

Infectious gastroenteritis

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Publication date: August 2018. **Approved by the Drug & Therapeutics Committee September 2018**

Review date: August 2020

See also: [Intravenous fluids in paediatric medical patients](#)

Background

- Sudden onset of diarrhoea (change in consistency and/or frequency of stools) +/-
 - Fever (usually low grade)
 - Abdominal pain (usually mild)
 - Vomiting- often precedes diarrhoea but **be cautious diagnosing gastroenteritis if isolated vomiting in the absence of diarrhoea**
- Vast majority are viral and no specific investigations are required for diagnosis.
- Look for an alternative diagnosis if red flag features are present:

Red Flag Features (especially if isolated vomiting)

- High grade fever (Temp >38 in <3mth; Temp >39 in >3mth)
- Severe or localised abdominal pain
- Abdominal distension or rebound tenderness
- Bilious vomiting
- **Bloody diarrhoea**
- Non-blanching rash
- Headache
- Bulging fontanelle in infants
- Neck stiffness
- Altered conscious state
- Tachypnoea

Alternative Diagnoses

- Appendicitis
- Intussusception
- Strangulated hernia
- Bowel obstruction
- UTI
- Meningitis
- Sepsis
- DKA
- Inborn error of metabolism
- Inflammatory bowel disease
- Haemolytic uraemic syndrome
- Raised intracranial pressure

Assessment

Assess degree of dehydration using table on next page.

Factors associated with increased risk of dehydration

- Children younger than 1 year (especially younger than 6mths)
- Infants who were of low birthweight
- >5 diarrhoeal stools in the previous 24hours
- Significant chronic disease (e.g. short gut, renal insufficiency, on diuretics)

Assessment of dehydration:

	No clinically detectable dehydration (<5% dehydrated)	Clinical dehydration (5-10% dehydrated)	Hypovolaemic shock (>10% dehydrated)
Consciousness	Alert & responsive	Irritable/lethargic	Decreased level of consciousness
Appearance	Appears well	Appears unwell or deteriorating	
Eyes	Normal	Sunken	
Mucous membranes	moist	Dry	
Breathing pattern	normal	Tachypnoea	Tachypnoea
Perfusion	Normal CRT, normal peripheral pulses, warm extremities, normal skin colour	Normal CRT, normal peripheral pulses, warm extremities, normal skin colour	CRT>2 secs, weak peripheral pulses, cold extremities, pale or mottled skin
Heart rate	normal	Tachycardia	Tachycardia
Blood pressure	normal	normal	Hypotension (if decompensated)
Skin turgor	normal	decreased	Decreased with tenting
Urine output	normal	oliguric	anuric

Investigations

- Stool microbiology is indicated if bloody diarrhoea, suspicion of septicaemia or immunocompromised patient.
- Consider if history of foreign travel, diarrhoea > 3 weeks or diagnostic dilemma
- Consider checking a blood sugar (particularly in young children).
- Routine laboratory bloods (FBC, U&E) are not indicated unless:-
 - IV fluids are required (see below)
 - Features suggestive of hypernatraemia (jittery movements, increased muscle tone, hyperreflexia, convulsions, drowsiness or coma)

Management

- The mainstay of management is preventing +/- treating dehydration.
- In the vast majority of cases this can be achieved by oral hydration/rehydration
- Antibiotics are rarely indicated – exceptions:-
 - Suspected septicaemia
 - Extra-intestinal spread of bacterial infection
 - Salmonella gastroenteritis if malnourished, immunocompromised or <6mths age
- Discuss with micro / ID if considering antibiotics

1. Prevention of Dehydration

Children with **no clinical features of dehydration** and who are **not at high risk of developing dehydration** do not always need to undergo a fluid challenge whilst in CED (but can sometimes be useful for parental education and reassurance).

Discharge with advice re: prevention of dehydration:-

- Continue breastfeeding and other milk feeds
- Encourage fluid intake - frequent, small amounts (avoid carbonated drinks)
- Offer oral rehydration solution (ORS) as supplemental fluid

Provide CED Diarrhoea & Vomiting leaflet

2. Oral / NG rehydration

Children who have features of **clinical dehydration** (but not shock) should be given **oral rehydration** via a fluid challenge

Oral rehydration solution

- Give small, frequent volumes starting with 1 ml/kg every 10 minutes
- Aim for **50ml/kg over 4hrs** (10-15ml/kg per hour)

Oral fluid tolerated

Complete rehydration period at home with instructions above.

