

Difference Between Food Poisoning and Gastroenteritis

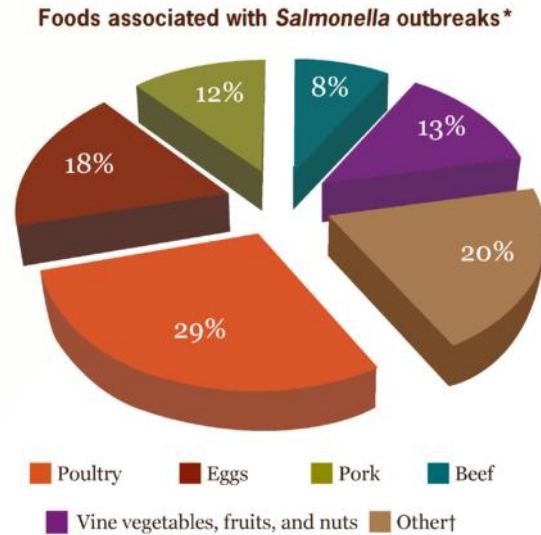
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Key Difference – Food Poisoning vs Gastroenteritis

Gastroenteritis or infectious diarrhea can be simply defined as the inflammation of the gastrointestinal tract, which involves stomach and small intestine. When the source of this infection is food that is called food poisoning. Therefore, food poisoning is just another category of gastroenteritis. **In gastroenteritis, pathogens enter the GIT from different sources, whereas in food poisoning, food is the only source by which the pathogens enter the GIT.** This is the key difference between food poisoning and gastroenteritis.

What is Food Poisoning?

Food poisoning is defined as any disease of an infective or toxic nature caused by or thought to be caused by the consumption of food and water. In England and Wales, food poisoning is a legally notifiable condition. There is some overlap in between food poisoning and gastroenteritis. But all cases of gastroenteritis are not due to food poisoning because pathogens causing gastroenteritis are not always food- or water- borne. Some types of food poisoning, such as botulism, do not primarily cause gastroenteritis. *Staphylococcus aureus*, *Yersinia enterocolitica*, *Bacillus cereus* and *Salmonella* are the common bacterial causes of food poisoning. Some non-infectious organic and inorganic toxins can also cause food poisoning.



*These contaminated ingredients or single foods (belonging to one food category) were associated with 1/3 of the *Salmonella* outbreaks.

†Other includes: Sprouts, leafy greens, roots, fish, grains-beans, shellfish, oil-sugar, and dairy.

Source: CDC National Outbreak Reporting System, 2004–2008.

Figure 01: Foods Associated with *Salmonella*

Livestock raised and slaughtered under the modern farming conditions are frequently contaminated with *Salmonella* or *Campylobacter*. Although the level of contamination is very low at the egg stage, there is a massive amplification of the infection during processing, storage and distribution resulting in extensive contamination.

What is Gastroenteritis?

Gastroenteritis is the commonest form of acute gastrointestinal infection, usually presenting with [diarrhea](#) with or without vomiting. Usually, children can have 3-6 bouts of severe diarrhea every year, in the developing world. Up to 2 million people die annually due to diarrheal disease, but the recently introduced oral rehydration programs have reduced the mortality significantly. Diarrhea is less common and less likely to cause death in the Western world. But it is a major cause of morbidity among elderly. Travelers to developing countries, men having sex with men and infants in day-care facilities have a higher risk of getting infectious diarrhea.

Etiology

Most common cause of diarrhea and vomiting in young adults is viral gastroenteritis which is less commonly seen among adults. In low-income countries, it is a major cause of morbidity and mortality. In developing countries, protozoal and helminthic gut infections are relatively common, but these forms are rare in the West. Bacterial infection is the most common cause of significant adult gastroenteritis worldwide. *Salmonella*, *Campylobacter jejuni*, *Shigella*, *E. coli*, *Vibrio*, *Yersinia enterocolitica*, *Staphylococcus aureus*, *Clostridium difficile* and *Bacillus cereus* are the main bacterial pathogens that cause gastroenteritis.

Mechanisms of Invasion

Three different ways are employed by bacteria in pathogenesis. They are,

- Mucosal Adherence
- Mucosal Invasion
- Toxin Production

The organism can use more than one of these methods. Other than these direct mechanisms, some people may develop post-infectious irritable bowel syndrome.

Most bacteria causing diarrhea first adhere to the gut mucosa. Mode of action is by effacement of the intestinal mucosa. The commonest clinical presentation is moderate watery diarrhea. Enteropathogenic *E. coli* and Enteroaggregative *E. coli* follow this mechanism in causing gastroenteritis.

In infections by some organisms, mucosal invasion acts as the pathological basis. They cause destruction and penetration of mucosa, resulting in dysentery. *Shigella* species and *Campylobacter* species are the main organisms following this mechanism.

