

CHAPTER 22
INFECTIONS OF THE
DIGESTIVE SYSTEM

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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

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CLINICAL SYMPTOMS AND
EPIDEMIOLOGY

- ◆ 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

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CLINICAL SYMPTOMS AND EPIDEMIOLOGY

- ◆ 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

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DENTAL AND PERIODONTAL INFECTIONS

- ◆ 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

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DENTAL AND PERIODONTAL INFECTIONS

- ◆ Dental plaque is a biofilm made up of hundreds of different organisms
- ◆ Gum diseases include gingivitis, chronic periodontitis, and necrotizing periodontal disease

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BACTERIAL INFECTIONS OF THE DIGESTIVE SYSTEM

- ◆ 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

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BACTERIAL INFECTIONS OF THE 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

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BACTERIAL INFECTIONS OF THE DIGESTIVE SYSTEM

- ◆ 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 enteroaggregative

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BACTERIAL INFECTIONS OF THE DIGESTIVE SYSTEM

- ◆ 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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BACTERIAL INFECTIONS OF THE DIGESTIVE SYSTEM

- ◆ *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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BACTERIAL INFECTIONS OF THE DIGESTIVE SYSTEM

- ◆ *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)

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VIRAL INFECTIONS OF THE DIGESTIVE SYSTEM

- ◆ The digestive tract is an important portal of entry for viruses
- ◆ The most common symptom of viral infection of the digestive system is diarrhea

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VIRAL INFECTIONS OF THE DIGESTIVE SYSTEM

- ◆ 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

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PARASITIC INFECTIONS OF THE DIGESTIVE SYSTEM

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

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