Guideline for use of a variable rate intravenous insulin infusion perioperatively

FOR STAFF USE

Indications for variable rate intravenous insulin infusion (VRIII, previously referred to as a "sliding scale")

- Patients anticipated to have a long starvation period (i.e. not expected to resume diet on day of surgery).
- Persistent hyperglycaemia following failed subcutaneous protocol (see hyperglycaemia protocol).

The aim of a VRIII is to achieve and maintain normoglycaemia (ideally, blood glucose levels between 6-10mmol/L, although 4-12mmol/L is acceptable).

If patient is already on a long acting insulin analogue (i.e. Levemir or Lantus) these should be continued.

- Initial insulin rate should be determined by the bedside capillary blood glucose (CBG) measurement.
- Hourly CBG measurement should be taken initially to ensure that the intravenous insulin infusion rate is correct.
- If the blood glucose remains over 12mmol/L for 3 consecutive readings and is not dropping by 3mmol/L per hour or more, the VRIII prescription should be reviewed and adjusted accordingly. Consideration should be given to contacting the diabetes team at this point.
- If the blood glucose is less that 4mmol/L, the insulin infusion rate should be reduced to 0.5 units/hour, and the low blood glucose should be treated as per hypoglycaemia protocol irrespective of whether the patient has symptoms.

Preparation & Administration

- Make up a 50ml syringe with 50 units of actrapid (drawn up via an insulin syringe) in 49.5mls of 0.9% sodium chloride solution. This makes the concentration 1 unit per ml.
- The initial crystalloid solution to be co-administered with the sliding scale **is 0.18% saline with 4% glucose and 0.15%KCl.**
    - This should be given via an infusion pump as a rate of 83-125mls/hr
    - Serum electrolytes must be measured daily and crystalloid adjusted as dictated by results.
- Both insulin and crystalloid must be administered through the same cannula with appropriate one way and antisyphon valves (e.g. Protect-A-Line 2 Extension set).
- Some patients will require additional concurrent fluid, such as gelofusin or Hartmann's solution (via separate infusion line).

Caution: do not infuse insulin without glucose solution

Guidelines for setting up a variable rate intravenous insulin infusion

Bedside capillary blood glucose (mmol/L)	Initial rate of insulin infusion (units per hour)
<4.0	0
4.1-7.0	1
7.1-9.0	2
9.1-11.0	3
11.1-14.0	4
14.1-17.0	5
17.1-20	6
>20	Seek diabetes team or medical advice