Shiga toxin-producing *Escherichia coli* - STEC
STEC

CAUSES

SYMPTOMS

TREATMENT
Shiga toxin-producing *Escherichia coli* (STEC)

Causes more than 265,000 illnesses each year in the United States.

Illness ranges from mild diarrhea to life-threatening hemolytic uremic syndrome (HUS).

STEC are categorized into serogroups by their somatic O antigen.

There are over 50 serogroups that can cause illness, with *E. coli* O157 being the most common.
Causes

Cattle are the most important reservoir of STEC O157 and may harbor many non-O157 STEC. Other ruminants (sheep, goats, and deer) may also carry STEC. Humans may serve as a reservoir for person-to-person transmission.

Transmission is mainly through ingestion of food contaminated with ruminant feces and direct contact with animals or their environment.

Outbreaks have occurred from:
- Beef (usually inadequately cooked hamburgers)
- Produce (lettuce, apple cider, raw spinach, coleslaw, sprouts, and melons)
- Unpasteurized cows’ milk
- Petting zoos
- Contaminated drinking water and recreational waters
Transmission

The infective dose of E. coli O157:H7 is estimated to be 10—100 cells.

Excretion of STEC is < 1 week in adults, but up to 3 weeks in children. Prolonged carriage is uncommon.
Pathogenesis

Mainly transmitted through ingestion of food contaminated with ruminant feces.

Bacterial excretion may continue for up to 3 weeks after onset of symptoms.
Clinical Features

Incubation Period 2-10 days (median 3-4 days for most serotypes)

Symptoms
- Diarrhea ranging from mild and non-bloody to stools that are virtually all blood.
- Abdominal cramps (may be severe)
- Hemolytic uremic syndrome (HUS) is possible

Clinical illness usually resolves in five to 10 days.
Risk Factors/Groups

- Very young children and the elderly
- Anyone eating under cooked ground beef
- Anyone drinking raw milk, unpasteurized dairy products, and unpasteurized juices.
Complications

Hemolytic Uremic Syndrome (HUS)

- Most severe rare complication
- Develops about 7 days after symptoms first appear, when diarrhea is improving.
- Signs include: decreased frequency of urination, feeling very tired, and losing pink color in cheeks and inside the lower eyelids.
Treatment/Prevention

Treatment
◦ Doctors usually recommend rest, adequate nutrition, and fluids.
◦ Hospitalization can occur for more severe cases. Persons with HUS should be hospitalized because their kidneys may stop working.

Prevention
◦ Education on proper sanitation, hand hygiene, and fecal disposal.
◦ Wash fruits and vegetables well under running water.
◦ Cook meats thoroughly.
◦ Don’t cause cross-contamination.
School Exclusion

**Reporting**
- IMMEDIATELY notify LHD, encourage good hand hygiene

**Exclusion**
- Medical clearance required
- Children with loose or watery stools should stay home until they have 2 days without loose stools.

Source: MDHHS - Managing Communicable Diseases in Schools
CDC – E. coli (*Escherichia coli*)


MDHHS - Managing Communicable Diseases in Schools

Sources