

BIF 26/9/01.

ford, Anne

From: BOB TAYLOR [drbobtaylor  
Sent: 18 September 2001 12:52  
To: paul.darragh  
Subject: Check\_Subject



dilutional  
hyponatraemia.ppt



recommendshyponat.d  
oc

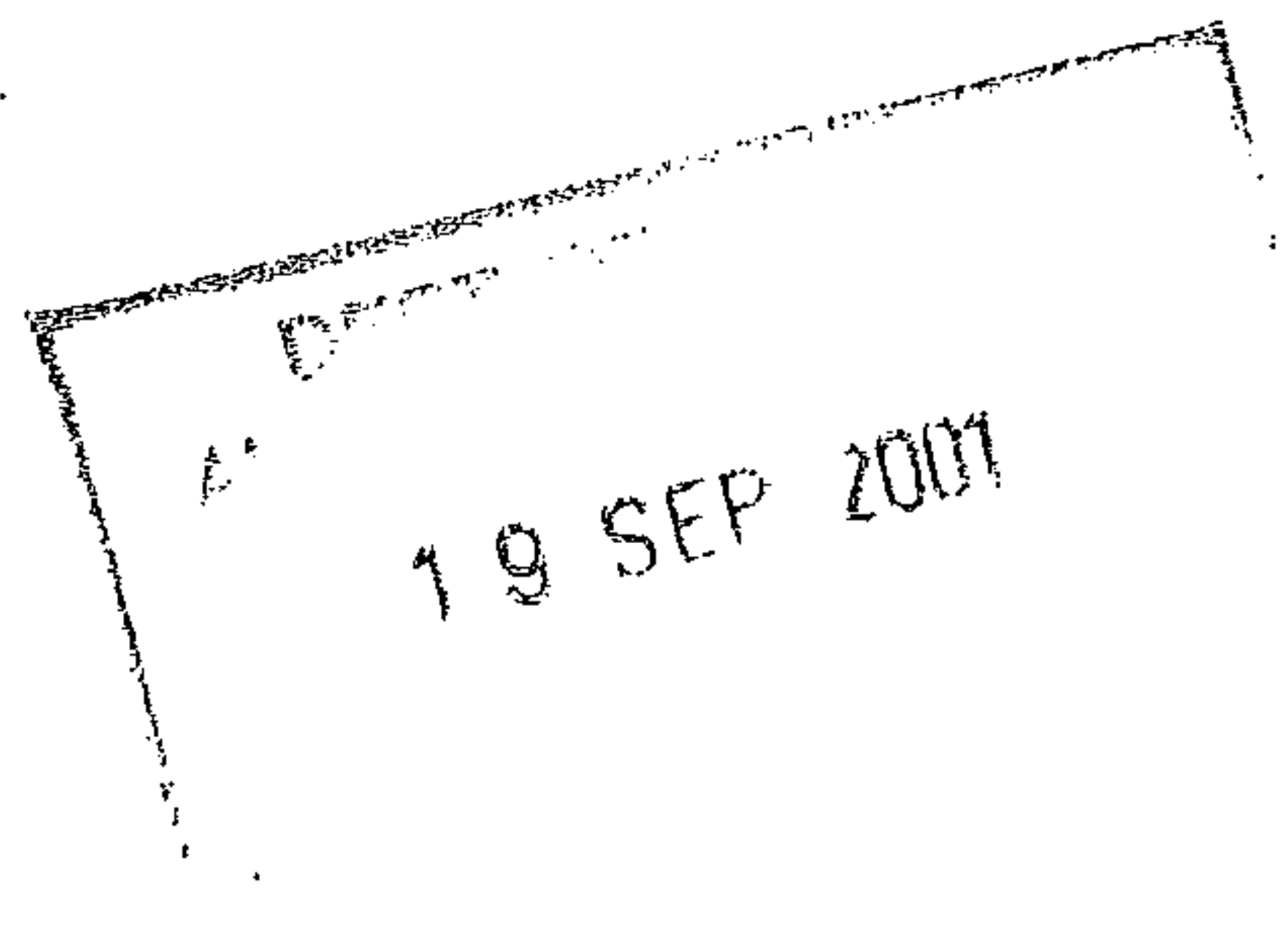
HI P,

*MABG*

Here are some draft documents for your consideration  
in advance of the meeting on the 26th SEPT

