

## Scenario: Child Diarrhoea

**Setting:** Emergency Department

**Clinical Focus:** Acute gastroenteritis and dehydration

**Situational Factors:** Mum has diarrhoea today.

### Learning Objectives:

- A-e assessment of a sick child
- Management of fluid resuscitation and maintenance fluids prescription
- Keep a broad differential – consider metabolic / surgical / infective causes

### Stage/ Design/ Props/ Technical Setup

Sim baby. Majors set up

### Briefing to Participants: Scene

A six month old child is brought to AE by her mum with a 3 day history of diarrhoea and vomiting. She is vomiting all her feeds and has not passed urine since last night....

Presentation	Expected Response	Actors Notes
		Parent (If available): Helpful Faculty nurse: Helpful
<b>Examination:</b> RR 45, no recessions Sats 95% in air HR: SR 160 CRT 3 sec, Dry lips and mouth Reduced skin turgor Sunken fontanelle BP 100/70 Alert	ABCD approach Specifically: BM 2.0 IV access 10% dextrose bolus 20ml/kg 0.9% NaCl Maintenance fluids (could also give maintenance + 5% correction – bolus volume.) Request Senior Support	
<b>Progress Improves:</b> CRT improves, hypoglycaemia does not recur if maintenance fluids with 0.9%NaCl and 5% Dextrose are prescribed.	Contact CAU SpR	If venous access successful: pH7.33 pCo24.5 pO2 9.5 BE-7.7 lact 2, HCO3 17.2,Ur7
<b>Progress Deteriorates:</b> Hypoglycaemia recurs if maintenance fluid not prescribed.	Maintenance fluids	Remain helpful
Debrief	Clinical	CRM
As required based on identified issues/frames	Discuss management of hypoglycaemia and difference between fluid resuscitation, replacement and maintenance	



Sample No.: S1234567

Patient ID:

Name:

Comments:

Rack:

Ward:

Tube:

Dr.:

Birth:

Inst.ID:XS-800i^65614

12:34:35

Sex:

WBC	7.2	[10 <sup>9</sup> /L]	
RBC	2.08	[10 <sup>12</sup> /L]	
HGB	145	[g/L]	
HCT	0.184	[Ratio]	
MCV	88.0	[fL]	
MCH	29.8	[pg]	
MCHC	339	[g/L]	
PLT	192	[10 <sup>9</sup> /L]	
RDW-SD	42.4	[fL]	
RDW-CV	14.0	[%]	
PDW	11.3	[fL]	
MPV	10.5	[fL]	
P-LCR	27.7	[%]	
PCT	0.18	[%]	
NEUT	5.2	[10 <sup>9</sup> /L]	65.5
LYMPH	2.75	[10 <sup>9</sup> /L]	15.6 *
MONO	1.58	[10 <sup>9</sup> /L]	9.0 *
EO	0.04	[10 <sup>9</sup> /L]	0.2 *
BASO	0.03	[10 <sup>9</sup> /L]	0.2

Actions required


- Normal
- Abnormal but no immediate danger
- Significantly abnormal results -  
**\*patient in imminent danger\***

document STAT actions taken

NPT samples  
processed by

NPT results

VBG



## Measurement report

Serial number : 19241  
 Instrument ID : A&E 1  
 Operator ID : blood

---

St. Elsewhere Emergency Dept

Pat. ID	S1234567		
Last name	Man		
First name	Sim		
Blood type	Venous		
FI <sub>O</sub> <sub>2</sub>	0.21		

---

pH	7.33	(-)	[	7.350 -	7.450]
PCO <sub>2</sub>	4.5	kPa	[	4.27 -	6.40]
PO <sub>2</sub>	9.5	kPa (-)	[	11.07 -	14.40]
BE	-7.7	mmol/L			
cHCO <sub>3</sub> <sup>-</sup>	17.2	mmol/L			

---

Na <sup>+</sup>	144	mmol/L	[	136.0 -	145.0]
K <sup>+</sup>	4.2	mmol/L	[	3.50 -	5.10]
Ca <sup>2+</sup>	1.5	mmol/L	[	1.150 -	1.330]
Cl <sup>-</sup>	106	mmol/L	[	98.0 -	107.0]
Glu	2.0	mmol/L	[	3.5 -	5.3]
Lac	2.1	mmol/L	[	0.4 -	0.8]
Urea	7.0	mmol/L	[	2.5 -	6.4]

