

C&W Pediatric Intensive Care Unit: Continuous Infusion Guidelines for Infants and Children (2008)

| Drug   | Concentrations   | Infusion Rate   | Dose Range   | Y-Site Compatibility  | Comments  |
|--|--|---|--|---|---|
| <p><b>Epinephrine</b><br/>[Adrenalin]</p> <p>1:1000 (1 mg/mL)<br/>1:10,000<br/>(0.1 mg/mL)</p> <p>pH = 2.5 – 5<br/>Osmolality =<br/>348 (1:1000)<br/>273 (1:10,000)</p> <p><b>Revised April 2008</b></p> | <p><u>Standard Concentrations</u></p> <p><b>25 mcg/mL</b><br/>Add 0.63 mL of 1:1000 (1 mg/mL) to 24.37 mL D5W to make 25 mL of 25 mcg/mL</p> <p><b>50 mcg/mL</b><br/>Add 1.25 mL of 1:1000 (1 mg/mL) to 23.75 mL D5W to make 25 mL of 50 mcg/mL</p> <p><b>100 mcg/mL</b><br/>Add 2.5 mL of 1:1000 (1 mg/mL) to 22.5 mL D5W to make 25 mL of 100 mcg/mL</p> | <p><i>Use Infusion Chart or Alaris Pump to determine infusion rate.</i></p> <p>OR</p> <p><i>Confirm with the following calculation:</i></p> <p>Infusion rate (mL/h) = Dose (mcg/kg/min) x Weight (kg) x 60 (min/h) <b>divided by</b> Concentration (mcg/mL)</p> | <p><u>Circulatory Support After Volume Resuscitation</u></p> <p>0.01 – 3 mcg/kg/min</p> <p><i>Beta-adrenergic (vasodilation):</i><br/>&lt;0.2 mcg/kg/min</p> <p><i>Alpha-adrenergic (vasoconstriction):</i><br/>&gt;0.2 mcg/kg/min</p> | <p><b>C:</b> dobutamine, dopamine, fentanyl, furosemide, heparin, hydromorphone, labetalol, lidocaine, lorazepam, midazolam, milrinone, morphine, nitroglycerin, norepinephrine, potassium chloride, propofol</p> <p><b>I:</b> aminophylline, calcium, sodium bicarbonate, thiopental</p> <p><b>Compatible with TPN</b></p> | <ul style="list-style-type: none"> <li>• Central line administration preferred.</li> <li>• Extravasation may cause ischemia or tissue necrosis</li> <li>• In case of infiltration, notify physician immediately to initiate phentolamine protocol.</li> <li>• Adverse effects include bradycardia, tachycardia, dysrhythmias, myocardial ischemia, hypertension.</li> <li>• <b>Protect from light.</b></li> <li>• Discard solution if precipitation or pink or brown discoloration occurs.</li> <li>• Change solution at 72 hours.</li> <li>• Ref: 3, 4, 7</li> </ul> |

