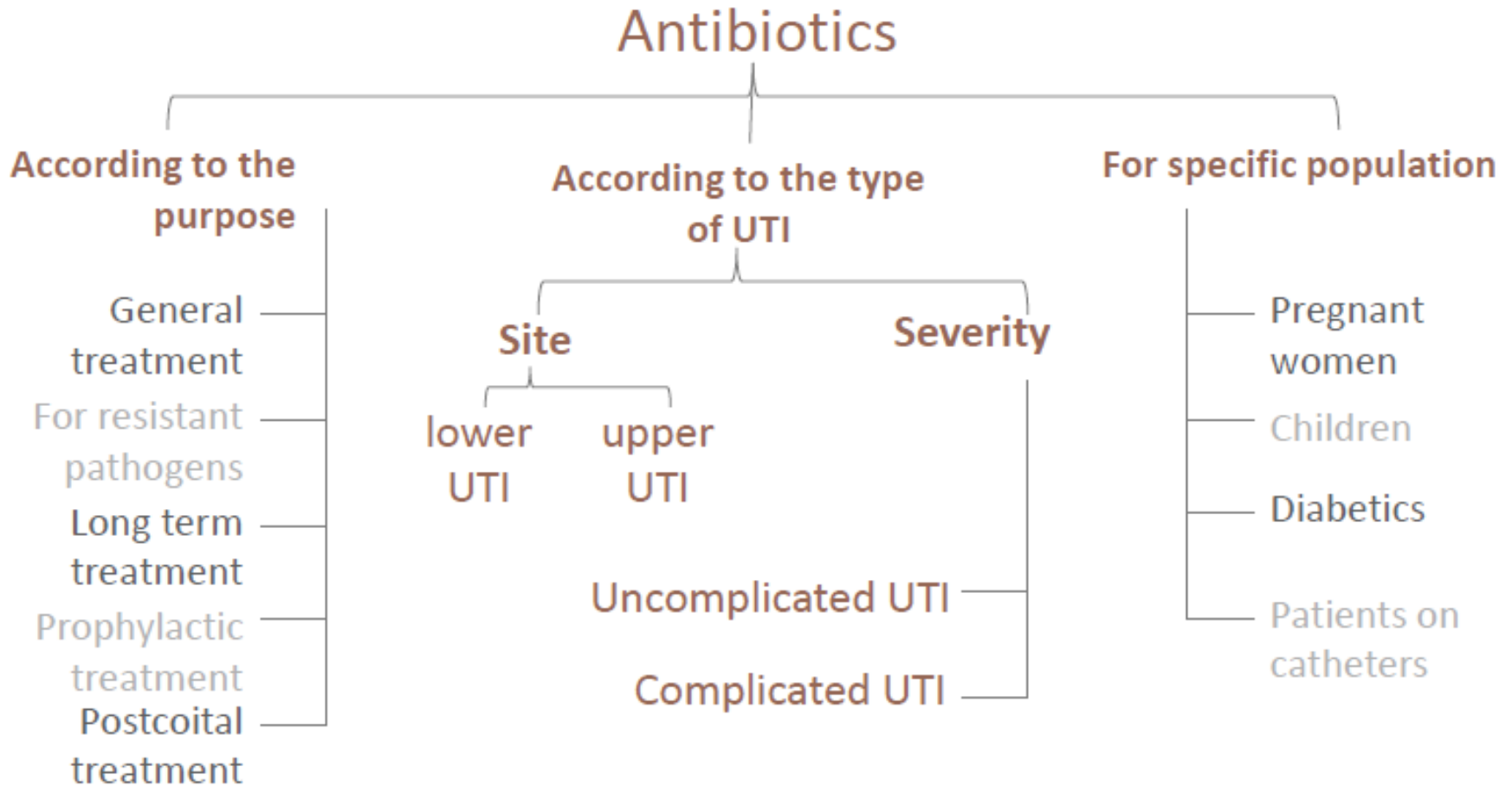


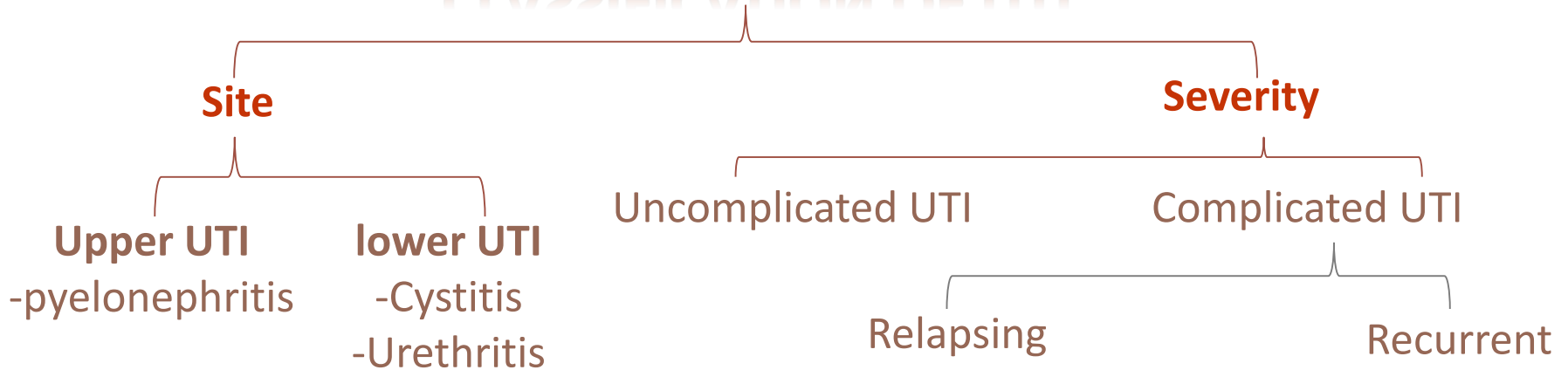
MIND MAP (MANAGEMENT OF UTI)



ANTIBIOTICS USED FOR UTI TREATMENT

Purpose	Antibiotic	Duration	notes
Major drugs used for UTI	Amoxicillin <i>or</i> Ampicillin	Depends on the type of UTI: -lower UTI: 3-7 days -Pyelonephritis: 10-14 days (duration may differ according to the situation)	used with or without clavulanate. (depends on the pathogen)
	Cephlosporins		1 st (Cephalexin) or 2 nd (cefuroxime) generation of Cephlosporins
	TMP-SMX (Trimethoprim/sulfamethoxazole)		Also used for prophylaxis and postcoital therapy
if other antibiotics are resistant	Fluoroquinolones (ciprofloxacin or norfloxacin)		<i>Contraindicated in <u>pregnant women and children</u> due to cartilage deformity.</i>
Long term Treatment	Nitrofurantoin		Used in chronic cases (only for cystitis not pyelonephritis)
Prophylactic therapy	TMP-SMX, Cephalexin or Nitrofurantoin	6 months or longer	- Reduces recurrence by up to 95% -more effective if taken at bed time - <u>Low doses of antibiotic should be taken</u>
Postcoital therapy (related to sexual activity)	TMP-SMX, Cephalexin or ciprofloxacin	taken immediately after intercourse	-A single preventive dose - usually with recurrent UTI (next slides)

CLASSIFICATION OF UTI



1. Uncomplicated UTI:

- If it happened for the first time
- If there are no recurrent infections
- No history of complication UTI
- Low-risk patient (usually a female)

Treatment plan:

treat with antibiotics for 3 days without urine test

Called empiric treatment. i.e. you choose the antibiotic that suits your predicted cause.

2. Complicated UTI:

A. **Relapsing UTI:** happens shortly after the initial infection.

Caused by:

- Treatment failure
- Structural abnormalities
- abscess

Treatment plan:

correct the cause and start antimicrobial therapy for 7-14 days.

