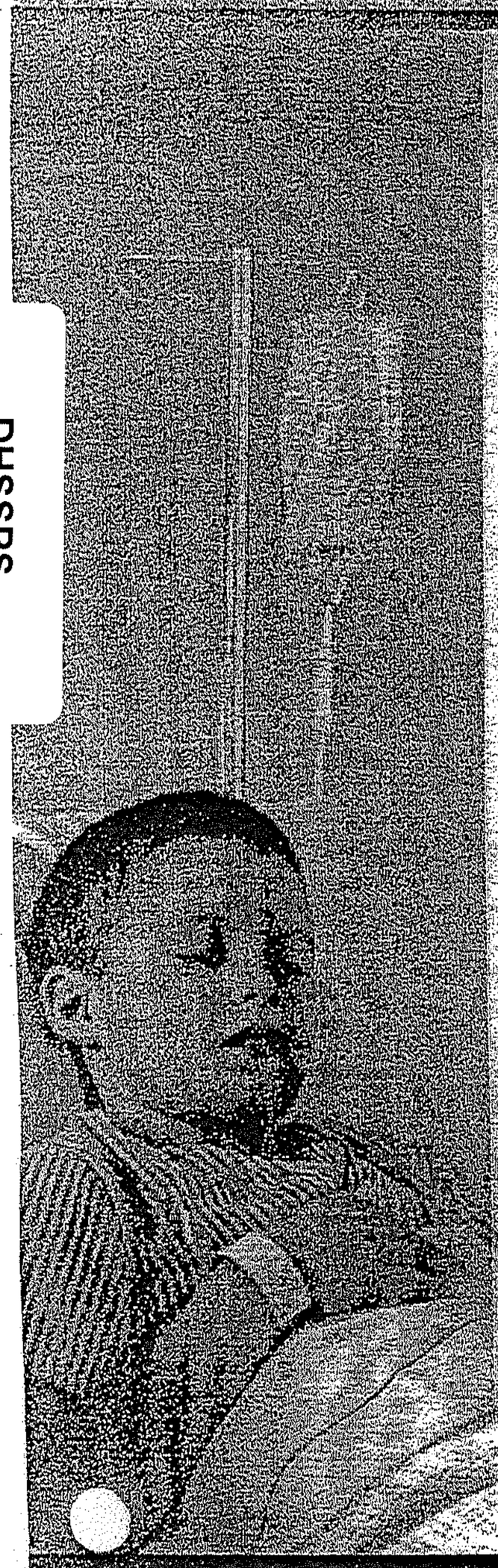
any CHILD RECEIVING PRESCRIBED FLUIDS is AT RISK OF HYPONATRAEMIA

DHSSPS



- **Every child on IV fluids or oral rehydration is potentially at risk of hyponatraemia.**
- **Hyponatraemia is potentially extremely serious, a rapid fall in sodium leading to cerebral oedema, seizures and death. Warning signs of hyponatraemia may be non-specific and include nausea, malaise and headache.**
- **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.**
- **Complications of hyponatraemia most often occur due to the administration of excess or inappropriate fluid to a sick child, usually intravenously.**
- **Hyponatraemia may also occur in a child receiving excess or inappropriate oral rehydration fluids.**
- **Hyponatraemia can occur in a variety of clinical situations, even in a child who is not overtly "sick". Particular risks include:**
  - **Post-operative patients**
  - **CNS injuries**
  - **Bronchiolitis**
  - **Burns**
  - **Vomiting**

BASELINE ASSESSMENT

Before starting IV fluids, the following must be measured and recorded:

- **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 REQUIREMENTS

Fluid needs should be assessed by a doctor competent in determining a child's fluid requirement. Accurate calculation is essential and includes:

Maintenance Fluid

- 100mls/kg for first 10kg body wt, plus
- 50mls/kg for the next 10kg, 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 in both volume and composition (lab analysis of the sodium content of fluid loss may be helpful).

CHOICE OF FLUID

- **Maintenance fluids** must in all instances be dictated by the anticipated sodium and potassium requirements. The glucose requirements, particularly of very young children, must also be met.
- **Replacement fluids** must reflect fluid lost. In most situations this implies a minimum sodium content of 130mmol/l.
- In resuscitating a child with clinical signs of shock, if a decision is made to administer a crystalloid, normal (0.9%) saline is an appropriate choice, while awaiting the serum sodium.
- The composition of oral rehydration fluids should also be carefully considered in light of the U&E analysis.

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

MONITOR

- **Clinical state:** including hydrational status. Pain, vomitin and general well-being should be documented.
- **Fluid balance:** must be assessed at least every 12 hours 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.

If a child still needs prescribed fluids after 12 hours of starting, their requirements should be reassessed by a senior member of medical staff.

- **Biochemistry:** Blood sampling for U&E is essential at least once a day - more often if there are significant flui losses or if clinical course is not as expected.

The rate at which sodium falls is as important as the plasma level. A sodium 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 samples from the same limb as the IV infusior

Capillary samples are adequate if venous sampling is nc practical.

Urine osmolarity/sodium: Very useful in hyponatraemia Compare to plasma osmolarity and consult a senior paediatrician or a chemical pathologist in interpreting results.

SEEK ADVICE

Advice and clinical input should be obtained from a senio member of medical staff, for example a Consultant Paediatrician, Consultant Anaesthetist or Consultant Chemical Pathologist

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

The Department Of Health, Social Services And Public Safety. Guidance is also available on the departmental website: www.dhsspsni.gov.uk

Garrett, Elizabeth

From: Geoff Nesbitt [GNesbitt[redacted]]
Sent: 24 January 2002 13:10
To: 'Miriam.McCarthy[redacted]
Subject: Hyponatraemia in Children

I am in receipt of your e mail dated 10th Jan (now that our e mail is working again), but was dissapointed to learn that you plan to drop the reference to No.18 solution. What evidence do you need exactly? We had a child who died and for that reason I feel strongly that No.18 solution is an innapropriate fluid to use. It is as close to free water as you can get, short of using 5% Dextrose. The reference to No.18 is fairly vague and states that it "may"increase the risk of hyponatraemia. I agree that it may and for that reason should be left.
You can be sure that it will remain highlighted as a risk in any protocol produced by Altnagelvin Hospital.

yours sincerely,

Geoff Nesbitt

Reply

Scpalu@ [illegible]

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