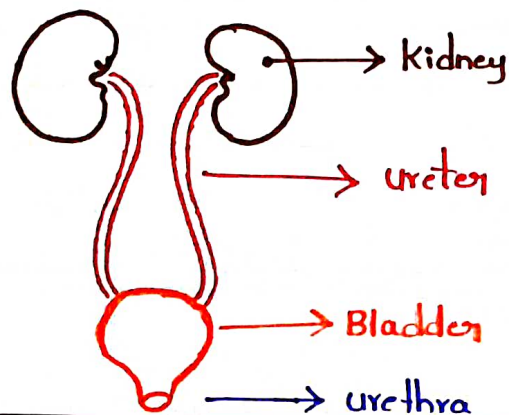


## Urinary tract infection (UTI)

- Urinary tract infections are also called "Bladder infection".
- An infection in any part of the urinary system. The urinary system includes the kidneys, ureters, bladder and urethra.
- Most infections involve the lower urinary tract - "The bladder and the urethra".
- Women are at greater risk of developing a UTI than are men.
- If an infection is limited to the bladder, it can be painful and annoying. But serious health problems can result if a UTI spreads to the kidneys.
- A bladder infection may cause pelvic pain, <sup>↑</sup> urge to urinate, pain with urination and blood in urine.



### \* Definition :-

A urinary tract infection (UTI) is an infection that affects any part of the urinary system (or) urinary tract, involve the kidney [a condition called pyelonephritis], Bladder [a condition called cystitis], urethra [a condition called urethritis] is called urinary tract infection

- UTI is invasion of the urothelium (the lining epithelium of the urinary tract) that results in an inflammatory response. that is usually associated with bacteriuria and pyuria.
- Bacteriuria - presence of bacteria in the urine
- Pyuria - presence of WBCs in the urine, is generally indicative of infection (or) inflammatory response of the urothelium to bacteria stones, foreign body (or) other conditions.

### \* Awareness day :-

" November 21<sup>st</sup> " - National UTI Awareness day.

## \* Etiology :-

- Escherichia coli (E. coli) cause about 80% of UTI
- 20% UTI caused by
  - Klebsiella proteus
  - Streptococcus faecalis
  - Staphylococcus saprophyticus
  - Pseudomonas aeruginosa
  - Enterobacter & Serratia
- Isolated in hospital acquired infections and catheter associated UTI.
  - Viruses - Rubella, Mumps and HIV
  - Fungi - Candida, Histoplasma capsulatum
  - Protozoa - T. vaginalis, S. haematobium

- Other Risk factors :
- pregnancy
  - Menopause
  - Sexual activity (or) intercourse
  - Birth control
  - unhygiene
  - Multiple sexual partners
  - Lack of water intake
  - Chronic health conditions - DM

• Renal diseases :

- failure of bladder completely
- obstruction of urinary flow
- congenital Abnormalities
- Bladder tumors
- Compression of urethra , ureter
- Renal calculi (or) calculus (or) stone
- Instrumentation of urinary bladder  
    ⇓  
    Long term use of bladder catheters

### \* Clinical Manifestations :-

- painful urination
- Burning Micturition
- Fever with chills
- dark urine / Blood in urine
- polyuria (frequent urination)
- urine - a strong odour / foul smelling
- Nausea , vomiting
- Lower abdomen pain
- pain in pelvis area / lower Back
- pain during sex
- weight loss
- Weakness
- irritation (urethra)
- bladder spasm (urgent)

### \* Types of UTI :-

• upper UTI :- Infections of the kidneys (or) ureters tubes connecting the kidneys to the bladder are known as upper UTIs

\* pyelonephritis — kidneys

\* ureteritis — ureters

• Lower UTI :- Infection of the bladder, prostate and urethra are known as Lower UTI

\* cystitis - Bladder

\* prostatitis - prostate

\* urethritis - urethra

• uncomplicated UTI :-

Bacterial infection of the Bladder

- • E. coli

• staphylococcus

• klebsiella

• Enterococcus

⇒ • Immunocompetent

⇒ • No comorbidities

⇒ • No known urologic abnormalities

⇒ • Non pregnant

⇒ • pre menopausal

\* Mild UTI, with out complications occur in Normal urinary tract.

• Complicated UTI :-

abnormality in urinary system has a health problem that compromises host's defense (HIV, DM)