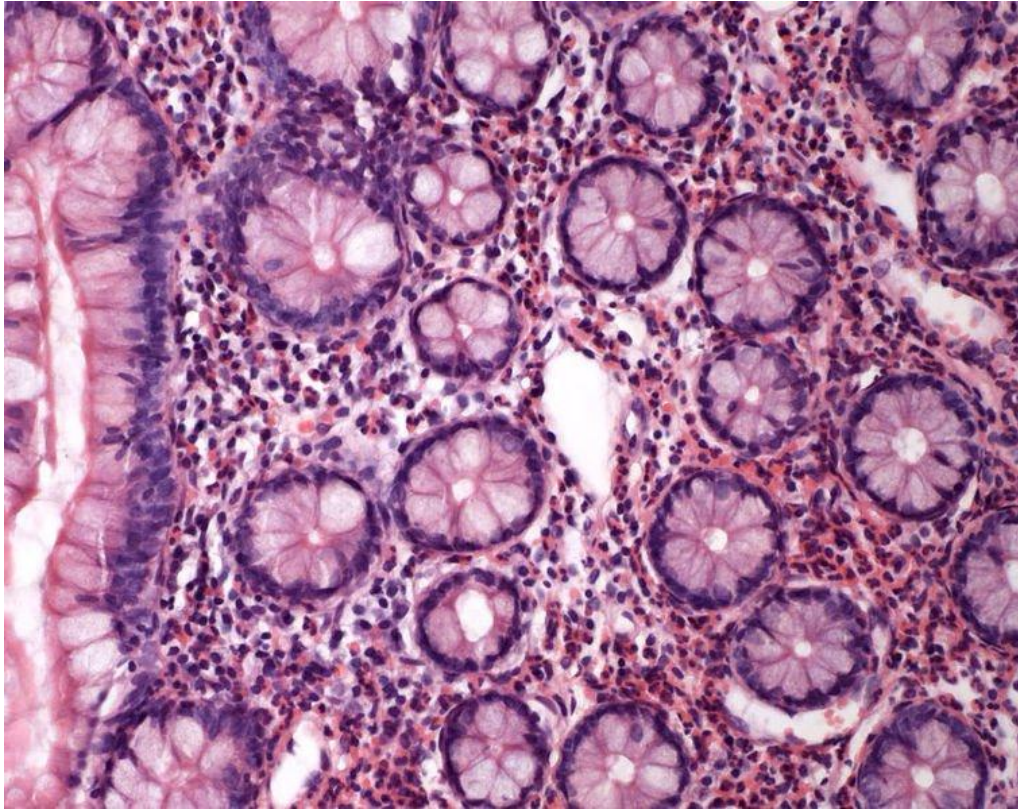


Figure 02: Viral gastroenteritis

Salmonella

Bacterial gastroenteritis can be caused by several serotypes of salmonella, but the commonest ones are *S. enteritidis* and *S. typhimurium*. These organisms are commensals found in the bowel of livestock and in the oviducts of chicken. They are transmitted to humans through contaminated food and water. The typical symptoms of the disease consist of nausea, cramping type abdominal pain, diarrhea and sometimes fever. Diarrhea can be either profuse or watery, and it can advance into bloody dysentery syndrome. Within 3-6 days, the spontaneous resolution of these symptoms may occur. Although *Salmonella* gastroenteritis is a minor illness, young children and elderly are at a high risk of significant [dehydration](#).

Campylobacter jejuni

C.jejuni is a commensal living in the GIT of many species of livestock such as poultry and cattle. It is a common cause of childhood gastroenteritis in developing countries. Undercooked meat, contaminated milk products, and water are the most common sources of *C. jejuni* borne gastroenteritis. Symptoms of the disease usually include abrupt onset of nausea, diarrhea, and severe abdominal cramps. Some patients can have invasive hemorrhagic [colitis](#). This infection is self-limiting and usually resolves within 3-5 days.

Clinical Syndrome

Clinical syndrome occurring in gastroenteritis can be divided into 2 main domains as watery diarrhea (usually due to enterotoxins or adherence) and [dysentery](#) (usually due to mucosal invasion and damage). The overlap between the 2 syndromes can occur with some pathogens like *Campylobacter jejuni*.

Management

Untreated diarrhea has a high mortality rate due to dehydration in children in low-income countries. In developing countries, death and serious morbidity are less common. It is important to remember that the mainstay of treatment for all types of gastroenteritis, is oral rehydration solutions.

Antibiotics in Adult Acute Bacterial Gastroenteritis

Condition	Drug of Choice
Dysentery	Ciprofloxacin 500mg twice daily
Cholera	Ciprofloxacin 500mg twice daily
Empirical therapy of watery diarrhea	Ciprofloxacin 500mg twice daily
Treatment of confirmed <i>Salmonella</i>	Ciprofloxacin 500mg twice daily

What are the similarities between Food Poisoning and Gastroenteritis?

- Both are associated with inflammation of the gastrointestinal tract.

What is the difference between Food Poisoning and Gastroenteritis?

Food Poisoning vs Gastroenteritis	
Gastroenteritis or infectious diarrhea is the inflammation of the gastrointestinal tract that involves stomach and small intestine.	Food poisoning is defined as any disease of an infective or toxic nature caused by or thought to be caused by the consumption of food and water.
Entry of Pathogens	
Pathogens enter into the GIT from different sources.	Food is the only source by definition from which the pathogens enter the GIT.

Summary – Food Poisoning vs Gastroenteritis

Gastroenteritis is the inflammation of the gastrointestinal tract due to bacterial toxins or viral infection. In gastroenteritis, the pathogens can enter the GIT from various sources. Food poisoning is a type of gastroenteritis where pathogens enter the GIT through food or water. The main difference between food poisoning and gastroenteritis is the way the pathogens enter the body.

References:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009. Print.

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1. “Foods associated with Salmonella outbreaks in US” By CDC – This file was derived from: Making Food Safer to Eat-CDC Vital Signs-June 2011.pdf (Public Domain) via [Commons Wikimedia](#)
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