

# Acute Gastroenteritis

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## Perspective

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Every year, millions of young children die from acute gastroenteritis, particularly in impoverished nations. In affluent countries, it is a common reason for visits to general practitioners or emergency rooms, as well as hospital hospitalisation. Dehydration, which can be accompanied by electrolyte imbalances and metabolic acidosis, is the most common and dangerous consequence. With careful oral or intravenous fluid management, dehydration and its harmful repercussions can be prevented. Antibiotics, anti-diarrhoeal medications, and anti-emetics are not recommended for everyday use and can be harmful. Prevention is the key to lowering gastroenteritis, and the recently approved, highly effective rotavirus vaccines will have a substantial public health impact.

Acute gastroenteritis is characterised as diarrhoea or vomiting (or both) that lasts more than seven days and is accompanied by fever, abdominal pain, and anorexia. Diarrhoea is the passage of excessively watery or frequent faeces with high water content. Stooling habits in young children vary widely, and diarrhoea is a rare occurrence. Globally, 3-5 billion cases of acute gastroenteritis occur each year, with roughly 2 million deaths in children under the age of five. In the United States, gastroenteritis accounts for more than 10% (220,000) of hospital admissions, more than 1.5 million outpatient visits, and around 300 deaths in children under the age of five each year. Rotavirus causes around 10,000 hospital admissions, 22,000 emergency department visits, and 1,15,000 general practise sessions in the same age group in Australia each year. Among the United Kingdom, gastroenteritis is the cause of 204 out of 1000 general practitioner visits in children under the age of five, with a seven-per-1000-child yearly hospital admission rate. Children in daycare settings are frequently infected yet asymptomatic, and they may inadvertently infect others. Malnourished children are more prone to have complications.

The majority of instances are caused by a viral infection, the most common of which being rotaviruses and noroviruses.

The enterocytes in the small intestine are destroyed by viral infections, resulting in a low-grade fever and watery diarrhoea without blood. Rotavirus infection is seasonal in temperate climates, peaking in late winter, although it is year-round in the tropics. Within countries, there are seasonal and geographical variances in rotavirus strains.

Inflammation is caused by bacterial infections such as *Campylobacter jejuni* and *Salmonella* spp infecting the small and large intestine linings. A high temperature and faeces containing blood and white blood cells are more common in children with bacterial gastroenteritis. Bacterial pathogens, especially in young infants, can spread throughout the body. Shiga toxin-producing *Escherichia coli* or *Shigella dysenteriae* infection can induce haemorrhagic colitis (with severe bloody diarrhoea), which can be exacerbated by the haemolytic uraemic syndrome. Enteric fevers (*Salmonella typhi* and *Salmonella paratyphi*) cause severe illness in young children, including high-fever swings, diarrhoea or constipation, leucopenia, and potentially central nervous system involvement, including encephalopathy, a rare complication of non-typhoid *Salmonella* infection. *Vibrio cholera* toxin stimulates chloride and water secretion from the small intestine without harming the intestinal mucosa, resulting in “rice water” faeces with high sodium content but no blood or white blood cells. Gastroenteritis can be passed from person to person or contracted by consuming polluted food or drink (food poisoning). Undercooked or inadequately stored cooked or processed meats (chicken, beef, pork) and shellfish are significant sources of bacterial infections. Food contaminated with toxins produced by bacteria (such as *Staphylococcus aureus* in ice cream or *Bacillus cereus* in reheated rice) causes rapid vomiting and diarrhoea (or both). Among the bacteria, viruses, and protozoa found in water are *Giardia lamblia*,

cryptosporidium, *V. cholera*, and *Entamoeba histolytica*, which causes amoebic dysentery.

It is possible to make a clinical diagnosis. Recent contact with people who have gastroenteritis, the kind and frequency of stool and vomitus, fluid intake and urine output, travel, and the use of antibiotics and other diarrhoea-inducing drugs should all be looked into. Chronic constipation is common in children, and faecal overflow incontinence can manifest as false diarrhoea. Diarrhoea and vomiting are non-specific symptoms in young children, and the diagnosis of gastroenteritis should be questioned if the child has a high temperature, long-term symptoms, or signs that suggest a surgical origin (such as severe abdominal pain, bilious vomiting, and abdominal mass). Children with diabetes mellitus and inborn metabolic disorders may vomit. Children with underlying diseases are more prone to develop complications, so a referral to a paediatric clinic

should be considered. It is not necessary or practical to collect stool samples from all children with gastroenteritis. Samples should be taken during outbreaks, especially in daycare, schools, hospitals, and homes, where it is vital to identify the virus and trace its source for public health reasons. Bacteria must be cultured, and viral pathogens must be investigated. Quick antigen detection testing for rotavirus, norovirus, and other viruses is available in most children's hospitals (such as enzyme-linked immunosorbent assay). Rapid diagnosis allows the child to be isolated to avoid nosocomial infection, which is common and often used as a criterion for the effectiveness of contact infection prevention strategies. Stool samples should be taken from all children with bloody diarrhoea, a history of recent international travel, and young or immunocompromised children with a high fever. Doctors are obligated by law in many countries to report a wide range of viral and bacterial illnesses to public health authorities.