Audit Topic Proposal Form

Approved outside Committee 21/2/05. Ame.

NAME OF PARTICIPANTS: Dr Neil Corrigan, Dr Aoife McMorrow

PRIMARY CONTACT: N Corrigan CONTACT NUMBER: [redacted]

AUDIT TITLE The management of hyponatraemia in children admitted to AAH over a 21 month period

METHOD: PROSPECTIVE ☐ RETROSPECTIVE X

IF QUESTIONNAIRE PLEASE INDICATE: PATIENT ☐ STAFF ☐

STANDARDS / GUIDELINES: Royal College ☐ Local Hospital X CREST ☐ Professional College ☐ ☐

Please attach guideline/standard Other please specify DHSS

SOURCE OF AUDIT: ALTNAGELVIN X REGIONAL ☐ NATIONAL ☐

Line Manager Signature: Dr Murray Quinn

(To state that he/she has approved this audit will take place)
N.B. THIS FORM WILL NOT BE PROCESSED UNLESS SIGNED BY LINE MANAGER

WHERE DO YOU INTEND TO PRESENT RESULTS? Ulster Paediatric Society / local audit

If you intend to present your audit outside of local hospital please gain permission from Line Manager

CLINICAL AUDIT DEPARTMENT ASSISTANCE

The Clinical Audit Department is happy to assist with one or more of these fields. **Please delete as applicable**

Please tick required assistance

QUESTIONNAIRE / PROFORMA DESIGN ☐ ANALYSIS ☐

PRESENTATION ☐ CASENOTES / X-RAYS X HOW MANY? 153

(N.B. IN THE 1ST INSTANCE 50 SETS OF CASENOTES WILL BE PROVIDED)

Please state where these casenotes are to be viewed Ward 16 AAH

COMMENCEMENT DATE: ASAP **COMPLETION DATE:** Feb 2006

If you have not requested assistance with your questionnaire, please enclose a copy of audit questionnaire you intend to use. Failure to do so may delay the start of your audit

The Clinical Audit Committee will discuss all requests for audit assistance, the schedule of meetings are detailed below. You will receive a letter within 2-3 days after the meeting informing you of assistance that will be available to you.

In **EXCEPTIONAL** circumstances, the Clinical Audit Committee can give approval for a study to commence and audit assistance to begin.

If you consider you need an urgent audit commenced before the next meeting, please indicate why?

I wish to complete this study ahead of the enquiry to share knowledge on this subject

Please return this form to Clinical Audit Manager, Clinical Audit Office, Ysbyty Ystrad Fawr.

Meeting Date	Closing Date for Entry
4TH JANUARY 2005	Closing date 22nd December 2004
1ST MARCH 2005	Closing date 22nd February 2005
3RD MAY 2005	Closing date 26th April 2005
5TH JULY 2005	Closing date 28th June 2005
6TH SEPTEMBER 2005	Closing date 30th August 2005
1ST NOVEMBER 2005	Closing date 25th October 2005
3RD JANUARY 2006	Closing date 22nd December 2005

DATE RECEIVED: 11 | 11 | 05

AUDIT COMMITTEE APPROVAL: YES ✓ NO ☐

Hyponatraemia study data sheet
November 2005

Further data to be collected:

Identifier:

Hyponatraemia

Serial results

day									
sodium									

Other electrolyte abnormalities y/n
Other electrolyte abnormalities – define

_____

WCC _____ CRP _____

Aetiology:

Surgical versus medical S/M
Hyponatraemic at admission Y/N
Aetiology

Aetiology	ISADH	Excessive Losses	Inappropriate replacement	Drugs	Inapprop fluids	Other

Diagnosis: _____
Diagnosis classification: infective resp/git/neuro/other
Surgical appx/other git/other

Management:

Input/output recorded Y/N
How recorded Standard/urine measured/nappies weighed/catheterised/other

IV fluids administered Y/N

Type of fluid

Type of fluid	0.5%N saline +	N saline	Hartmans	Sol 18	Other

Type of fluid appropriate clinically Y/N

Fluid prescription:

Maintenance	Restricted appropriately ISADH	Restricted with concomitant orals	Generous	Too little	

If generous how much extra given ____%

Became hyponatraemic on IV fluids: Y/N

Clinical Audit Department
Directorate of Nursing & Risk Management

"Audits Undertaken Determines Improvement in Treatments"

Hyponatraemia Study Data Sheet: December 2005

Patient ID: ☐☐☐

Name: _____ **Age:** ☐☐ **Gender:** ☐ Male ☐ Female

Adm Date: ☐☐/☐☐/☐☐ **Time:** ☐☐:☐☐ **length of stay (days)** ☐☐ **ICU transfer:** ☐ Yes ☐ No

U & E

Tot number of U&E's checked: _____

Time to 1st post treatment:
☐ < 6 h ☐ < 12 h
☐ Daily ☐ > 24 h

Time (hours) to documented normal sodium: ☐☐

Highest WCC: ☐☐ **Highest CRP:** ☐☐☐ **Lowest serum osmolality:** (= 2Na + glucose + urea) ☐☐☐ **Lowest urine osmolality:** ☐☐☐

Aetiology

Directorate: ☐ Medical ☐ Surgical **If surgical:** ☐ Pre-op ☐ Post-op ☐ N/A

Diagnosis/code:

Infective:
- ☐ Chest infection - bacterial **(CB)**
- ☐ Chest infection - viral **(CV)**
- ☐ UTI **(U)**
- ☐ Septicaemia/meningococcal disease/meningitis **(M)**
- ☐ Sepsis - bacterial NOS **(SB)**
- ☐ Sepsis - Viral NOS **(SV)**
- ☐ Gastroenteritis **(G)**

Medical Other:
- ☐ DKA **(D)**
- ☐ Other medical NOS **(MN)**

Surgical:
- ☐ Appendicitis **(A)**
- ☐ Other Surgical NOS **(SU)**
- ☐ Orthopaedic **(OR)**
- ☐ ENT infective **(EI)**
- ☐ ENT other **(EO)**

Aetiology

	SIADH	Excessive Losses	Inappropriate IV Replacement Volume	Inappropriate IV Solution	Drugs	Inappropriate Orals	Other
I	☐	☐	☐	☐	☐	☐	☐
II	☐	☐	☐	☐	☐	☐	☐
III	☐	☐	☐	☐	☐	☐	☐

Hosp No: A H 4 4 2 1 3 4 Patient ID: 1 4 0

Hyponatraemia on admission: If NO Go to Section A: If YES Go to Section B

Section A: General Management:

Was Fluid Bolus required: ☐ Yes ☐ No **Bolus Volume appropriate:** ☐ Yes ☐ No **Bolus Solution appropriate:** ☐ Yes ☐ No

Were IV Fluids administered: ☐ Yes ☐ No **No of hours:** ☐☐ **Input Recorded:** ☐ Yes ☐ No **Output Recorded:** ☐ Yes ☐ No

How was it recorded: ☐ Standard ☐ Urine Measured ☐ Nappies Weighed ☐ Catheterised ☐ Not recorded

Initial Fluid Prescription: ☐ 0.5% N saline + Dextrose **(SD)** ☐ N saline **(N)** ☐ Hartmans **(H)** ☐ Sol 18 **(SO)** ☐ Other **(O)**

Initial Fluid Volume prescribed: ☐ Maintenance ☐ Restricted appropriately SIADH ☐ Generous ☐ Too little ☐ Other

Type of fluid appropriate clinically: ☐ Yes ☐ No **Time to reassessment of fluids: (hours)** ☐☐ **Did patient become hyponatraemic on IV fluids having had normal initial sodium level?** ☐ Yes ☐ No

Section B: Management of Hyponatraemia:

Was Fluid Bolus required: ☐ Yes ☐ No **Bolus Volume appropriate:** ☐ Yes ☐ No **Bolus solution appropriate:** ☐ Yes ☐ No

