

## Guidelines for Management of Bloody Diarrhoea in Paediatrics

[Link to Algorithm](#)

### Aim

To assist medical care providers in the evaluation and management of children with bloody diarrhoea, defined as any loose or watery stools containing visible red blood.

### Definition of Terms

FPIES	Food protein-induced enterocolitis syndrome
FPIAP	Food protein-induced allergic proctocolitis
HAEC	Hirschsprung's associated enterocolitis
HD	Hirschsprung's Disease
HSP	Henoch Schönlein Purpura
HUS	Haemolytic Uraemic Syndrome
IBD	Inflammatory Bowel Disease
NEC	Necrotizing enterocolitis
Non-IgE-GI-FA	Non-IgE mediated gastrointestinal food allergy
OFC	Oral food challenge
VTEC	Verocytotoxin producing Escherichia coli

### Target Patient Population

This evidence summary applies to children with bloody diarrhoea. This does **NOT** include episodes in which:

- Blood is present in streaks on the surface of formed stool, seen in anal fissures (which present with painful bleeding per rectum) and polyps or Meckel's diverticulum (which present with painless bleeding per rectum).
- Blood is detected only by microscopic examination or biochemical tests such as in Meckel's diverticulum.
- Stool is black owing to the presence of digested blood (melaena), e.g., upper GI bleeding such as with oesophageal varices.

### Target Users

This guideline is directed at healthcare professionals engaged in the care of children with bloody diarrhoea presenting to the CHI Department of Emergency Medicine.

## Causes of Bloody Diarrhoea

Infants aged <1 year	Infants aged >1 year
<p><b>Common causes:</b></p> <ul style="list-style-type: none"> <li>• Intestinal infection</li> <li>• Non-IgE mediated gastrointestinal food allergy               <ul style="list-style-type: none"> <li>○ FPIAP</li> <li>○ FPIES</li> </ul> </li> </ul> <p><b>Less common or rare causes:</b></p> <ul style="list-style-type: none"> <li>• Intestinal ischaemia               <ul style="list-style-type: none"> <li>○ Intussusception</li> <li>○ Malrotation and volvulus</li> <li>○ Necrotising enterocolitis</li> </ul> </li> <li>• Hirschsprung's associated Enterocolitis HAEC</li> <li>• Inflammatory bowel disease               <ul style="list-style-type: none"> <li>○ Crohn's colitis</li> <li>○ Ulcerative colitis</li> </ul> </li> <li>• Henoch-Schönlein purpura</li> </ul>	<p><b>Common causes:</b></p> <ul style="list-style-type: none"> <li>• Intestinal infection</li> <li>• Inflammatory bowel disease               <ul style="list-style-type: none"> <li>○ Crohn's disease</li> <li>○ Ulcerative colitis</li> </ul> </li> </ul> <p><b>Less common or rare causes:</b></p> <ul style="list-style-type: none"> <li>• Intestinal ischaemia               <ul style="list-style-type: none"> <li>○ Intussusception</li> <li>○ Malrotation and volvulus</li> </ul> </li> <li>• Henoch-Schönlein purpura</li> </ul>
<p><b>Other rarer causes:</b></p> <ul style="list-style-type: none"> <li>• Juvenile Polyp</li> <li>• Inherited monogenic Immunodeficiency</li> </ul>	

## Clinical Picture of Common Causes of Bloody Diarrhoea

### 1. Intestinal infection (Gastroenteritis and enterocolitis)

- At any age, intestinal bacterial infection is a common cause of bloody diarrhoea.
- Risk factors include travel abroad, household contacts, or contaminated water and food sources.
- The duration of symptoms of bloody diarrhoea, secondary to intestinal infection, is usually 3-8 days. Bloody diarrhoea may persist for up to 3 weeks in unusual cases of salmonella or Yersinia infection.
- Infectious enterocolitis may present with fever, significant abdominal pain and watery +/- bloody diarrhoea lasting for 3-7 days.
- In all children with bloody diarrhoea, a stool sample should be sent for culture.
- For children with a recent preceding history of antibiotic exposure, or inpatient care, age-appropriate testing for *C difficile* toxin is warranted.
- If VTEC is isolated from stool, 10-15% of children may develop HUS, usually within 3 to 16 days, comprising of haemolytic anaemia, thrombocytopenia, and renal injury
- Antibiotics are contraindicated even for culture positive bacterial gastroenteritis, except:
  - in children with severe symptoms
  - in immunocompromised patients
  - when stool microscopy shows entamoeba histolytica or shigella species, which are uncommon in Ireland (take a travel history)

