DS ⇒ 160 : 800 ⇒ Treatment dose
SS ⇒ 80 : 400 ⇒ prophylaxis dose

TABLE 134-3 Overview of Outpatient Antimicrobial Therapy for Lower Tract Infections in Adults

Indications	Antibiotic	Oral Dose	Interval*	Duration
Lower tract infections	1 : 5	160 Tri / 800 sl		
Uncomplicated	Trimethoprim–sulfamethoxazole	1 DS tablet	Twice a day	3 days
	Nitrofurantoin monohydrate	100 mg	Twice a day	5 days
	Fosfomycin trometamol	3 g	Single dose	1 day
	Ciprofloxacin	250 mg	Twice a day	3 days
	Levofloxacin	250 mg	Once a day	3 days
	Amoxicillin–clavulanate	500 mg	Every 8 hours	5-7 days
	Pivmecillinam	400 mg	Twice a day	3 days
Complicated	Trimethoprim–sulfamethoxazole	1 DS tablet	Twice a day	7-10 days
	Ciprofloxacin	250-500 mg	Twice a day	7-10 days
	Levofloxacin	250 mg	Once a day	10 days
		750 mg	Once a day	5 days
	Amoxicillin–clavulanate	500 mg	Every 8 hours	7-10 days
Recurrent infections	Nitrofurantoin	50 mg	Once a day	6 months
	Trimethoprim–sulfamethoxazole	40 : 200 1/2 SS tablet	Once a day	6 months
Acute pyelonephritis	Trimethoprim–sulfamethoxazole	1 DS tablet	Twice a day	14 days
	Ciprofloxacin	500 mg	Twice a day	14 days
		1,000 mg ER	Once a day	7 days
	Levofloxacin	250 mg	Once a day	10 days
		750 mg	Once a day	5 days
	Amoxicillin–clavulanate	500 mg	Every 8 hours	14 days

Complicated ⇓ structural, Functional abnormality ....

هاي جرعات الـ prophylaxis سواء
كانت جرعات الـ recurrent او الـ
relapse / كل episode بواخذ
acute theraputic dose بـ
ولكن بمشي المريض على الـ
suppression therapy For prophylaxis

نفس جرعات الـ Ciprofloxacin + Cotrimoxazole
+ levofloxacin

therapeutic dose ← ولكن يمشي المريض على ال
suppression therapy For prophylaxis

يمشي على ال Kidney fun لانه يهمني اتاكد انه الدوا يوصل بتركيز كافي و
urine و urin tissue ال bacteriocidal

TABLE 134-2 Commonly Used Antimicrobial Agents in the Treatment of UTIs الاشياء لازم نمشي عليها و نتابعها

Drug	Adverse Drug Reactions	Monitoring Parameters	Comments
Oral Therapy	sever reaction	Kidney Function test	cotrimoxazol
Trimethoprim–sulfamethoxazole	Rash, Stevens–Johnson Syndrome, renal failure, photosensitivity, hematologic (neutropenia, anemia, etc.) hematolic abnormal ← عشانه	Serum creatinine, BUN, electrolytes, signs of rash, and CBC	This combination is highly effective against most aerobic enteric bacteria except *P. aeruginosa*. High urinary tract tissue concentrations and urine concentrations are achieved, which may be important in complicated infection treatment. Also effective as prophylaxis for recurrent infections
Nitrofurantoin	GI intolerance, neuropathies, and pulmonary reactions ال toxicity ← في الكلى ممكن ترتفع معها يزيد	Baseline serum creatinine and BUN impairment ← حيث انه اذا في	This agent is effective as both a therapeutic and prophylactic agent in patients with recurrent UTIs. Main advantage is the lack of resistance even after long courses of therapy
Fosfomycin trometamol	Diarrhea, headache, and angioedema	No routine tests recommended	Single-dose therapy for uncomplicated infections, low levels of resistance, use with caution in patients with hepatic dysfunction single dose ← ما بعطي الا complicated ال
Fluoroquinolones			
Ciprofloxacin Levofloxacin	Hypersensitivity, photosensitivity, GI symptoms, dizziness, confusion, and tendonitis (black box warning)	CBC, baseline serum creatinine, and BUN sensitive ← احد ال P.aeruginosa ← complicated ال في MO بدي اعتمد على اني بوظيفها	The fluoroquinolones have a greater spectrum of activity, including *P. aeruginosa*. These agents are effective for pyelonephritis and prostatitis. Avoid in pregnancy and children. Moxifloxacin should not be used owing to inadequate urinary concentrations
Penicillins			
Amoxicillin–clavulanate	Hypersensitivity (rash, anaphylaxis), diarrhea, superinfections, and seizures	CBC, signs of rash, or hypersensitivity	Due to increasing *E. coli* resistance, amoxicillin–clavulanate is the preferred penicillin for uncomplicated cystitis

