INTRAVENOUS FLUID THERAPY PRESCRIBING GUIDELINE

1. Purpose of document

- This guideline describes the general principles of prescribing intravenous fluids and helps ensure a consistent approach between medical staff.
- This guideline does not replace clinical judgement and an alternative approach should be taken if there is a clinical reason to do so.
- This guideline covers commonly prescribed intravenous fluids and does not cover all clinical scenarios or all intravenous fluids that may be prescribed.

2. Responsibility

- All medical staff prescribing fluids.

3. Document management principles and goals

- Fluids containing predominantly water and little or no sodium are titrated to osmolality, and serum sodium concentration is used as a surrogate measure of osmolality.
- Crystalloids, usually as an intermittent dose of 1-2 litres, are titrated to intravascular volume which is determined clinically.
- Crystalloids are preferred over colloids for expansion of intravascular volume, unless a colloid is specifically clinically indicated.
- Rapid boluses of crystalloids or colloids are usually avoided unless shock is prominent.
- Pathological fluid loss is replaced (if required) with a continuous infusion of fluid that is similar in composition to the fluid being lost.

4. Inclusion Criteria All patients

INTRAVENOUS FLUID THERAPY PRESCRIBING GUIDELINE

5. Exclusion Criteria Nil

6. Process of Treatment

Glucose containing fluids

- 5% glucose is prescribed as a maintenance fluid to provide a source of water to patients that are unable to drink sufficient water to meet their physiological needs. The infusion rate is titrated to the serum sodium concentration.
- An infusion of 10% glucose is prescribed as a glucose source if the glucose requirement is such that the volume of 5% glucose risks causing hyponatraemia. 10% glucose may be administered peripherally.
- 50% glucose is prescribed as a glucose source if the glucose requirement is such that the volume of 10% glucose risks causing hyponatraemia. 50% glucose should be administered centrally because of the risk of causing phlebitis and/or thrombosis if administered peripherally.

Target serum sodium concentrations

- 135-143 mmol/L for patients who are not at risk of cerebral oedema. For most patients this will require approximately 1 ml/kg/hour of 5% glucose. This is replaced by a water source as feeding (usually enteral) or drinking, as soon as feasible.
- 145-150 mmol/L for patients at risk of cerebral oedema. For most patients this requires free water restriction, usually as 10-20 ml/hour of 5% glucose as a drug carrier fluid. Enteral feeding is usually commenced using a concentrated feed, for example 2 calories per ml.
- 148-153 mmol/L for patients with known cerebral oedema or raised ICP. For most patients this will require free water restriction and the administration of intermittent boluses of 4 molar sodium chloride, for example 10-20 ml as required. 4 molar sodium chloride should be administered centrally because of the risk of causing phlebitis and/or thrombosis if administered peripherally.

INTRAVENOUS FLUID THERAPY PRESCRIBING GUIDELINE

Sterile IV water

- Rarely sterile IV water may be prescribed if the water requirement is such that the volume of 5% glucose required risks causing hyperglycaemia, but this should usually only occur in consultation with a specialist or fellow.
- Sterile IV water must be administered via a central line because of the risk of causing hemolysis if administered peripherally.

Crystalloids

- The preferred crystalloid is PL148 unless there is a specific clinical indication for 0.9% sodium chloride, for example if the patient requires expansion of intravascular volume and also has a metabolic alkalosis.
- Intermittent doses of 1-2 litres are usually administered over an hour to expand intravascular volume.
- Rapid boluses are usually avoided unless shock is prominent.
- Intravascular volume is determined clinically taking into account multiple factors including the trend of: pulse pressure, blood pressure, heart rate, peripheral perfusion, vasopressor requirement and urine output. The trend and response of these multiple factors to administration of crystalloids is important, and requires frequent clinical reassessment in conjunction with the overall trajectory of the patient.
- Continuous infusions of crystalloids are not usually prescribed unless it is to replace a pathological loss.

Colloids

- 4% albumin is administered for expansion of intravascular volume if crystalloid is relatively contraindicated. For example, if the patient has septic shock and is unresponsive to crystalloid administration, or the patient is hypovolemic and has clinically significant ECF expansion.
- Intermitted doses of 500-1000 ml over 1-4 hours are usually administered.
- Rapid boluses are usually avoided unless shock is prominent.
- Intravascular volume is determined clinically as described above under crystalloids.
- Rarely 20% albumin may be prescribed to expand intravascular volume in the setting of severe ECF expansion, but this should usually only occur in consultation with a

INTRAVENOUS FLUID THERAPY PRESCRIBING GUIDELINE

specialist or fellow.

Pathological loss replacement

- Pathological losses are usually only replaced if the volume and constitution of the loss is such that replacement is required to prevent physiological derangement.
- Pathological losses are usually replaced by a continuous infusion of a fluid that is similar in composition to the fluid being lost. For example

- PL148 for ileostomy or diarrheal loss.
- 0.9% sodium chloride for gastric loss.
- 4% albumin for ascitic loss.
- 0.45% sodium chloride for polyuria following kidney transplantation.
- 5% glucose for polyuria associated with diabetes insipidus.

8. Disclaimer

No document can cover all variations required for specific circumstances. It is the responsibility of the health-care practitioners using this ADHB document to adapt it for safe use within their own institution, recognise the need for specialist help and call for it without delay, when an individual patient falls outside of the boundaries of this document.