### 2. Non-immunoglobulin E-mediated gastrointestinal food allergy (non-IgE-GI-FA)

- During infancy, non-IgE-GI-FA may present with delayed gastrointestinal symptoms of variable severity after exposure to specific dietary antigens.
- The diagnosis is made clinically and relies on a constellation of typical symptoms that improve upon removal of the culprit food.

- Management includes dietary avoidance, nutritional counselling, and supportive measures in the case of accidental exposure.
- The prognosis is favorable in most cases and resolves before school age.
  - A. Food protein-induced allergic proctocolitis (FPIAP)**
    - FPIAP is the most frequent non-IgE-GI-FA. It occurs within the first few weeks of life in both bottle-fed and exclusively breastfed infants due to indirect exposure to maternal dietary protein via breastmilk.
    - These infants present with bloody, loose stools, sometimes with mucus.
    - Affected children look well, have no severe symptoms of emesis or diarrhea and no significant growth failure.
    - Although FPIAP is most often seen in young infants, it is reported to occur in older children.
  - B. Chronic Food Protein-Induced Enterocolitis Syndrome (FPIES)**
    - FPIES is a non-IgE mediated gastrointestinal food hypersensitivity.
    - Chronic FPIES presents with chronic watery diarrhea (occasionally with blood or mucus), intermittent emesis, abdominal distension, and/or poor weight gain with dehydration and metabolic disturbances.
    - Typically, chronic FPIES will occur with persistent exposure to cow's milk or soy-based formula.
    - A defining feature of chronic FPIES is the recurrence of symptoms presenting acutely when the trigger food is reintroduced after a period of withdrawal (acute-on-chronic phenotype).
    - Rarely, FPIES has been reported in exclusively breastfed infants.
    - The age of onset can vary, with FPIES to cow's milk or soy usually presenting earlier within the first weeks or months of life, while FPIES to solids presenting later at about 4–7 months of life.
    - 30% of infants with FPIES develop atopic diseases, such as atopic dermatitis, asthma or allergic rhinitis.

### 3. Inflammatory Bowel Disease (IBD)

- Bloody diarrhoea is the presenting symptom in 85% of ulcerative colitis and 50% of Crohn's disease.
- IBD may occur at any age but is more likely in older children >1 year.
- Other symptoms and signs suggestive of IBD are:
  - **Intestinal manifestations:** colicky abdominal pain, peri-defecation cramping, urgency, tenesmus, stool clustering, weight loss, deep oral ulceration, perianal abscess/ fistula/large skin tags.
  - **Extraintestinal manifestations:** fever, growth failure, pubertal delay, clubbing, erythema nodosum, pyoderma gangrenosum, arthritis, liver disease, iritis, and uveitis.

### 4. Intestinal ischaemia

- A less common cause of bloody diarrhoea and is considered a surgical emergency.
- Clinically, the child presents with an acute abdomen: severe abdominal pain, persistent or bilious vomiting, abdominal tenderness with guarding or rigidity and distension.
  - A. Intussusception**
    - May occur at any age, but most commonly between 2 months and 2 years of age.
    - Risk factors: 90% of cases are idiopathic. In older children, a pathological lead point may be the cause, e.g., Meckel's diverticulum, Henoch Schönlein Purpura, lymphoma, luminal polyps (e.g., Peutz-Jegher Syndrome). Recent bowel surgery and recent rotavirus vaccination are also observed.
    - Presentation: Initially episodic colicky abdominal pain, lethargy, or irritability and a possible right lower quadrant abdominal mass.
    - "Red currant jelly" stool (blood and mucous per rectum) is a late presentation of intussusception.
  - B. Malrotation and volvulus:**
    - During the neonatal period, bilious vomiting is the main presentation.
    - Later presentation is with intermittent non-bilious vomiting; may be for years, with episodes of abdominal pain. In these presentations, the presence of bloody stool declares the development of volvulus, associated with sepsis and extensive intestinal gangrene.
  - C. Necrotizing enterocolitis (NEC)**