← بكونه افضل عشانه ال resistance

single → معظم الكلام على انها واكو شائك نعطي جرعة كبيرة

بدلا ما نعطي اكزمن مرة هاد احد البروتوكولات

او نعطوا الوقت stand وهاد البروتوكول الثاني

والتين موجودين ومستخدمين

two agent اعطوا practes والـ therapy

β-lactam من different mech of action

(aminoglycoside / Fluroquenolons)

(piperacillin tazobactam & Flouroquinolon)

Cephalosporins			
Cefaclor Cefpodoxime-proxetil	Hypersensitivity (rash, anaphylaxis), diarrhea, superinfections, and seizures	CBC, signs of rash, or hypersensitivity	There are no major advantages of these agents over other agents in the treatment of UTIs, and they are more expensive. These agents are not active against enterococci
Parenteral Therapy			
Aminoglycosides			
Gentamicin Tobramycin Amikacin	Ototoxicity, nephrotoxicity	Serum creatinine and BUN, serum drug concentrations, and individual pharmacokinetic monitoring	These agents are renally excreted and achieve good concentrations in the urine. Amikacin generally is reserved for multidrug-resistant bacteria
Penicillins			
Ampicillin–sulbactam Piperacillin–tazobactam	Hypersensitivity (rash, anaphylaxis), diarrhea, superinfections, and seizures	CBC, signs of rash, or hypersensitivity	These agents generally are equally effective for susceptible bacteria. The extended-spectrum penicillins are more active against *P. aeruginosa* and enterococci and often are preferred over cephalosporins. They are very useful in renally impaired patients or when an aminoglycoside is to be avoided
Cephalosporins			
Ceftriaxone Ceftazidime Cefepime Ceftozolane/tazaobactam Ceftazidime/avabactam	Hypersensitivity (rash, anaphylaxis), diarrhea, superinfections, and seizures	CBC, signs of rash, or hypersensitivity	Second- and third-generation cephalosporins have a broad spectrum of activity against gram-negative bacteria, but are not active against enterococci and have limited activity against *P. aeruginosa*. Ceftazidime and cefepime are active against *P. aeruginosa*. They are useful for nosocomial infections and urosepsis due to susceptible pathogens

active مشتغل على pseudomonas p. aeruginosa
عليها بس ما تغطيها كفاية

Azetreonam ⇒ cell wall synthesis inhibitor هو / monobactam
(mechanism of action الا نفس) اشتغل على p. aeruginosa
تفيد بالناس الي عندهم allergy لانه ما في crossallergy

Carbapenems/monobactams			
Imipenem–cilastatin Meropenem Meropenem/vaborbactam Doripenem Ertapenem Aztreonam	Hypersensitivity (rash, anaphylaxis), diarrhea, superinfections, and seizures	CBC, signs of rash, or hypersensitivity	Carbapenems have a broad spectrum of activity, including gram-positive, gram-negative, and anaerobic bacteria. Imipenem, meropenem, and doripenem are active against *P. aeruginosa* and enterococci, but ertapenem is not. Aztreonam is a monobactam that is only active against gram-negative bacteria, including some strains of *P. aeruginosa*. Generally useful for nosocomial infections when aminoglycosides are to be avoided and in penicillin-sensitive patients
Fluoroquinolones			
Ciprofloxacin Levofloxacin	Hypersensitivity, photosensitivity, GI symptoms, dizziness, confusion, and tendonitis (black box warning)	CBC, baseline serum creatinine, and BUN	These agents have broad-spectrum activity against both gram-negative and gram-positive bacteria. They provide urine and high-tissue concentrations and are actively secreted in reduced renal function