B. **Recurrent UTI:** *patients with 2 or more symptomatic infections within 6 months, or patients with 3 or more infections over a year.*

Treatment plan:

antibiotics taken as soon as symptoms develop for 14 days + prophylactic therapy

Note: If infection occurs less than twice a year (Uncomplicated) , a **clean catch urine** test should be taken for culture. The treatment should take 3 days (previous slide)

PYELONEPHRITIS

Type of pyelonephritis	Clinical features	Treatment plan	Antibiotics used	Other tests/imaging
<u>Uncomplicated pyelonephritis</u>	Fever, chills, flank pain.	Treated <u>at home</u> with oral antibiotics for 14 days . (the first dose may be given by injection)	Antibiotic used for general treatment of UTI (refer to slide3) - amoxicillin is used with clavulanate - Ciprofloxacin is used in case of resistance.	Urine culture: should be obtained within one week of therapy. Another one after 4 weeks to check for recurrent infections
Moderate to severe pyelonephritis	---	Patients need hospitalization Antibiotic given by IV route for 3-5 days → symptoms relieved → complete <u>the duration</u> with oral rout	Antibiotic used for general treatment of UTI (refer to slide3)	If fever & back pain continue for 72 hours of treatment, imaging tests are indicated to check for abscess, obstruction or abnormalities

Uncomplicated pyelonephritis means:
patient is not pregnant, not nauseous or vomiting with no signs of kidney involvement

PYELONEPHRITIS (CONT.)

Type of pyelonephritis	Clinical features	Treatment plan	Antibiotics used	Other tests/imaging
<u>Chronic pyelonephritis</u>	---	Patients need long-term antibiotics treatment. (even during long symptom-free periods)	Prophylactic antibiotics (refer to slide 3)	---

URETHRITIS

The lecture discussed urtehritis in men only. As this disease doesn't usually effect men unless it was accompanied with STD* and is caused by different organisms, it has different treatment.

Classification + cause	Antibiotic used	notes
<p>1) Gonococcal urethritis: caused by Neisseria gonorrhoeae</p> <p>2) Non gonococcal: Caused by chlamydia</p>	<p>1) DOXYCYCLINE (7 days)</p> <p>2) Azithromycin: not recommended to avoid its spread to the prostate. Also, because it has many side effects & could cause sudden death.</p>	<p>Patients should be tested for accompanying STD*</p>

Treatment of UTI regarding specific populations

group		notes	Treatment	
			Antibiotics	Duration
Pregnant women	1- with asymptomatic bacteriuria <i>(evidence of infection but no symptoms)</i>	<ul style="list-style-type: none"> Have high risk for UTI (specially acute pyelonephritis) Should be screened for UTI regularly. (that's why asymptomatic bacteriuria is detected) 	1. Amoxicillin. 2. Ampicillin. 3. Cephalosporins. 4. Nitrofurantoin.	3-5 days
	2- with uncomplicated UTI <i>(with symptoms)</i>			*Pregnant women should strict to the above & should not take Quinolones .
Children	Without VUR	---	TMP-SMX <u>or</u> Cephalexin - If resistant → Gentamicin	---
	With Vesicoureteric reflux (VUR)	<ul style="list-style-type: none"> Can lead to pyelonephritis and kidney damage 	Long-term antibiotic + surgery	---
Diabetic patients		<ul style="list-style-type: none"> more frequent and more sever UTIs. 	General treatment (slide3)	7-14 days

Duration for specific populations is not important. It depend more on the type of UTI (lower or upper)

Treatment of UTI regarding specific populations

group	notes	Prevention	Treatment
Patients on catheters	<ol style="list-style-type: none"> 1. Very common 2. Catheterized patients usually develop asymptomatic UTI and at risk for sepsis. 3. Associated organisms are constantly changing. 4. May be multiple species of bacteria. 	<ol style="list-style-type: none"> 1. Daily hygiene and use of closed system. 2. replaced catheter every 2 weeks. 3. irrigating bladder with antibiotics between replacements. 4. If catheter is required for <u>long periods</u>, it is best to be used intermittently. 5. Antibiotic use for <u>prophylaxis</u> is rarely recommended since high bacterial counts present and patients do not develop symptomatic UTI. 	<ol style="list-style-type: none"> 1. treated for each episode with antibiotics. 2. catheter should be removed, if possible. 3. Antibiotic therapy has little benefit if the catheter is to remain in place for long period.

