

Recommendations to prevent Acute Hyponatraemia in Children

To prevent the uncommon but serious problem of dilutional hyponatraemia the free water component of intravenous fluids must be limited. Acute hyponatraemia is often unheralded, therefore care must be taken in the prescription and administration of intravenous fluids. Finally surveillance of the patient receiving intravenous fluids is vital.

1. **Body weight** must be accurately measured or estimated by a professional with substantial paediatric experience. The estimation of body weight can be made using the child's age; **Body weight = (AGE+4) x 2**

This weight should be plotted on a Centile Chart as a cross check. If the weight is beyond the 3rd or 97th Centile range then the weight must be re-examined.

2. **Fluid Calculation.** Maintenance fluids should be calculated carefully.

An accepted guide to maintenance fluid administration is;

For the first 10 kgs body wt give 4 mls / kg / hour (*40 mls/hr for a 10 kg infant*)

For the second 10 kgs body wt give 40 + 2 mls / kg / hour (*60 mls/hr for a 20 kg child*)

For each subsequent 1 kg body wt give 60 + 1 ml / kg / hour (*70 mls/hr for a 30 kg child*)

3. **Maintenance fluid** should contain at least 0.45%NaCl in 2.5% Glucose.

4. **Chemistry.** A baseline blood sample must be sent for Na⁺, Urea and blood sugar. Regular Na⁺ and blood sugar estimation is required and must be documented. This will mean at least once and often twice daily samples. An indwelling heparinised cannula or capillary sample will avoid sampling difficulties in the anxious child or those with poor veins. Do not take samples for the same limb as the intravenous infusion.

5. **Other Fluids.** DO NOT give GLUCOSE containing iv fluids for fluid resuscitation. This is in keeping with APLS recommendations (use 0.9% NaCl, Normal Saline or other salt solution). Give 5 mls/kg 10% GLUCOSE bolus if there is hypoglycaemia (< 4 mmol/L). Care must be exercised when additional fluids are administered. Intravenous antibiotics, oral fluids or contrast media are commonly forgotten additional fluids.

6. **Fluid balance.** Measurement of urine output or body weight is mandatory. Daily body weight measurement will accurately assess free fluid but is not feasible in the surgical bed bound child with acute pain. Urine output must be measured and clearly documented. An experienced doctor must assess fluid balance at least twice daily and take appropriate action to correct fluid loss or retention. If measurement of urine output is problematic a urinary sodium, potassium and urea should be measured.

7. **Correction of hyponatraemia.** A Child with a serum Na⁺ < 130 mmol/l needs urgent referral to a hospital with a Paediatric ICU (Asymptomatic hyponatraemia). Correction of hyponatraemia is potentially dangerous and requires experience