Carba (handwritten beside carbapenems)

Aztreonam monobactam → للناس الي عندها allergy من الـ B-lactam

مرنة نشغلها out patient

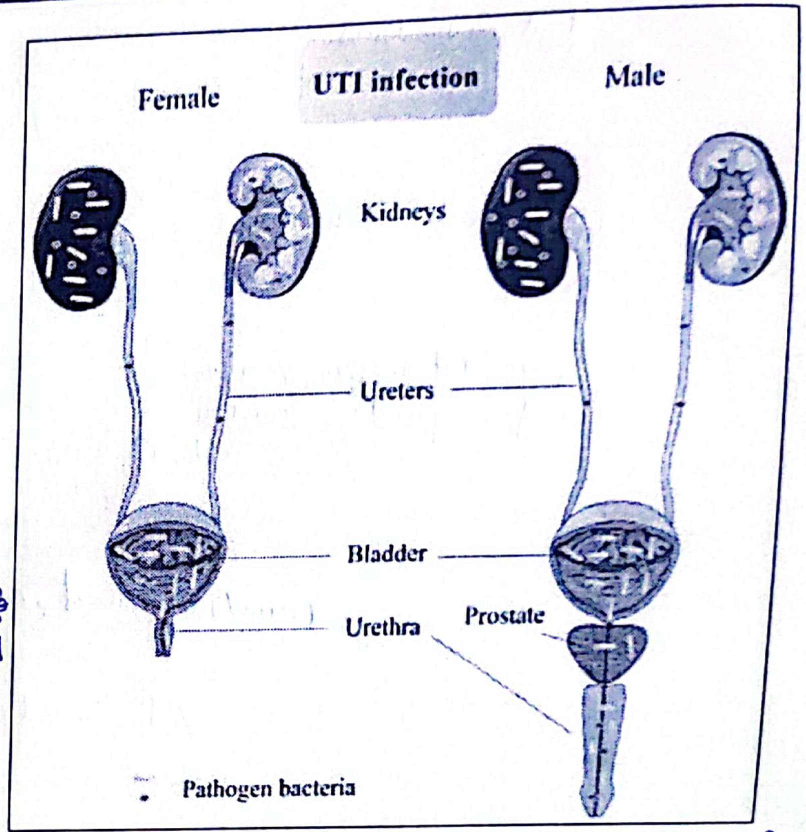
⇒ by Filtration مش بس
ما يوصلوا الـ site of infection الـ urinary system
الـ Conc بالتالي بس by Filtration العالية
مش كثير يتأثروا بالـ Kidney Function

BUN, blood urea nitrogen; CBC, complete blood count; GI, gastrointestinal; UTIs, urinary tract infections.

حصيا بسبب الاختلاف في الـ urethra بتكون أصعب انه البكتريا توصل الـ bladder وتصير UTI أو حكينا عند الـ women
الـ opening و prerectal المسافة (قرب)

Genitourinary Infections in Men

Cystitis:



- ✓ Cystitis is uncommon in young men; E. coli is the most frequent pathogen.
- ✓ Risk factors include urologic abnormality, anal intercourse, and lack of circumcision.
- ✓ A pretreatment urinalysis and culture should be sent.

في الـ women كان الـ uncomplicated مش بحاجة لـ culture لكن الـ men اذا اصابه cystitis بنعتبره complicated
وبنعمل culture

- ✓ Other urologic studies are appropriate if there are no underlying risk factors, when treatment fails, in recurrent infections, or when pyelonephritis occurs.