BOB

Terrorist Attacks on U.S. - How can you help?  
Donate cash, emergency relief information  
[http://dailynews.yahoo.com/fc/US/Emergency\\_Information/](http://dailynews.yahoo.com/fc/US/Emergency_Information/)



*Anne*  
*Please copy to MIRIAM A [unclear]*

*Calculation*

*U+E*

*->*

*find out  
about attachments.*

DHSSPS

# **Hyponatraemia in Children**

## **Teaching Aid**

**Hyponatraemia Working Party  
Department of Health 2001**

DHSSPS

007-051-101

# Background

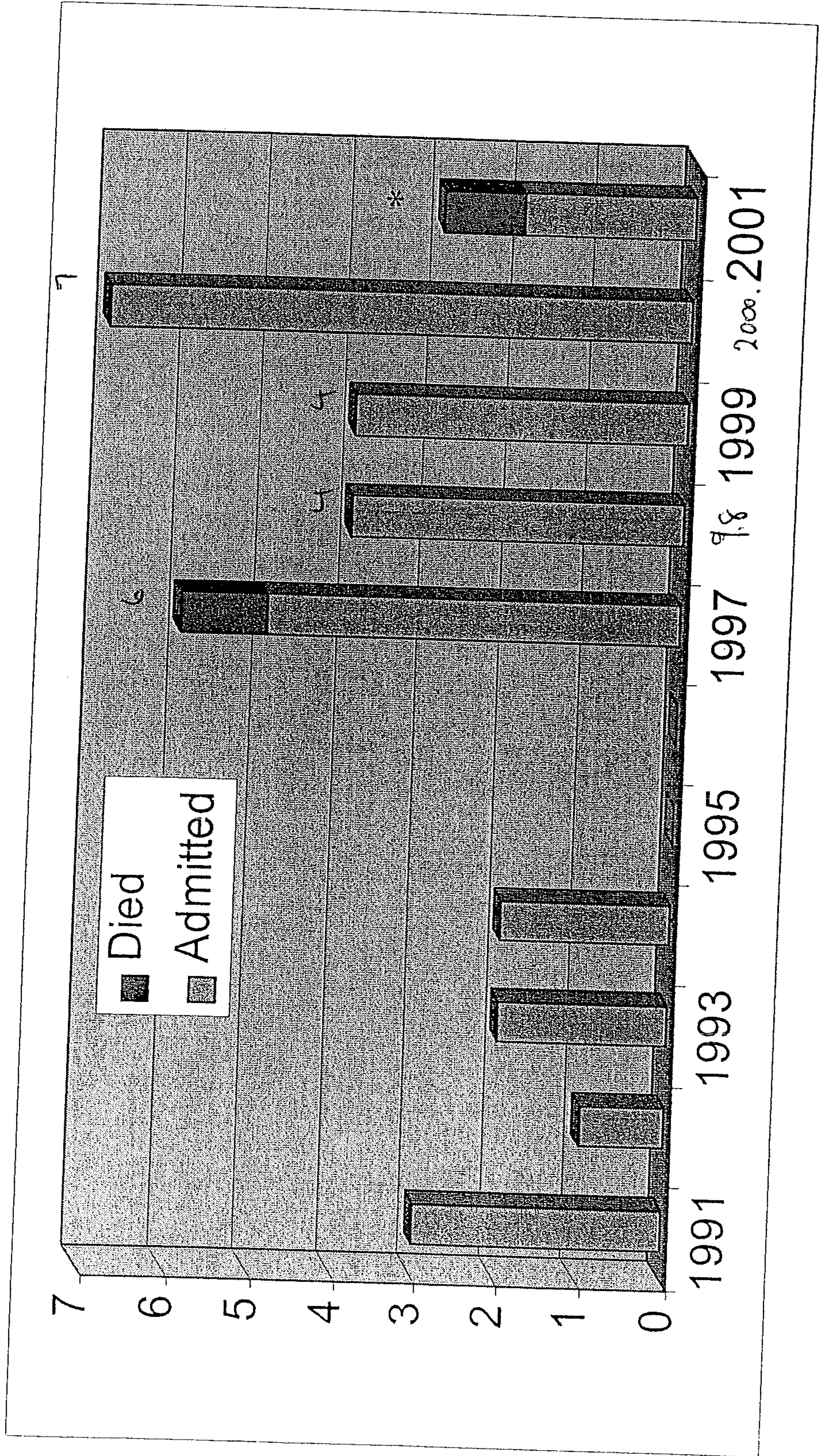
- Dilutional Hyponatraemia has been documented in otherwise healthy children following routine elective surgery
- If unrecognised it can lead to seizures, cerebral oedema and death

