Insulin Intravenous for Adults

Who can administer

May be administered by registered competent doctor or nurse/midwife

Important information

- **Insulin syringes MUST be used when drawing up insulin**
- **On most occasions, insulin is given by the subcutaneous route**
- For **single** patient use only (**not** to be used in multiple patients)
- When opening vial, attach patient addressograph to flag label, and write date of opening on label
- For Y-site compatibility see below
- See prescription sheet

Insulin syringes must be used to draw up insulin- these are the orange-capped syringes, graduated in units

Available preparations

Actrapid 100 units per 1ml (i.e. 1,000 units in a 10ml vial)

NovoRapid 100 units per 1ml (i.e. 1,000 units in a 10ml vial)

Reconstitution

Already in solution

Infusion fluids

Sodium chloride 0.9%

Methods of intravenous administration

Continuous intravenous infusion using a syringe driver (If a patient is being transferred between wards/units, the syringe driver must **not be disconnected,** but must be transferred with the patient)

- **Usual concentration** used is 50 units Actrapid insulin (draw up using insulin syringe) in 50ml Sodium chloride 0.9%(**to produce a final concentration of 1 unit per ml**) (ref 2)
- Ensure that the needle injecting the insulin is longer than the injection port dead-space (ref 2)

- Invert the syringe several times after addition of insulin, to **ensure even distribution of the insulin**Â
- Before beginning the infusion, **prime the entire administration set with the prepared solution of insulin** (ref 3)

Slow intravenous injection (HYPERKALAEMIA- as per hospital guidelines) (ref 1)

- See under DOSE

Dose in adults

Usual dose

- Rate adjusted according to blood glucose monitoring
- Generally 0.3 to 1 unit/kg/day
- See Q pulse guidelines on the use of intravenous insulin in
  - Management of hyperglycaemia in the clinically unwell patient
  - Diabetic KetoacidosisÂ Â

Hyperkalaemia(ref 1)

- Insulin administration varies depending on baseline glucose and on renal function
- **See GUH guidelineÂ forÂ hyperkalaemia management (adults) for full details**. Information below relates to the **Novorapid** aspect of the guideline only

GUH guide to hyperkalaemia management (adults)		
Blood glucose level	**Glucose dose**	**Insulin dose**
Blood glucose less than 5mmol/L	Glucose 50% x 50ml over 15 minutes	NO INSULIN
Blood glucose 5 to 14mmol/L	Add required dose insulin to 50ml Glucose 50% and administer over 15 minutes	eGFR **greater than** 30ml/min/1.73m^2: NovoRapid insulin 10 units IV added to Glucose 50% 50ml over 15 minutes Draw up Novorapid insulin using an **insulin syringe** (checking with another healthcare worker)
		eGFR l**ess than** 30ml/min/1.73m$^{2:}$ NovoRapid insulin 5 units IV added to Glucose 50% 50ml over 15 minutes Draw up Novorapid insulin using an **insulin syringe** (checking with another healthcare worker)
Blood glucose >14mmol/L	No glucose	eGFR **greater than** 30ml/min/1.73m^2: NovoRapid insulin 10 units IV Draw up Novorapid insulin using an **insulin syringe** (checking with another healthcare worker). Add to 10ml Sodium chloride 0.9%, mix well and administer as an IV push
		eGFR **less than** 30ml/min/1.73m^2: NovoRapid insulin 5 units IV Draw up Novorapid insulin using an **insulin syringe** (checking with another healthcare worker). Add to 10ml Sodium chloride 0.9%, mix well and administer as an IV push

Renal or hepatic impairment

- Insulin requirements may be reduced - monitor closely

Further information

- Some loss of insulin can occur during intravenous administration using plastic infusion systems - to minimise this occuring **prime** line prior to infusion with a small quantity of insulin infusion, and monitor clinical response during infusion, including blood glucose [ref 3]
- Insulin is more often given by the subcutaneous route in GUH- see '**GUH Subcutaneous INSULIN & Glucose Monitoring record' sheet**
- See also GUH policy on Prescribing, Storage and Administration

Storage

- Store between 2 to 8^{0}C until the vial has been opened
- Once opened, the product should be stored at room temperature
- Do not freeze, either prior to opening, or when the vial is in use
- When opening vial, attach patient addressograph to flag label, and write date of opening on label
- Prepared infusion should be used within 24 hours

References

Novorapid SPC 09/2020

Actrapid SPC 09/2020

1:CLN-60 GUH guide to hyperkalaemia management (adults) Dec 2023

2. Injectable Medicines administration guide Medusa, downloaded 19/02/2025

3. Variable rate IV insulin Infusion for management of adult patients in GUH, July 2022

4: CLN-DIAB-005 -GUH Guidelines for Management of Diabetic Ketoacidosis in Adults

5. CLN-DIAB-8 - GUH Hyperglycaemic Hyperosmolar Nonketotic State Protocol

Therapeutic classification

Actrapid: Short-acting human insulin Novorapid: Short-acting human insulin analogue