Were IV fluids administered: ☐ Yes ☐ No **No of hours:** ☐☐ **Input recorded:** ☐ Yes ☐ No **Output recorded:** ☐ Yes ☐ No

How was it recorded: ☐ Standard ☐ Urine measured ☐ Nappies weighed ☐ Catheterised ☐ Not recorded

Initial Fluid prescription for Hyponatraemia: ☐ 0.5% N saline + dextrose **(SD)** ☐ N saline **(N)** ☐ Hartmans **(H)** ☐ Sol 18 **(SO)** ☐ Other **(O)**

Initial Fluid Volume Prescribed: ☐ Maintenance ☐ Restricted appropriately SIADH ☐ Generous ☐ Too Little ☐ Other

Repeat Fluid prescription for Hyponatraemia: ☐ 0.5% N saline + dextrose **(SD)** ☐ N saline **(N)** ☐ Hartmans **(H)** ☐ Sol 18 **(SO)** ☐ Other **(O)**

Repeat Fluid Volume Prescribed: ☐ Maintenance ☐ Restricted appropriately SIADH ☐ Generous ☐ Too Little ☐ Other

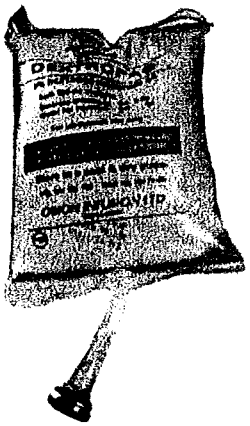
Time to reassessment of fluids (Hours) ☐☐ **Were fluids prescribed relevant to probable ongoing aetiology of hyponatraemia:** ☐ Yes ☐ No **If patient surgical were they referred to paediatrics:** ☐ Yes ☐ No

Is there record in chart of discussion with / review by middle grade: ☐ Yes ☐ No **Is there record in chart of discussion with / review by consultant:** ☐ Yes ☐ No

ALTNAGELVIN HOSPITALS

Clinical Audit
Department of Clinical Effectiveness

"Audit Undertaken Determines Improvement in Treatments"

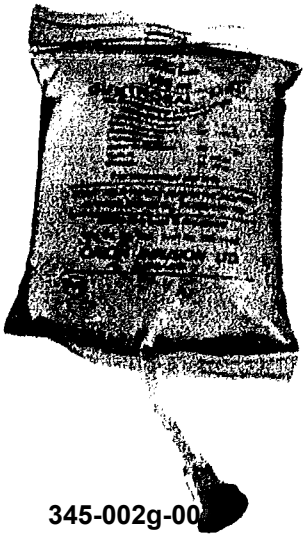


Management of Hyponatraemia

AUDIT

By: Dr. Aoife McMorrow

Lead Audit Assistant:
Resty Bautista



Acknowledgement

The Author / Authors of this audit project wish to acknowledge the resources provided by Altnagelvin H&SST through the Clinical Audit Department in support of this piece of work.

Background

Recent publicity has highlighted the potentially catastrophic results of Paediatric Hyponatraemia. Little data exists however on the overall incidence and course of uncomplicated Hyponatraemia in general Paediatric practice.

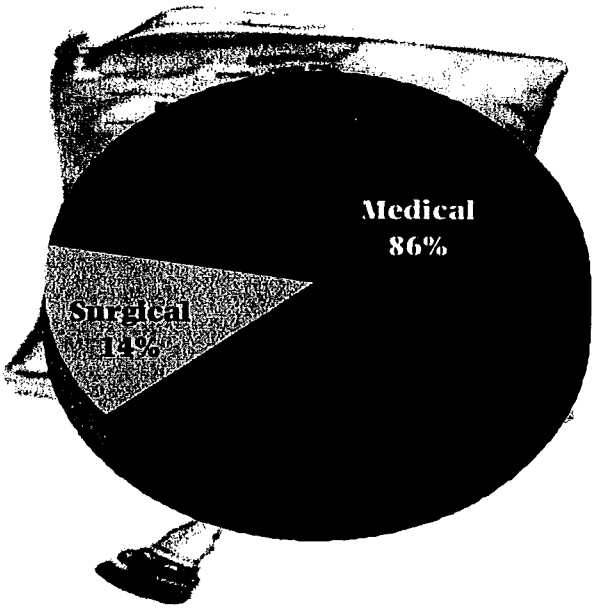
Aim

To determine the Aetiology of Hyponatraemia in children and assess our management of Hyponatraemia.

