Insulin

Special note: Special care with calculating doses and administration volumes in neonates - frequently involved in medication errors.

Neonatal

BRAND NAME Actrapid®

FORM Vial containing insulin 1000units/10ml

INDICATION Management of Hyperglycaemia - see below.

Management of life threatening hyperkalaemia using glucose and insulin - See monograph for Insulin and Glucose for hyperkalaemia

DOSE RANGE

AGE	DOSE	FREQUENCY	ROUTE
0 – 6months	0.02 - 0.2 Units/kg/hr*	Continuous infusion	IV

Commence treatment and titrate upwards as per WOS guideline.
* Doses up to 0.5 units/kg/hr may be used on Consultant advice

PRESCRIPTION OF CONTINUOUS INFUSION

LOW CONCENTRATION (if doses <0.05units/kg/hr are required)
10units/kg in 50ml infusion fluid

This gives:- 0.02 unit/kg/hr at 0.1ml/hour
0.1 unit/kg/hr at 0.5ml/hour
0.2 unit/kg/hr at 1ml/hour

HIGH CONCENTRATION
25units/kg in 50ml infusion fluid

This gives:- 0.05 unit/kg/hr at 0.1ml/hour
0.1 unit/kg/hr at 0.2ml/hour
0.2 unit/kg/hr at 0.4ml/hour

RECONSTITUTION Already in solution

DILUTION For all doses of insulin by IV infusion, dilution of the insulin 100 units/ml injection will be required to produce a suitable solution of insulin for further dilution.

Initial Dilution:

Insulin soluble (human actrapid) injection (100units/ml)	1ml
Water for injection	up to 10ml total

Gives a 10 unit in 1ml solution. Use the required volume.

Final Dilution:

LOW CONCENTRATION
Using the 10unit in 1ml solution

1 x weight (kg) = Number of ml of **diluted** human actrapid insulin **10units in 1ml** solution to be diluted up to 50ml total with sodium chloride 0.45% (equivalent to **10units/kg in 50ml**)

HIGH CONCENTRATION
Using the 10unit in 1ml solution

2.5 x weight (kg) = Number of ml of **diluted** human actrapid insulin **10units in 1ml** solution to be diluted up to 50ml total with sodium chloride 0.45% (equivalent to **25units/kg in 50ml**)

NB: **Prime line and leave for 10 minutes then flush the administration line through with 5ml of the solution before connecting to the patient.** Insulin adheres to plastic so this will ensure consistent IV delivery. Repeat this procedure when lines are changed.

For greater insulin requirements a more concentrated solution can be prepared – contact unit pharmacist for advice

METHOD OF ADMINISTRATION

For continuous Infusion
By continuous intravenous infusion, flow rate adjusted according to the baby's response (see prescription section for details).

RHC – DO NOT FILTER THE INFUSION

COMPATIBILITY

Solution compatibility	Glucose 10%, Sodium Chloride 0.9%, Sodium Chloride 0.45%
Solution incompatibility	
IV Line compatibility	Aciclovir, Adrenaline (NaCl 0.9% only), Calcium Gluconate, Dobutamine, Gentamicin, Heparin, Midazolam (glucose only), Milrinone, Morphine, Noradrenaline (NaCl 0.9% only), potassium chloride, Sodium Bicarbonate, TPN, Vancomycin, vecuronium,
IV Line incompatibility	Aminophylline, Dopamine, labetalol, phenytoin, rocuronium

THIS LIST IS NOT EXHAUSTIVE PLEASE CONTACT PHARMACY FOR FURTHER INFORMATION ON COMPATIBILITY WITH ANY MEDICINES NOT INCLUDED

CAUTIONS, CONTRA-INDICATIONS AND SIDE EFFECTS
See Summary of Product Characteristics and most recent edition of BNF for Children (links below)
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FURTHER INFORMATION

- Hyperglycaemia can be enhanced by the following drugs; levothyroxine, steroids, diuretics, including thiazides.
- Concentrations <1 unit/ml may cause significant line adherence
- Once opened, vial has 4 week expiry if stored in the fridge.
- Warning: do not flush through a line containing insulin once connected to the patient.

PH 7.2-7.4

LICENSED STATUS Licensed for use in all ages.

LINKS BNF for Children / Electronic Medicines Compendium:

APPLICABLE POLICIES West of Scotland Neonatal Guidelines:
Consult local policy if applicable

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Administer reconstituted solutions immediately.
All vials, ampoules and infusion bags are for single use only unless otherwise stated.
Dose may vary depending on indication, age, renal function, hepatic function, and concomitant medications.
This monograph should be used in conjunction with the package insert, BNF for Children, and Summary of Product Characteristics. For further advice contact your clinical pharmacist or pharmacy department.