

# URINARY TRACT INFECTION

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# COMMON INFECTION

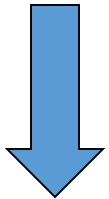
- Women
- Children
- Elderly males
- Gives rise to acute complications -  
    Gram negative septicemia  
    ARF

# IMPORTANT

Recurrent UTI



CHRONIC PYELONEPRITIS



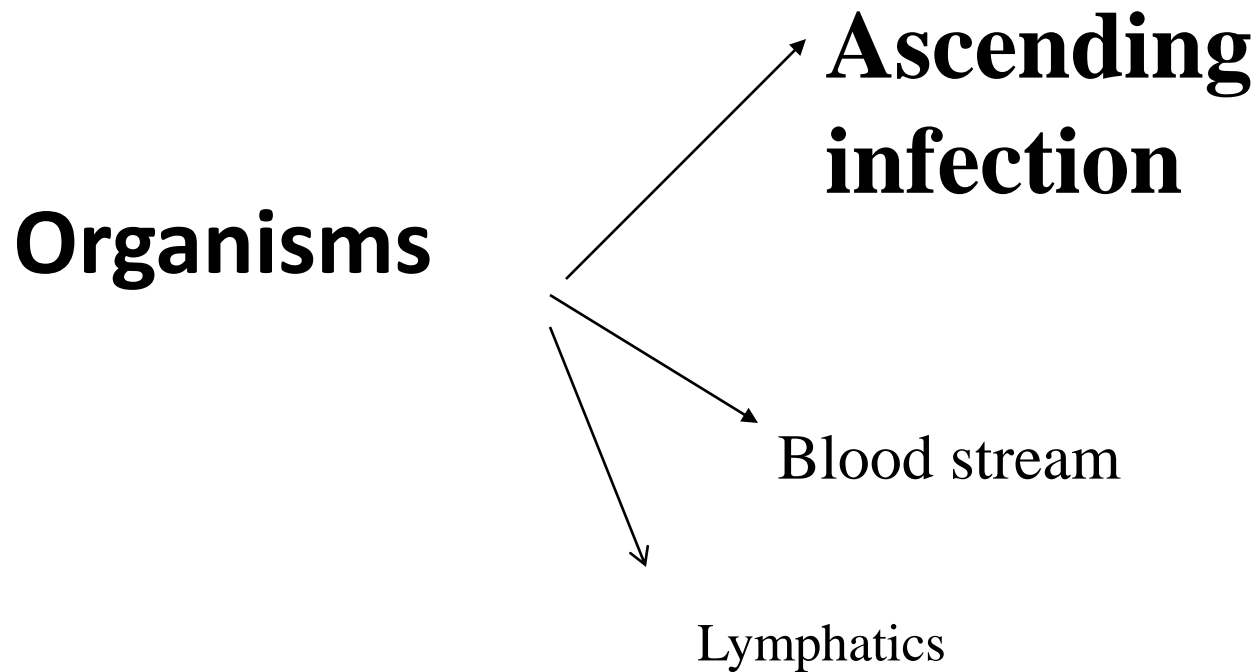
CRF

# Definitions

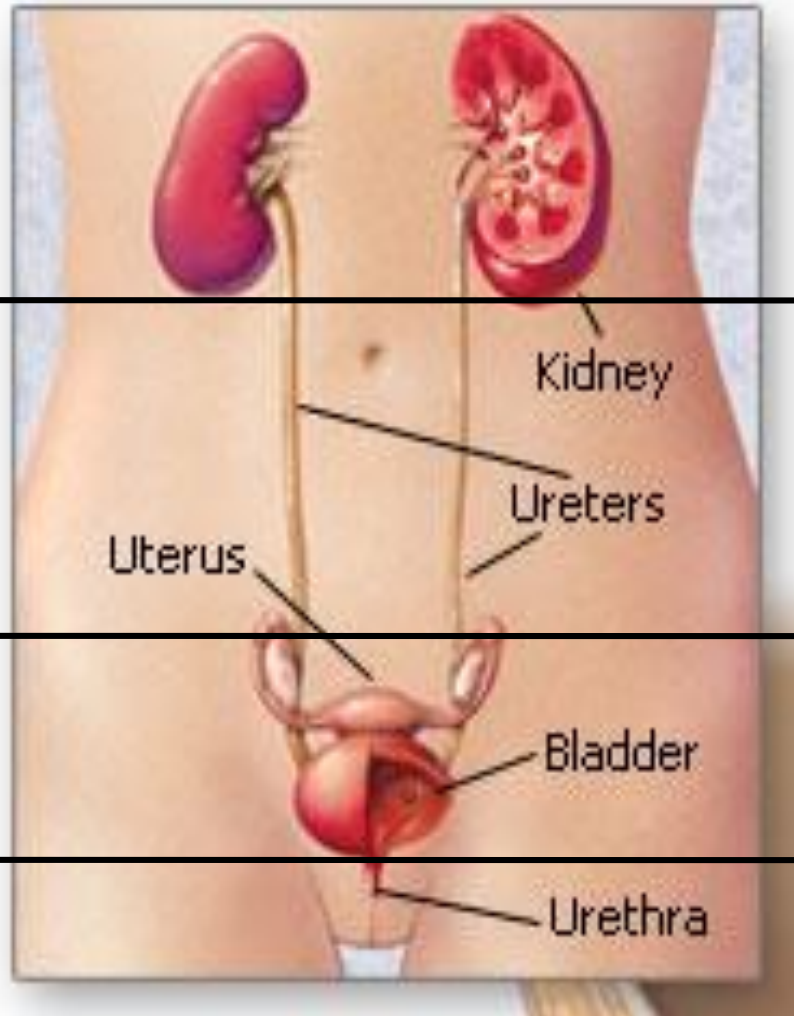
- UTI-

Infection involving the kidneys, ureters, bladder, and urethra.

