

# Updates to the Management of STIs

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# Learning objectives

1. Counsel patients on appropriate **screening** (tests and intervals) for sexually-transmitted infections (STIs).
2. Summarize the **differences** in the CDC's 2021 treatment recommendations compared to 2015.
3. Diagnose possible **sequelae** from untreated STIs and coordinate subsequent care.

# What has changed since 2015?



- The 2021 CDC update on STI treatment guidelines has a handful of notable differences from previous recommendations:
  - **Gonorrhea (GC)** – the dose of ceftriaxone has been increased (and depends on the patient’s weight); this affects treatment of some other conditions/situations
  - **Chlamydia (CT)** – doxycycline is preferred over azithromycin; erythromycin and ofloxacin have been dropped as alternative treatments
  - ***Mycoplasma genitalium*** – treatment guidelines were clarified
  - **Bacterial vaginosis (BV)** – the concern for disulfiram-like reaction when drinking alcohol within recent use of metronidazole has been removed
  - ***Trichomonas vaginalis*** – disulfiram-like reaction warning has been removed; duration of preferred treatment for females has been lengthened
  - **Scabies** – treatment options have been broadened

# Introduction

- In the United States,<sup>\*</sup>
  - GC/CT, trichomoniasis, syphilis, genital herpes (from HSV-2), HPV, HBV, and HIV have a combined prevalence of 67.6 million and incidence of 26.2 million
    - Estimated point prevalence (men and women, median) –
      - HPV: 42,500,000
      - Genital herpes: 18,574,000
      - Trichomoniasis: 2,576,000
      - Chlamydia: 2,353,000
      - HIV: 984,000
  - 1 in 5 people has an STI
  - 45.5% of all new STIs occur in adolescents and young adults
  - New infections amount to \$16 billion in direct medical costs

\* 2018 estimates, published in 2021

# Infections by class\*

Bacterial	Viral	Parasitic	Fungal
Chlamydia	HSV-1/-2	Trichomonas	Candida
Gonorrhea	HPV	Pubic lice	Tinea
Syphilis	Molluscum contagiosum	Scabies	
Chancroid	Hepatitis A/B/C/D		
Mycoplasma	HIV		
Ureaplasma	(Mpox)		
BV			
Donovanosis			
(UTIs/Pyelonephritis)			

\* Though there is a relationship between these infections and sexual contact, not all occur exclusively with sex

# Case #1: preventative care

- Natasha, a 28 year-old cisgender graduate student, presents to your urgent care clinic for STI screening. She denies any known exposures and has never been seen in your health system before for testing. Being the comprehensive clinician you are, you take this opportunity to discuss sexual health preventative care that can be delivered in UC.
  - *What details would guide your recommendations about screening tests?*
  - *What vaccines and/or medications may be appropriate for her?*
  - *How are the recommendations different for her 26 year-old boyfriend Alexei?*

# Screening recommendations: GC/CT

## Gonorrhea and Chlamydia

### Women

- Sexually active women <25 years-old
- Sexually active women ≥25 years-old if at increased risk (e.g., >1 partner)
- Retest for GC/CT ~3 months after treatment
- Pregnant individuals <25 years-old or at increased risk should be retested during 3rd trimester (pregnant patients with CT should have a test of cure 4 weeks after treatment)
- In addition to urogenital GC/CT, consider pharyngeal GC and rectal GC/CT testing based on reported sexual behaviors and exposure

### Men

- Insufficient evidence for routine screening of men who have sex with women (MSW) at low risk of infection; consider screening young men for CT in high prevalence settings (e.g., correctional facilities)
- Men who have sex with men (MSM) should be screened for GC/CT at least annually at sites of contact (urethra, rectum) irrespective of reported condom use; consider also screening for pharyngeal GC; if at increased risk, screening every 3–6 months may be appropriate

# Screening recommendations: HIV/HCV

HIV	
Everyone	<ul style="list-style-type: none"><li>• Opt-out HIV testing for ages 13-64</li><li>• Anyone seeking evaluation and treatment for STIs</li></ul>
Women	<ul style="list-style-type: none"><li>• Pregnant individuals at the first prenatal visit (and again in the 3<sup>rd</sup> trimester if high risk)</li></ul>
Men	<ul style="list-style-type: none"><li>• MSM should be screened annually (or every 3-6 months if at increased risk)</li></ul>

