ANTIBIOTICS
II.
Resistance involves

• *Accumulation of inherently-resistant bacteria*

• *Spread of resistance genes among bacteria*

• *Mutant selection, sometimes during therapy*

• *Spread of resistant strains among patients*
Resistance to Antimicrobial Drugs

- There are many different mechanisms by which bacteria exhibit resistance to antibiotics.
  - Microorganisms produce enzymes that destroy the antibiotics
  - Microorganisms change their permeability to the drug
  - Microorganisms develop an altered structural target for the drug
  - Microorganisms develop an altered metabolic pathway that bypasses the reaction inhibited by the antibiotic
Cross-resistance

• Microorganisms resistant to a certain drug may also be resistant to other drugs that share a mechanisms of action.

• Such relationship exist mainly between agents that are closely related chemically.
Multi-resistance

Isolates resistant to one antibiotic are more likely than others to be resistant to chemically unrelated drugs
How Antibiotic center can help

• Confirms unusual resistance for hospitals
• Types resistant bacteria, defining outbreak & epidemic strains e.g. MRSA
• Advises on therapy vs. resistant strains
• Runs surveys of resistance
• Advises on infection control
Influence of third-generation cephalosporin utilization on the occurrence of ESBL-positive Klebsiella pneumoniae strains

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