
- **Fentanyl:** Start Fentanyl infusion and give q15 minute boluses for the first hour. Overlapping boluses and infusions will accelerate achievement of steady state sedation. Midazolam can be started if blood pressure is stable.
- **Midazolam:** After an infusion has been started and several boluses have been given, reassess the level of sedation. If sedation is not adequate, the rate of infusion can be increased by 25-50% within the range on the table. This will not have an immediate effect, so give a bolus at the same time.
- **Hypotension:** If hypotension is a concern, hold or lower the Midazolam dose. Fentanyl is less likely to cause hemodynamic changes.
- **Boluses:** Boluses should be drawn up or bolused on the pump from pre-mixed bags so the same concentration is ALWAYS used.

**Remember:**
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- Patient will not have an immediate response to infusion rate changes; infusions are meant to maintain a level of sedation.
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**Dosing Reference:**
- **Fentanyl (10mcg/ml)** — bolus dose 1-2 mcg/kg (max dose 50 mcg/bolus); infusion dose range 1-3 mcg/kg/hr.
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<td><strong>MIDAZOLAM</strong> 1 mg/mL</td>
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<td>Infusion 1.5–4 mg/hr 1.5–4 mL/hr</td>
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