# PATHOGENESIS



# Ascending Infection



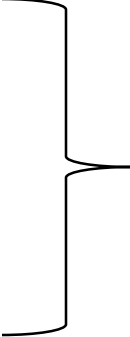
Acute Pyelonephritis

Ascending

Uroepithelial penetration

Colonization

# ORGANISMS

- **E. coli- >70%**
  - **Proteus**
  - **Klebsiella**
- 
- Common
- Pseudomonas aeruginosa
  - Streptococcus faecalis
  - Staphylococcus epidermidis/ saphrophyticus/aureus

# FACTORS WHICH PREDISPOSE

## 1. Abnormal urinary tract

Stones

Strictures

Vesico ureteric reflux

Gynecological causes → vesico-vaginal fistula

Neurological causes

Enlarged prostate

## 2. Instrumentation

## 3. Reduced immunity

- Diabetes

- Pregnancy



# CLINICAL FEATURES

1.Acute pyelonephritis –upper

2.Urethritis, cystitis-lower

# 1.ACUTE PYELONEPHRITIS

- Symptoms**

Loin pain

Fever –high with chills and vomiting

- Signs –**

renal angle and lumbar region tenderness.

## 2.Cystitis , urethritis

- **Symptoms-**

Dysuria

Frequency of micturition

Intense desire to pass urine after micturition

Supra pubic pain

- **Signs –**

supra pubic tenderness

# COMPLICATIONS

- Septicaemia
- Perinephric abscess
- ARF
- Acute haemorrhagic necrotising papillitis

# INVESTIGATIONS FOR UTI

1. To confirm the diagnosis
2. To find complications
3. To detect underlying cause

## A.)For Diagnosis of UTI

- UFR-

Pus cells, RBC, Pus cell casts

- Urine culture & ABST-

Colony count and identification of organism

**Presence of pure growth of  $>10^5$  per ml of fresh urine**

# A CORRECT URINE COLLECTION

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✦ ***Give the patient written and simple instructions:***

- Collect the first or the second urine of the morning
- Avoid strenuous physical effort
- Wash external genitalia
- Male: uncover the glans
- Female: spread the labia of vagina
- Collect mid-stream urine

✦ ***Avoid urine collection during menstruation***

✦ ***Give the patient a proper urine container***

# When is low colony count is significant?

1. Urine specimens collected from Nephrostomy tubes or supra-pubic aspiration.
2. Partially treated UTI
3. Dysuria frequency is severe
4. Repeatedly positive for same organism



## B.)Other Investigations

- FBC
- Blood urea
- Serum electrolytes
- Blood culture & ABST
- FBS
  
- Ultrasonography - Renal stones, Upper UT obstruction, Renal scars, Residual urine in the bladder
- KUB X-ray - radio-opaque renal calculi.
- IVU, Cystoscopy- further Ix.

# MANAGEMENT –1. Acute Pyelonephritis

- **IV antibiotics:**

**IV Ciprofloxacin**

**IV Ceftazidime/Ceftriaxone**

**IV Ampicillin+Clavulinic acid**

**7 –14 days**

- IV fluids
- Fluid balance
- Antiemetics – Metochlorpramide
- Antipyretics
- Monitor vital signs
- Look for complications

## 2.Cystitis

### Oral Antibiotics

1. Nitrofurantoin
2. Quinolones – norfloxacin, ciprofloxacin
3. Ampicillin + Clavulinic acid

Short course : 5-7 days

In BOTH these conditions REPEAT culture , 2-3 days after course of antibiotics.

# PROPHYLACTIC MEASURES

1. Increased Fluid intake
2. Empty bladder frequently
3. Improving Personal hygiene
4. Empty bladder before bed time
5. Low dose antibiotic prophylaxis
6. Control diabetes
7. Rx underlying cause

# RECURRENT INFECTIONS

1. **Relapse**— same organism

2. **Reinfection**— different organisms

# Asymptomatic Bacteriuria

2 Consecutive urine cultures growing more than  $10^5$  colony count of same organisms with no symptoms.

- Common in PREGNANCY
- 2-6% have asymptomatic bacteriuria
- Can cause acute pyelonephritis late in pregnancy
- Predispose to premature labour
- Use Amoxycillin, Ampicillin, Nitrofurantoin, oral Cephalosporins
- **AVOID** Tetracyclines, Trimethoprim, Sulphonamides, Quinolones

# Sterile Pyuria

Pus cells present in urine but no bacteria isolated in urine.

Causes-

**1. Renal TB**

2. Partially treated UTI

3. Chronic Prostatitis

- Renal TB

Blood-borne spread (from Lung)



- Cortical necrotizing lesion



- Abscess



- Atrophic scarred calcified non functioning Kidney.

later contracted bladder, ureteral strictures



# Presents with

- Dysuria
- Frequency
- Haematuria
- Fever ( P.U.O. )
- Loin Pain

- **Investigations**

Urine- Sterile Pyuria

( Pus cells positive , Culture negative)

Early morning urine for ZN stain  
and culture ( Three times )

IVU/ CT → cavities in papilla,  
calcification

- **Treatment**

At least 6 months of anti TB drugs

# TB of Urinary Tract

IVU



Macroscopy



# Urethral Syndrome

- Characterized by frequency, Dysuria with no abnormality in Urine or Culture.
- Most patients are females aged women 30-50.
- Vaginal discharge and lesions must be excluded.

Thank You