Microbes that cause infectious diseases

Part 2 infectious diseases

biomed
Bacteria

- Small unicellular microorganism that multiplies by cell division.
- Found as spherical, rod and spiral shapes:
  - Anthrax, Botulism, Cholera, Legionellosis, Lyme Disease, Salmonellas, Strep, TB, Typhoid
- Treatable with antibiotics
Bacteria

- Salmonella typhus
- Staphylococcus aureus

Morphology
- Bacillus
- Coccus
- Spirillum

STAPH
FAVORITE HANGOUT: Skin and nose

LIKES: Getting inside the body, where it can cause a minor infection like a boil, or serious, sometimes fatal infections such as blood infections or pneumonia.

DISLIKES: Many antibiotics
Bacteria

- Aerobes
  - Reproduces only in the presence of oxygen
- Anaerobes
  - Reproduces only in the absence of oxygen

Facultative anaerobic bacteria: can produce in either environment
• Gram negative
  – SALMONELLA

• Gram positive
  – STAPHYLOCOCCUS
Staph infections

- Non flesh eating
- Impetigo
VIRUSES

• Apart from the host cell, have no metabolism and cannot reproduce or survive unless they take over a living cell.
Retroviruses

- HIV
- Certain types of CA
- Retroviruses are viruses whose genome consists of RNA not DNA.
• In February 1997 it was reported that pig cells contain a retrovirus capable of infecting human cells. This is troublesome because of the efforts that are being made to transplant pig tissue into humans (e.g., fetal pig cells into the brains of patients with Parkinson's disease/ hearts etc).
Prions

- Extremely small particles that consist only of protein.
- Resistant to heat and disinfectants

- No known treatment
• Mad Cow Disease
• Creutzfeld-Jacob Disease

• JD patients usually die within 1 year of illness onset.
Herpes Viruses

- Chicken pox
- Cold sores
- Genital herpes
- Shingles
- Small pox
- AIDS
- Influenza
- Rabies
- West Nile Virus
- Ebola
- Hantavirus

- Many are preventable via vaccinations
- Antiviral drugs
- ANTIBIOTICS do not work
1. Primary Infection

2. Healthy Population

3. Immunocompromised Individuals

4. Transplant Recipients

5. AIDS patients

6. Diffusion

7. Saliva

8. Virus Secreted

9. Saliva in Saliva

10. Exanthem Subitum

11. Spread to Organs

- Brain
- Salivary Gland
- Lung
- Liver
- Kidney
- Bone Marrow
- Lymph Node
- Skin
Small pox
Rhinovirus

• Common cold
Myxoviruses & Paramysoviruses

- Influenza
- Measles
- mumps
Rotavirus

- Gastroenteritis
- Wheel shaped virus causing diarrhea

- Every year it kills approximately 1 Million children world wide
"Oh gawd - here comes Lenny with something he picked up off the toilet seat!"
Fungi

- Have a cell wall and cell membrane
- Includes molds, and yeast
- Antifungal medication, sometimes with antibiotics

Aspergillus infection of eye
Fungi – form spores

- Ringworm
- Histoplasmosis
- Athletes foot
- Thrush
Coccidiomycosis

- Second most common fungal infection encountered in the United States.
- Most frequently seen in desert regions, such as the southwestern part of the United States.
- In cases where symptoms are present (symptomatic illness), the illness can range from mild to severe.
- S/S: cough, fever, chills, night sweats, headache, muscle aches, joint pain and other flu-like symptoms.
- In more severe forms, there can also be blood-tinged sputum, loss of appetite, weight loss, painful red rash, change in mental status. Arthritis with painful, swollen joints may also occur.
• Yeast of candida are opportunist

• Antibiotics reduce flora
Protozoa

- Acquired through contaminated food or water, or bite of an arthropod (mosquito)
- More common in wet climates
Protozoa

- Simple single cell organism such as amoeba and paramecium
- May have flagella and have cilia
- Capable of rapid movement
- Chagas disease
- Amoebic dysentery
- Malaria
- Treat antibiotics
• Diarrheal disease in the US
  – Giardia lamblia
  – Cryptosporidium parvum

• Malaria - plasmodium
Helminths

- Simple, invertibrae animals, some infectious parasites
- WORMS
- In intestine, blood, body tissue

- Medications to force evacuation or death of worms
Let's go suck some blood!!

F*ck Concert

Come on, honey, just whip me!

Let's

Baby, I'd just like to make 10,000 babies with you!

Hmmmm... you talk pretty big for a guy, only 1½" tall!
• Swimmer itch in US
  – Flatworm
  – Schistosoma
  – Trichinosis
  – Filariasis

• Triicjinella spiralis
  – Roundworm
  – Ingested in undercooked pork
"Do you know why people don't make ham from sick pigs?"

"Because it can't be cured."
Looks like a bug, Jim... its going around...