- It usually presents with abdominal distension, bilious vomiting, signs of septicaemia and bloody diarrhoea in a preterm infant up to 10 weeks of age.
- In a full-term infant, it presents within the first week of life, usually with a predisposing factor such as cardiac disease, polycythaemia, and gastrointestinal malformations.

#### 5. Hensch Schönlein Purpura (HSP) – refer to the CHI HSP guidelines

- HSP is a systemic vasculitis associated with a characteristic palpable purpuric rash, abdominal pain, arthralgia, and overt or microscopic haematuria. Overt gastrointestinal bleeding and bloody diarrhoea are sometimes seen.
- Complications include intussusception, bowel perforation, bowel gangrene, massive hemorrhage, and nephritis.

#### 6. Hirschsprung's Associated Enterocolitis (HAEC)

- The classic presentation of Hirschsprung's disease is constipation.
- However, 25% of infants present with HAEC, secondary to prolonged stasis of stool which allows proliferation of bacteria, causing abdominal distension, tenderness, severe watery and sometimes bloody diarrhoea, and sepsis. This may cause hypovolaemic shock and colonic perforation.
- HAEC can be potentially life-threatening. It should be Suspected even after surgical correction.
- Also, consider HAEC in the differential diagnosis of neonates with possible NEC or distal bowel obstruction with loose stools.
- Risk factors: Trisomy 21, long-segment disease, previous HAEC and post-op obstruction.
- Early recognition of Hirschsprung disease before the onset of enterocolitis is essential in reducing morbidity and mortality.

### Clinical Approach for Patient with Bloody Diarrhoea

#### 1. Bloody diarrhoea with fever and abdominal pain for <7 days, suspect intestinal infection.

- In all children with bloody diarrhoea, a stool sample should be sent for culture.
- For children with a recent preceding history of antibiotic exposure, or inpatient care, age-appropriate test for C. difficile toxin is warranted.
- If there is only **mild dehydration** and no systemic symptoms, discharge the patient with the following instructions:
  - encourage fluid intake
  - return to ED if any of the following develop:
    - new bleeding from the nose, mouth, or blood in the urine
    - bruising
    - a rash that does not disappear if you press a glass onto it
    - severe abdominal pain
    - severe headache
    - not passing urine for 12 hours
    - irritability
    - puffiness of the face or ankles
    - persistent blood in the stool for 3 weeks or more

([Parent Information Leaflet – Gastroenteritis with Bloody Diarrhoea](#))
- Antibiotics are contraindicated except in
  - immunocompromised patients
  - children with severe infection
  - isolation of shigella or entamoeba histolytica which are not common in Ireland.

(In these conditions, follow the gastrointestinal section within the [CHI Antimicrobial Guidelines](#))
- If VTEC is isolated from the stool:
  - the patient should be called back to the ED for clinical reassessment and investigation (FBC with blood film and U&E).

- If all the following criteria are present, HUS is diagnosed, and the patient should be admitted with involvement of the nephrology team:
  - ◊ Haemolytic anaemia (Hgb < 10g/dL, positive schistocytes or fragmented RBCs)
  - ◊ Thrombocytopenia (platelet < 150 x 10<sup>3</sup>/mL)
  - ◊ Acute kidney injury (elevated urea/ Cr)
- If one of the above criteria is present, the patient is admitted for monitoring of the other two criteria.
- If none of the above are present, organise a follow-up visit via the GP for clinical assessment and repeat FBC with film and U&E within 16 days.