→ other factors بتكون صعب تحسبه أو اذا حكينا وصابته risk factors اذا ما في
بدنا نعمل فحوصات اكثر (urologic) / ما استجاب على الدوا اول مرة / او وصل الـ infection للـ Kidney

Prostatitis: => inflamation in prostate (acute, chronic)

✓ Acute prostatitis:

- It usually presents with fever, chills, dysuria, pelvic pain, obstructive symptoms, and a boggy, tender prostate on examination. => لما يفحصه الطبيب

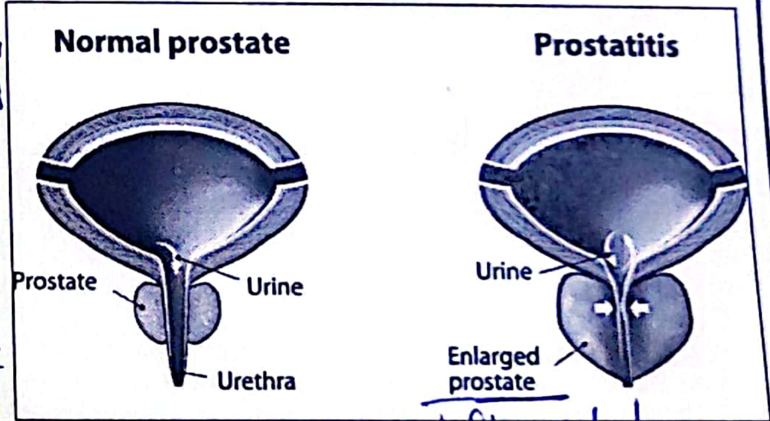
- It is caused by E. coli and other gram-negative organisms.

- Diagnosis is made by physical examination and urine Gram stain and culture. يعني من الـ examination للطبيب والـ symptom

- Prostatic massage is contraindicated as it can lead to bacteremia. +very painful

اصلاً ليش بنعمل ؟ <= الـ infection هون مش في الـ bladder في الـ prostate بالتالي بدنا الـ prostatic secretion هيه اللي نفحصها فـ الـ culture بس prostatic بنعملها massage بناخذ الـ secretion بس بتكون contraindicated في الـ acute

لانه بنخاف الـ infection يوصل للدم ويصير مشكلة اكبر وبتكون painful بنعملها في الـ chronic



inflamed → بـ obstruct والـ urine مابيخرج بالـ normal flow

y.

* هدي حبار الها عندهم الحرمن ٣ شهور بس تجي الـ Symptom نعمل culture عشان يعرفوا السبب بالزبط وين

✓ Chronic prostatitis:

