

Micro summary.

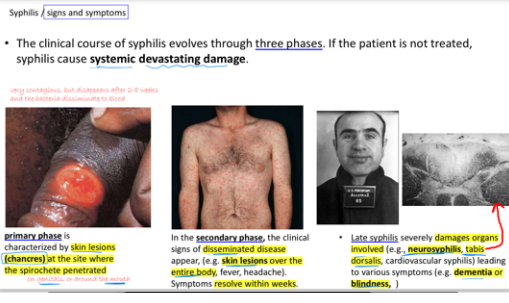

Done by : Rahaf Jamal

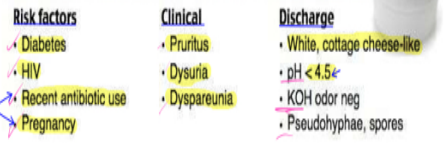

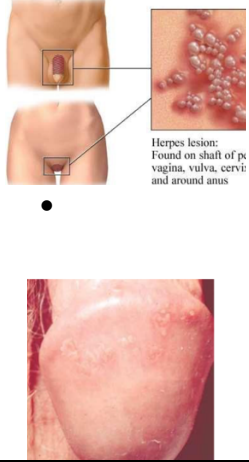
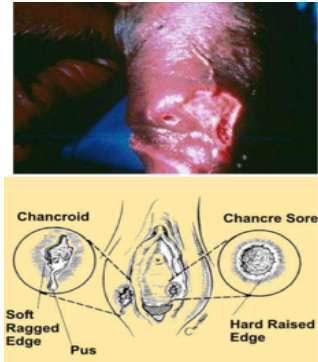
Disease	Cause	Sign and symptoms	Diagnosis	Treatment	Picture	Note
Cystitis	urinary tract infection (UTI)	Dysuria, Urinary frequency, Urinary urgency, Hesitancy Suprapubic discomfort, Gross hematuria. Pyuria	* detailed history. E.g., in women presenting with at least one symptom of UTI (dysuria, frequency, hematuria, or back pain) and without complicating factors, the probability of acute cystitis or pyelonephritis is 50%. * If vaginal discharge and complicating factors are absent (in which STDs and other more serious conditions can be ruled out), the probability of UTI is close to 90%, and no laboratory evaluation is needed before initiation of therapy. * Urine culture is the gold standard for detection of urinary tract infection.	* Antimicrobial therapy is warranted (necessary) for any symptomatic UTI. o The choice of antimicrobial agent and the onset and duration of therapy depend on the site of infection and the presence or absence of complicating conditions. * Nitrofurantoin is recommended for the treatment of cystitis because it is highly active against E. coli and achieves high urinary concentration Trimethoprim/ sulfamethoxazole is also highly effective for the treatment of uncomplicated cystitis. *Fluoroquinolones levofloxacin or ciprofloxacin) o Beta-lactams are less effective in the treatment of UTIs since gram -ve bacteria including Enterobacteriaceae family are usually resistant to these agents.		inflammation of the bladder.
Pyelonephritis		Fever, flank pain + the same symptoms as cystitis				* common route by which the kidneys get infected is the ascending route from a previous UTI (bladder → ureter → kidneys) * costovertebral angle tenderness * single episode of acute pyelonephritis in an adult woman can lead to renal scarring. * o Chronic pyelonephritis results from recurrent episodes of acute pyelonephritis. Typically requires predisposition to infection such as vesicoureteral reflux VUR or chronically obstructing kidney stones. o Xanthogranulomatous pyelonephritis: A rare, serious, debilitating illness characterized by a chronic inflammatory mass originating in the renal parenchyma. o Gross appearance: Mass of yellow tissue composed of lipid-laden macrophages and inflammatory cells, regional necrosis, and hemorrhage
Prostatitis		dysuria, frequency, and pain in the prostatic, pelvic, or perineal area (not common in cystitis). Fever and chills are usually present, and symptoms of bladder outlet obstruction are common.				Murphy's percussion test is negative


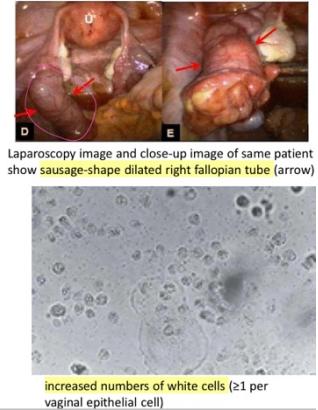
Sexually transmitted diseases

Symptoms and signs of disease may include vaginal discharge, penile discharge, ulcers on or around the genitals, and pelvic pain. Dysuria and dyspareunia can also happen. Many STDs can be asymptomatic.