Oral fluid not tolerated

Give ondansetron 0.1 mg/kg if:

- > 1 year old
- clear diagnosis of gastroenteritis

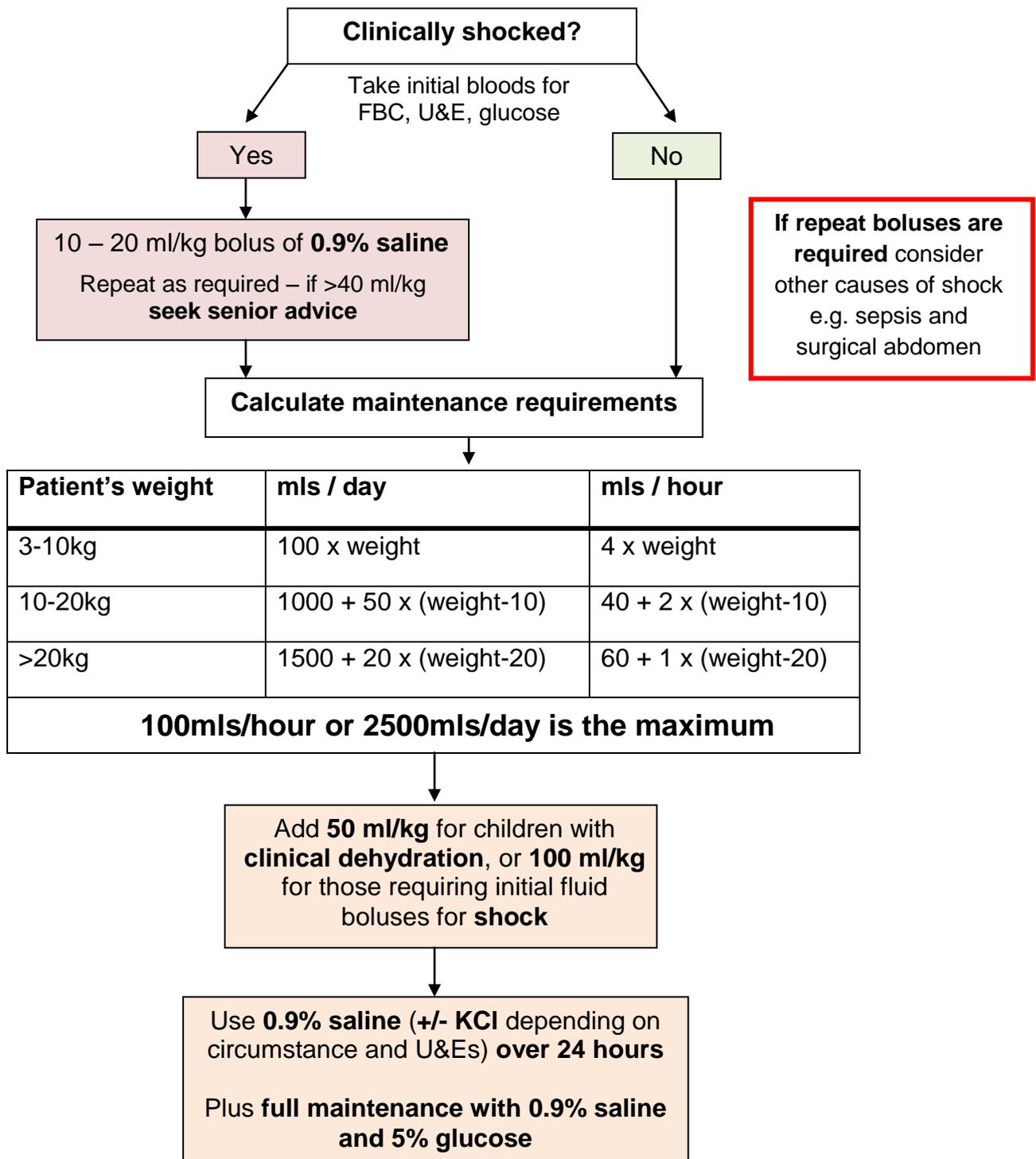
Consider giving fluids through a NG tube

- Use ORS
- Give rapid rehydration if appropriate with **25 ml/kg/hour for 4 hours**. See [RCH Melbourne guideline](#)
- Give slower rehydration if < 6 months, co-morbidities or significant abdo pain – use 24 hr rate of maintenance + deficit

3. Intravenous Rehydration

Intravenous fluids should be used if:

- Child is in shock
- A child with signs of clinical dehydration deteriorates despite ORS
- A child persistently vomits ORS given orally (or if ondansetron +/- NG rehydration is not felt to be feasible or is not successful)



NB. If a child has hypernatraemic dehydration fluid deficit should be replaced slowly with frequent monitoring to prevent a too rapid fall in serum sodium. [See I.V fluids guideline](#)

4. Ongoing Care

- Children who have successfully rehydrated can be discharged with home care advice as above. Children should continue to be offered ORS while diarrhoea persists to prevent recurrence of dehydration (~5ml/kg of ORS after each large watery stool).
- Vomiting usually lasts 1-2 days and in most stops within 3 days
- Diarrhoea usually lasts 5-7 days and in most stops within 2 weeks

Some children develop prolonged diarrhoea due to a secondary transient lactose intolerance that can last up to 6 weeks.