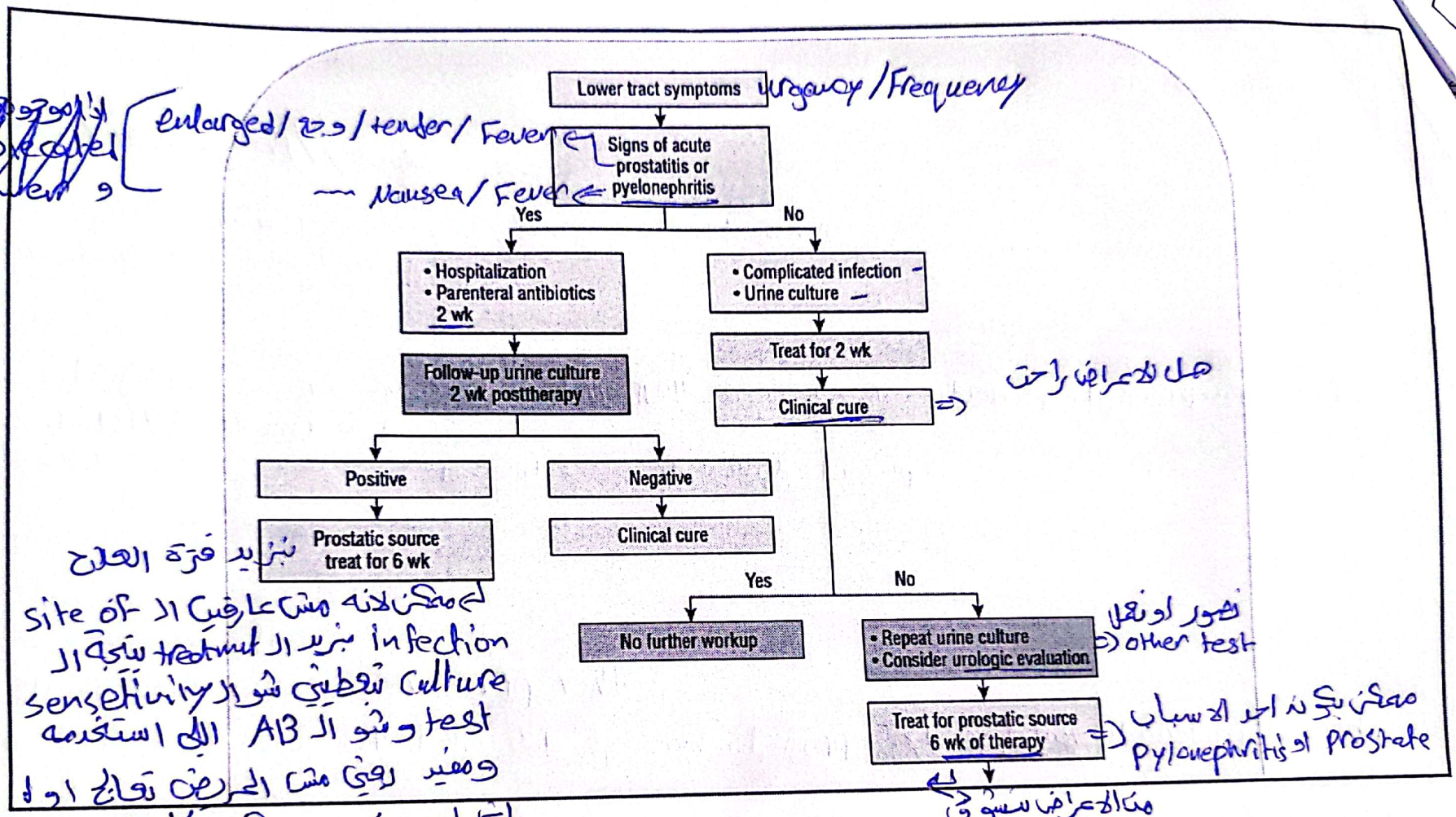
- It is defined as presence of urinary symptoms for > 3 months. urgancy / Frequency / dysurea
  لـ تتكون تخفا وتزيد
- It is frequently noninfectious. ⇒ الـ AB بس ممكن تعطي / ممكن تكون بسبب infection الها مش بوضوح متل الباقي treatment
- Chronic bacterial prostatitis is caused by enteric gram-negative organisms. Symptoms include frequency, dysuria, urgency, perineal discomfort, and recurrent UTIs.
  يعني هنا infected source مهم نعمل eradicate للـ MO من هنا الـ source الي هو الـ prostate وهو موجود في معناها recurrent UTI لدى المريض
- Urine cultures should be obtained when the patient is symptomatic. بدل
  لـ حكينا الاعراض بتجي وتختفي لناخذ sample
- Referral to a urologist for quantitative cultures before and after prostatic massage may be necessary.
- Transrectal ultrasound can be used if prostatic abscess is suspected. اذا توقعوا انه في abscess او في مشاكل اخرى ممكن يستخدموا other procedure

* بدهم اخصائي مسالك (Urologist) هون بعملوا prostatic massage وبعملوا quantity للـ number of bacteria before و after

