



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"

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

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

<p>Administration <i>(continued)</i></p>	<p>Intravenous infusion: 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>Prime the IV Infusion line with 20mL of insulin infusion and wait 20 minutes (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>Monitoring</p>	<p>Close monitoring of plasma glucose levels is mandatory</p> <p>Monitor potassium levels when treating hyperkalaemia</p>
<p>Storage</p>	<p>Insulin vials not in use – Refrigerate, do not freeze</p> <p>Insulin vials in use - stored at room temperature, below 25°C for up to 28 days</p>
<p>Notes</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>References</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 & 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: https://amhonline.amh.net.au/</p> <p>Truven Health Analytics. Insulin Human Regular. In: NeoFax [Internet]. Greenwood Village (CO): Truven Health Analytics; 2020 [cited 2020 Feb 24]. Available from: https://neofax.micromedexsolutions.com/</p>

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