MICROBIOLOGY
ANTIMICROBIAL DRUGS II

I. INTRODUCTION AND HISTORICAL PERSPECTIVE

II. PROPERTIES OF ANTIMICROBIAL DRUGS

III. SPECTRUM AND ACTION OF ANTIMICROBIAL DRUGS
   A. BROAD AND NARROW SPECTRUM
   B. BACTERICIDAL OR BACTEROSTATIC
   C. CELL WALL ANTIBIOTICS

D. PROTEIN SYNTHESIS ANTIBIOTICS
   1. AMINOGLYCOSIDES
      a. STREPTOMYCIN & GENTAMICIN
      b. AMINO SUGARS & AMINO INOSITOL
      c. BINDS TO 30S RIBOSOMAL PROTEIN (S12)
      d. BACTERICIDAL
      e. SOMewhat TOXIC (RENAL AND NERVE)
   2. TETRACYCLINES
      a. POLYCYCLIC COMPOUNDS
      b. BIND TO 30S SUBUNIT -- BLOCK A SITE
      c. LOW TOXICITY (BUT RESISTANCE)
      d. NOT FOR CHILDREN -- STAINS TEETH (& BONE)
   3. CHLORAMPHENICOL
      a. SMALL MOLECULE--PENETRATES ALL TISSUES
      b. BINDS TO 50S SUBUNIT
      c. BROAD SPECTRUM
      d. SERIOUS SIDE-EFFECTS -- APLASTIC ANEMIA
   4. ERYTHROMYCIN (MACROLIDE ANTIBIOTICS)
      a. LARGE LACTONE RING
      b. BINDS TO 50S SUBUNIT (L15--PEPTIDYL TRANSFERASE)
      c. BROAD SPECTRUM--OFTEN SUBS FOR PENICILLIN
      d. ORALLY ADMINISTERED (CHILDREN)
   5. NEW OXAZOLIDINONES: ZYVOX

E. ANTIMETABOLITES
   1. SULFONAMIDES -- FIRST WAS SULFANILAMIDE
      a. SYNTHETIC DRUGS
      b. INHIBIT FOLIC ACID SYNTHESIS (MIMIC PABA)
   2. TRIMETHOPRIM
      a. INHIBITS DHF REDUCTASE
      b. USED WITH SULFONAMIDE--SULFAMETHOXAZOLE
   3. OTHERS
      a. ISONIAZID--FOR TB
      b. ETHAMBUTOL--FOR TB and DAPSONE--FOR LEPROSY

F. NUCLEIC ACID ANTIBIOTICS
   1. QUINOLONES & FLUOROQUINOLONES (TOPOISOMERASE ACTIVITY)
   2. RIFAMYCINS INHIBIT RNA POLYMERASE

G. MEMBRANE ACTIVE ANTIBIOTICS
   1. POLYENES--AMPHOTERICIN B (ANTIFUNGAL)
   2. IMIDAZOLES--MICONAZOLE & KETOCONAZOLE (ANTIFUNGAL)

IV. RESISTANCE
   A. RESISTANCE FACTORS (PLASMIDS)
   B. CONTROLLED CLINICAL USE
   C. DRUG COMBINATIONS