



NEONATAL Medication Monograph

# Insulin Short-Acting (Actrapid®)

This document should be read in conjunction with this [DISCLAIMER](#)





**Highly Restricted:** Requires Neonatologist or Endocrinologist approval before commencing

**⚠ HIGH RISK Medication**  
Ensure dose is prescribed clearly in "UNITS"

<b>Presentation</b>	Vial: 100units/mL [10mL vial] (Actrapid®)
<b>Description</b>	A pancreatic hormone. Insulin promotes cellular uptake of glucose, fatty acids and amino acids, and their conversion to storage forms in most tissues.
<b>Indications</b>	<ul style="list-style-type: none"> <li>• Hyperglycaemia due to diabetes or other causes</li> <li>• Hyperkalaemia: to reduce blood potassium levels (in combination with glucose)</li> </ul>
<b>Contraindications</b>	Hypoglycaemia
<b>Precautions</b>	Errors may occur with insulin prescribing and administering because of sound alike names and multiple types of insulins. Full trade name must be documented.
<b>Dosage</b>	<p><b>Ensure the dose is prescribed in "UNITS" and written in full.</b></p> <p><b><u>Intermittent Subcutaneous Dose:</u></b> 0.05-0.2 units/ kg/ dose every 6 to 12 hours</p> <p><b><u>Continuous Infusion:</u></b> 0.01-0.1units/ kg/ hour <b>Infusion rate:</b> 0.1-1 ml/hour (0.01-0.1 units/kg/hour)</p> <p><b>Insulin Infusion Order:</b> 3 units/kg to a final volume of 30mL of Sodium Chloride 0.9% (See <i>Preparation section for further details</i>)</p>

<b>Dosage Adjustment</b>	Titrate according to response (See monitoring)
<b>Adverse Reactions</b>	<b>Common:</b> Hypoglycaemia. Injection site reaction with subcutaneous routes
	<b>Serious:</b> Hypokalaemia, anaphylaxis
<b>Interactions</b>	Medications that affect blood glucose concentration and may increase risk of hypoglycaemia – Contact Pharmacy
<b>Compatible Fluids</b>	Sodium Chloride 0.9%, Glucose 5%, Glucose 10%
<b>Preparation</b>	<p>Use solution prepared by Pharmacy (CIVAS)</p> <p><b><u>IV Infusion:</u></b></p> <p>If unavailable prepare solution as follows (See administration section – 2 syringes will need to be prepared)</p> <p><b>Step 1:</b></p> <p>Withdraw 50units (0.5mL) of insulin from vial and dilute to 50mL with compatible fluid. Concentration is 50 units in 50mL = <b><u>1 unit/mL</u></b></p> <p><b>Step 2:</b></p> <p>Withdraw 3 units/kg (3mL/kg) using the above solutions and dilute to a final volume of 30mL using 0.9% Sodium Chloride Concentration at 0.1mL/hour = <b><u>0.01 units/kg/hour</u></b></p> <p><b>Titrate the infusion based on blood glucose levels.</b></p> <p><b><u>Subcut:</u></b></p> <p>Withdraw 50units (0.5mL) of insulin from vial and dilute to 10mL with compatible fluid. Concentration is 50 units in 10mL = 5 units/mL = <b><u>0.5units/0.1mL</u></b></p>
<b>Administration</b>	<p><b><u>Subcutaneous:</u></b> As per NCCU policy</p> <p><b><u>Intravenous infusion:</u></b> <i>See below for further details</i></p>

<p><b>Administration</b> <i>(continued)</i></p>	<p><b>Intravenous infusion:</b> Infuse via syringe pump.</p> <p>Insulin can adsorb to PVC tubing resulting in a decreased dose; therefore, it is important to saturate the plastic tubing binding sites/prime the IV infusion line prior to use.</p> <p>To prime the line for an IV infusion, prepare 2 syringes during preparation – 1 syringe will be used for priming and 1 for administration.</p> <p><b>Prime the IV Infusion line with 20mL of insulin infusion and wait 20 minutes</b> (preconditioning), After 20 minutes, discard the contents in the IV Infusion line and of syringe 1.</p> <p>Using the second syringe: Re-prime the line and the Insulin infusion will then be ready to commence.</p>
<p><b>Monitoring</b></p>	<p>Close monitoring of plasma glucose levels is mandatory</p> <p>Monitor potassium levels when treating hyperkalaemia</p>
<p><b>Storage</b></p>	<p>Insulin vials <b>not in</b> use – Refrigerate, do not freeze</p> <p>Insulin vials <b>in</b> use - stored at room temperature, below 25°C for up to 28 days</p>
<p><b>Notes</b></p>	<p>Due to the risk of precipitation in pump catheters, Actrapid® should not be used in insulin pumps for continuous subcutaneous infusion</p> <p>Discard unused excess solution immediately due to absorption in PVC plastic</p> <p>In some instances, Albumin 0.3g/100mL may be added to infusion solutions containing insulin to reduce absorption to plastic</p>
<p><b>References</b></p>	<p>Lilley L, Legge D. Paediatric injectable guidelines. 5th ed. Melbourne (Victoria): The Royal Children's Hospital; 2019. P42.</p> <p>Takemoto CK, Hodding JH, Kraus DM. Pediatric &amp; neonatal dosage handbook with international trade names index : a universal resource for clinicians treating pediatric and neonatal patients. 24th ed. Hudson (Ohio): Lexicomp; 2019</p> <p>Australian Medicines Handbook. Insulin. In: Australian Medicines Handbook [Internet]. Adelaide (South Australia): Australian Medicines Handbook; 2020 [cited 2020 Feb 24]. Available from: <a href="https://amhonline.amh.net.au/">https://amhonline.amh.net.au/</a></p> <p>Truven Health Analytics. Insulin Human Regular. In: NeoFax [Internet]. Greenwood Village (CO): Truven Health Analytics; 2020 [cited 2020 Feb 24]. Available from: <a href="https://neofax.micromedexsolutions.com/">https://neofax.micromedexsolutions.com/</a></p>

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