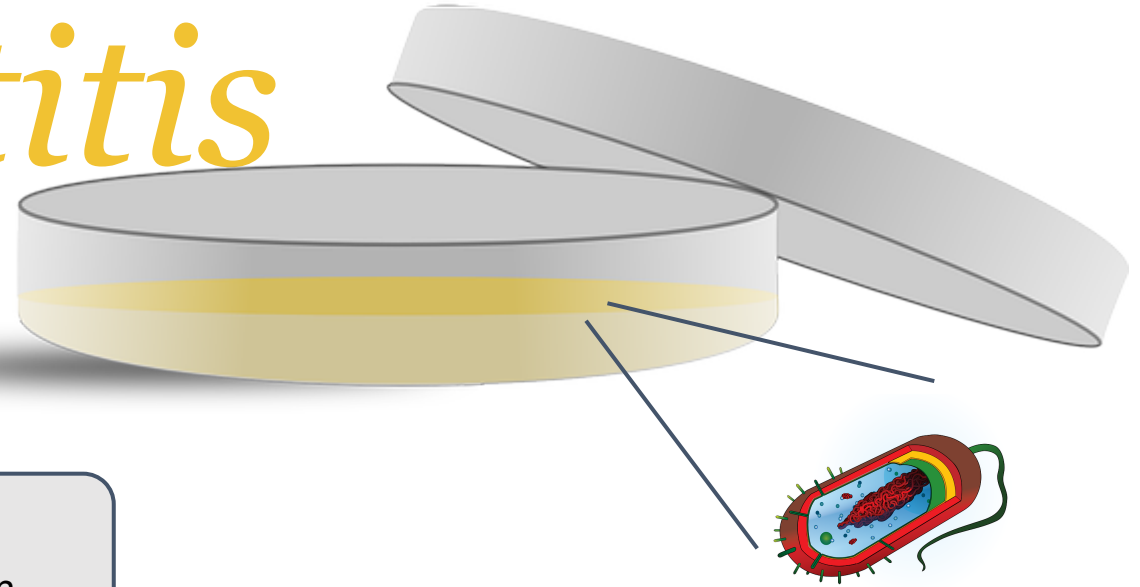


دعاء قبل المذاكرة: اللهم اني اسألك فهم النبيين
وحفظ المرسلين والملائكة المقربين.

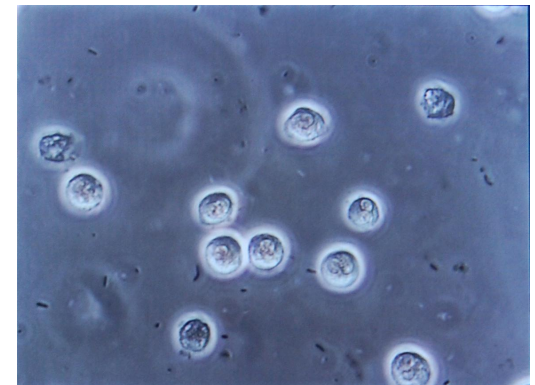
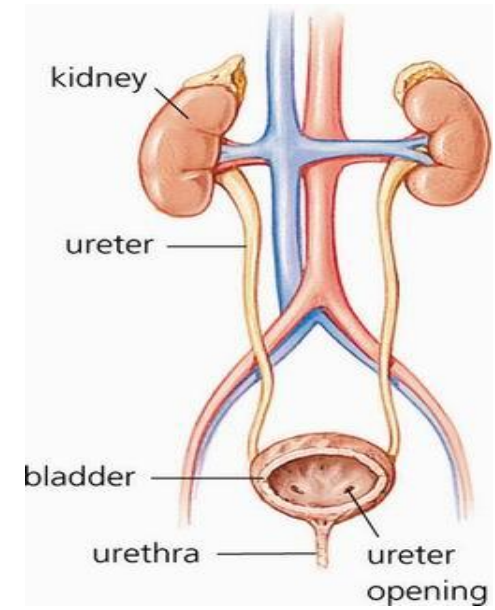
Cystitis