**1. Bloody diarrhoea in early infancy with normal growth, no other gastrointestinal symptoms, and no manifestation of atopy, consider FPIAP.**

Or

**2. Bloody diarrhoea in infancy with GIT symptoms, manifestation of atopy and possible impaired growth, Consider chronic form of FPIES.**

- The approach to both **FPIAP** and **FPIES** is the same.
- In all children with bloody diarrhoea, a stool sample should be sent for culture.
- The cornerstone of the management is the elimination of the offending foods from the diet.
- Changing the formula is diagnostic and therapeutic and clinical improvement is expected within 1-2 weeks.
- In exclusively breastfed infants:
  - They usually respond to the maternal elimination of all milk products (including butter).
  - Occasionally, the elimination of multiple foods may be required, usually soy and/or egg.
  - Referral of the mother to a dietitian is required for providing nutritional support.
  - When the restriction measures of maternal diet are unsuccessful or too cumbersome, infants can be placed on an extensively hydrolysed formula.
- In formula fed infants:
  - Prescribe an extensively hydrolysed formula. It can resolve the symptoms in 80% of patients.
  - If no improvement after 4 weeks, an amino acid-based formula can help majority of the remaining patients.

**3. Bloody diarrhoea (recurrent or persistent > 1 week) with negative stool culture, rule out the possibility of IBD.**

- In all children with bloody diarrhoea, a stool sample should be sent for culture.
- Check for intestinal and extraintestinal manifestation of IBD.
- All suspected patients should have a perianal inspection BUT NOT A DIGITAL RECTAL EXAM.
  - If **mild bloody diarrhoea with no other [intestinal or extra intestinal manifestations](#)**, needs GP follow up for 3 weeks for possible spontaneous resolution.
  - If **mild bloody diarrhoea and one or more of the [intestinal or extra intestinal manifestations](#)** are present, request FBC, U&E, LFT, CRP and ESR and general paediatric **OPD referral**.
  - If **mild bloody diarrhoea is recurrent or persistent for 3 weeks**, request FBC, U&E, LFT, CRP, ESR and general paediatrics **OPD referral**.
  - If **moderate severity bloody diarrhoea** for more than one week with fever, anaemia, tachycardia or ESR > 30 consider hospital admission.
  - If **severe bloody diarrhoea** with more than 7 episodes of bloody diarrhoea, consider hospital admission.
- Patients with known IBD may present with bloody diarrhoea because of intestinal infection or disease exacerbation. A stool culture, including C. difficile, is always indicated in addition to the above blood tests.

**4. Bloody diarrhoea + symptoms of acute abdomen, suspect intestinal ischaemia.**

- X-ray abdomen in erect position, if possible, otherwise lateral decubitus

- FBC, U&E, clotting profile, group and save, and blood culture
  - Fluid resuscitation, maintenance fluid and replacement of ongoing losses
  - Nasogastric tube for drainage
  - Urgent surgical referral
5. **Bloody diarrhoea + petechial or purpuric rash mainly on the extensor surfaces of lower limbs and buttocks, suspect HSP and follow [the CHI HSP guidelines](#).**
6. **Bloody diarrhoea + unwell infant + failed to pass meconium in the first 24 hours of life, suspect Hirschsprung's associated enterocolitis (HAEC).**
- HAEC should be suspected even after surgical correction.
  - Also consider HAEC in the differential diagnosis of neonates with possible NEC or distal bowel obstruction with loose stools.
- A. Follow [paediatric sepsis 6](#) within 1 hour:
- I. Take blood culture, CRP, FBC, blood gas, glucose (treat if low), coagulation profile, U&E, LFT, urinalysis, urine output measurement and early senior input.
  - II. Give IV fluid bolus, I.V. antibiotic and oxygen to maintain  $SO_2 \geq 94\%$ .
- B. Urgent surgical referral.

#### Companion Documents

- [Bloody Diarrhoea Algorithm](#)
- [Parental Information Leaflet – Gastroenteritis with Bloody Diarrhoea](#)
- [Parental Information Leaflet – Food Protein-Induced Allergic Proctocolitis \(FPIAP\)](#)

#### [Link to References](#)