# Treatment of urinary tract infections

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# Goal

To eradicate the offending organisms from the urinary bladder tissue.

The main treatment of UTI is by antibiotics.

# Choice of antibiotic depends on:

Whether infection is complicated or uncomplicated.

Whether infection is primary or recurrent.

Type of patient *: pregnant women ,children , hospitalized patients , diabetic patients*

Bacterial count.

Presence of symptoms.

# Uncomplicated UTI

Low-risk patient *(woman)* for recurrent infection.

3-days antibiotic without urine test.

Cure rate 94%.

# Choice of antibiotic depend on susceptibility pattern ,include:

Amoxicillin ( with or without clavulanate)

Cephlosporins ( *first or second generation*)

TMP-SMX

Nitrofurantoin ( long term use)

Fluoroquinolone ( ciprofloxacin or norfloxacin) (not for pregnant women or children) ,first choice if other antibiotics are resistant.

# Complicated Cystitis

Ciprofloxacin for 5~14 days is better choice then others.

# Relapsing infection

Caused by treatment failure or structural abnormalities or abscesses.

Antibiotics used as initial infection

Treatment for 7~14 days.

# Recurrent infections

Patients with two or more symptomatic UTIs within 6 months or 3 or more over a year.

**Need preventive therapy**

Antibiotic taken as soon as symptoms develop.

If infection occurs less than twice a year, a **clean catch urine test should be taken for culture** and treated as initial attack for 3 days.

# When to consult the doctor ?

If symptoms persist

A change in symptoms

Pregnant women

Three or more infections per year

Impaired immune system

Previous kidney infections

Structural abnormalities of urinary tract

H/O infection with resistant bacteria

# Postcoital antibiotics

If recurrent UTI related to sexual activity, and episodes recur more than 2 times within 6 months

A single preventive dose taken immediately after intercourse

Antibiotics include: TMP-SMX, Cephalexin or ciprofloxacin

# Prophylactic antibiotics

Optional for patients who do not respond to other measures.

Reduces recurrence by up to 95%

Low dose antibiotic taken continuously for 6 months or longer, it includes :

TMP-SMX, Nitrofurantoin, or Cephalexin

Antibiotic taken at bed time more effective.

# Uncomplicated pyelonephritis

Patients with fever, chills and flank pain ,but they are healthy non-pregnant not nauseous or vomiting with no signs of kidney involvement.

Always collect urine for culture

Can be treated at home with oral antibiotics for 10-14 days with one of the followings:

Ciprofloxacin, Ceftriaxone , Aminoglycosides or TMP-SMX.

First dose may be given by injection

Avoid Nirofurantoin

# Continue~

A urine culture may be obtained  if the patient has persistent after 48~72 hrs or recurrent symptoms.

# Moderate to sever pyelonephritis

Patients need hospitalization

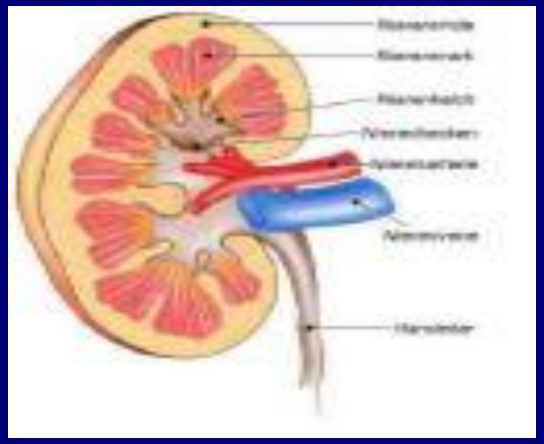
Antibiotic given by IV route for 3~5 days until symptoms relieved for 24~48 hrs.

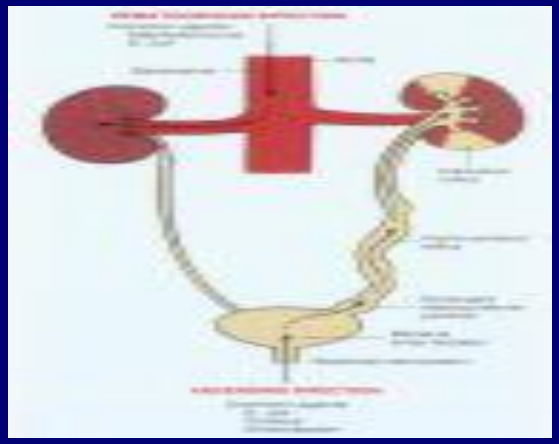
Ciprofloxacin or ceftriaxone for 10~14 days

If fever and back pain continue after 72 hrs of antibiotic, imaging tests indicated to exclude abscesses, obstruction or other abnormality.