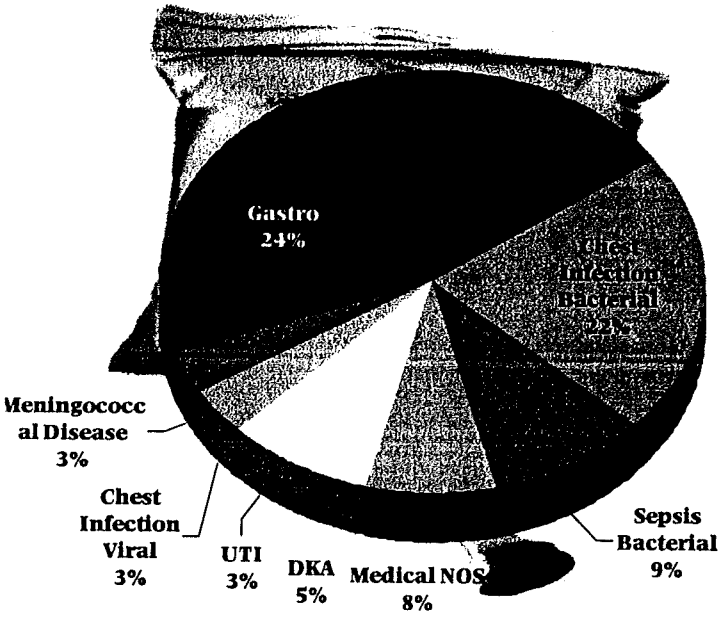
Methodology

Retrospective case note review of 136 children admitted to Altnagelvin Hospital over a 21-month period with Hyponatraemia

