

Sexually Transmitted Diseases, Part II: “Drips” & Discharges

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Sexually transmitted diseases (STDs) associated with discharges or “drips” are usually caused by one of three types of pathogens - bacteria, viruses, or parasites. One non-STD fungal infection, candidiasis, is seen frequently among active persons and is considered in this group. Although inflammatory STDs are classically associated with discharges, these infections cause a spectrum of disease from asymptomatic infection to an array of often overlapping syndromes that make clinical diagnosis alone inadequate for predicting the cause of the infection. Untreated or inadequately treated STDs associated with discharges can have long-term adverse consequences, particularly for women and their fetuses and newborn infants. These inflammatory STDs enhance the acquisition and transmission of human immunodeficiency virus (HIV). Early detection, treatment, partner notification services, and education targeting behavior modification are critical components of interrupting the transmission of STDs. Prevention and control elements must be rigorously and creatively pursued among certain at-risk groups, including guests in homeless shelters, to interrupt the ever-expanding “hidden epidemic” of STDs.

General Approach to Patients at Risk for STDs

Every sexually active patient not in a long-term, mutually monogamous relationship who is seen in the clinic should be considered at risk for newly incident STDs, both asymptomatic and symptomatic. Whenever possible, a routine STD screening history and physical examination should be obtained on all at-risk patients, regardless of the presenting complaint. Contacts of patients treated for bacterial STDs or trichomoniasis should be

treated and offered screening for HIV infection, if indicated. Contacts of persons with viral STDs should be tested for the presence of infection and offered screening for HIV, if indicated. Sexually active persons, with or without symptoms, should undergo diagnostic testing for treatable STDs and be offered HIV counseling and testing. Those with symptoms of STDs should have further evaluations based upon the clinical syndrome noted at presentation. Single dose, directly-observed therapy should

Gonococcal Urethritis. Gram stain of the urethral discharge in this man shows many polymorphonuclear leukocytes with intracellular Gram negative diplococci. Photo courtesy of the CDC

Table 1: Vaginal Discharge and Vaginitis Features

Feature	Normal Female Vaginal Fluid	Bacterial vaginosis	Trichomoniasis	Candidia vulvovaginitis
Discharge Characteristics • Amount • Consistency • Color	Usually scant Flocculant, non-homogeneous White or clear	Moderate to heavy Homogeneous; coats vaginal walls Grey or white	Heavy Homogeneous; often frothy Yellow, green, white	Moderate to heavy “Cheesy”, clumpy, adherant plaques on erythematous base White
Classic symptoms	None	Increased discharge Odor often	Increased discharge Odor often External dysuria Pruritis	Increased discharge No odor Severe vulvar pruritis
Usual secretion pH	< 4.5	≥ 4.5	≥ 5.0	<4.5
Microscopic exam of secretions	Saline prep Epithelial cells: normal Organisms: Lactobacilli predominate	Saline prep Epithelial cells: Clue cells Organisms: No/few lactobacilli	Saline prep Organism: Motile trichomonads	10% KOH prep Epithelial cells: Lysed by KOH Organism: budding yeast/pseudohyphae
“Whiff” test outcome	No odor	Fishy smell	Fishy smell at times	No odor

be used for treatment when an approved regimen exists.

Most of the STD clinical syndromes fall into two general categories: “sores” and “drips/discharges”. The approach to genital “sores” was discussed in the previous chapter. This chapter will address STDs associated with discharges or “drips”.

Inflammatory STDs Presenting as Discharges

Inflammatory STDs can cause diffuse manifestations, many of which are gender-specific rather than pathogen-specific. Therefore, the associated syndromes will be grouped by gender for discussion of the clinical presentations, prevalence, complications, diagnosis, and treatment, and follow-up. Prevention and control strategies will be discussed together after the clinical section of the chapter. The clinical syndromes for discussion include:

Acute Inflammatory STDs in Women

- lower genital tract inflammatory STDs in women (vaginitis, mucopurulent cervicitis)
- upper genital tract inflammatory STDs in women (pelvic inflammatory disease or PID)

Acute Inflammatory STDs in Men

- urethritis
- acute epididymitis

I. Acute Inflammatory STDs in Women:

A. Lower Genital Tract STDs

Vaginal discharge caused by a lower genital tract STD may be due to inflammation or infection of the vagina or the cervix, with vaginitis predominating. The presence of vaginal discharge should lead the practitioner to question the patient further about related signs and symptoms and should be followed by a directed physical examination that should include, at a minimum, inspection of the external genitalia and a bimanual examination. The pathogens associated with vaginal discharge include:

- *Neisseria gonorrhoeae*, the causative agent of gonorrhea;
- *Chlamydia trachomatis*, the causative agent of Chlamydia;
- *Trichomonas vaginalis*, the causative agent of trichomoniasis;
- bacterial vaginosis, a disruption of the

- vaginal floral ecology;
- *Candida albicans*, the causative agent of vulvovaginal candidiasis;
- herpes simplex virus.