Bacterial vaginosis (BV)	Lactobacillus Normal vaginal flora	*50 to 75 % of cases are asymptomatic. In symptomatic cases, there is thin, white, fishy smelling discharge, most noticeable after intercourse. * Pregnant women with BV have a higher rate of preterm delivery and pregnancy complications.	Discharge examination * based on Amsel criteria 1- homogeneous, watery, white-grey discharge coating the vaginal walls 2- vaginal pH > 4.5; 3- positive amine test— add 10% KOH to a sample of discharge— positive if produces a fishy odour; 4- the presence of 'clue cells' (epithelial cells studded with adherent coccobacilli)	*Probiotic supplements properly contain lactobacilli to restore the normal vaginal flora * infection resolved in one-third of cases. * metronidazole and clindamycin • Thirty percent of patients experience recurrence within 3 months. A prolonged (e.g. 14 days) or alternative treatment course should be used in such patients.	* BV isn't a sexually transmitted infection (STI), but it can increase your risk of getting an STI such as chlamydia * BV is caused by complex changes in the balance of the microbiological flora. * BV also increases the risk of contracting other STDs like HIV.
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Trichomoniasis	flagellated protozoan T. vaginalis (TV).	Infection is asymptomatic in 10– 50% of women and 15– 50% of men <ul style="list-style-type: none"> •Symptoms include frothy, yellow vaginal discharge (may be itchy and smelly), dyspareunia, dysuria, and lower abdominal pain. •punctate haemorrhages on the cervix ('strawberry cervix') in 2% of patients • Can lead to urethritis in men. 	* Microscopy—phase-contrast dark-ground microscopy of wet preparation of genital specimens will demonstrate the motile flagellated protozoans in 48– 80% of infected women and 50– 90% of infected men. <ul style="list-style-type: none"> •Point-of-care tests, e.g. OSOM Trichomonas rapid test has a sensitivity of 80– 94% and a specificity of >95%. • NAATs offer the highest sensitivity and are becoming the gold standards 	Metronidazole 2g stat dose or tinidazole 2g stat dose. Partners and asymptomatic individuals should be treated		* TV pathogenesis include damage to host tissue mediated by parasite killing of host cells, disruption of steady-state vaginal microbial ecology, and eliciting inflammation by activating the host immune response.
Syphilis	Treponema pallidum		<ul style="list-style-type: none"> •Darkfield microscopy, immunofluorescent stains, or PCR . •Serology is the most important tool; *non treponemal/ cardiolipin tests, quantitative test should be done to screen, stage the disease and monitor treatment. * specific treponemal tests <p>Treponema</p>	* syphilis can be controlled only through the practice of -safe sex and treatment with antibiotics <ul style="list-style-type: none"> • penicillin is the drug of choice .(Benzathine benzylpenicillin/Penicillin G). 		* Spirochete are thin ,helical gram-negative bacteria , has not been cultured regularly in vitro because they are dependent on host cells for many metabolites extremely sensitive to oxygen (microaerophilic or anaerobic) <ul style="list-style-type: none"> * syphilis can not be transmitted through contacting inanimate objects such as toilet seats * The most common route of spread is by direct sexual contact. * Other routes include congenitally (from an infected mother) or by transfusion with contaminated blood.
Gonorrhoea	N. gonorrhoeae.	*genital infection in men restricted to the urethra. A purulent urethral discharge and dysuria <ul style="list-style-type: none"> *half of all infected women have mild or asymptomatic infections. * retrograde ,causing salpingitis/ endometritis, PID, and tubo- ovarian abscesses in up to 20% of women with cervicitis. 	*Exudates (by a swab into urethra), urine, cervical or throat swabs <ul style="list-style-type: none"> *Nucleic acid amplification tests (NAATs)— test of choice 	*Treatment should include patient and sexual partner/s. <ul style="list-style-type: none"> • First- line therapy is ceftriaxone 500mg IM single dose plus azithromycin 1g PO single dose 		*purulent infection of mucous membrane (e.g. urethra, rectum, cervix, conjunctiva, pharynx) <ul style="list-style-type: none"> *aerobic gram -negative bacteria, typically coccoid shaped arranged in pairs (diplococci) not part of normal flora *N. gonorrhoeae is fastidious and only grows on enriched chocolate agar and other supplemented media. *second commonest STI
Chlamydia	Chlamydia trachomatis.	*Trachoma is the leading cause of preventable blindness. <ul style="list-style-type: none"> *woman are asymptomatic (as many as 80%) while most in men are symptomatic, as many as 25% of the infections will be inapparent. *cervicitis in women and urethritis and proctitis in both men and women. *Lymphogranuloma venereum 		*Treatment should include patient and sexual partner/s. <ul style="list-style-type: none"> • The drug of choice for reasons of compliance is doxycycline 100mg bd PO for 7 days or azithromycin 1g single dose 		*Infect epithelial cells, which are found on mucous membranes of the urethra, endocervix, endometrium, fallopian tubes, anorectum, respiratory tract, and conjunctivae <ul style="list-style-type: none"> • Metabolically inactive infectious forms (elementary bodies [EBs]) and metabolically active noninfectious forms (reticulate bodies [RBs]) *most common bacterial sexually transmitted diseases *sexual transmission, eye-to-eye transmission of trachoma is by droplet, hands, contaminated clothing
Nongonococcal urethritis caused by Mycoplasma	M.genitalium and Ureaplasma urealyticum		*The most sensitive diagnostic test are PCR amplification test -specific gene targets.	Doxycycline and azithromycin as the primary drug of choice		*smallest free-living bacteria, do not have a cell wall and their cell membrane contains sterols.