# Chronic pyelonephritis

Those patients need long-term antibiotic treatment even during periods when they have no symptoms.





# Treatment of specific populations

## Pregnant women

High risk for UTI and complications

Should be screened for UTI

**Antibiotics during pregnancy include:**

Amoxicillin, ampicillin, cephalosporins,and nitrofurantoin.

Pregnant women should **NOT** take quinolones.

# Drug safety During pregnancy

Avoid Ceftriaxone on day before delivery

Avoid nitrofurantoin and trimethoprim (FA)in the first trimester can lead to birth defects

Avoid near term and hemolytic anemia in G6PD deficiency(0.0004%)

Sulfonamides should be avoided in the last days before delivery because they can increase the level of unbound bilirubin in the neonate

Pregnant women with **asymptomatic bacteriuria** *( evidence of infection but no symptoms)* have 30% risk for acute pyelonephritis in the second or third trimester.

Screening and 3~5 days antibiotic needed.

For uncomplicated UTI, need 7~10 days antibiotic treatment.

# Diabetic patients

Have more frequent and more sever UTIs.

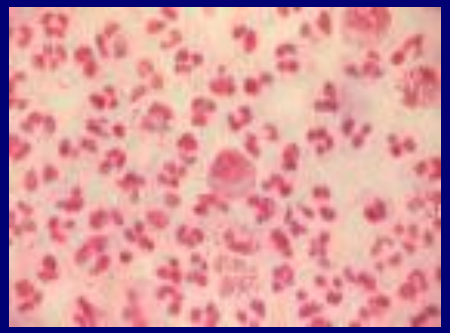
Treated for 7~14 days antibiotics even patients with uncomplicated infections.

# Urethritis in men

Require 7days regimen of Doxycycline.

A single dose Azithromycin may be effective but *not recommended* to avoid spread to the prostate gland.

Patients should also be tested for accompanying STD.

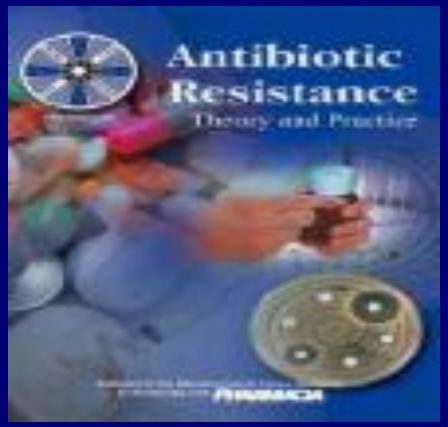


# Children with UTI

Usually treated with TMP~SMX or Cephalexin.

Sometimes given as IV.

Gentamicin may be recommended as resistance to cephalexin is increasing.



# Vesicoureteric reflux ( VUR)

Common in children with UTI

Can lead to pyelonephritis and kidney damage.

Long-term antibiotic + surgery used to correct VUR and prevent infections.

Acute kidney infection : use Cefixime (Suprax) or 2-4 days Gentamicin in a one daily dose. Oral antibiotic then follows IV.


Grade V

# Management of catheter-induced UTI

Very common

Preventive measures important

Catheter should not be used unless absolutely necessary and they should be removed as soon as possible.

# Intermittent use of catheters

If catheter required for long-periods ,it is best to be used intermittently.

May be replaced every 2 weeks to reduce risk of infection and irrigating bladder with antibiotics between replacements

Daily hygiene and use of closed system to prevent infection.

# Catheter induced infections

Catheterized patients who develop UTI with symptoms or at risk for sepsis should be treated for each episode with antibiotics and catheter should be removed, if possible.

Associated organisms are constantly changing.

May be multiple species of bacteria.

# continue~

Antibiotic use for prophylaxis is rarely recommended since high bacterial counts present and patients do not develop symptomatic UTI.

ANTIBIOTIC THERAPY HAS LITTLE BENEFIT IF THE CATHETER IS TO REMAIN IN PLACE FOR LONG PERIOD.