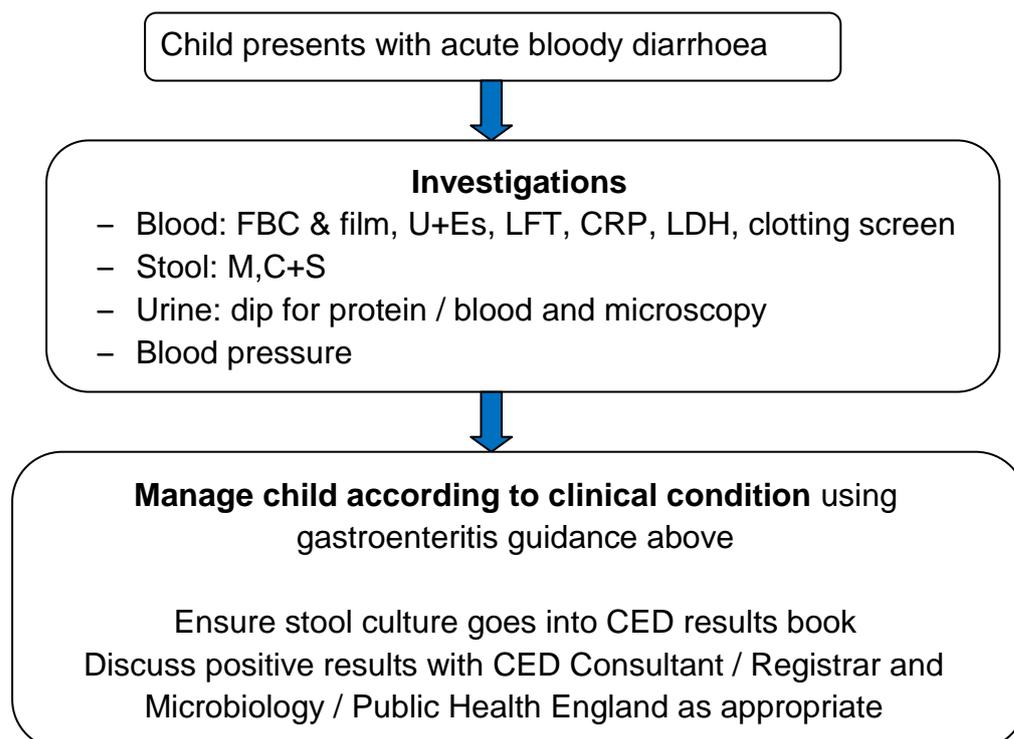
This can be managed with the temporary use of a lactose free formula (eg. Aptamil Lactose Free, Enfamil O-Lac, SMA Lactofree).

If diarrhoea is due to lactose intolerance it should resolve in 2-3 days and lactose can be re-introduced in 4-6 weeks.

Acute infectious bloody diarrhoea

Always consider Haemolytic Uraemic Syndrome (HUS) if bloody diarrhoea is present
It is crucial to consider / exclude E coli VTEC infection due to the link with HUS

Management of bloody diarrhoea



Haemolytic Uraemic Syndrome

Triad of:-

- Microangiopathic haemolytic anaemia
- Thrombocytopenia
- Acute renal failure

Can be caused by verotoxins produced by VTEC E coli organisms (~15% of cases of VTEC infection will develop HUS)

Recognised early features of HUS on tests include: leucocytosis, falling platelets, increased LDH, haematuria, proteinuria.

Have a high suspicion of VTEC +/- HUS if bloody diarrhoea is present + any of:-

- Abdominal pain
- Fever
- Oliguria
- Petechiae
- Pallor
- Recent (<21 days) contact with farm animals
- Contact with other VTEC cases or living in an area with suspected or confirmed cases

Management of suspected or confirmed VTEC cases:-

- Careful attention to hydration and urine output - low threshold for use of IV fluids to ensure adequate hydration.
- **Avoid NSAIDs**, opiate analgesics, anti-motility agents and antibiotics.
- **Low threshold for admission for monitoring** or if discharging, clear safety net advice to carers regarding the features that should prompt reassessment (lethargy, pallor, reduced urine output) and consideration to repeating blood tests (see below).
- HUS can develop up to 2 weeks after the onset of diarrhoea and initial investigations may be falsely reassuring – blood tests should therefore be repeated in the event of any clinical deterioration.

Confirmed HUS is potentially life-threatening and a renal emergency. Cases require urgent discussion with CED Consultant / Registrar as well as the paediatric renal team at Evelina Children's Hospital London. They will guide further management.