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Vulvovaginal candidiasis	Candida albicans		<p>*wet mount of the discharge with 10% KOH may allow recognition of yeast and hyphae, *Vaginal pH is around 4– 4.5 *Preform culture in patient’s with persistent discharges or recurrent symptoms</p>	<p>*Oral and topical treatments fluconazole *immunosuppressed and those with severe symptoms are unlikely to respond to short treatment courses— 7– 14 days of topical therapy is recommended *Pregnancy— treat only for symptoms using a topical imidazole for 7– 14 days (e.g. clotrimazole). Oral azoles are contraindicated in pregnancy</p>		<p>*Candida albicans, which is an opportunistic pathogenic yeast that is a common member of the human gut flora.</p>
Lympho granuloma venereum LGVHSV-2 infection	serHSV-2 infection.	<p>starts first as an ulcer that goes unnoticed most of the time, then the ulcer disappears and the lymph nodes enlarge (inguinal and femoral LNs)</p>				
Ulcerative genital infections / Genital herpes	HSV-2 infection	<p>* visible outbreak consists of single or clustered vesicles (a cluster of blisters) on the genitalia that rupture and ulcerate before resolving *Asymptomatic viral shedding is common.</p>	<p>*clinically it can be diagnosed by the presence of an ulcer preceded by a blister with a history of recurrence. *Viral culture from fluid and ulcerated lesions are useful for definitive *PCR- based viral detection (the gold standard) is rapid and specific. And so is Viral antigen detection.</p>	<p>* Systemic antiviral drugs especially acyclovir, valacyclovir, and famciclovir *Symptomatic treatment lidocain) ointment especially for painful micturition.</p>		<p>*HSV has a double stranded linear DNA genome, these viruses are usually characterized by: Lifelong infection and periodic reactivation *Patients with HSV-1 infection average zero to one recurrence per year, whereas HSV-2 recurs four to five times annually</p>
Ulcerative genital infections / Chancroid	Gram negative bacterium Haemophilus ducreyi	<p>*Painful, erythematous papules develop on the external genitalia then advance into pustules, and then erode into sloughy, non- indurated haemorrhagic ulcers</p>	<p>* Single oral dose of azithromycin or ciprofloxacin and intramuscular ceftriaxone regimens offer advantages in terms of improved patient compliance</p>			<p>*characterised by necrotising genital ulceration *Chancroids are similar to chancres (syphilitic ulcers), but they can be differentiated by some characteristics: ✓ Chancroids are painful and they have a ragged edge whereas chancres have raised, circular edges and are painless.</p>

