


Lecture 7
**URINARY
TRACT
ANTISEPTICS/ANTI
MICROBIALS**



Assist. Lecturer
Dr. Firas Al
Dabbagh

URINARY TRACT ANTISEPTICS/ANTIMICROBIALS ○

- UTIs are prevalent in women of child-bearing age and in the elderly population.
- E. coli is the most common pathogen, causing about 80% of uncomplicated upper and lower UTIs.
- Staphylococcus saprophyticus is the second most common bacterial pathogen causing UTIs.

Note...

These drugs do not achieve antibacterial levels in the circulation, but because they are concentrated in the urine, microorganisms at that site can be effectively eradicated.

Drugs used in the treatment of urinary tract infections:

A. ANTIBIOTICS

1. Nitrofurantoin.

- It is useful against *E. coli*, but other common urinary tract gram-negative bacteria may be resistant. Grampositive cocci (for example, *S. saprophyticus*) are typically susceptible
- Hemolytic anemia may occur with *nitrofurantoin* use in patients with G6PD deficiency. .

The drug should not be used in patients with significant

- renal impairment or women who are 38 weeks or more pregnant.

2.

2. Fluoroquinolones.

Norfloxacin, Ciprofloxacin, . Levofloxacin.

- Unlike *ciprofloxacin*, *levofloxacin* has excellent activity against *S. pneumoniae* respiratory infections. *Levofloxacin* has 100% bioavailability and is dosed once daily.

Pharmacokinetics

1. Absorption: Only 35% to 70% of orally administered *norfloxacin* is absorbed, compared with 80% to 99% of the other fluoroquinolones.

Intravenous and ophthalmic preparations of *ciprofloxacin*, *levofloxacin*, and *moxifloxacin* are available.

2. Distribution: Binding to plasma proteins ranges from 10% to 40%, The fluoroquinolones distribute well into all tissues and body fluids, which is one of their major clinical advantages.

Levels are high in bone, urine (except *moxifloxacin*), kidney, and prostatic tissue (but not prostatic fluid), and concentrations in the lungs exceed those in serum.

3. Elimination: Most fluoroquinolones are excreted renally. Therefore, dosage adjustments are needed in renal dysfunction. *Moxifloxacin* is excreted primarily by the liver, and no dose adjustment is required for renal impairment.

B. ALKALINIZATION.

Sodium bicarbonate causes urinary alkalization. If given by mouth it reacts with hydrochloric acid in the stomach to produce carbon dioxide, so it is poorly tolerated and not very effective. Instead, a citric acid/potassium citrate mixture can be used orally, as citrate is absorbed from the gut and metabolized via the tricarboxylic acid cycle with generation of bicarbonate. Potassium must be avoided in renal failure, as retention of potassium ions may cause hyperkalaemia.

DRUGS FOR PROSTATIC OBSTRUCTION.

Prostatic obstruction is often managed surgically. Symptoms of benign prostatic hypertrophy may be improved by finasteride, or by Tamsulosin.

ERECTILE DYSFUNCTION.

Erectile failure has several organic, as well as numerous psychological, causes. Nitric oxide is involved in erectile function. Sildenafil (**Viagra™**) was the first of these to be introduced.