3 principal factors affecting choice of antibiotic

- The identity of the infecting organism
- Drug sensitivity of infecting organism
- Host factors (age, pregnancy and lactation, site of infection, status of host defences)

Types of antibiotics

Penicillin:

- Inhibit cell wall synthesis
- bactericidal
- treat non-resistant aerobic Gram +
- Types of penicillins: Methicillin, flucloxacillin, amoxicillin, Ampicillin, carbenicillin
- Least toxic of all antibiotics
- Side effects include: rashes, fever, anaphylactic shock, neurotoxicity

Cephalosporins:

- Apart of the beta lactam group
- inhibit cell wall synthesis
- Bactericidal
- Second choice for many infections

Ist generation	cephalothin , cefaclor gram +
2nd generation	Cefamandole gram-
3rd generation	cefotaxime, ceftriaxone minimal gram + Activity
4th generation	Cefepime, Cefozopran, Cefpirome
5th generation	Ceftobiprole, Ceftaroline fosamil

Tetracyclines

- Inhibitors of protein synthesis
- Bacteriostatic, broad spectrum
- E.g Tetracycline, doxycycline
- Bulky structure
- Usefulness has declined due to widespread resistance
- Side effect: tooth enamel dysplasia

Chloramphenicol

- Inhibits protein synthesis
- Bacteriostatic, broad spectrum
- Inhibits peptidyl transferase
- Reserved for life-threatening infections caused by Salmonella and Haemophilus spp. and meningitis in penicillin-sensitives

Aminoglycosides

- Inhibitor of protein synthesis
- Bactericidal
- Gentamicin, streptomycin, amikacin
- Used for serious infections of Gram –ve

Macrolides

- Erythromycin, clarithromycin, roxithromycin
- Can be bacteriostatic or -cidal, wide spectrum, Gram +ve and others, can cause jaundice
- inhibit protein synthesis

Trimethoprim **(Antimetabolites)**

- Inhibit folic acid synthesis and bacterial dihydropteroate synthetase
- Bacteriostatic
- Selectively toxic to bacteria
- E.g septrim

Sulphonamides (**Antimetabolites)**

- Inhibit folic acid synthesis and bacterial dihydropteroate synthetase
- Bacteriostatic, wide range of Gram+ and –
- E.g Sulfamethoxazole
- Have limited use now
- Are mixed with other drugs (trimethoprim - co-trimoxazole)

Lecture 3: pharmacokinetics

PP3 – Pharmacokinetics

- The way in which the drug concentrations change with time
  - Absorption
  - Distribution
  - Metabolism
  - Excretion
    - Allow to make decisions regarding dose and frequency of drug administration
- Quantitative pharmacokinetics: we measure the concentration of a drug at various times in various parts of the body

Oral route of drug administration – intestines is major site of drug absorption via oral

1. Most common route
2. Usually safest
3. Most convenient
4. Most economical