Disease	Cause	Sign and symptoms	Diagnosis	Treatment	Picture	Note
Genital warts	human papillomavirus (HPV)	<ul style="list-style-type: none"> •Within few weeks of the initial contact we can start seeing those fleshy outgrowths, around the genitals or anus *Lesions are rarely considered to be painful, however the often associated with severe discomfort, burning, and pruritis and they may bleed 	<ul style="list-style-type: none"> *Diagnosis is mostly made through clinical examination or through PCR of DNA or antigens tests to determine the type of HPV. *Pap tests, can help detect vaginal and cervical changes caused by genital warts or the early signs of cervical cancer, some advocate that it should be performed annually after the age of 21, or after one's sexually active. 	<ul style="list-style-type: none"> *vaccine known as Gardasil protects against four strains of HPV that cause cancer, and is used to prevent genital warts (against HPV 6,11,16,18) *Imiquimod is a newer modality of therapy, it activates innate immunity by activating toll like receptor 7 and it helps in activation of adaptive immunity. ✓podophyllotoxin, works on continuously dividing cells or viruses, (antimitotic drug) ✓Cryotherapy: application of liquid nitrogen to the warts to help in eliminating them ✓ Trichloroacetic acid: can help in "melting" the warts 		<ul style="list-style-type: none"> *HPV circular, double stranded DNA protected by capsid proteins *90% of cases are related to HPV subtypes 6 *HPV subtype 16&18 associate with squamous cell carcinoma *Women tend to be affected more than men in most settings *the hallmark of an HPV-infected cell is the development of morphologically atypical keratinocytes known as koilocytes.
Pelvic inflammatory disease (PID)	bacterial vaginosis.	<ul style="list-style-type: none"> *The hallmark of the diagnosis is pelvic tenderness (cervical motion tenderness, adnexal tenderness, or uterine compression tenderness) combined with inflammation of the lower genital tract * The abrupt onset of severe lower abdominal pain or shortly after menses has been the classic symptom used to identify acute . 	<ul style="list-style-type: none"> *Clinical diagnosis is often imprecise and more tests are needed to confirm diagnosis *Although laparoscopy has been considered the standard for the diagnosis of pelvic inflammatory disease, it has high interobserver variability and is invasive. *Transcervical endometrial aspirations with histopathological findings of WBCs is more commonly used to confirm the diagnosis of pelvic inflammatory disease. 	The treatment of pelvic inflammatory disease is empirical and involves the use of broad- spectrum combination regimens of antimicrobial agents to cover likely pathogens.		<ul style="list-style-type: none"> *Other than primary infections from STDs, infection can also be secondary to invasive intrauterine surgical (e.g. termination of pregnancy). **Sequalae •Infection result in fibrinous or suppurative inflammatory damage along the epithelial surface of the fallopian tubes and the peritoneal surface of the fallopian tubes and ovaries, which leads to scarring, adhesions with surrounding organs, and possibly partial or total obstruction of the fallopian tubes • This can results long-term reproductive disability, including infertility, ectopic pregnancy, and pain.

urinary tract infection (UTI) bacteria

1- Uropathogenic E.coli (UPEC)

- It is a gram negative rod, facultative anaerobe.
- The optimum growth temperature is 37C.
- On nutrient agar, colonies are large, thick, greyish white, moist, smooth.
- There is a subtype of E.coli can cause epidemic diarrheal diseases.

2- Enterococcus faecalis

- The enterococci are gram-positive cocci, typically arranged in pairs and short chains.
- E. faecalis is found in the large intestine
- it is a common cause of complicated UTIs (By the insertion of a catheter).
- Enterococci are one of the most common causes of infections acquired in the hospital (nosocomial infection).
- It's resistant to many antibiotics.
- Pass antibiotic-resistance genes to other bacteria by horizontal gene transfer either by conjugation or transformation with naked DNA.

3- Klebsiella pneumonia

- routinely found in the human nose, mouth, and gastrointestinal tract as normal flora.
- Antibiotic resistant which is another problem.
- Pass antibiotic-resistance genes to other bacteria by horizontal gene transfer either by conjugation or transformation with naked DNA.

4- Proteus mirabilis

- is a Gram negative, facultatively anaerobic, rod-shaped bacterium. It shows swarming motility and urease activity.
- The urine is supposed to have a low pH so the increase in the level of ammonia in the urine raises the local pH.
- alkaline pH leads to precipitation of calcium and magnesium ions and the formation of urinary stones

The triad of infection

- 1- Factors in the organism, most importantly the existence
- 2- Host factors which includes:
 - The immune response. Ex: immunocompromised patients are more likely to get UTIs.
 - Behavioural factors related to the host; sexual intercourse is an independent factor that increases the risk of UTIs. Also, multiple sexual partners increase the risk of UTIs.
 - Genetic background: certain people have a higher risk of having UTIs. It's found that females who have UTIs their daughters or mothers also have a higher chance of getting UTIs.
- 3- The environment in which this interaction takes place

