

- 1 **Chapter 25**
Microbial Diseases of the Digestive System
- 2 **The Human Digestive System**
- 3 **Normal Microbiota**
 - Millions of bacteria per ml of saliva
 - Large numbers in large intestine
 - 100 billion bacteria per gram of feces
- 4 **Defenses**
 - Stomach: Acidic
 - Small intestine: Paneth cells
- 5 **A Healthy Human Tooth**
- 6 **Dental Caries (Tooth Decay)**
- 7 **Dental Caries (Tooth Decay)**
- 8 **The Stages of Tooth Decay**
- 9 **The Stages of Periodontal Disease**
- 10 **Bacterial Diseases of the Mouth**
- 11 **Diseases in Focus:**
Bacterial Diseases of the Mouth
 - Can you identify infections that could cause persistent sore, swollen, red, or bleeding gums, as well as tooth pain or sensitivity and bad breath?
- 12 **Diseases of Lower Digestive System**
 - Infection: Growth of a pathogen
 - Incubation is from 12 hours to 2 weeks
 - Fever
 - Intoxication: Ingestion of toxin
 - Symptoms appear 1 to 48 hours after ingestion
 - Gastroenteritis: Diarrhea, dysentery
 - Treatment: Oral rehydration therapy
- 13 **Staphylococcal Food Poisoning**
- 14 **Events in Staphylococcal Food Poisoning**
- 15 **Shigellosis (Bacillary Dysentery)**
- 16 **Invasion of Intestinal Wall by *Shigella***
- 17 **Shigellosis**
- 18 **Salmonellosis and Typhoid Fever**
- 19 **Typhoid Fever**
 - Caused by *Salmonella typhi*
 - Bacteria spread throughout body in phagocytes
 - 1–3% of recovered patients become chronic carriers

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- 21 **Salmonellosis**
- 22 **Determine the *Salmonella* Source**
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- 24 **Vibrios**
- Cholera
 - *Vibrio cholerae* serotypes that produce cholera toxin
 - Toxin causes host cells to secrete Cl^- , HCO_3^- , and water
 - Noncholera vibrios
 - Usually from contaminated crustaceans or mollusks
 - *V. cholerae* serotypes other than O:1, O:139, eltor
 - *V. parahaemolyticus*
 - *V. vulnificus*
- 25 ***Vibrio cholerae***
- 26
- 27 ***Escherichia coli* Gastroenteritis**
- Pathogenic *E. coli*
 - Attach to intestinal cells with fimbriae
 - Produce toxins
 - May aggregate
- 28 ***Escherichia coli* Gastroenteritis**
- 29 ***Escherichia coli* Gastroenteritis**
- 30 ***Campylobacter* Gastroenteritis**
- 31 ***Helicobacter* Peptic Ulcer Disease**
- 32 ***Helicobacter* Peptic Ulcer Disease**
- 33 ***Yersinia* Gastroenteritis**
- 34 ***Clostridium* and *Bacillus* Gastroenteritis**
- 35
- 36 **Diseases in Focus: Bacterial Diseases of the Lower Digestive System**
- An 8-year-old boy had diarrhea, chills, fever (39.3°C), abdominal cramps, and vomiting for 3 days. The next month, his 12-year-old brother experienced the same symptoms. Two weeks before the first patient became ill, the family had purchased a small (10 cm) red-eared slider turtle at a flea market.
 - Can you identify infections that could cause these symptoms?
- 37 **Viral Diseases of the Digestive System**
- 38 **A Case of Mumps**
- 39 **Hepatitis**
- An inflammation of the liver
 - May result from drug or chemical toxicity, EB virus, CMV, or the hepatitis viruses

- 40 **Hepatitis Viruses**
- 41 **Hepatitis B Virus (HBV)**
- 42 **Applications of Microbiology:
A Safe Blood Supply**
- Nucleic acid testing (NAT) is used to test donated blood and plasma:
 - HCV
 - HIV
 - West Nile virus
 - Virus-inactivation is used on plasma
- 43 **Diseases in Focus: Viral Hepatitis**
- After eating at one restaurant, 355 people were diagnosed with the same hepatitis virus.
 - Can you identify infections that could cause these symptoms?
- 44 **Diseases in Focus: Viral Diseases of the Digestive System**
- An outbreak of diarrhea began in mid-June, peaked in mid-August, and tapered off in September. A clinical case was defined as diarrhea (three loose stools during a 24-hour period).
 - Can you identify infections that could cause these symptoms?
- 45 **Mycotoxin Intoxications**
- 46 *Giardia lamblia*
- 47 **Giardiasis**
- 48 *Cryptosporidium hominis*
- 49 *Cryptosporidium hominis* in the U. S.
- 50 **Cryptosporidiosis**
- 51 *Cyclospora* Diarrheal Infection
- 52 *Entamoeba histolytica*
- 53 **Amoebic Dysentery**
- 54 **Worldwide Prevalence of Helminthic Diseases**
- 55 **Tapeworms**
- 56 **Ophthalmic Cysticercosis**
- 57 *Echinococcus granulosus*
- 58 **Hydatid Disease**
- 59 **Tapeworms and Hydatid Disease**
- 60 **Tapeworms and Hydatid Disease**
- 61 **Pinworms**
- 62 **Pinworms**
- 63 **Hookworms**

64 *Ascariasis lumbricoides*

65 Heartworm

66 Life Cycle of *Trichinella spiralis*

67 Roundworms

68 Roundworms