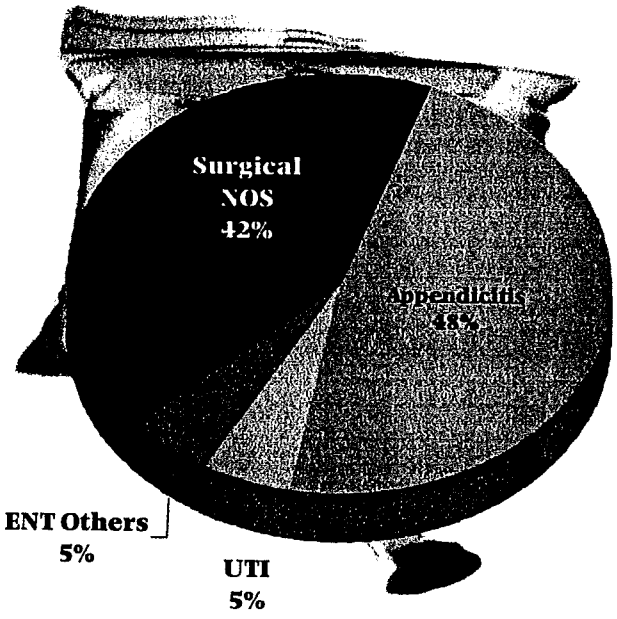
Aetiology



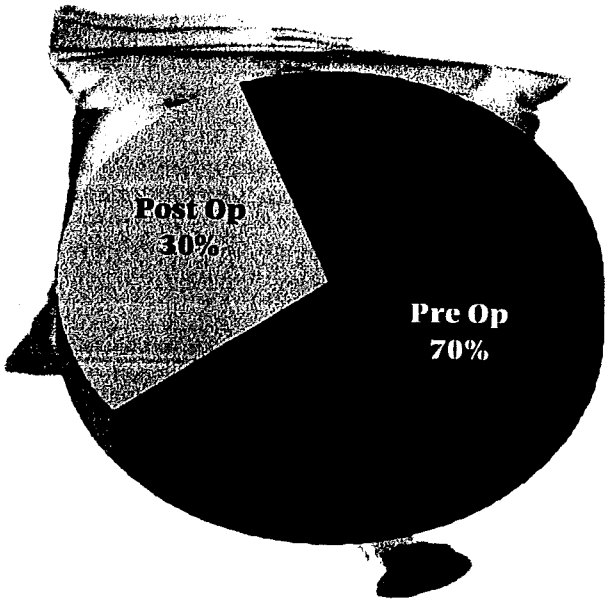
Diagnosis: Medical



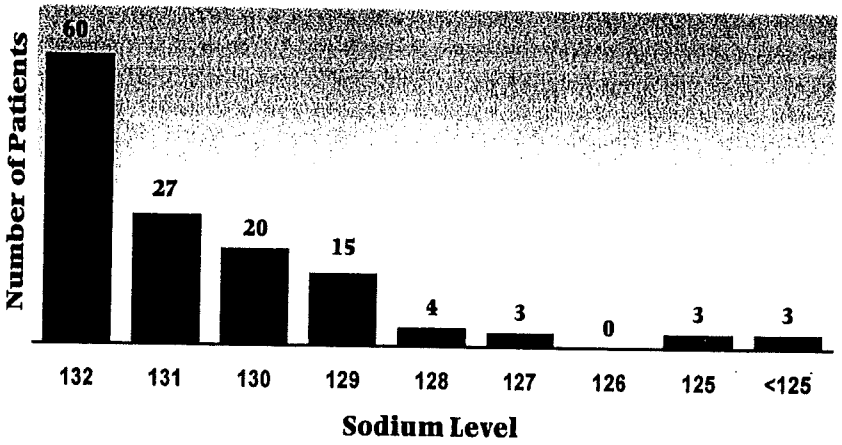
Diagnosis: Surgical



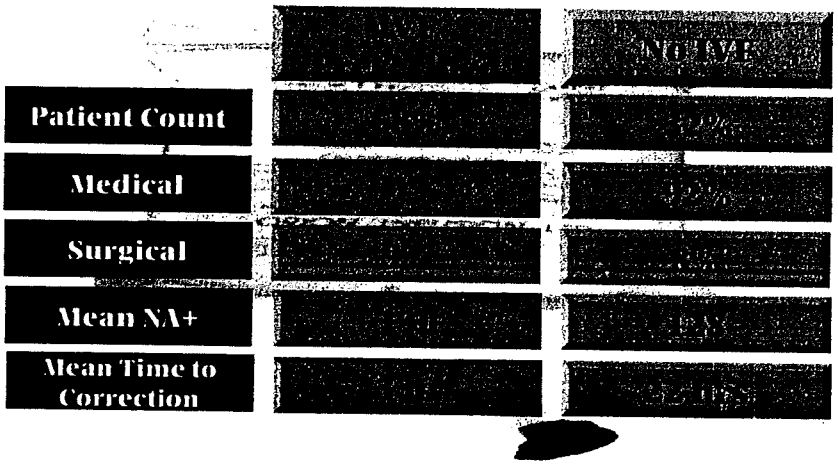
Enroute Surgical



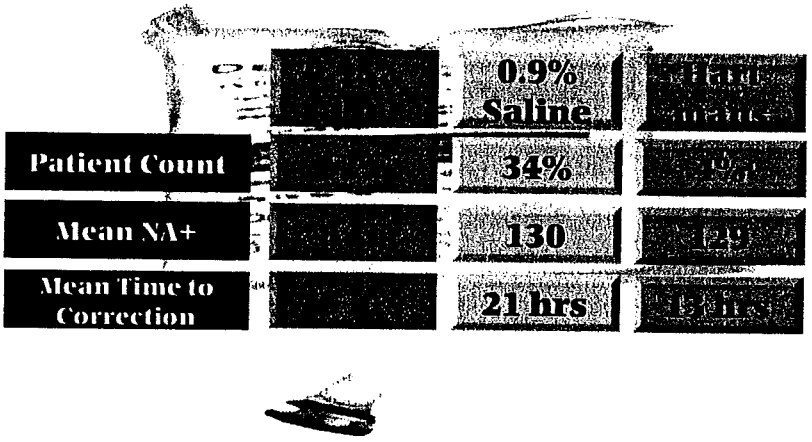
Distribution of Lowest Na+



Hyponatraemic On Admission = 88%



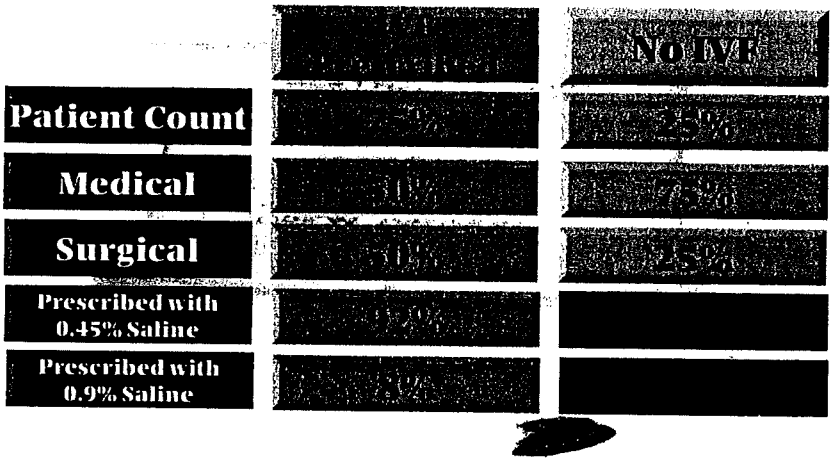
IVF Prescription*



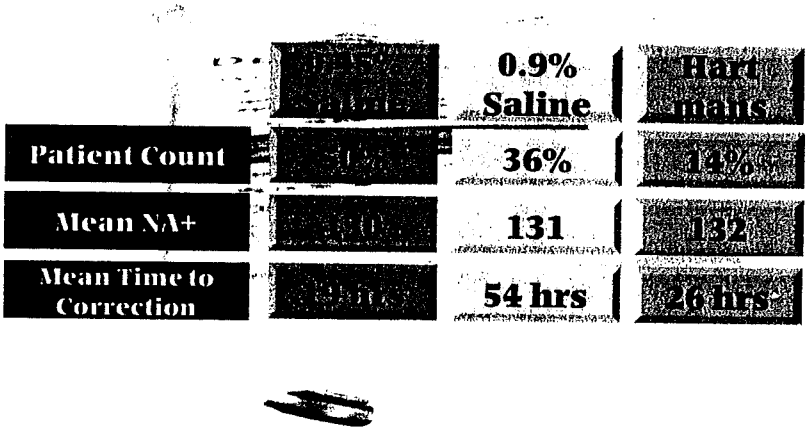
Key Findings*

- 68% received IV fluid
- Mean Na+ 130 in group receiving IVF
- No difference in mean time to correction (23 hrs vs. 22 hrs)
- 62% prescribed 0.45% Saline/dextrose
- Lower mean time to correction with Isotonic Solutions

Became Hyponatraemic in Hospital

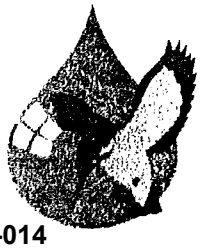


IVF Prescription**



Key Findings**

- ❖ 75% received initial IV fluids
- ❖ 50% prescribed 0.45% Saline/dextrose
- ❖ When Hyponatraemia detected, 43% changed to 0.90% Saline
- ❖ No difference in mean lowest Na+
- ❖ Lower correction time with oral rehydration