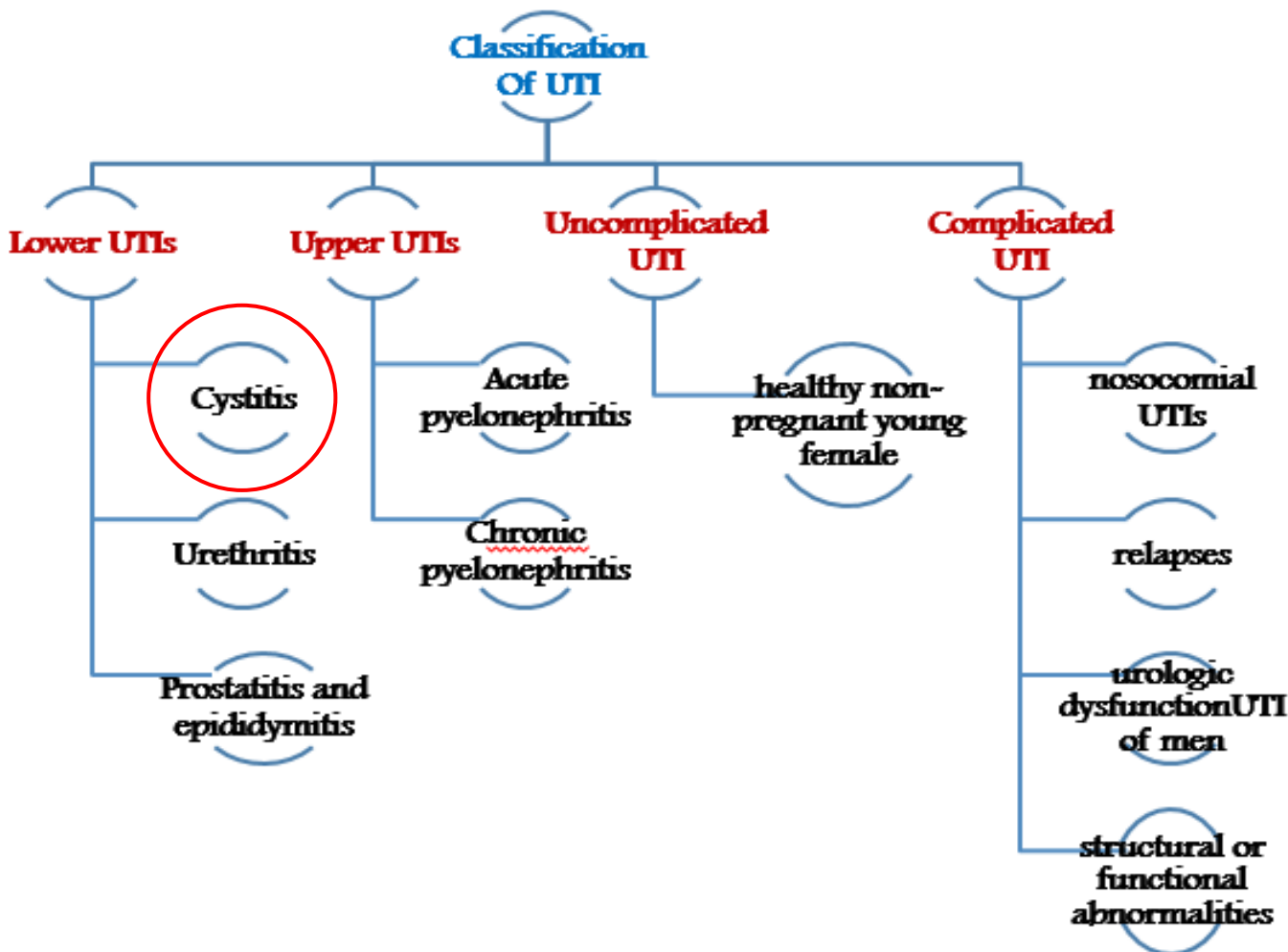


Red: Important
Grey: Additional information

Urinary Tract Infections

- UTI is more common in females than males because of the anatomical structure of the female (short urethra).
- Usually we don't worry about first UTIs in non pregnant females (uncomplicated UTI). In males, however, it can develop Benign prostatic hyperplasia (BPH) (Complicated UTI).
- Uncomplicated lasts from 3-7 days, complicated lasts from 10-14 days.