DOCTOR'S NOTES (SUMMARY)

1) Major antibiotics used to for UTI treatment include:

- A. Amoxicillin or Ampicillin
- B. Cephalosporins (Cephalexin or cefuroxime)
- C. TMP-SMX (Trimethoprim/ sulfamethoxazole)
- D. Fluoroquinolones (ciprofloxacin or norfloxacin)
- E. Nitrofurantoin

2) Quinolones are contraindicated for pregnant women and children.

3) Nitrofurantoin is contraindicated in pyelonephritis.

4) Duration of treatment:

- Lower UTI: 3-7 days
- Upper UTI: 10-14 days

Purpose		Antibiotic	Duration	Diseases
Major drugs used for UTI	General treatment	Amoxicillin or Ampicillin (-/+ clavulanate)	Depends on the type of UTI: -lower UTI: 3-7 days -Pyelonephritis: 10-14 days	CLASSIFICATION OF UTI (SEVERITY) <ul style="list-style-type: none"> Uncomplicated UTI : (Empiric treatment <i>without</i> urine test) Complicated UTI : (Antimicrobial therapy for 7-14 days) Recurrent UTI : (14 days + <u>prophylactic</u> therapy)
		Cephlosporins (Cephalexin or cefuroxime)		
		TMP-SMX (Trimethoprim/ sulfamethoxazole)		
if other antibiotics are resistant	Fluoroquinolones (ciprofloxacin or norfloxacin) * <i>Contraindicated in pregnant and children</i>	(duration may differ according to the situation)	PYELONEPHRITIS <ul style="list-style-type: none"> <u>Uncomplicated</u> pyelonephritis: (At home), oral antibiotics for 14 days. Moderate to severe pyelonephritis Hospitalization, IV route for 3-5 days, if it's continue for (72 h) do imaging test. <u>Chronic</u> pyelonephritis: 	
Long term Treatment	Nitrofurantoin only for cystitis			
Prophylactic therapy	TMP-SMX, Cephalexin or Nitrofurantoin	6 months or longer Low doses	Patients need long-term antibiotics treatment	
Postcoital therapy (sexual activity)	TMP-SMX, Cephalexin or ciprofloxacin	taken immediately after intercourse	<ul style="list-style-type: none"> Gonococcal urethritis : DOXYCYCLINE (7 days) and should be tested for STD 	



Questions!

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- 1. A 35 year old female presented with UTI for the first time, she didn't have any history of complications or underlying diseases. Her treatment plan should include:**
 - a) Treat with antibiotics for 1 to 2 weeks
 - b) Treat with antibiotics for 3 days without urine test
 - c) Long-term antibiotics
 - d) Oral antibiotics for 14 days

- 2. One of the following drugs is not used to treat upper UTI:**
 - a) Nitrofurantoin
 - b) Amoxicillin + clavulanate
 - c) Ciprofloxacin
 - d) Cephradine

- 3. The main treatment for Male urethritis is:**
 - a) TMP-SMX
 - b) Fluoroquinolones
 - c) Cephalosporins
 - d) Doxycycline



Questions!

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4. **Urinalysis for a pregnant woman who came to the OB/GYN clinic earlier showed bacteriuria. The woman didn't show any signs or symptoms for UTI. Her clinician should:**
- a) Prescribe Amoxicillin for 2 weeks
 - b) Prescribe Nitrofurantoin for 4 days.
 - c) Prescribe Quinolones. for 5 days.
 - d) Send her home without antibiotics.
5. **Diabetic patient presented with uncomplicated cystitis, his treatment plan should include:**
- a) Azithromycin for 7 days
 - b) Amoxicillin + clavulanate for 3 weeks
 - c) Ciprofloxacin for 3 weeks
 - d) TMP-SMX for 7 days

Answers:

- | | |
|------|-----|
| 1.b | 2.a |
| 3. d | 4.b |
| 5.d | |