---

AG	18.2	mmol/L			
Osm	282	mOsm/kg			

---

Hct	45	% (-)	[	36.0 -	53.0]
Hct(c)	45	%			

---

tHb	145	g/L	[	115.0 -	178.0]
SO <sub>2</sub>	76	%	[	94.0 -	98.0]
COHb	0.5	%	[	0.0 -	3.0]
MetHb	1.4	%	[	0.0 -	1.5]
HHb	2.5	%	[	0.0 -	2.9]
O <sub>2</sub> Hb	15	%	[	94.0 -	98.0]

---

Bili	Out of range (-)	[	51 -	850]
------	------------------	---	------	------

## LRI Emergency Department

Guideline for

### Management of Acute Gastroenteritis

In the Paediatric Emergency Department (UHL Category C Guidance)

Staff relevant to:	ED Medical and Nursing Staff
ED senior team approval date:	May 2011 (Reviewed May 2016)
Version:	2.1
Trust Reference:	C142/2016
Revision due:	May 2019
Written by:	J Acheson
Previous Authors:	J Acheson



## Management of Acute Gastroenteritis (based on NICE guideline CG84)

GASTROENTERITIS = sudden change to at least 2 loose or watery stools or at least 2 vomits (or both). There may be associated fever or abdominal pain, however differential diagnoses should be considered in all cases (1). See additional pages for explanatory notes for (1), (2), (3) and (4)



## (1a) Differential diagnosis

- Reflux
- UTI (if vomiting prominent)
- Acute abdomen, eg. Appendicitis (difficult diagnosis <5yrs), if pain prominent
- Intussusception
- Intracranial pathology
- Haemolytic uraemic syndrome , if blood in stool and anaemic
- Many others –seek senior advice if concerned

## (1b) Signs and symptoms that may indicate other diagnoses

- Fever >38 or higher (younger than 3months)
- Fever >39 or higher (older than 3months)
- Difficulty in breathing
- Neck stiffness
- Non blanching rash
- Blood and/or mucus in the stool
- Bilious (green) vomit
- Severe or localised abdominal pain
- Abdominal distension or rebound tenderness

## (2) Children at risk of dehydration

- Children <3months or chronic illness – do **NOT** discharge from the ED
- Children younger than 1year, especially younger than 6months –be cautious
- Infants who were of low birth weight
- Children who have passed six or more diarrhoeal stools in the past 24 hrs
- Children who have vomited three times or more in the past 24 hrs
- Poor parental technique for giving supplementary fluids
- Infants who have stopped breast feeding during the illness
- Children with signs of malnutrition



### (3) Assessing Dehydration (note Red flag signs and symptoms)

	No clinically detectable dehydration	Clinical dehydration	Clinical Shock
Signs and Symptoms (face to face assessments)	Appears well	Appears to be unwell or deteriorating	-
	Alert and responsive	Altered responsiveness (lethargic, irritable)	Decreased level of consciousness
	Normal urine output	Decreased urine output	-
	Skin colour unchanged	Skin colour unchanged	Pale or mottled skin
	Warm extremities	Warm extremities	Cold Extremities
	Eyes not sunken	Sunken eyes	-
	Moist mucus membranes (except after a drink)	Dry mucus membranes (except for mouth breather)	-
	Normal HR	Tachycardia	Tachycardia
	Normal breathing pattern	Tachypnoea	Tachypnoea
	Normal peripheral pulses	Normal peripheral pulses	Weak peripheral pulses
	Normal CRT	Normal CRT	Prolonged CRT
	Normal skin turgor	Reduced skin turgor	-
	Normal BP	Normal BP	Hypotension



## (4) Hypernatraemic dehydration

### Suspect if

- Drowsiness or coma
- Jittery movements
- Increased muscle tone
- Decreased skin turgor
- Hyperreflexia
- Convulsions
- Breastfeeding / child <6months

### Treatment

- Weigh the child
- Obtain urgent advice from the Paediatric Emergency Medicine SpR /Consultant and Paediatric SpR (Bleep 4124) on fluid management
- Use 0.9%saline with 5% dextrose IV for fluid deficit and replacement
- Replace the fluid deficit slowly (over 48hrs)
- Aim to reduce the plasma sodium at less than 0.5mmol/per hour
- Start input/output fluid chart
- Recheck U+E after one hour