•Risk Factors:

In women

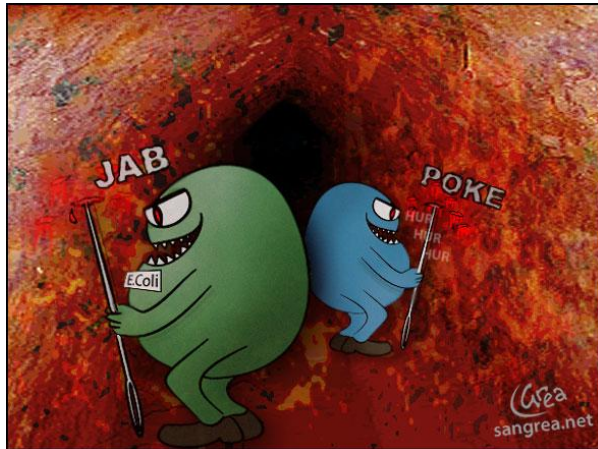
Short wide urethra
Genetic factors
Sexual intercourse
Pregnancy
(progesterone,
obstruction)
Decreased estrogen
production during
menopause.

In men

persistent bacterial
infection of the
prostate.

In both sexes :

- ~ Presence of bladder stone
- ~ Urethral stricture
- ~ Catheterization of the urinary tract
- ~ Diabetes mellitus



The dreadful truth behind urinary tract infections

Pathogenesis of Cystitis

1- Infection ascends to the urinary bladder:

The bacteria are transient members of the perineal flora which is derived from our intestinal flora, they're called uropathogens.



Uropathogens produce toxins which cause frequent irritation of the mucosal membrane of the urethra and bladder.

2- Hematogenous spread (less common + not very important)
Spreads through blood stream.



Etiologic agents

1- Gram positive bacteria:

A- Enterococcus faecalis

B- staphylococcus saprophyticus honeymoon cystitis (only in female)

C- Group B streptococci (in pregnant women and diabetic patient)

2- Fungi: candida

(not common)

3- Gram negative bacteria:

A- Enterobacteriaceae :
E.coli (most common)

B- Pseudomonas aeruginosa (mostly nosocomial)

Clinical presentation

→ **Upper UTI symptoms:**

- 1- Severe flank pain
- 2- High fever
- 3- Vomiting

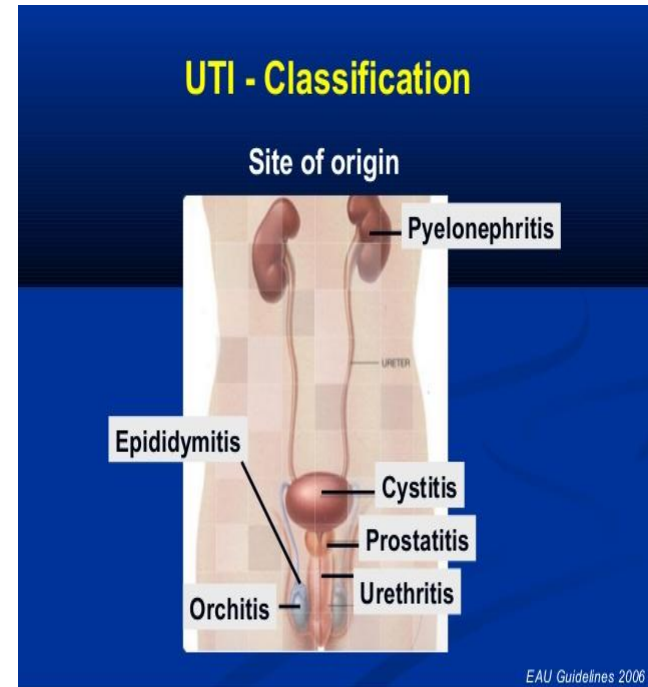
→ **Lower UTI symptoms:**

- 1- Dysuria (painful or burning urination)
- 2- Hematuria
- 3- **No fever**
- 4- **Flank pain**
- 5- Urgency : sudden and compelling urge to urinate.



