

UTI

**Urinary
Tract
Infection**

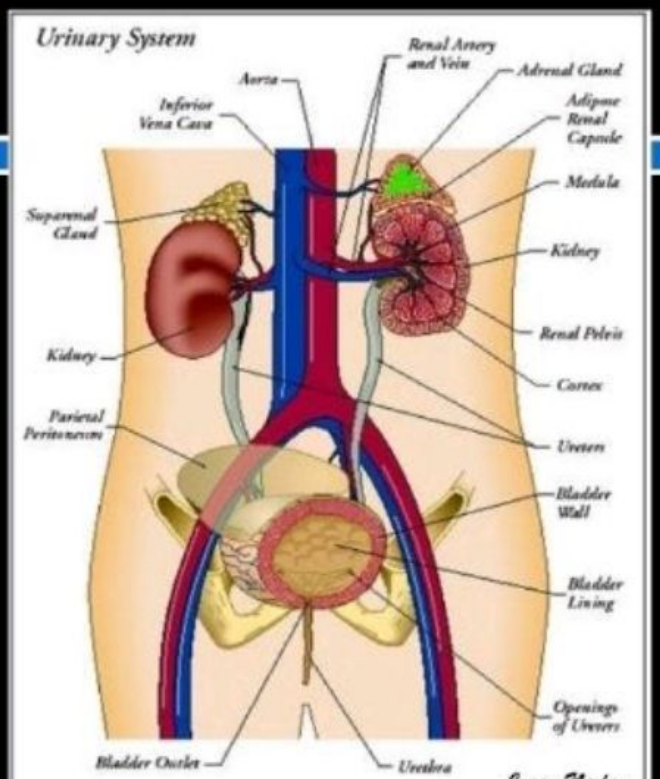


URINARY TRACT INFECTION

- ❖ A **urinary tract infection (UTI)**, also known as **acute cystitis** or **bladder infection**, is an infection that affects part of the urinary tract.
- ❖ It is the Second most common infection following respiratory infections.
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- ❖ UTI occur when **bacteria (*E. coli*)** from the digestive tract get into the opening of the urinary tract and multiply
- ❖ Bacteria first infect the urethra, then move to the bladder and finally to the kidneys
- ❖ **UTI tend to occur more in women than men**

- ❖ Urinary tract is normally sterile due to the fact that bacteria moving upwards are regularly washed out by urination
- ❖ Normal flora found in the urethra consist of *Lactobacillus* and *Staphylococcus* to name a few



URINARY TRACT INFECTION

TYPES

LOWER TRACT INFECTION

UPPER TRACT INFECTION

URETHRITIS

PROSTATITIS

CYSTITIS

PYELONEPHRITIS

- Urine is normally sterile. But due bacterial infection it becomes infected and this infection can spread to near by urinary organ
- The urinary tract from the kidney to urethra is normally sterile and resistant to bacteria because of normal machanisms that maintain sterility of urine

NORMAL MECHANISMS THAT MAINTAIN STERILITY OF URINE

- Adequate urine volume**
- Free-flow from kidneys through urinary tract**
- Complete bladder emptying**
- Normal acidity of urine**
- Peristaltic activity of ureters**
- Increased intravesicular pressure preventing reflux**
- In males, antibacterial effect of zinc in prostatic fluid**

COMMON CAUSATIVE ORGANISMS

- ❖ *Escherichia coli* (gram-negative enteral bacteria) causes most community acquired infections
- ❖ *Staphylococcus saprophyticus*, gram-positive organism causes 10 – 15%
- ❖ Catheter-associated UTI's caused by gram-negative bacteria: ***Proteus, Klebsiella, Seratia, Pseudomonas***