Hepatitis C	
Everyone	<ul style="list-style-type: none"><li>• Adults &gt;18 years old unless low prevalence of infection</li></ul>
Men	<ul style="list-style-type: none"><li>• Annual screening only in HIV+ MSM</li></ul>

# Other screening recommendations

Syphilis	
Women	• If at increased risk
	• Pregnant individuals at the first prenatal visit (and again at 28 weeks gestation and delivery if high risk)
Men	• Sexually active men <29 years-old
	• MSM should be screened annually (or every 3-6 months if at increased risk)

Hepatitis B	
Women	• If at increased risk
	• Pregnant individuals at the first prenatal visit (and again at delivery if high risk)
Men	• If at increased risk
	• MSM should be tested for HBsAg, anti-HBc, and anti-HBs

# Sexual health prophylaxis

- HIV PrEP with emtricitabine/tenofovir (brand names: Truvada, Descovy) or cabotegravir (brand name: Apretude)
  - Also, HIV PEP
- HPV vaccine (brand name: Gardasil)
  - Routinely initiated at age 11-12, but could be started as early as age 9; if not previously given, it should be offered until age 26, with shared decision-making until age 45
- Hepatitis A and B vaccines
- Birth control (including emergency contraception)
- Condoms and other appropriate/relevant personal protective equipment

# Case #2a: urethral discharge

- Bruno, a 24 year-old Latino fireman, presents to your clinic with the chief concern of **dysuria** and **penile discharge**.
  - He reports mild **testicular discomfort**.
  - He denies other urinary symptoms.
  - He is uncircumcised and engages in unprotected vaginal intercourse with several female partners.
- 
- *What's your differential?*
  - *How would you further evaluate his symptoms?*

# Infections of the male urogenital system

- Gonorrhea (GC)
- Non-gonococcal urethritis (NGU):
  - Chlamydia (CT)
  - Mycoplasma
  - Ureaplasma
  - Trichomonas
  - Herpes simplex virus (HSV)
- Urinary tract infection (UTI) may be less likely in a male due to length of urethra
- The prostate gland, testicles, or glans penis (+/- foreskin) may be involved:
  - Prostatitis
  - Epididymitis/orchitis
  - Balanitis/balanoposthitis

## Case #2a (con't)

- Physical exam reveals scant creamy, off-white penile discharge with mild urethral inflammation. No rash or genital lesions. Mild generalized testicular discomfort with palpation. Cremasteric reflex is intact.
- Empiric treatment discussed, but patient declines. He is advised to refrain from sexual contact until his urine GC/CT tests (“dirty urine” sample) return.
- 3 days later, the labs reveal infection with **gonorrhea**.
  - *How would you treat his infection?*

# Gonorrhea (GC)

- *Neisseria gonorrhoeae*
- Treatment for **uncomplicated urogenital, rectal, or pharyngeal infections** is **ceftriaxone 500mg IM x1 (or 1g if patient  $\geq 150$ kg)**. This regimen can also be used in pregnancy.
  - Alternative therapies (not for pharyngeal infections) include **cefixime 800mg PO x1, or gentamicin 240mg IM x1 + azithromycin 2g PO x1**
  - *If chlamydial infection has not been excluded, treat for that as well*
- Untreated, GC can cause epididymitis, infertility, **pelvic inflammatory disease (PID)**, or **disseminated gonococcal infection (DGI)**. It can also increase one's risk of acquiring or transmitting HIV.

## Case #2b: exposure but asymptomatic

- Elsa, a 28 year-old foreign exchange student from Scandinavia, presents to your campus health clinic for STI screening.
- She received an anonymous text message saying she had been exposed to an STI. She denies having any symptoms.
- She also denies any non-consensual sexual activity.
- After a similar workup, her testing reveals **chlamydia**.
  - *If she had had symptoms, what might she have experienced?*
  - *How is her treatment different?*

# Chlamydia (CT)

- *Chlamydia trachomatis*
- Treatment for **uncomplicated urogenital, rectal, or pharyngeal infections** consists only of **doxycycline 100mg PO BID x7d**.
  - Alternative therapies include **azithromycin 1g PO x1, or levofloxacin 500mg PO daily x7d**
  - Pregnant patients should use **azithromycin as above, or amoxicillin 500mg PO TID x7d**
- The L1-3 serovars of *C. trachomatis* can also cause **lymphogranuloma venereum (LGV)**, which manifests as genital papules or ulcers and inguinal lymphadenopathy. It is rare in industrialized countries.



