

# MICROORGANISMS

Microorganism	Description	Diseases	Notes
<b>Escherichia coli (E. coli)</b>	<ul style="list-style-type: none"> <li>Gram-<b>negative</b></li> <li>anaerobic</li> <li>Rod-shaped</li> <li>-ve citrate</li> <li><b>+ve indole test</b></li> <li>-ve urease.</li> <li><b>Lactose fermenter.</b></li> </ul>	<b>Most common cause of UTI</b> (both complicated and uncomplicated)	<ul style="list-style-type: none"> <li>- colon normal flora</li> <li>- Ascending infection (or VUR reflex).</li> </ul>
Staphylococcus agalactiae (Group B)	<ul style="list-style-type: none"> <li>Gram-<b>positive</b></li> <li>beta-hemolytic</li> <li>catalase-negative</li> <li><b>anaerobic</b></li> <li><b>coccus</b></li> <li><b>-ve catalase</b></li> </ul>	UTI in: <ul style="list-style-type: none"> <li>&gt; Pregnant women.</li> <li>&gt; Neonates.</li> <li>&gt; Diabetic patients.</li> </ul>	colon normal flora
<b>Staphylococcus saprophyticus</b>	<ul style="list-style-type: none"> <li>Gram-<b>positive.</b></li> <li><b>+ve catalase.</b></li> <li><b>-ve coagulase.</b></li> <li><b>Coccus.</b></li> </ul>	<ul style="list-style-type: none"> <li><b>- Honey moon cystitis.</b></li> <li>- Uncomplicated UTIs.</li> </ul>	<ul style="list-style-type: none"> <li>- Normal flora of female genital tract &amp; perineum.</li> <li><b>- UTI in Females in childbearing age.</b></li> <li>- Ascending Infection (or VUR reflex).</li> </ul>
<b>Staphylococcus aureus</b>	<ul style="list-style-type: none"> <li>Gram-<b>positive.</b></li> <li><b>+ve catalase.</b></li> <li><b>+ve coagulase.</b></li> </ul>	UTI with systemic manifestations. <ul style="list-style-type: none"> <li>- Pyelonephritis from infection elsewhere.</li> </ul>	<b>- Hematogenous spread.</b>

Klebsiella	<ul style="list-style-type: none"> <li>• Gram-<b>negative</b></li> <li>• Rod-shaped.</li> <li>• +ve urease.</li> <li>• +ve citrate.</li> <li>• <b>Mucoid colonies in CLED ager.</b></li> <li>• <b>Enterobacteria</b></li> </ul>	Complicated UTI.	Ascending infection (or VUR reflex).
<b>Proteus</b>	<ul style="list-style-type: none"> <li>• Gram-<b>negative.</b></li> <li>• Rod-shaped</li> <li>• <b>+ve urease.</b></li> <li>• -ve oxidase.</li> <li>• <b>Enterobacteria.</b></li> </ul>	Complicated UTI	<b>Stones formation</b> 'phosphate stones (alkaline urine).' <b>practically in children</b> - Ascending infection (or VUR reflex).
Pseudomonas aeruginosa	<ul style="list-style-type: none"> <li>• Gram-<b>negative.</b></li> <li>• Rod-shaped.</li> <li>• <b>+ve oxidase.</b></li> <li>• Swarming in blood ager</li> </ul>	- Hospital acquired (Nosocomial) UTI. - Complicated UTI.	Ascending Infection (or VUR)
Candida albicans	Opportunistic fungus	UTI in: - <b>Immuno-compromised patients.</b> -Diabetic. -catheterized. - On broad spectrum antibiotics.	Hematogenous spread
Schistosoma haematobium	Parasite in endemic areas (especially in south KSA and Egypt)	- Eosinophilic cystitis. - Squamous cell carcinoma.	Causes <b>hematuria.</b>
<b>Mycobacterium tuberculosis</b>	Acid fast bacilli	- Pyelonephritis.	<b>- Hematogenous spread.</b>

Enterococci	<ul style="list-style-type: none"> <li>• Gram-<b>positive cocci</b>.</li> <li>• <b>Anaerobic</b></li> </ul>	- Complicated UTI	<ul style="list-style-type: none"> <li>- Hospital acquired.</li> <li>- Ascending Infection (or VUR reflex).</li> <li>colon normal flora</li> </ul>
Salmonella typhi	<ul style="list-style-type: none"> <li>• Gram-<b>negative</b></li> <li>• Rod-shaped.</li> <li>• Aerobic</li> </ul>	- Pyelonephritis.	- Heamatogenous spread
Brucella melitensis	<ul style="list-style-type: none"> <li>• Gram-<b>negative</b></li> <li>• Coccobacillus.</li> </ul>	- Pyelonephritis.	- Heamatogenous spread

## Important Notes:

### 1-Cystitis lecture:

- **Most common cause** ☒ **E-coli.**
- **Significant bacteriuria: 100,000 CFU/ml.**
- Females are more susceptible to get UTI than males (short urethra).
- **Staph. Saprophyticus** ☒ **Honey moon cystitis!!!!**
- Uncomplicated UTI ☒ young, healthy, sexually active Female (rather than that ☒ complicated).
- **Lavatory diagnosis: MSU!!**

**Keywords: #No fever #Dysuria #Urgency #burning sensation while peeing.**

### 2-pyelonephritis lecture:

- **VUR is the most common cause of the pyelonephritis in children.**
- **Staph. Aureus** ☒ **Hematogenous spread!**
- **Proteus mirabilis** ☒ stone formation, **+urase.**
- dipstick test ☒ +ve nitrite , leukocyte esterase.
- **Risk factors: diabetes mellitus**, Immunocompromised, **VUR**, calculi ...
- **Hypertension** is one of the chronic pyelonephritis complications.

-  
**Acute pyelonephritis Keywords: #Fever #chills #Flank pain #Pyuria.**

**Chronic pyelonephritis Keywords: #polyuria #weight loss #scarring #creatinine.**

---

### **3-Management of UTI lecture:**

- **Complicated cystitis + pyelonephritis ☒ 10-14 days.**
  - **Uncomplicated ☒ 3 days.**
  - **Nitrofurantoin ☒ prophylaxis therapy** (low dose for 6 months or longer).
  - **Quinolones – Ciprofloxacin - norfloxacin ☒ contra. In pregnancy.**
-