DLS

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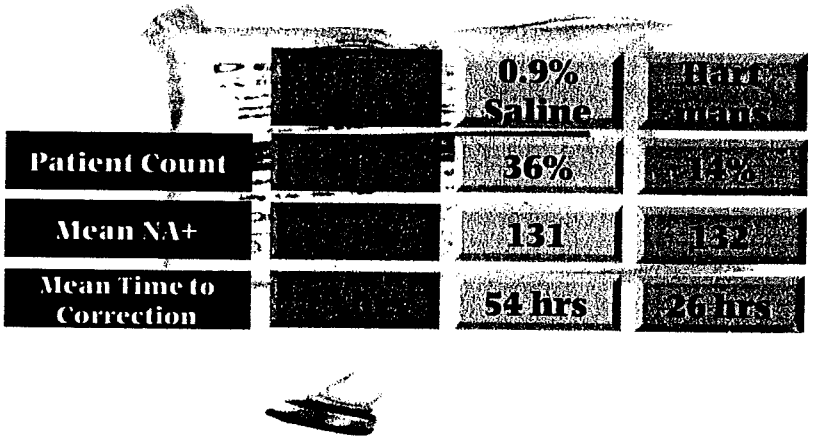
IVF Prescription**



Key Findings**

- 75% received initial IV fluids
- 50% prescribed 0.45% Saline/dextrose
- When Hyponatraemia detected, 43% changed to 0.90% Saline
- No difference in mean lowest Na+
- Lower correction time with oral rehydration

Appendicitis = 7%
IVF Prescribed

	Mean Na+
0.45% Saline	132
0.90% Saline	132
Hartmans	132
Others	129

Appendicitis : IVF Volume

	Mean Na+
Generous	132
Maintenance	132
Restricted	131
Others	

Key Findings***

- Overall incidence : 11%
- 7 children, Hyponatraemic on admission
- 38% prescribed 0.45% Saline/dextrose

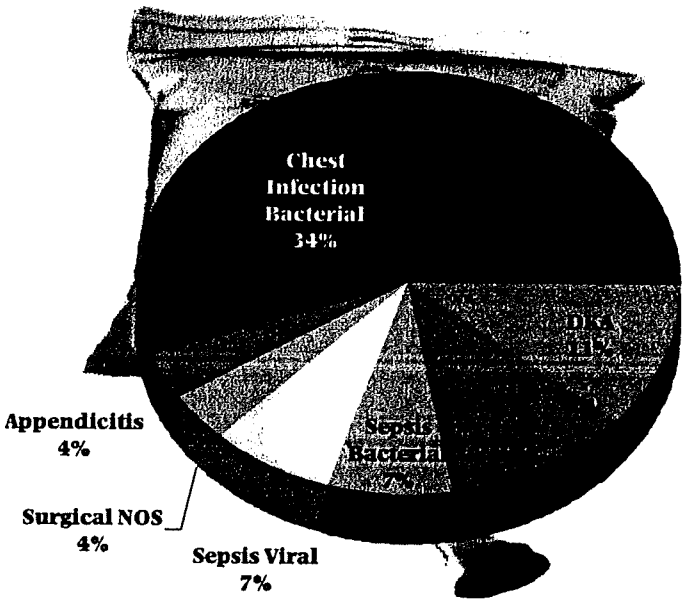
Sodium<130 = 20%
IVF Prescribed

		Mean Na+	
0.45% Saline		127	
0.90% Saline		128	
Hartmans		125	
Others		128	

Sodium<130 : IVF Volume

		Mean Na+	
Generous	[illegible]	124	[illegible]
Maintenance	[illegible]	128	[illegible]
Restricted	[illegible]	128	[illegible]
Others	[illegible]		

Sodium<130 : Diagnosis



Key Findings****

- 85% prescribed intravenous fluids
- 50% isotonic solutions
- Time to correction slower with 0.45% Saline
- 58% restricted fluid volume