# Case #2c: vaginal discharge

- Moana, a 31 year-old tattoo artist of South Pacific Islander heritage, presents to your clinic with the chief concern of **malodorous vaginal discharge**.
- She reports genital itch and dysuria but no vaginal pain or bleeding.
- She engages in unprotected vaginal intercourse with male and female partners.
  - *What's your differential?*
  - *How would you further evaluate her symptoms?*

# Infections of the vagina/cervix

- Gonorrhea (GC)
- Chlamydia (CT)
- Trichomonas
- Mycoplasma
- Ureaplasma
- Bacterial vaginosis (BV)
- Candida
- Syphilis
- Chancroid
- Herpes simplex virus (HSV-1/-2)
- Human papillomavirus (HPV)

## Case #2c (con't)

- Pelvic exam reveals foul-smelling, frothy greenish vaginal discharge.
  - Wet mount (saline) reveals a motile, pear-shaped, flagellated organism.
  - KOH prep shows neither spores nor pseudohyphae.
- 
- *Could any other tests have been performed?*
  - *How would you treat this patient?*
  - *What if her exam/testing had different findings?*

# Trichomoniasis

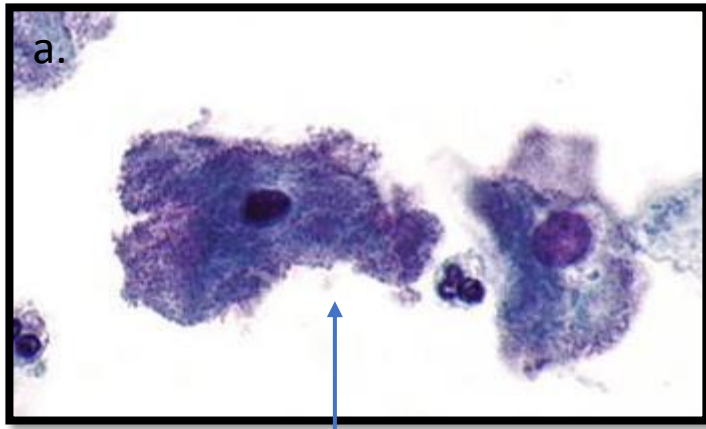
- *Trichomonas vaginalis* → trichomoniasis
  - May be asymptomatic or present with vaginal discharge (malodorous, purulent, frothy), vaginal odor, and/or itch
    - POCT is available (vaginal/endocervical swab)
    - Microscopic evaluation of the discharge can also be performed
    - In men, trichomoniasis is usually asymptomatic, but may present with penile discharge and/or dysuria; men are typically treated after known exposure rather than having confirmatory testing
  - First-line therapy for *women* is **metronidazole 500mg PO BID x7d**
  - First-line therapy for *men* is **metronidazole 2g PO x1**
  - Alternative treatment for either sex (unless pregnant) is **tinidazole 2g PO x1**
  - *The CDC removed the warning about a disulfiram-like reaction if drinking alcohol after using metronidazole, though this information may persist in other groups' guidelines*

# Causes of vaginitis

	Bacterial vaginosis	Candidiasis	Trichomoniasis
<i>Symptoms</i>	Odor, itch, discharge	Itch, thick discharge, dysuria, discomfort	Often asymptomatic; itch, discharge
<i>Vaginal discharge</i>	Adherent, thin, milky-white, "fishy"	Thick, clumpy, white "cottage cheese"	Frothy, grey or yellow-green, malodorous
<i>Saline wet mount</i>	Clue cells, no/few WBCs	WBCs (few to many)	Motile flagellated protozoa, many WBCs
<i>KOH preparation</i>		Pseudohyphae, budding yeast	
<i>KOH "whiff test"</i>	Positive	Negative	Often positive