- هدول 4-samples تتكون اول 10ml urine (حكينا في UTI بناخذ العينة mid-stream هون لا) هاي بتمثل الـ urine في الـ urithra مش في الـ bladder يعني اذا في infection تعطينا دلالة عن الـ infection (هو مع الـ urine مشان في الـ urithra لكن هو بمر فيها) بعدها الـ patient بعمل voiding للـ 200ml خارج وبناخذ 10ml of urine وهاي تمثل الـ urine في الـ bladder بعدين بعمل الطبيب prostatic massage بعدها متوقع يكون في prostatic secretion بناخذها sample (EPS) بعدها المريض بعمل voiding وآخر 10ml تتكون الـ sample الرابعة اذا كان الـ number of bacteria في الـ sample الثالثة اكثر من 10 اضعاف اول عينتين الي هو الـ urine في الـ urithra والـ bladder يعني الـ source هو الـ prostate يعني في prostatitis اذا ما كانت في prostatic secretion ساعتها الـ sample الرابعة (بعد الـ prostatic massage) . اذا الـ number of bacteria كانت 10^5 اضعاف يكون الـ infection في الـ prostate

✓ Treatment:

- Acute bacterial prostatitis should be treated with a 6 week course of either ciprofloxacin 500 mg PO q12h or TMP-SMX 160 mg/ 800 mg (DS) PO q12h.
- Chronic prostatitis is difficult to treat. Culture-positive chronic bacterial prostatitis should receive prolonged therapy (for at least 4– 6 weeks with a fluoroquinolone or TMP-SMX).
  لـ ممكن اكثر يوصل الـ treatment لـ 12 اسبوع
  ← نفس الـ regimen
  بس لازم نعرف شو المشكلة وسبب انه صار الـ chronic



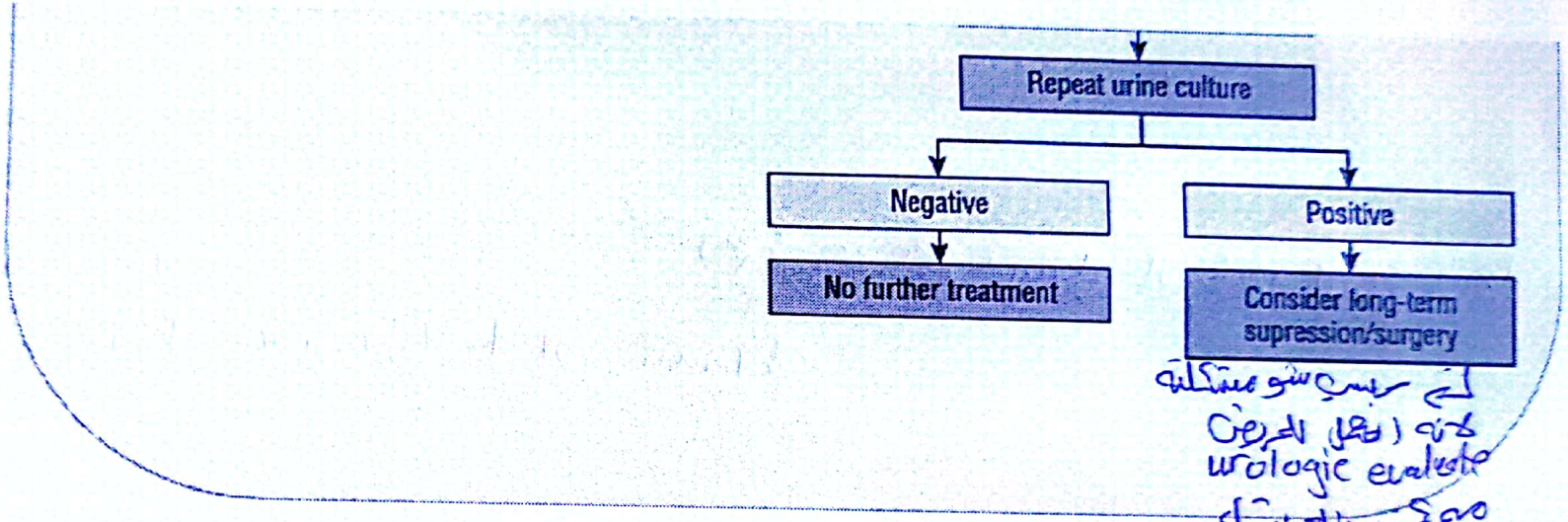


FIGURE 134-2 Management of urinary tract infections in males.

