Stafford, Anne

From: Garrett, Elizabeth
Sent: 05 November 2001 14:32
To: Darragh, Paul (Dr); 'drbobtaylor[redacted]; 'clodagh.loughrey[redacted]; 'luz.mcelkerney[redacted]; 'peter.crean[redacted]; 'jarlath.mcaloon[redacted]
Subject: PREVENTION OF HYPONATRAEMIA IN CHILDREN RECEIVING INTRAVENOUS FLUIDS

Dear All,

I have been asked by Dr McCarthy to forward the attached document to you .

Regards,

Karen Shanks

mm11-10b__.doc

Discuss c̄ Miriam

Nursing
Medical

SAC Anaes
SAC Paeds.

CMO letter
→ concern
→ prevent

Fluid balance
↓
Chapter 9

Importance – fluid bal
baseline

Audit

DHSSPS

Ref: 007-028-053

- **Biochemistry**: Regular blood sampling for U&E may be difficult but remains **essential** at least once a day - more often if there are significant fluid losses or if clinical course is not as expected

- The rate at which Na+ falls is as important as the actual plasma level. A Na+ that falls quickly may be accompanied by rapid fluid shifts with major clinical consequences.

- Consider using an indwelling heparinised cannula to facilitate repeat U&Es.

- Do not take sample from the same limb as the IV infusion.

- Capillary samples are adequate if venous sampling is not practical.

- **Urine osmolarity/Na**: Very useful in hyponatraemia. Compare to plasma osmolarity and consult a chemical pathologist in interpreting results.

CHOICE OF FLUID

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

- The choice of maintenance fluids will be influenced by anticipated sodium, potassium and glucose requirements.
- The choice of replacement IV fluids will depend on replacement needs, eg fluid loss for vomiting etc.
- The composition of oral rehydration fluids should be carefully considered

Hyponatraemia may occur in children receiving **any** IV fluid, or oral rehydration. Vigilance is needed for all children receiving fluids.

SEEK ADVICE

Advice and clinical input may be obtained readily from a senior member of medical staff including:

Consultant Paediatrician
Consultant Anaesthetist
Consultant Chemical Pathologist

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

PREVENTION OF HYPONATRAEMIA IN CHILDREN RECEIVING INTRAVENOUS FLUIDS

INTRODUCTION

- Hyponatraemia most often reflects failure to excrete water. Stress, pain and nausea are all potent stimulators of anti-diuretic hormone (ADH), which inhibits water excretion.

- Hyponatraemia is potentially extremely serious, a rapid fall in sodium leading to cerebral oedema, seizures and death.

- Complications of hyponatraemia most often occur due to the administration of excess or inappropriate fluid to sick children, usually intravenously. ~~but potentially with excess dilute oral fluids.~~
- Hyponatraemia may also occur in children receiving excess or inappropriate oral rehydration fluid
- Hyponatraemia can occur in a variety of clinical situations, even in children who are not overtly "sick". Those at particular risk include:
  - Post-operative patients.
  - CNS injuries
  - Bronchiolitis
  - Burns
  - Vomiting

BASELINE ASSESSMENT

Before starting IV fluids:

- **Weight**: accurately in kg. [In a bed-bound child use best estimate.] Plot on centile chart or refer to normal range.

- **U&E**: take serum sodium into consideration.

- **Fluid needs:** calculate accurately including:

Maintenance Fluid	100mls/kg for first 10kg body weight plus 50mls/kg for the next 10kg body weight plus 20mls/kg for each kg thereafter, up to max of 70kg [This provides the total 24 hr calculation, divide by 24 to get the mls/hr].
Replacement Fluid	Must always be considered and prescribed separately. Must reflect fluid loss. Must replace loss with most appropriate fluid.

MONITOR

- **Clinical state**: including hydrational status. Pain, vomiting, general well-being should be documented.

- **Fluid balance**: must be assessed at least daily by an experienced member of clinical staff.
  Intake: All oral fluids (including medicines) must be recorded and IV intake reduced by equivalent amount.

  Output: Measure and record all losses (urine, vomiting, diarrhoea, etc.) as accurately as possible