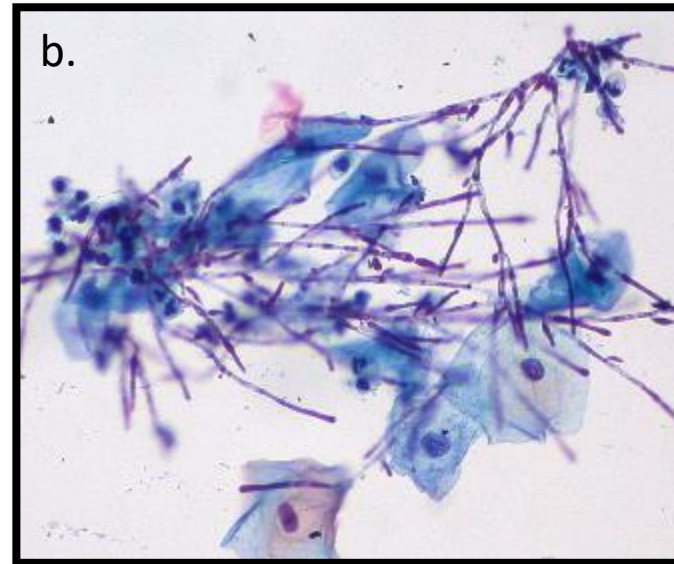
CDC (2013)

# Microscopic evaluation



Clue cell

- a. Bacterial vaginosis
- b. Candidiasis
- c. Trichomoniasis



Pseudohyphae



Flagellated parasite

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# Another cause of discharge: *M. gen.*

- *Mycoplasma genitalium*
  - Emerging pathogen
  - Infection can be asymptomatic, or cause **cervicitis**, **PID**, and/or **infertility** in females, or **urethritis** (particularly persistent/recurrent urethritis) in males
  - Genetic mutations in *M. gen.* allow antimicrobial resistance (AMR), most notably to macrolides (e.g., azithromycin, the previous treatment) but also fluoroquinolones
  - AMR testing guides treatment... but is not yet commercially-available in the US
    - If AMR testing shows **macrolide resistance** (or if such testing is not available but *M. gen.* is confirmed), use **doxycycline 100mg PO BID x7d then moxifloxacin 400mg PO daily x7d**
    - If AMR testing shows **macrolide sensitivity** (or if moxifloxacin cannot be used), use **doxycycline 100mg PO BID x7d then azithromycin 1g PO x1 and subsequently azithromycin 500mg PO daily x3d**
    - Note that the regular treatment recommendations for PID do not cover *M. gen.*

## Case #3a: genital itch

- Jun, a 30 year-old South Asian transman (they/them pronouns), presents to your clinic with the chief concern of itching in the genital area.
  - They are in the military and recently returned home from being deployed.
  - They deny new soaps, detergents, clothing, etc.
  - They deny taking hormonal therapy and have not had phalloplasty.
- 
- *What else would you want to know?*
  - *What's your differential?*

# STIs\* with dermatologic manifestations

- Candidiasis
- Tinea cruris/corporis
- Pubic lice (pediculosis pubis)
- Scabies
- Herpes simplex virus (HSV)
- Anogenital warts (HPV)
- Molluscum contagiosum (MC)
- Mpox [formerly known as monkeypox]
- Syphilis
- Chancroid
- Donovanosis (granuloma inguinale)

\* Though there is a relationship between these infections and sexual contact, not all occur exclusively with sex

# Scabies

- *Sarcoptes scabiei* → scabies
  - The female mite burrows under the skin and lays eggs; the larvae emerge soon after, with their feces causing a hypersensitivity reaction
    - Rash (and excoriations) tend to occur at the wrists, between the fingers, in the axillae and antecubital areas, waist, and genital/perineal area
  - Permethrin 5% cream or ivermectin 1% cream applied from the neck down and washed off after 8-14h
  - Ivermectin 200 µg/kg PO x1 and repeated after 2 weeks is another first-line therapy
  - Lindane 1% cream, an alternative treatment, is not for use in children and may be banned/restricted in some areas due to toxicity

## Case #3b: genital bumps

- Jasmine, a 35 year-old zoologist of Middle Eastern heritage, presents to your clinic with the chief concern of painless bumps on her genital tissue.
  - She denies having had this issue before. She denies ulcers.
  - She is married and monogamous. She does not suspect her husband of extramarital affairs.
- 
- *What else would you want to know?*
  - *What's your differential? (What's more likely now?)*

