

Module 8

Chapter 14 – Epidemiology

Pathology, Infection and Disease

- Pathology: the scientific study of _____
- Pathogen: _____
- Three areas of primary concern in pathology
 - Etiology: the _____ of a disease
 - Pathogenesis: how the _____
 - Disease: an abnormal state in which the _____
- Infection: _____ or _____ of the body by _____
 - Can include presence of microbe not normally found in that part of body
- Possible to have _____ without detectable _____

Normal Microbiota

- _____ microbiota: microbes that colonize human _____
 - Aka “normal flora”
- _____ microbiota: microbes that colonize human for a _____ without causing disease
 - Days, weeks, months
- Specific microbes are _____
 - *Propionibacterium* – _____ eyes
 - *Lactobacillus* – mouth, _____
- Many factors affect distribution, composition of normal microbiota
 - Diet, age, health, stress, hygiene, etc ...
- Microbial _____: _____ overgrowth of _____ microorganisms, aka “_____”
 - Protect host against _____
 - Protect simply by _____, taking _____
- *Clostridium difficile* has problems growing in intestines due to _____
 - *C. difficile* commonly causes gastrointestinal infections _____
 - Many normal microbiota _____
- _____: _____ ingested to provide beneficial effect
 - _____ bacteria can prevent growth of pathogens
 - *Lactobacterium*, *Bifidobacterium*

Relationship between host and microbe

- _____: relationship between microbes and host; “_____”
- _____: a type of symbiosis in which one organism _____, the other is _____
 - Many _____ are commensals
- _____: a type of symbiosis in which _____
 - *E. coli* in large intestine produces Vitamin K
 - *E. coli* obtains nutrients
- _____: a type of symbiosis in which one organism _____ of the other

- _____ are parasites

Opportunistic Microorganisms

- _____: normally _____ bacteria that cause _____ in certain conditions
- Under certain conditions, _____ or _____ microbes can _____
 - Some _____ are opportunistic pathogens
 - *E. coli* is _____ in intestines, _____ in bladder
 - Gain access through puncture wounds, in weakened or compromised patients

Classifying Infectious Diseases

- Every disease alters body structures and functions in particular ways
 - Characteristic of disease
- _____: a change in body function that is felt by _____ as a result of disease
 - “_____” changes not apparent to _____
 - Eg, Aches and pains, malaise
- _____: a change in a body that can be _____ as a result of disease
 - “_____” changes that can be seen by _____
 - Eg, temperature, swelling, hives
- _____: a specific group of signs and symptoms that _____
- _____ disease: a disease that _____ from one host to another
- _____ disease: a disease _____ from one host to another
- _____ disease: _____ host to host

Occurrence of disease

- _____: number of people in a population who _____ over a specified time
 - Indicator of _____ of disease
 - *Incidence* of AIDS in US in 2004 was 40,000
- _____: number of people in a population who _____ with a disease at a specified time
 - Indicator of how _____ a disease affects a population
 - Includes both _____ cases
 - *Prevalence* of AIDS in 2004 was 900,000

Occurrence of a Disease

- _____ disease: a disease that occurs only _____
- _____ disease: a disease that is _____ in a population
- _____ disease: acquired by _____ in a given area over a relatively _____
- _____ disease: an _____ disease that occurs _____

Severity or Duration of a disease

- _____ disease: develops _____, lasts _____ time
- _____ disease: develops _____, disease is continual or recurring for _____
- _____ disease: intermediate between _____

- _____ disease: causative agent remains _____ for a time, but then becomes _____ to produce disease
- Rate at which disease spreads depends on _____ of a population
 - _____ can provide barriers to _____ of disease
 - _____ people can be protected from communicable disease if majority of population is vaccinated
- _____: population in which _____ people are present

Extent of Host involvement

- _____ infection: pathogen is _____ of the body
- _____ infection: pathogen (or products) are spread _____
- _____ infection: _____ of local infection to another _____ of body
 - Tetanus, dentist infections
- _____: toxic inflammatory condition arising from _____
- _____: systemic infection arising from multiple _____, aka blood poisoning
 - Most common example of _____
- _____ infection: acute infection that causes the _____
- _____ infection: infection by _____ after a primary (predisposing) infection _____
 - Sometimes _____ than primary infection
- _____ (_____) infection: does not cause _____

Reservoirs of Infection

- _____ of the pathogen
- Provides conditions for _____
 - _____
 - Sick people; _____ may have inapparent infections
 - _____
 - Aka _____
 - _____
 - Soil, water
- Pathogens can be transmitted by three routes

Transmission of Disease

_____ transmission

- Direct: _____
 - No _____ involved
 - Indirect: via _____ object
 - Spread by _____ (_____ objects)
 - Droplet: _____ (_____, _____)
 - Travel only _____, < _____ (_____)
- _____ transmission - transmission by a _____
- Waterborne: pathogens spread _____
 - Contaminated with _____, _____ sewage
 - Foodborne: pathogen transmitted _____
 - Usually _____, poorly _____, _____

- Airborne: spread by _____ that _____
 - Small droplets can remain airborne _____
- _____: _____ that _____ from one host to another
- Arthropods most common
- _____: _____ transport of pathogens on body parts
- _____: _____ process
 - Usually from bites
 - Involves complex life cycle

Nosocomial Infections

- Disease that does _____ of being present at time of _____
 - Acquired as a result of _____

Source of infection

- Microbes _____
 - Hospital is _____ for microbes
 - Many _____ are _____
- Weakened or compromised state of host
 - Compromised host – patient whose _____
- Chain of transmission
 - _____ from _____ to _____ to _____

Epidemiology

- **Epidemiology**: study of _____ diseases occur, how they are _____, _____ of disease
- **Centers for Disease Control and Prevention (CDC)**
 - _____ epidemiological information in the United States
- _____: collection and _____ of data
 - Snow
- _____: controlled _____
 - Semmelweis
- _____: comparison of a _____ group and a _____ group
 - Nightingale
- Epidemiologist looks at _____, important factors and _____ of the people affected
- **Case reporting**: health care workers report _____ to local, state, and national offices
- **Nationally notifiable diseases**: _____ are required to report occurrence

The CDC

- _____: _____ of a specific notifiable disease
- _____: _____ from notifiable diseases
- _____: number of people affected in relation to the total population in a given time period
- _____: number of deaths from a disease in relation to the population in a given time
- Emerging Infectious Diseases: Diseases that are new, increasing in _____ or showing _____ to increase in the _____