⇒ • pyelonephritis

⇒ • pregnant women

⇒ • Severe DM (or) Moderate

⇒ • cancer, chemotherapy

⇒ • catheter, stent

⇒ • obstructive stone

⇒ • Hospital - associated UTI

⇒ • immunosuppression

⇒ • impaired Micturition

⇒ • pathogen - • E. coli

• Klebisella

• Enterobacter

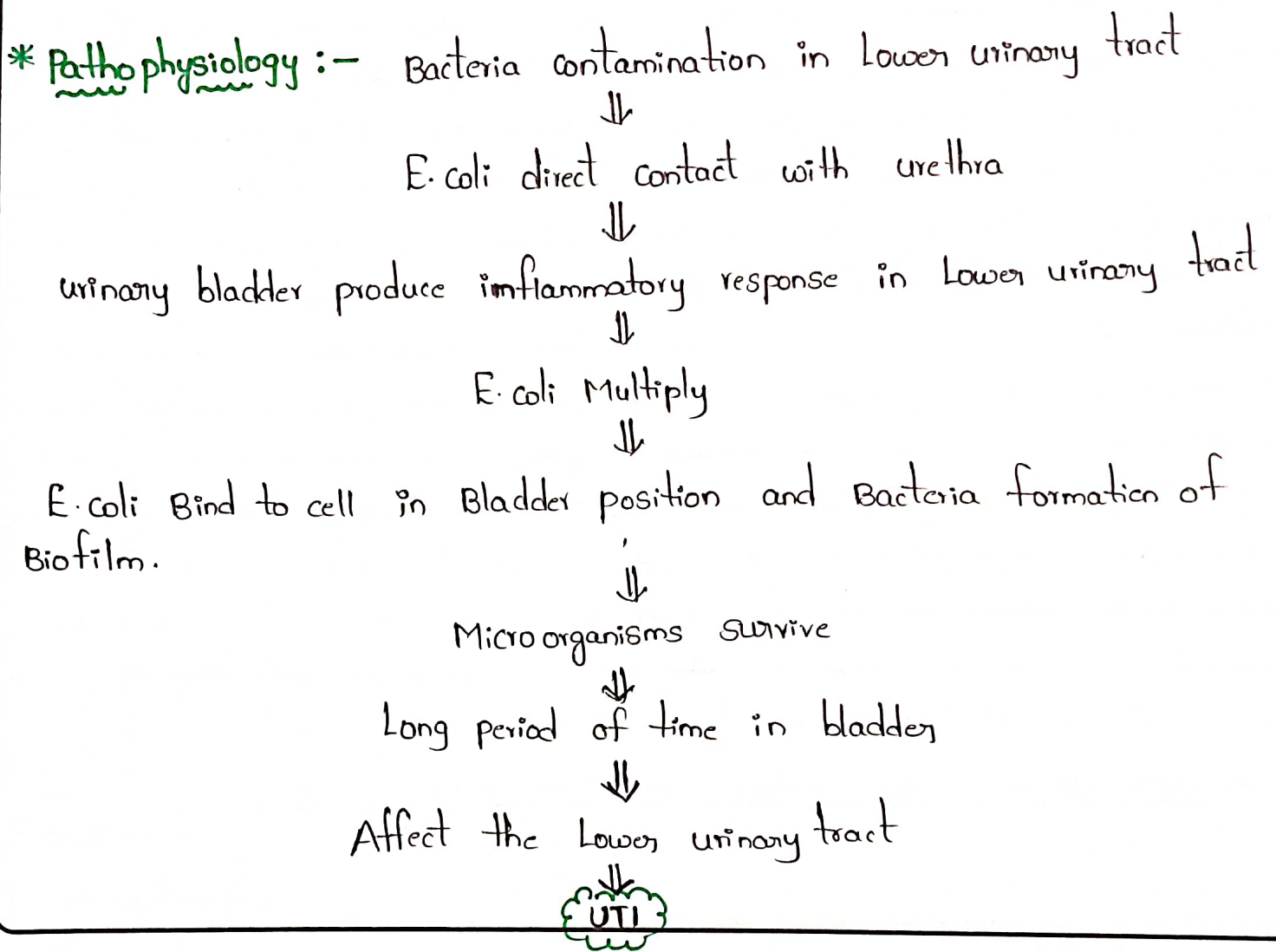
• pseudomonas

• Enterococcus

• proteus mirabilis

• seratia marcescens

- urinary hesitancy (abnormal flow of urine)
- Vesicoureteral reflux (urine moves backward)
- obstructive uropathy (obstructed urinary flow)
- Neurogenic Bladder (bladder dysfunction caused by Nervous system)
- Renal parenchymal disease (disease (or) various disorders - Nephron, tubules  
Small blood vessels of the kidney)
- urinary stasis (stopping of urine)
- bladder Neck obstruction (abnormal opening of the bladder Neck)
- Chronic constipation (difficult bowel Movements)
- Local inflammation and infection any where in the body.





## \* Pharmacological treatment :-

### \* Adults dosing :-

- Amoxicillin - 500mg po TID
- cefazolin - 1g IV Q-6hr
- Cephalexin - 500mg po TID
- cefadroxil - 250mg po TID
- cefexime - 200mg po BD
- Nitro-furantoin - 50 - 100mg po QID
- ceftriaxone - 1g IV BD
- ciprofloxacin - 500mg BD  
↓  
if Normal female  
(No pregnant)

### \* Children dosing :-

- Amoxicillin / clavulanate - 25 to 45mg per kg / day divided every 12 hrs
- cefixime - 8mg per kg every 24 hr (w) divided every 12 hrs
- cefpodoxime - 10mg per kg / day - divided every 12 hrs
- cefproxil - 30mg per kg / day divided every 12 hrs
- cephalexin - 25 - 50mg per / kg / day divided every 6 - 12 hrs
- Trimethoprim / Sulfamethoxazole - 8 to 10mg per / kg / day - divided every 12 hrs.

### Other :-

- Cipro - 100 - 250 mg BD - 3 days
- Levo - 250 mg - Daily - 3 days
- Nor - 400 mg - BD - 3 days
- Bactrim DS (TMP-SMX) - 160/800 mg BD - 3 days

## • Non pharmacological treatment :-

- Drink plenty of water / avoid dehydration.
- clean external genitalia area after urination
- avoiding after sexual intercourse
- Drink cranberry juice / eat garlic / Blue Berries juice.
- Empty the bladder when it is filled and don't stop to urinate
- Eating Yogurt (contain active Lactobacillus cultures)
- Avoiding constipation / Avoid acidic fruits / don't skip meals
- use Lactobacillus probiotics
- use antibiotics in cases of recurrent infections in time.
- Take healthy food and Nutrient food
- use topical estrogen (in postmenopausal women)
- change catheters for every 2 weeks
- Avoid coffee, Alcohol & soft drinks and spicy foods
- use heating pads / 15 to 20 min warm bath
- consult physician - urologist / Nephrologist.