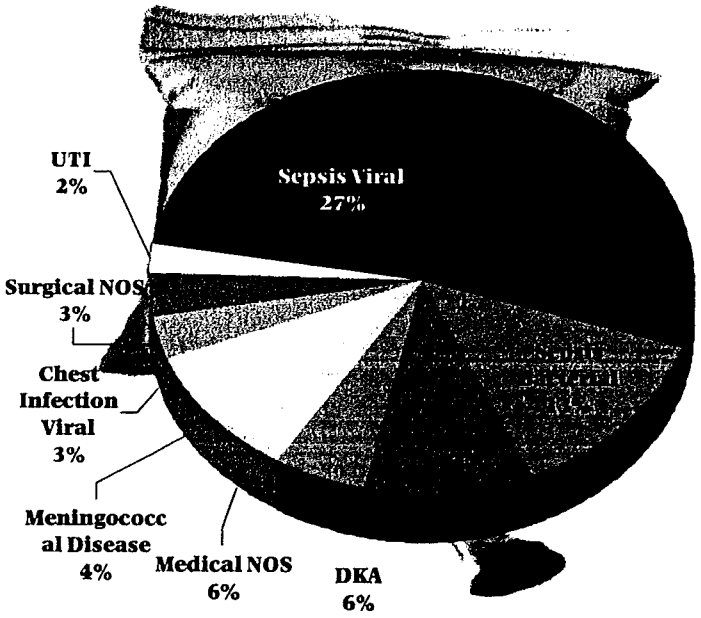
SIADH = 66%
IVF Prescribed

		Mean Na+	
0.45% Saline		130	
0.90% Saline		130	
Hartmans		131	
Others		131	

SIADH : IVF Volume

		Mean Na+	
Generous		128	
Maintenance		131	
Restricted		131	
Others		132	

SIADH = Diagnosis



Key Findings*****

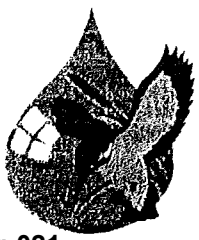
- 55% prescribed IV fluids
- If given IV fluids, 40% restricted volumes

Generous = 4%
IVF Prescribed

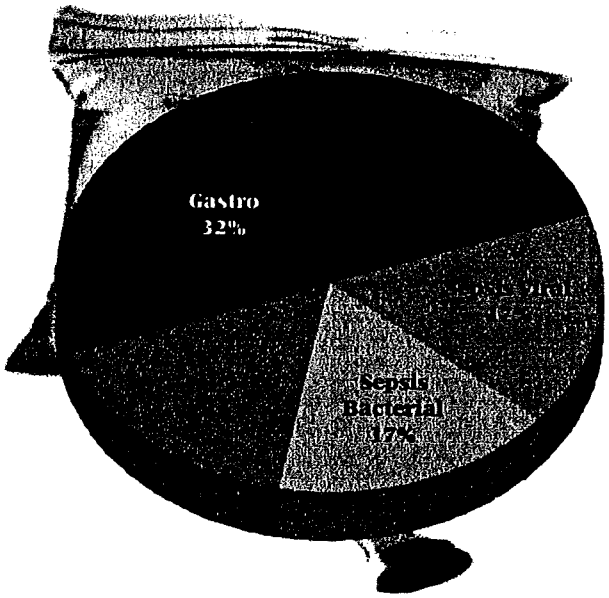
		Mean Na+	
0.45% Saline		126	
0.90% Saline		132	
Hartmans			
Others			

IVF Volume: Generous

Patient Count		
Medical	100%	
Surgical		



Generous : Diagnosis



Key Findings******

- **Overall mean time to correction was longer**

Conclusion

- A common complication of both medical & surgical illness
- Incidence increased in appendicitis & chest infections
- Maybe related to severity of illness
- Very hypotonic solutions no longer prescribed
- Isotonic solutions appear to correct Hyponatraemia more quickly
- Possible under prescribing of Normal Saline

Recommendation

- Continue to increase awareness of Hyponatraemia
- Re-audit following implementation of new DoH Guidelines