

Bloody Diarrhea

Caused by Shiga Toxin Producing *E. coli* (STEC) Infections



FAST FACTS

15–20%

of children with STEC infection will develop HUS 3–10 days after onset of diarrhea

HUS develops several days (median 7.5 days) after onset of diarrhea

60%

of children with HUS require dialysis and up to 2% may die

WHEN TO REFER TO ED

- Abnormal laboratory values that suggest HUS
- Confirmed positive STEC infection
- Child is ill appearing, dehydrated or clinically unstable
- Unable to perform regular labs or follow up closely

See next page for information about outpatient management for children with confirmed STEC infection.

For urgent issues or to speak with a hospitalist on call 24/7, call the Physician Priority Link® at 1-888-987-7997.

STEC infections are an important cause of morbidity and mortality in children with acute bloody diarrhea. The most serious complication of STEC infections is hemolytic uremic syndrome (HUS). Early identification, hydration and close follow-up are essential to prevent or minimize complications.

ASSESSMENT

Perform a focused history and physical exam (HPE). Assess for clinical stability and hydration status.

Risk factors for STEC infection

- Close contact with known STEC infection
- Eating raw/undercooked meat
- Farm visits or farm animal contact
- STEC epidemic

Risk factors for HUS

- Dehydration
- Late presentation
- Use of antibiotics
- Use of antidiarrheals or antimotility agents

Consider alternative diagnoses. The differential diagnosis for bloody diarrhea includes other infectious acute gastroenteritis such as shigellosis or salmonellosis, inflammatory bowel disease, intussusception, Meckel's diverticulum and anatomical defects.

HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

- Decreased urine output
- Dehydration
- Edema
- Hypertension
- New bleeding, bruising, petechial rash
- Pallor
- Severe abdominal pain
- Unusual or severe headache, seizures

DIAGNOSTIC TESTING

Order a molecular routine bacterial stool pathogens test for all children with grossly bloody diarrhea presumed infectious or non-bloody diarrhea with any of the above STEC risk factors.

Obtain the following **initial** labs:

- Molecular routine bacterial stool pathogens (to confirm STEC)
- CBC with differential to evaluate for HUS
- BMP to evaluate for HUS

If STEC is confirmed, strongly consider referral to the ED. Preliminary studies show early IV fluids mitigate or prevent complications, including HUS and need for dialysis. Outpatient management involves monitoring for dehydration and HUS. Obtain the following additional labs:

- Urinalysis
- Urine NGAL
- Lactate dehydrogenase
- Blood culture (if febrile)

If concerned for HUS, refer to the ED immediately. Suspect HUS if the patient has any of the following. The diagnosis is made when **all** three criteria are met.

- AKI (elevated serum Cr or urine NGAL >150)
- Hemolytic anemia (Hgb <10g/dL, positive schistocytes)
- Thrombocytopenia (platelets <150,000 or >5% decrease in platelets since onset of illness)

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

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Patient Presents

Assessment

Perform focused history and physical exam (HPE) to explore STEC infection and HUS risk factors. Assess clinical stability and hydration status.

Risk factors for STEC infection:

- Close contact with known STEC infection
- Eating raw/undercooked meat
- Farm visits or farm animal contact
- STEC epidemic

Risk factors for HUS

- Dehydration
- Late presentation
- Use of antibiotics
- Use of antidiarrheals or antimotility agents

HPE (HISTORY AND PHYSICAL EXAM) RED FLAGS

- Decreased urine output
- Dehydration
- Edema
- Hypertension
- New bleeding, bruising, petechial rash
- Pallor
- Severe abdominal pain
- Unusual or severe headache, seizures

Does child have grossly bloody diarrhea “presumed infectious” or non-bloody diarrhea with any of the above STEC infection risk factors?

Yes

No

Diagnostic Testing

Order initial lab tests:

- Molecular routine bacterial stool pathogens (to confirm STEC)
- CBC with differential (to help confirm HUS)
- BMP (to help confirm HUS)

Does the patient have a positive STEC test or labs concerning for HUS?

Yes

No

Consider alternative diagnosis

If STEC infection is confirmed, strongly consider referral to the ED. Preliminary studies show early IV fluids mitigate or prevent complications, including HUS and need for dialysis.

If lab results suggest or confirm HUS, refer to the ED immediately. Suspect HUS if the patient has any of the following. The diagnosis is made when all three criteria are met.

- AKI (elevated serum Cr or urine NGAL >150)
- Hemolytic anemia (Hgb <10g/dL, positive schistocytes)
- Thrombocytopenia (platelets <150,000 or >5% decrease in platelets since onset of illness)

Outpatient Management of STEC Infection

Outpatient management of children with STEC infections involves monitoring for dehydration and HUS. Obtain the following additional labs:

- Blood culture (if febrile)
- Urinalysis
- Lactate dehydrogenase
- Urine NGAL

Repeat a CBC and BMP daily or every other day for up to 7 days after symptom onset to monitor for HUS. Encourage fluid intake.

The following can worsen complications in children with STEC infections. Do not administer:

- Antibiotics
- Medications that slow the gut (antidiarrheals, antimotility agents, anticholinergics, narcotics)
- Potential nephrotoxins such as NSAIDs