# Human papillomavirus (HPV)

- Human papillomavirus (HPV) → anogenital warts, cervical and other cancers
  - High- and low-risk strains
  - Anogenital warts are soft, moist, raised (sometimes pedunculated) polyps that may cause itching, burning, or discomfort
  - Provider-administered treatments include cryotherapy, surgical removal (e.g., shave), trichloroacetic acid (TCA) and bichloroacetic acid (BCA) §
  - Patient-administered treatment options for external warts include podofilox solution/gel, imiquimod cream †, and sinecatechins ointment †

§ = these should be in conjunction with a specialist if internal;  
TCA/BCA should not be used at the urethral meatus  
† = imiquimod and sinecatechins may weaken latex/rubber products like condoms or vaginal contraceptive diaphragms

# Molluscum contagiosum (MC)

- Molluscum contagiosum (poxvirus)
  - Smooth, shiny, small (2-5mm in diameter) papules, usually in clusters and with a central umbilication
  - Treatment can also be through mechanical methods or topical irritants

# Mpox

- Virus spread through direct skin-to-skin contact but also respiratory secretions and shared surfaces (i.e., penetrative and non-penetrative sexual contact, sex toys, linens, and even hugging or kissing)
- Incubation period (not contagious) typically lasts 7-14 days
- Nonspecific, flu-like prodrome and lymphadenopathy gives way to papulovesicular and pustular lesions, usually on the head and extremities
- Infection lasts approximately 2-4 weeks and resolves on its own
- Strains from the 2022 U.S. outbreak unlikely to result in fatal illness
- Vaccination opportunities (e.g., brand-name JYNNEOS) are increasing; antiviral medications (e.g., tecovirimat, cidofovir) probably best considered for high-risk patients, with specialist guidance

# Mpox (con't)

## Key Characteristics of Monkeypox Rash



## More Monkeypox Rash Photos

Photo Credit: NHS England High Consequence Infectious Diseases Network



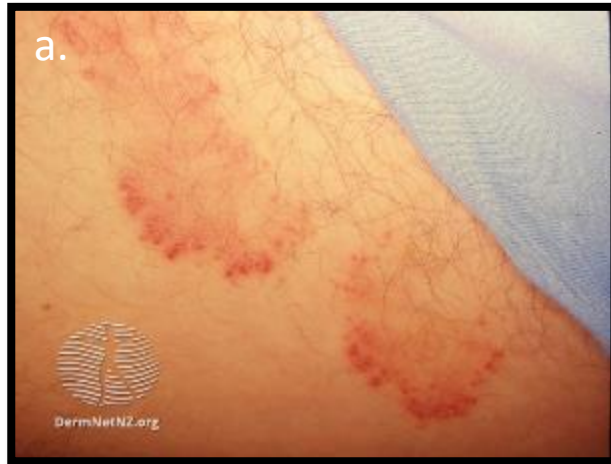
## Examples of Monkeypox Rashes

Photo credit: UK Health Security Agency



<https://www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html>

# Visual diagnosis of other infections



a. Tinea cruris  
b. Pubic lice  
c. Scabies



d. Genital herpes  
e. Genital warts  
f. MC

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# Workup for syphilis

- *Treponema pallidum*

- Syphilis serology:

- **Nontreponemal tests** (e.g., VDRL, RPR) [NTT]

- First test in the “classical” screening algorithm

- Certain conditions (e.g., SLE, pregnancy) and infections (e.g., TB, Lyme) can cause false positives

- **Treponemal tests** (e.g., FTA-ABS, TP-PA) [TT]

