

PREVENTION OF HYPONATRAEMIA IN CHILDREN RECEIVING INTRAVENOUS FLUIDS

INTRODUCTION

is extremely serious and

sick

- Hyponatraemia ↑ can occur in any $\frac{1}{2}$ child.

~~sick or 'stressed' child.~~

- A ~~sick~~ child behaves very differently ~~from~~ a ~~healthy~~ child.

- In a sick child the potent anti-diuretic hormone (ADH) response causes fluid

retention. The administration of ~~excess~~ additional

~~fluids~~ fluid can result

in ~~water~~ ~~in~~ cerebral oedema, ~~fits~~.

Seizures and deaths.

- Child Any sick child is at risk of

hyponatraemia. There are particular risk

include

- Post-operative patients.

- CNS injuries

- Bronchiolitis

- Burns

- Vomiting.

~~or oral fluids only.~~

~~Even~~ Children may also be at risk of

hyponatraemia ~~if their~~

- Hyponatraemia is usually associated with IV fluids but can occur in ^{sick} children taking fluids orally.

BASLINE ASSESSMENT.

Before ~~commencing~~ ^{starting} IV fluids on any child:

- Weigh accurately
 - In kg.
 - ~~Reference against normal range.~~
 - Plot on centile chart or refer to normal range

Take a.

- Baseline U+E.

- Calculate Fluid Needs ~~Calculate maintenance requirements~~

Maintenance Fluid. For first 10kg - 4mls/kg/hr.

For second 10kg. $40 \frac{\text{mls}}{\text{hr}} + 2 \text{mls/kg/hr}$

For each additional kg 60mls + 1ml/kg/hr

Replacement Fluid. - Must ~~be~~ always be considered and prescribed separately. ~~and~~ must reflect fluid loss.

- Must replace loss with most appropriate fluid.

MONITOR

- Reassess fluid balance regularly.
- Monitor all oral fluids (including medications) and reduce IV intake by equivalent amount.
- Repeat blood sampling for U_{Na} may be difficult but remains ESSENTIAL.
 - At least once a day but more often if there are ^{significant} additional fluids losses or addition or if clinical course is not as expected.
 - (The rate ~~that~~ ^{at which} Na^+ falls is as important as the level. A Na^+ that falls quickly ^{may} indicates an impending crisis.
 - Consider using a indwelling heparinised cannula to facilitate repeat U_{Na} 's
 - Do not take sample from same limb as the IV infusion.
 - Capillary samples may be adequate.
 - Near patient testing may be indicated if local circumstances prevent a ^{sp} prompt lab result.

- Urinary sample: If plasma Na^+ is low, check Urinary Osmolality - If the ^{osmolality} of urinary ~~is~~ greater than plasma osmolality - ~~hypernatraemia~~ indicates a

CHOICE OF FLUID.

Fluid and electrolyte requirements vary as a function of metabolic activity.

- The choice of ^{maintenance} IV fluid will ~~depend~~ be influenced by anticipated sodium, potassium and glucose requirements.

- The choice of ~~The choice~~ replacement IV fluid will depend on replacement needs, eg. fluid loss for vomiting etc.

Hypонатremia may occur in ^{children} patients on ANY IV fluid.

SEEK ADVICE.

Advice ^{and clinical input} may be obtained locally for a senior member of medical staff including

- Consultant paediatrician
- anaesthetist
- chemical pathologists.

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In the event of problems that cannot be resolved locally help should be sought for consultant paediatricians/anaesthetists at the PICU, RBHSC.