PATHOGENESIS

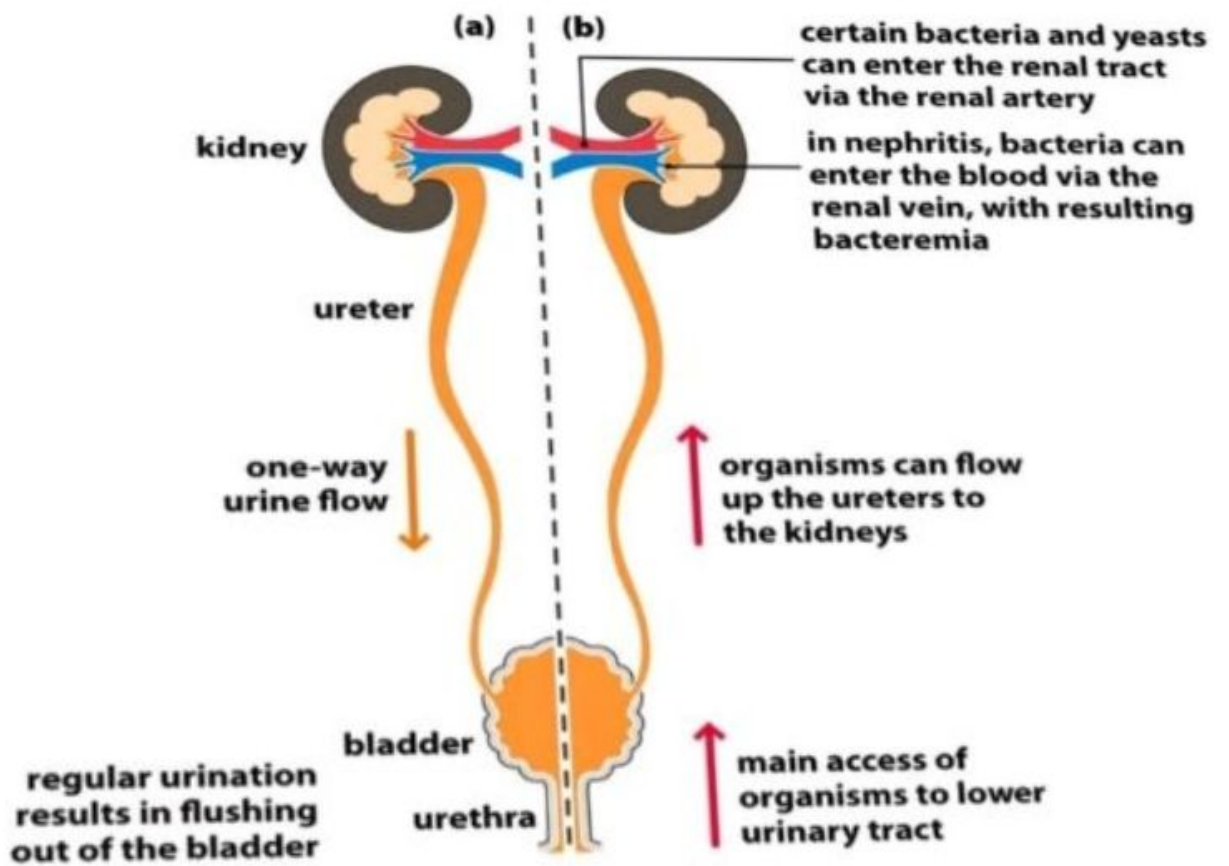
□ Bacteria Get Access from Urethra and Ascends

Females are more prone due to:

- ❖ Small urethra
- ❖ Gram negative organism radiate from perianal area to urethra (due to close proximity)
- ❖ Susceptibility of epithelium

Two potential routes :

