CHAPTER 22
INFECTIONS OF THE DIGESTIVE SYSTEM

CLINICAL SYMPTOMS AND EPIDEMIOLOGY

- The digestive system is a major portal by which pathogens may enter the body
- The main symptom of a digestive system infection is diarrhea, but there can also be fever, vomiting, and abdominal pain
- Dysentery differs from diarrhea in that in dysentery the stool contains mucus and blood

- Gastrointestinal diseases are a major cause of death of children in developing countries
- Treatment for most gastrointestinal infections is supportive, replacing the liquids lost as a result of diarrhea and/or vomiting
Most infections of the digestive system are endemic, but epidemics and pandemics occur and are usually caused by poor public health management and spread by overcrowding.

Food poisoning is a common cause of gastrointestinal infection.

Many opportunistically pathogenic organisms are found in the mouth.

Most infections in the oral cavity involve the formation of dental caries, which destroy the teeth, and gum disease, with dental plaque being the source of the infections.

Dental plaque is a biofilm made up of hundreds of different organisms.

Gum diseases include gingivitis, chronic periodontitis, and necrotizing periodontal disease.
The family Enterobacteriaceae comprises Gram-negative rods and contains a variety of organisms involved in infections of the digestive system. Many bacteria of the family Enterobacteriaceae are resident flora of the human digestive system.

O antigens are part of the lipopolysaccharide in the outer membrane, whereas H antigens are found on the flagella, and K antigens are part of the capsule. The enterobacteria *Escherichia coli*, *Salmonella*, *Shigella*, and *Yersinia* cause infections of the digestive system through the production of toxin as well as the invasion of tissue.

Several toxins are produced by *E. coli*, with one of the most dangerous being the Shiga toxin. Virulence properties can be used to subdivide *E. coli* into five groups: enterotoxigenic, enteropathogenic, enteroinvasive, enterohemorrhagic, and enteraggretive.
Four species of *Shigella* are involved in digestive infections, and all produce the Shiga toxin: *S. dysenteriae*, *S. flexneri*, *S. boydii*, and *S. sonnei*.

Two prominent infections of the digestive system that are caused by *Salmonella* are gastroenteritis and typhoid fever.

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*Vibrio cholerae*, a member of the family Spirillaceae, produces a powerful toxin that causes devastating infections of the digestive system.

*Campylobacter* enteritis is one of the most common causes of diarrhea.

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*Helicobacter pylori* is the most common cause of gastric and duodenal ulcers.

Gastrointestinal infections can be exogenous (coming from the outside) or endogenous (caused by organisms found in a person’s normal intestinal flora).
The digestive tract is an important portal of entry for viruses. The most common symptom of viral infection of the digestive system is diarrhea.

Viral pathogens of the digestive system include rotavirus, calicivirus, astrovirus, and adenovirus. Hepatitis describes any disease that affects hepatocytes of the liver, and there are six different viruses that are classified as hepatitis viruses.

There are several protozoa and helminths that infect the human digestive tract. Parasitic protozoan pathogens of the digestive tract include *Giardia* and *Cryptosporidium*. Infection of the digestive tract by helminths can be caused by whipworms or hookworms.