- Detect antibodies specific for syphilis

- “Reverse sequence” screening uses TT first

- *Treponemal antibodies remain detectable even after successful treatment*

# Syphilis: progression

Stage	
Primary	<ul style="list-style-type: none"><li>• Painless ulcer(s) [<a href="#">chancre</a>] lasting 3-6 weeks</li><li>• Frequently associated with localized nontender LAD</li></ul>
Secondary	<ul style="list-style-type: none"><li>• Nonpruritic rash (rough spots) on palms/soles [<a href="#">syphilitic dermatitis</a>] while primary chancre is healing, or several weeks later</li><li>• Nonspecific symptoms such as fever, HA, LAD, sore throat, patchy hair loss (“moth-eaten” alopecia), weight loss, myalgias, and fatigue</li></ul>
Latent	<ul style="list-style-type: none"><li>• Early latent syphilis = infection within previous 12 months [<i>CDC definition</i>]</li><li>• Late latent syphilis = infection more than 12 months ago</li></ul>
Tertiary	<ul style="list-style-type: none"><li>• Variable presentation affecting other organ systems</li><li>• Formation of <a href="#">gummas</a></li><li>• Appears 10-30 years after initial infection; can be fatal</li></ul>
Neurosyphilis	<ul style="list-style-type: none"><li>• When bacterium enters nervous system; can occur at any stage</li><li>• Symptoms include altered behavior, dementia, ataxia, and paralysis</li><li>• Ocular syphilis can lead to blindness</li></ul>

# Syphilis: progression (*con't*)



- a. Chancre (1° syphilis)
- b. Syphilitic dermatitis (2° syphilis)
- c. Gumma (late/3° syphilis)

<https://www.merckmanuals.com/professional/infectious-diseases/sexually-transmitted-diseases-syphilis>

# Syphilis: treatment

- Primary, secondary, and early latent syphilis (<1y):
  - Benzathine PCN G 2.4 M units IM x1
- Late latent syphilis (or latent syphilis of unknown duration) and tertiary syphilis:
  - Benzathine PCN G 2.4 M units IM weekly x3 (i.e., 7.2 M units total)
- Neurosyphilis and ocular syphilis:
  - Aqueous crystalline PCN G 18-24 M units/day (3-4 M units IV q4h or continuous infusion) x10-14d
- Alternative regimens (e.g., ceftriaxone, doxycycline) should only be used when penicillin desensitization is not possible
  - No proven alternatives to PCN for treatment of syphilis during pregnancy

## Case #3c: genital ulcers

- Loki, a 42 year-old Caucasian thespian, presents to your clinic for evaluation of painful sores on the shaft of his penis.
- He reports practicing unprotected anal penetrative and receptive intercourse with male partners.
  - *What else do you want to know about his symptoms?*
  - *What's your differential?*
  - *How would you further evaluate his symptoms?*

# Genital herpes: testing and types

- Limitations of testing for herpes simplex virus (HSV-1/-2):
  - **Swab** can only be done for an active lesion; relatively high rate of false negatives (especially if lesion small or already healing)
  - **Blood test** may be difficult to interpret; though IgM appears first, only IgG tests can distinguish between HSV-1 and -2
- Cold sores (**herpes labialis**) and mat herpes (**herpes gladiatorum**) are typically caused by HSV-1 and treated differently
  - Herpes labialis (episodic treatment): valacyclovir 2g PO q12h x2 doses (ie, 1 day)
  - Herpes gladiatorum (episodic treatment): valacyclovir 500mg PO q12h x7d

# Genital herpes: treatment

- Treatment dosage and duration depends on the number and frequency of outbreaks
  - Consider **topical analgesia** (e.g., benzocaine spray)
  - *The following options are not an exhaustive list but the most common regimens*
- First episode:
  - Valacyclovir 1g PO BID x7-10d
  - Acyclovir 400mg PO TID x7-10d
  - *Treatment may be extended if healing incomplete after 10d*
- Recurrence (episodic outbreaks):
  - Valacyclovir 500mg PO BID x3d
  - Acyclovir 800mg PO TID x2d or 800mg PO BID x5d
- Daily suppressive (if >4-6 outbreaks/yr or severe symptoms):
  - Valacyclovir 1g PO daily
  - Acyclovir 400mg PO BID

# Complications of STIs

- **Balanoposthitis**: treat for GC/CT or yeast as appropriate
- **Epididymitis**: treat for GC/CT or enteric organisms as appropriate
  - If most likely GC/CT, ceftriaxone 500mg\* IM x1 + doxycycline 100mg PO BID x10d
  - If most likely enteric organisms, levofloxacin 500mg PO daily x10d
  - If insertive (penetrative) anal intercourse, ceftriaxone 500mg\* IM x1 + levofloxacin 500mg PO daily x10d
- **Prostatitis**: treat for GC/CT or other organisms (e.g., *E. coli*, *T. vaginalis*) as appropriate
- **Proctitis**: ceftriaxone 500mg\* IM x1 + doxycycline 100mg PO BID x7d [or more]