Pyelonephritis

وممكن يكون hematogenous من البلد اللي هو الـ descending يعني من الدم للكلية بس
الغالب يكون ascending .

- ✓ Pyelonephritis is infection of the kidney, usually due to ascending infection from the lower urinary tract.
- ✓ The causative agents are typically Enterobacteriaceae such as E. coli or Proteus spp.
  ← multy drug resistans organism
- ✓ The incidence of MDRO is rising, especially in patients with recent use of broad-spectrum antibiotics or exposure to health-care facilities.

ممكن نتوقع في بعض الحالات اذا MDRO
المريض عنده تاريخ / مثلا اخذ AB / اخذ العدوى من المستشفى وتقلها للبيت

Diagnosis

✓ Clinical Presentation:

- Patients present with fever, chills, flank pain, nausea/ vomiting, and costovertebral angle tenderness, often along with cystitis symptoms. upper و lower UTI symptom

- Patients may present with sepsis or multiorgan dysfunction, especially if they have urinary obstruction and recent instrumentation or are elderly or diabetic.

يمكن اول اتي يجي المريض عنده sepsis بين الحمر يكون UTI / او يكون severcase و صار عندها septic shok و دخلت في septicemia و صارت تعاني من Kidney Failur , heart failur

✓ Diagnostic Testing:

- Urinalysis reveals significant bacteriuria, pyuria, red blood cells, and occasional leukocyte casts.

- A urine culture should be sent. Blood cultures should be obtained in hospitalized patients as bacteremia is present in 15%– 20% of cases.

- Imaging may be considered if symptoms persist despite 48– 72 hours of appropriate antibiotics or for suspected urinary tract obstruction.

- Ultrasonography, CT scan, or IV pyelogram may demonstrate the presence of a renal abscess or renal calculi, which may require more invasive management.

نطلبش يعني اعطايا انه هاد ال AB فعال وبعطي هاي ال bacteria بس بيمكن هاي على الواقع ما ساعد المريض

Deemah Sartawi
دعوة بظهر الغيب منكم
الموفقين بالفيرست باخر تحيب

Treatment

✓ Start empiric antibiotics promptly. See Tables.

✓ Patients with mild to moderate illness who are able to take oral medications can typically be treated in the outpatient setting. رجعت الدكتورة لـ algorithm الاول الي عن ال Femal حكت عنه سريع

✓ Patients with more severe illness and pregnant patients should be treated initially with IV therapy.

* حسب ال severity للـ illness بعالج in/ out و parentral/ oral
* هاي ال severity بحددها الاعراض وشدتها
* ال pylonephritis بيصاحبها abdominal pain, Nausea, vomiting اذا كانت sever بده مستشفى (able to take oral) بمعنى ادخله المستشفى لانه مش قادر ياخذ oral
* لحد كم انا بدي اعطي المريض IV فترة العلاج للـ pylonephritis كامل ١٤ يوم (general) عادة من ٢-٥ ايام تحديد بكمل لعدة oral (general) سوعيش تترك ال IV بعد ما يصير afebrile على الاقل ٤٨ ساعة تعتمد على شو ال agent يعني اخر جرعته ال IV اليوم وبدي احوله لـ oral ما بعطي الجرعة اليوم لا ببدي بعطي الجرعة
* كل ما طلعنا المريض اسرع من المستشفى كل ما كانه افضل عشانه ما ياخذ عدوى بعطي اشي oral بعطي السبترا اللي عنده حتى لو مش نفس ال class / amioglycosid ما بعطوا مدة طويلة عشان ال toxicity