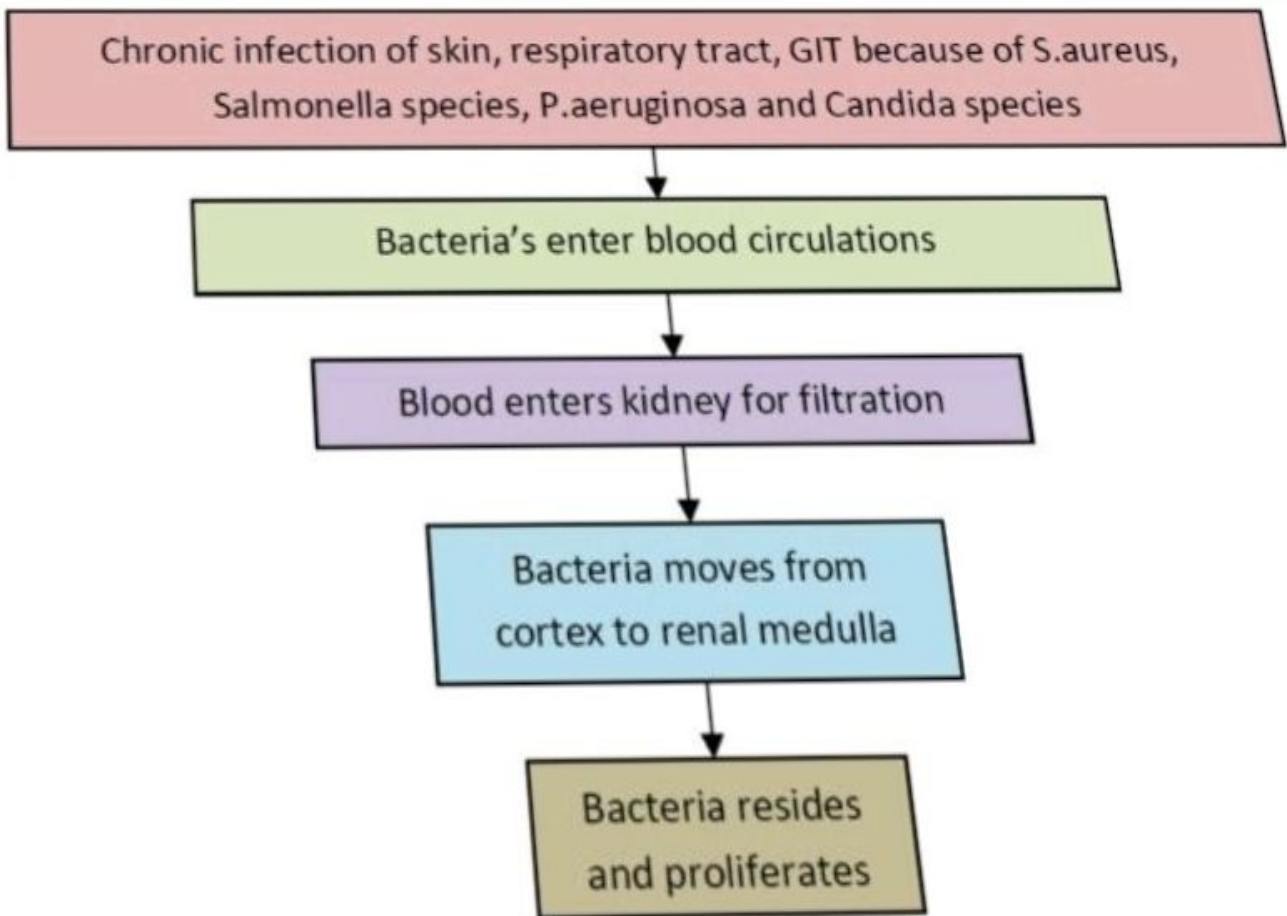
- **The hematogenous route,**
- **The ascending route,**



