Lecture 10
Antimicrobial Drugs

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- Principles of Antimicrobial Therapy:
- Antimicrobial drugs are effective in the treatment of infections because of their selective toxicity.
- Antimicrobial therapy takes advantage of the biochemical differences that exist between microorganisms and human beings.
- They have the ability to injure or kill an invading microorganism without harming the cells of the host.
- In most instances, the selective toxicity is relative rather than absolute, requiring that the concentration of the drug be carefully controlled to attack the microorganism, while still being tolerated by the host.

SELECTION OF ANTIMICROBIAL AGENTS:

Selection of the most appropriate antimicrobial agent requires knowing 1) the organism's identity, 2) the organism's susceptibility to a particular agent, 3) the site of the infection, 4) patient factors, 5) the safety of the agent, and 6) the cost of therapy.

- Bacteriostatic versus bactericidal drugs:
- Antimicrobial drugs are classified as either bacteriostatic or bactericidal.
- *Bacteriostatic drugs* arrest the growth and replication of bacteria at serum(or urine) levels achievable in the patient, thus limiting the spread of infection until the immune system attacks, immobilizes, and eliminates the pathogen.
- Bactericidal drugs kill bacteria at drug serum levels achievable in the patient.
- Because of their more aggressive antimicrobial action, bactericidal agents are often the drugs of choice in seriously ill and immunocompromised patient.

- Patient factors:
- In selecting an antibiotic, attention must be paid to the condition of the patient. For example, the status of the patient's immune system, kidneys, liver, circulation, and age must be considered. In women, pregnancy or breast-feeding also affects selection of the antimicrobial agent.
- Chemotherapeutic spectra:
- A. Narrow-spectrum antibiotics.
- B. Extended-spectrum antibiotics.
- C. Broad-spectrum antibiotics.

Drugs Resistance:

Bacteria are considered resistant to an antibiotic if the maximal level of that antibiotic that can be tolerated by the host does not halt their growth.