# Insulin Short-Acting (Actrapid®)

**Presentation**
Vial: 100 units/mL [10mL vial] (Actrapid®)

**Description**
A pancreatic hormone. Insulin promotes cellular uptake of glucose, fatty acids and amino acids, and their conversion to storage forms in most tissues.

**Indications**
- 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**
Ensure the dose is prescribed in “UNITS” and written in full.

**Intermittent Subcutaneous Dose:**
0.05-0.2 units/kg/dose every 6 to 12 hours

**Continuous Infusion:**
0.01-0.1 units/kg/hour
Infusion rate: 0.1-1 ml/hour (0.01-0.1 units/kg/hour)

**Insulin Infusion Order:**
3 units/kg to a final volume of 30mL of Sodium Chloride 0.9%  *(See Preparation section for further details)*
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<th><strong>Dosage Adjustment</strong></th>
<th>Titrate according to response (See monitoring)</th>
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| **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** | Use solution prepared by Pharmacy (CIVAS)  
**IV Infusion:**  
If unavailable prepare solution as follows  
*(See administration section – 2 syringes will need to be prepared)*  
**Step 1:**  
Withdraw 50 units (0.5 mL) of insulin from vial and dilute to 50 mL with compatible fluid.  
Concentration is 50 units in 50 mL = **1 unit/mL**  
**Step 2:**  
Withdraw 3 units/kg (3 mL/kg) using the above solutions and dilute to a final volume of 30 mL using 0.9% Sodium Chloride  
Concentration at 0.1 mL/hour = **0.01 units/kg/hour**  
**Titrate the infusion based on blood glucose levels.** |
| **Subcut:** | Withdraw 50 units (0.5 mL) of insulin from vial and dilute to 10 mL with compatible fluid.  
Concentration is 50 units in 10 mL = 5 units/mL = **0.5 units/0.1 mL** |
| **Administration** | **Subcutaneous:** As per NCCU policy  
**Intravenous infusion:**  
*See below for further details* |
### Administration (continued)

**Intravenous infusion:** Infuse via syringe pump. 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.

To prime the line for an IV infusion, prepare 2 syringes during preparation – 1 syringe will be used for priming and 1 for administration.

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.

Using the second syringe: Re-prime the line and the Insulin infusion will then be ready to commence.

### Monitoring

Close monitoring of plasma glucose levels is mandatory

Monitor potassium levels when treating hyperkalaemia

### Storage

Insulin vials **not in** use – Refrigerate, do not freeze

Insulin vials **in** use - stored at room temperature, below 25°C for up to 28 days

### Notes

Due to the risk of precipitation in pump catheters, Actrapid® should not be used in insulin pumps for continuous subcutaneous infusion

Discard unused excess solution immediately due to absorption in PVC plastic

In some instances, Albumin 0.3g/100mL may be added to infusion solutions containing insulin to reduce absorption to plastic

### References


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


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