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| <p><b>Midazolam</b><br/>[Versed]</p> <p>5 mg/mL in 2 or 10 mL vial<br/>1 mg/1 mL vial</p> <p>pH = 3 – 3.6<br/>Osmolality = 385</p> <p>Contains benzyl alcohol</p> <p><b>Revised Jan 2009</b></p> | <p><u>Standard Concentrations</u></p> <p><b>1 mg/mL</b><br/>Add 5 mL of 5 mg/mL to 20 mL D5W to make 25 mL of 1 mg/mL</p> <p><i>Fluid Restriction:</i><br/><b>5 mg/mL (undiluted from 5 mg/mL strength vials)</b></p> | <p><i>Use Infusion Chart or Alaris Pump to determine infusion rate.</i></p> <p>OR</p> <p><i>Confirm with the calculation below.</i></p> | <p><u>Sedation in Mechanical Ventilation</u></p> <p>20 – 360 mcg/kg/h<br/>(0.33 – 6 mcg/kg/min)*</p> <p><i>Loading Dose</i><br/>0.05 – 0.2 mg/kg IV over at least 3 minutes</p> <p>* <u>Note:</u><br/>20 mcg/kg/h = 0.33 mcg/kg/min<br/>30 mcg/kg/h = 0.5 mcg/kg/min<br/>60 mcg/kg/h = 1 mcg/kg/min<br/>100 mcg/kg/h = 1.7 mcg/kg/min<br/>120 mcg/kg/h = 2 mcg/kg/min<br/>150 mcg/kg/h = 2.5 mcg/kg/min<br/>180 mcg/kg/h = 3 mcg/kg/min<br/>210 mcg/kg/h = 3.5 mcg/kg/min<br/>240 mcg/kg/h = 4 mcg/kg/min<br/>360 mcg/kg/h = 6 mcg/kg/min</p> | <p><b>C:</b> D5W, NS, amiodarone, calcium gluconate, dobutamine, dopamine, epinephrine, esmolol, fentanyl, heparin, hydromorphone, insulin, labetalol, magnesium, milrinone, morphine, nitroglycerin, norepinephrine, potassium chloride, propofol</p> <p><b>I:</b> amphotericin, furosemide, hydrocortisone, omeprazole, sodium bicarbonate, thiopental</p> <p><b>Compatible with TPN</b></p> | <ul style="list-style-type: none"> <li>Peripheral or central line administration.</li> <li>Use lowest effective dose, as may accumulate in tissues with prolonged use.</li> <li>May cause hypotension. Use cautiously and avoid loading doses in postoperative open-heart patients, septic shock, or meningococemia.</li> <li>Rapid infusion may cause respiratory depression or apnea.</li> <li>Change solution at 72 hours.</li> <li>Ensure that patients being transferred to 3R are using 1 mg/mL concentration</li> <li>Ref: 1, 2, 7</li> </ul> |

$$\text{Infusion rate (mL/hour)} = \frac{\text{dose (mcg/kg/hour)} \times \text{weight (kg)}}{\text{Concentration (mg/mL)} \times 1000 \text{ mcg/mg}}$$

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| <p><b>Morphine</b><br/>[MOS]</p> <p>10 mg/mL</p> <p>pH = 2.5 – 6</p> <p>Osmolality = 54</p> <p><b>Revised April 2008</b></p> | <p><u>Standard Concentrations</u></p> <p><b>200 mcg/mL</b><br/>Add 0.5 mL of 10 mg/mL to 24.5 mL D5W to make 25 mL of 200 mcg/mL</p> <p><b>400 mcg/mL</b><br/>Add 1 mL of 10 mg/mL to 24 mL D5W to make 25 mL of 400 mcg/mL</p> <p><b>1 mg/mL (=1000 mcg/mL)</b><br/>Add 2.5 mL of 10 mg/mL to 22.5 mL NS or D5W to make 25 mL of 1000 mcg/mL</p> | <p><i>Use Infusion Chart or Alaris Pump to determine infusion rate.</i></p> <p>OR</p> <p><i>Confirm with the following calculation:</i></p> <p>Infusion rate (mL/h) = <math>\frac{\text{Dose (mcg/kg/h)} \times \text{Weight (kg)}}{\text{Concentration (mcg/mL)}}</math></p> | <p><u>Postoperative Analgesia &amp; Sedation</u></p> <p><i>Neonates</i><br/>5 – 20 mcg/kg/h</p> <p><i>Infants &amp; Children</i><br/>10 – 40 mcg/kg/h</p> <p><b>Maximum Dose</b><br/>400 mcg/kg/h</p> | <p><b>C:</b> D5W, NS, acidic solutions, aminophylline, amiodarone, calcium chloride, calcium gluconate, dopamine, dobutamine, epinephrine, esmolol, fentanyl, heparin, hydromorphone, insulin, ketamine, labetalol, lidocaine, magnesium sulfate, midazolam, milrinone, nitroglycerin, nitroprusside, norepinephrine, potassium chloride</p> <p><b>I:</b> basic solutions, amphotericin, furosemide, thiopental</p> <p><b>Compatible with TPN</b></p> | <ul style="list-style-type: none"> <li>Peripheral or central line administration.</li> <li>Monitor for respiratory depression in non-ventilated patients.</li> <li>Antidote is naloxone 0.01 – 0.1 mg/kg IV prn</li> <li>Prolonged use of high-dose infusion may result in tolerance.</li> <li>Abrupt discontinuation of infusion after prolonged use (&gt;2 weeks) may result in withdrawal symptoms.</li> <li>Change solution at 72 hours.</li> <li>Ref: 1, 2, 3, 7</li> </ul> |