Insulin

Deliberate self-poisoning can cause profound, prolonged, and life-threatening hypoglycaemia.

Toxicity / Risk Assessment

- Any exposure is potentially toxic in a patient how does not have diabetes
- Duration of hypoglycaemia is difficult to predict; varies with type of insulin, dose, and manner of administration
- Hypoglycaemia can potentially last for days even with short-acting insulin
- Ingestion of insulin does not cause hypoglycaemia

Clinical features:

- May be blunted in patients with long-standing diabetes
- **CNS**: headache, anxiety, confusion, agitation, coma, seizures, death if untreated
- **Autonomic**: diaphoresis, tachycardia (palpitations), nausea, tremor
- Insulin excess can also lead to **hypokalaemia**

Investigations:

- If euglycaemic: BSL hourly for 4 hours then q2-4 hourly
- If hypoglycaemic: BSL every 30 minutes until normal for 4 hours then hourly for 4 hours, then every 4 hours
- Monitor for hypo K^+, hypo Mg^{2+} & hypo PO_4^{3-}

Management

Hypoglycaemia: IV dextrose should only be administered if the patient is symptomatic or has confirmed hypoglycaemia. *Glucagon is not indicated for the hospital management of hypoglycaemia.*

Asymptomatic and BSL > 4.0 mmol/L - Feed complex carbohydrates

Symptomatic or BSL < 4.0 mmol/L - 50 mL bolus of 50% dextrose IV (Paediatric– 2 mL/kg bolus of 10% dextrose IV). Repeat if no improvement.

Maintaining euglycaemia after initial control:

- Feed complex carbohydrates. If hypoglycaemia recurs, re-bolus dextrose as above & commence a 10% dextrose infusion at 100 mL/hour (paediatric – 5mL/kg/hour)
- If euglycaemia cannot be maintained (4 - 8 mmol/L) with 100mL/hour of 10% IV dextrose, please discuss higher concentrations and/or rates of dextrose + additional therapies with a clinical toxicologist
- Consider placement of central venous access for infusions of dextrose with concentration > 10%
- Do NOT cease dextrose infusions at night.
- Additional therapies such as octreotide, dexamethasone, NGT feeding or parenteral feeding may be required in complex cases. (Discuss with a clinical toxicologist)
- Hypokalaemia is due to redistribution: maintain [K+] 3.0-4.0 mmol/L to avoid rebound hyperkalaemia

Disposition:

- Observe euglycaemic patients for at least 6 hours for short acting, 12 hours for longer acting insulins
- Patients requiring IV dextrose needs observation for at least 6 hours post IV dextrose administration
- Do NOT discharge any patient during the night.