\* = ceftriaxone 1g IM x1 if patient weighs  $\geq 150$ kg

# Complications (*con't*)

- **Cervicitis:** doxycycline 100mg PO BID x7d (*alternative: azithromycin 1g PO x1*)
  - Similar treatment for **nongonoccal urethritis (NGU)**
- **Pelvic inflammatory disease (PID):** ceftriaxone 500mg\* IM x1 + doxycycline 100mg PO BID x14d + metronidazole 500mg PO BID x14d
  - Other combination and parenteral options exist
- **Disseminated gonococcal infection (DGI):**
  - If gonococcal-related arthritis, ceftriaxone 1g IM/IV daily x7d
  - If gonococcal meningitis or endocarditis, ceftriaxone 1-2g IV daily (duration to be determined in consultation with specialist)
  - Also treat for CT (doxycycline 100mg PO BID x7d) if co-infection has not been excluded
- **Lymphogranuloma venereum (LGV):** doxycycline 100mg PO BID x21d

\* = ceftriaxone 1g IM x1 if patient weighs  $\geq 150$ kg

# Plain language summary

1. Prior to the 2021 CDC update, the recommendations on [screening for HIV and Hep C](#) were broadened
2. The eligible demographic for [HPV vaccine](#) was also expanded
3. Revealed several months before the full 2021 CDC update, the dose of ceftriaxone in [treatment of GC](#) was increased to 500mg (or 1g if  $\geq 150$ kg)
4. The other most significant change was preference of doxycycline over azithromycin in [treatment of CT](#)
5. These changes affected approach to disease sequelae and other situations such as sexual assault
6. A new and emerging pathogen, [M. gen.](#) was given more attention and seemingly clearer guidelines
7. The [disulfiram-like reaction warning for metronidazole](#) (treatment for BV and trich) was removed
8. First-line [treatment for T. vaginalis](#) depends on the patient's sex
9. Ivermectin cream was added as a treatment option for [scabies](#)

## Practice points

- There is substantial overlap in symptoms for STIs and UTIs, but infections may also be *asymptomatic*. Testing is particularly challenging for new and emerging pathogens (e.g., *Mycoplasma genitalium*, mpox).
- Recommended treatment may differ based on various factors (e.g., developing antimicrobial resistance), and not all professional guidelines agree. When in doubt, consult a specialist.
- Similarly, be familiar with the laws in your place of practice, with regard to treatment of minors, EPT, etc.
- Patients can sense when you're nervous. Normalize sensitive questions for you and for them.

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# Self-assessment questions

# Comprehension question #1

- Even though he is asymptomatic, you prescribe metronidazole to 21 year-old Oswald after learning that his girlfriend tested positive for trichomoniasis. He leans over and asks if this means he can't go drinking tonight.
- *What is the CDC's guidance on this very question?*
  - A. Avoid drinking alcohol for 24 hours after taking this medication
  - B. Avoid drinking alcohol for 72 hours after taking this medication
  - C. There is no necessary "waiting period" before consuming alcohol
  - D. This medication has manipulated his DNA and he can never drink again

## Comprehension question #2

- Your 33 year-old patient Donald reports a painless ulcer at the base of his penis that has been present for about 4 weeks. And now he's noticed a rash on his palms and soles.
- *What was the most likely causative agent for this patient's symptoms?*
  - A. Herpes simplex virus type 1
  - B. *Treponema pallidum*
  - C. *Hemophilus ducreyi*
  - D. *Klebsiella granulomatis*

# Comprehension question #3

- While reviewing recently-returned lab results, you discover that Minnie, a 50 year-old woman, had a positive urine test for gonorrhea. Chlamydia was negative. She has a documented allergy to azithromycin and weighs 65 kg.
- *What is the appropriate treatment regimen for this patient?*
  - A. Ceftriaxone 500mg IM x1
  - B. Ceftriaxone 1g IM x1 + doxycycline 100mg PO BID x7 days
  - C. Gentamicin 240mg IM x1
  - D. Penicillin G 1.2 million units IM x1

# Session Evaluation

- Your feedback is valuable, take a moment to complete the survey for this session.
- To claim CME, you must complete a separate survey available after the convention.

\* How likely are you to recommend this **content** to a colleague?

Not likely at all                      Neutral                      Extremely likely

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What would have made this **content** better?

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