ASYMPTOMATIC BACTERIURIA (ASB)

1- MICROBIOLOGICAL DIAGNOSIS

- - It tests for the presence of a certain number of CFU (colony forming units) in urine.
- - In asymptomatic women: recent guidelines define it as 2 consecutive voided urine specimens with isolation of the same bacterial strain in quantitative counts $\geq 10^5$ cfu/ml (isolating the same bacterial strain in both specimens is important to eliminate the possibility of a contamination).
- - In men: a single, clean-catch voided urine specimen with 1 bacterial species in a count $\geq 10^5$ cfu/ml can be identified as bacteriuria.

2- CLINICAL DIAGNOSIS

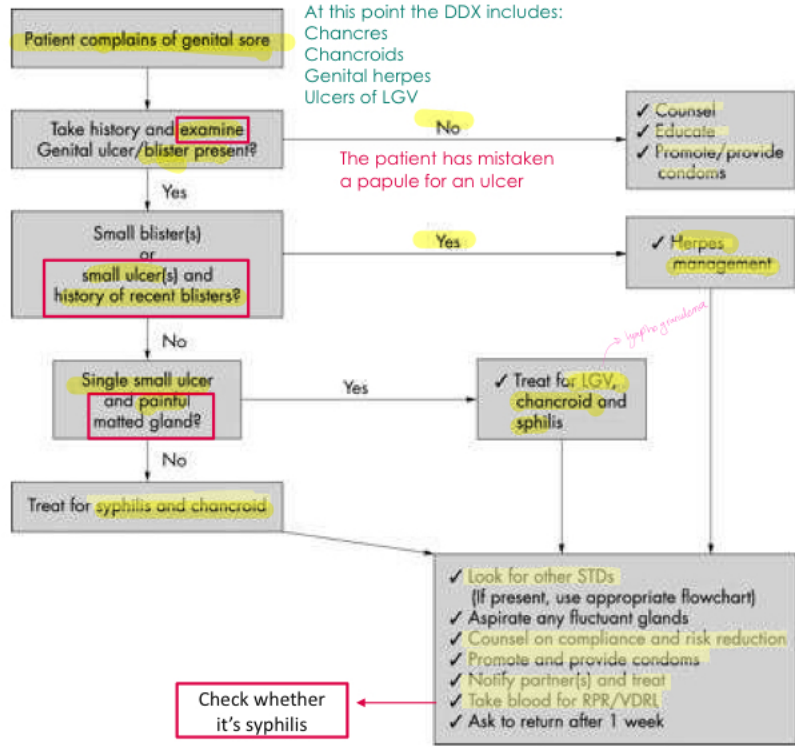
- 3- - Indicates there should be no referable symptoms to the urinary tract,. There is no presence of symptoms, but there are bacteria in the urine.

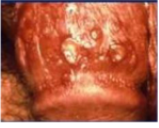


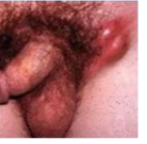
- Pregnancy and patients undergoing genitourinary procedures associated with mucosal bleeding (transurethral prostate resection and renal implants) should be screened and treated for asymptomatic bacteriuria.

CATHETER-ASSOCIATED URINARY TRACT INFECTION (CAUTI)

- CAUTI/UTI is the most common type of healthcare-associated infection. In an acute care hospital setting, more than 30% of infections are UTIs
- How do we manage CAUTI? By removing or replacing the catheter. In addition, you start treatment with empirical IV antibiotics
- How do we minimize the risk of CAUTI? Healthcare workers should follow septic techniques while placing the catheter. The catheter should be placed if there are clear indications. In cases of patients who require chronic indwelling catheters (long-term catheters), alternatives should be considered, such as intermittent catheterization.

You start here by taking the complaint



	Genital herpes	Primary syphilis	Chancroid	LGV
				
Diagnostic clue	Painful vesicular lesions → multi-superficial ulcer	Painless indurated border	Extremely painful deep ulceration, ragged edges	Painless ulcer, heals within few days 'Groove sign'
Treatment	Acyclovir	Benzathine pen G Alternatives Doxycycline Tetracycline Erythromycin	Ceftriaxone Ciprofloxacin Erythromycin azithromycin	Doxycycline Erythromycin

- WHO recommended syndromic management for genital ulceration includes therapy for both chancroid and syphilis.