Difference between cystitis and urethritis

- Cystitis is more of an **acute** onset.
- More severe symptoms.
- Pain and tenderness at the **supra-pubic area**.
- Presence of Bacteria in urine (*bacteriuria*).
- Urine cloudy, malodorous (smelly) and may be bloody.



Types of cystitis

Non-infectious

traumatic

In women

interstitial

Due to autoimmune disease

eosinophilic

Due to *S.hematobium*

Hemorrhagic

Chemo or radio therapy

▶ Laboratory Diagnosis of Cystitis

1-Specimen collection by:

- Mid-stream urine (**MSU**) or clean catch urine to bypass contamination by perineal flora *and must be before stating antibiotic.*
- **Supra-pubic aspiration** or **catheterization** may be used in children.
- Catheter urine should not be used for diagnosis of UTI.

2-Microscopic examination

3-Chemical screening tests:

- Nitrites: indicates gram -ve bacteria in the urine
- Leukocyte esterase : indicates inflammatory cells



4-Urine culture: when bacteria count is 10^5 / mm^3 or more indicates UTI .



▶ Treatment

- **Gram negative bacteria (e.g. E.coli)**: cephalosporin: 1st and 2nd generation mainly especially **Ciprofloxacin** .
- **Trimethoprim-Sulfamethoxazole (TRM-SMX)**.
- **Amoxicillin/clavulanic** (not preferable): Beta lactam with beta lactamase inhibitor.
- **Nitrofurantoin**: is the most effective but limited to lower UTI .

* in cystitis the problem is that it's usually accompanied with upper UTI, therefore it mustn't be used except if lower UTI is diagnosed alone. but in uncertainty **Ciprofloxacin** is better, also TRM-SMX

* **Ciprofloxacin** is more preferred but the issue that it is more potent to develop resistance against it.

*Ampicillin used to treat Gram-ve but not anymore due to resistance but can work on Enterococcus faecalis

Duration of treatment :

- **3-7 days for uncomplicated cystitis**
- **10-14 days for complicated and recurrent cystitis**

MCQs

1. Which one of the risk factors of Cystitis is seen in women:

- A- Persistent bacterial infection of the prostate.
- B- Genetic factors.
- C- Short wide urethra
- D- Both B and C.

3. Which is the most common cause of Cystitis:

- A- Klebsiella pneumoniae.
- B- E.coli.
- C- Staphylococcus saprophyticus.

2. What is the duration of treatment for uncomplicated cystitis

- A- 3-7 days.
- B- 10-14 days.
- C- 2-5 days.
- D- 5-10 days.

4. Type of non-infection cystitis which occurs due to radiotherapy or chemotherapy:

- A- Traumatic cystitis.
- B- Interstitial cystitis.
- C- Hemorrhagic cystitis.



5. What is the most effective treatment for lower UTI:

- A- Nitrofurantoin.
- B- Amoxicillin.
- C- Ciprofloxacin.

7. Which of the following represents lower UTI symptoms:

- A- Dysuria.
- B- Hematuria.
- C- Usually no fever.
- D- All of the above.

6. Which one of the following indicates inflammatory cells:

- A- Nitrites.
- B- Leukocyte esterase.
- C- Both A and B.

8. Which one of the following is an Uncomplicated UTI

- A- UTI in non pregnant and young lady.
- B- UTI with diabetes mellitus.
- C- UTI in old age male.
- D- UTI after sexual intercourse.

Thank You and Good Luck

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دعاء بعد المذاكرة: اللهم اني استودعك ما قرأت
وما حفظت وما تعلمت، فرده لي عند حاجتي إليه
انك على كل شيء قدير، وحسبنا الله ونعم الوكيل.

MCQ'S:

1-D

2-A

3-B

4-C

5-A

6-B

7-D

8-A