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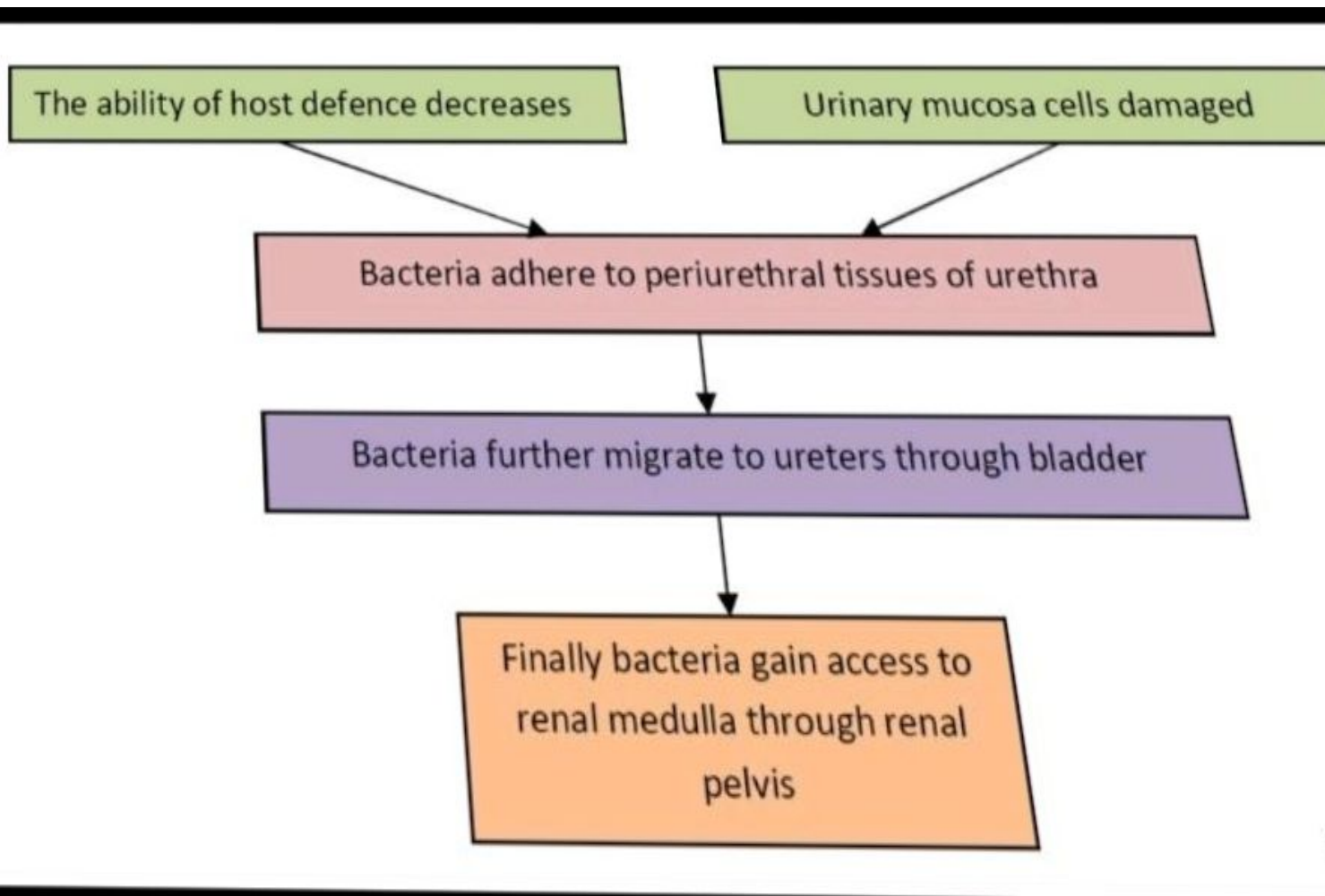
HEMATOGENOUS ROUTE

- ❖ Because the kidneys receive 20% to 25% of the cardiac output, any microorganism that reaches the bloodstream can be delivered to the kidneys.
- ❖ The major causes of hematogenous infection are *S. aureus*, *Salmonella* species, *P. aeruginosa*, and *Candida* species.



THE ASCENDING ROUTE








- Bacteria's gain access from the urethra to the bladder, then from the bladder to the kidneys via the ureters.



SYMPTOMS

- ❖ Dysuria
- ❖ Urgency
- ❖ Hematuria in Women
- ❖ Painful and Burning Urination
- ❖ Flank Pain
- ❖ Abdominal Pain
- ❖ Fever
- ❖ Nausea
- ❖ Vomiting

TREATMENT

	organism	treatment
	<i>Escherichia coli</i>	trimethoprim, cephalexin, gentamicin
	<i>Proteus spp.</i>	trimethoprim, cephalexin, gentamicin
	<i>Klebsiella spp.</i>	trimethoprim, cephalexin, gentamicin
	<i>Pseudomonas aeruginosa</i>	ciprofloxacin, gentamicin
	<i>Enterococcus spp.</i>	amoxicillin, vancomycin
	<i>Staphylococcus aureus</i>	trimethoprim, cephalexin, gentamicin
	coagulase-negative staphylococci	trimethoprim, cephalexin, gentamicin

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Thank You