Lecture 11
ANTIBIOTIC AND ANTIFUNGAL DRUGS

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- Main Types of Antibiotics:
- 1.PENICILLINS:
- The penicillins (β-lactam antibiotics)are among the most widely effective and the least toxic drugs known, but increased resistance has limited their use.
- Amoxicillin (AMOXIL 250mg , 500mg , 1000mg)
- Ampicillin (250mg ,500mg)
- Augmentine -amoxil with Clavelunic acid -(625mg , 1000 mg)
- Mechanism of action
- The penicillins interfere with the last step of bacterial cell wall synthesis , Cell lysis can then occur, either through osmotic pressure or through the activation of autolysins , these drugs are bactericidal antibiotics.

- 2.Cephalosporins:
- The cephalosporins are β-lactam antibiotics that are closely related both structurally and functionally to the penicillins.
- Cephalosporins have been classified as first, second, third, fourth, and advanced generation, based largely on their bacterial susceptibility patterns and resistance to β-lactamases.
- Cephalexin
- Cefixime
- Cefotaxim
- Ceferiaxone
- Pharmacokinetics

1. Administration:Many of the cephalosporins must be administered IV or IM because of their poor oral absorption.

2.Distribution: All cephalosporins distribute very well into body fluids.

- 3. Elimination: Cephalosporins are eliminated through tubular secretion and/or glomerular filtration . Therefore, doses must be adjusted in cases of renal dysfunction to guard against accumulation and toxicity. One exception is *ceftriaxone*, which is excreted through the bile into the feces and, therefore, is frequently employed in patients with renal insufficiency.

- Antifungal drugs:
- Infectious diseases caused by fungi are called mycoses, and they are often chronic in nature. Mycotic infections may be superficial and involve only the skin , while others may penetrate the skin, causing subcutaneous or systemic infections.
- Fungal infections are generally resistant to antibiotics, and, conversely, bacteria are resistant to antifungal agents.

1. Fluconazole.

Fluconazole was the first member of the triazole class of antifungal agents. It is the least active of all triazoles, with most of its spectrum limited to yeasts and some dimorphic fungi.

- 2. Itraconazole
- Itraconazole is a synthetic triazole that has a broad antifungal spectrum compared to fluconazole, Itraconazole is available in two oral dosage forms, a capsule and an oral solution. The oral capsule should be taken with food, and ideally an acidic beverage, to increase absorption. In contrast, the solution should be taken on an empty stomach, as food decreases the absorption. The drug distributes well in most tissues, including bone and adipose tissues. Itraconazole is extensively metabolized by the liver, and the drug and inactive metabolites are excreted in the feces and urine.
- Itraconazole has a negative inotropic effect and should be avoided in patients with evidence of ventricular dysfunction, such as heart failure.
- 3. Nystatin

It is used for the treatment of cutaneous and oral Candida infections. The drug is negligibly absorbed from the gastrointestinal tract, and it is not used parenterally due to systemic toxicity, It is administered as an oral agent ("swish and swallow" or "swish and spit") for the treatment of oropharyngeal candidiasis (thrush), or topically for cutaneous candidiasis. Adverse effects are rare after oral administration, but nausea and vomiting occasionally occur.