DHSSPS

Arieff AI. Paediatric Anaesthesia 1998;8:1-4  
Halberthal M et al, BMJ 2001;322:780-2



# Incidence of hyponatraemia at RBHSC



2001 - 3A1D

\* 1<sup>st</sup> six months of 2001



# Background

## *Patients at risk*

- Hypermnatraemia
- Dehydration (>7%)
- Stress; Nausea, pain, anxiety
- Drugs
- Disturbances of the Central Nervous System
- Metabolic and Endocrine disorders

Arieff AI. Paediatric Anaesthesia 1998;8:1-4

Halberthal M et al, BMJ 2001;322:780-2

# Study findings

Halberthal M et al, BMJ 2001;322:780-2

- 23 patients studied with acute hyponatraemia
- Median age = 5 years (range 1 mth-21 years)
- 13 (57%) were postoperative patients
- 18 (78%) developed seizures
- 5 (22%) Died (Brainstem death),  
1 severe neurological deficit

DHSSPS

501-150-108

# Study findings 2

Halberthal M et al, BMJ 2001;322:780-2

- 23 patients studied with acute hyponatraemia
- All received hypotonic fluids (plasma Na+ < 140 mmol/l)
- 16 (70%) received excessive maintenance fluids (>50%)

# Conclusions

Halberthal M et al, BMJ 2001;322:780-2

- Avoid hypotonic solution if plasma  $\text{Na}^+ < 138 \text{ mmol/l}$
- Must measure plasma  $\text{Na}^+$  when starting an iv infusion
- Only use hypotonic solutions if plasma  $\text{Na}^+ > 140 \text{ mmol/l}$
- Must measure plasma if children receives  $> 30 \text{ mls/kg}$  fluids



# Sodium content

- 0.18 NaCl in 4% Glucose contains 30 mmol/l of sodium
- 0.45 NaCl in 2.5% Glucose contains 75 mmol/l of sodium
- 0.9% NaCl contains 154 mmol/l of sodium
- Hartmanns contains 131 mmol/l of sodium

in USA isotonic saline is 5% glucose - is readily available.

# Body weight

- Where possible the child should be weighed in Kgs

- Otherwise calculate the weight according to the formula;  $(\text{Age}+4) \times 2$

*ie a 2 year old will weigh 12 kgs*

*up to what safe dose this*

$$(10+4) \times 2 = 28\text{kg}$$

**Plot the weight on a Centile Chart as a cross-check**



# Maintenance Fluids

- 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)

# Recommendations

- Body weight should be measured or carefully estimated.
- Total fluid must not exceed the calculated maintenance.
- Maintenance fluid should contain at least 0.45% NaCl in 2.5% Glucose.
- Measurement of urine output or serial body weight is mandatory and should be assessed daily
- Baseline and regular measurement of blood biochemistry (Na<sup>+</sup>, Glucose), at least daily.
- Do not use any glucose containing solution for "Fluid Bolus" or "Fluid Challenge" above maintenance rate.