Vaginitis

Causes of vaginitis

Three common causes of inflammatory vaginitis are trichomoniasis, bacterial vaginosis, and candidiasis. Women commonly present with a complaint of vaginal discharge or vulvar itching and irritation and may complain of the presence of a vaginal odor. Bacterial vaginosis (BV) is caused by a disruption of the normal acid-rich vaginal flora. BV has only been shown to be an STD in women who have sex with women. Otherwise, it is considered a high-risk marker for the presence of an STD.

Signs and symptoms

A detailed history to obtain a good description of the vaginal discharge in terms of amount, odor, and the presence or absence of pruritis is essential to the diagnosis of vaginitis. An examination of the external genitalia, vagina and cervix is very important:

- vulvovaginal candidiasis (VVC) is most likely to be associated with vulvar pruritis, erythema, and a “cheesy” discharge;
- trichomoniasis usually has vulvar pruritis and a frothy green-yellow discharge that is malodorous;
- BV often has a watery malodorous discharge.

Co-infection is common and signs and symptoms often overlap. Thus a laboratory diagnostic evaluation is necessary.

Diagnosis

Evaluation of a shelter guest with suspected vaginitis must rely on a good history, a physical examination, and the examination of the discharge. The amount, consistency, and location of the discharge should be noted. Two samples of the discharge should be collected from the vaginal wall with a swab. The specimen should not be contaminated with cervical mucus. The color of the discharge on the swabs should be noted in comparison to a fresh white cotton swab. Using pH indicator paper, roll the first swab directly onto the paper and note the pH of the secretions (normal vaginal fluid has a pH of 4.0 to 4.5). Mix the content of the second swab separately into a drop of saline on one slide and a drop of 10% potassium hydroxide (KOH) on

a second slide. Immediately smell the KOH slide to determine if there is a “fishy” odor. Then place cover slips on both the saline and KOH slides for microscopic examination.

Bacterial vaginosis:

- pH of vaginal fluid >4.5;
- fishy odor on KOH “whiff” test;
- “clue” cells on microscopic examination of the saline slide;

Trichomoniasis:

- pH of vaginal fluid >4.5;
- fishy odor on KOH “whiff” test (common);
- motile trichomonad parasites on microscopic examination of the saline slide.

Vulvovaginal candidiasis:

- pH of < 4.5;
- no fishy odor on KOH “whiff” test;
- yeast, budding yeast, and pseudohyphae on microscopic examination of the KOH slide.

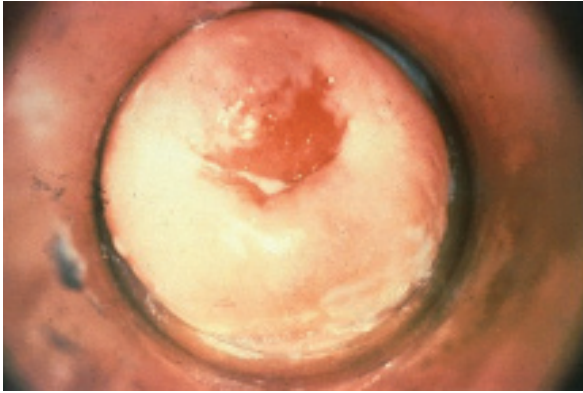
Prevalence

- Bacterial vaginosis. BV is the most prevalent cause of vaginal symptoms among women of childbearing age. Data on the prevalence of BV varies widely because differing diagnostic criteria have been used and differences in the population sampled. In women attending STD clinics the prevalence is between 25 and 40 percent. Prevalence is essentially zero for women who are not sexually active.
- Trichomoniasis. Prevalence rates of trichomoniasis in women range from 5 to 10% in the general population to 50 to 60% in female prison inmates and commercial sex workers. In women who report vaginal complaints, the prevalence of trichomoniasis is 20 and 50%.
- Vulvovaginal candidiasis. VVC affects 70 to 75% of women at least once during their lives, of whom 40 to 50% will have at least one recurrence. Prevalence data are minimal at best, but some estimates suggest a prevalence of up to 200 per 100,000 women per year. Prevalence is highest among women who are pregnant, HIV-infected, or have diabetes mellitus.

Complications

- Bacterial vaginosis. BV during pregnancy is associated with adverse pregnancy out-

Mucopurulent Cervicitis (MPC). The vaginal discharge of MPC may be due to STDs (gonorrhea, Chlamydia, or HSV) or other non-infectious conditions. Photo courtesy of the CDC



comes, including premature rupture of the membranes, premature labor, premature birth, and post-partum endometritis. Newer data strongly suggest that untreated symptomatic BV is also a risk factor for pelvic inflammatory disease (PID).

- Trichomoniasis. Potential complications of untreated trichomoniasis infection include pelvic inflammatory disease (PID) and rarely perinephric abscess or meningitis.
- Vulvovaginal candidiasis. Untreated, symptomatic VVC may result in secondary bacterial infection of excoriated areas.

Treatment

Any patient found to have motile trichomonads should be treated, whether or not associated with symptoms. BV and VVC should only be treated in symptomatic women with the exception of asymptomatic pregnant women with BV and a history of a previous preterm delivery.

- Bacterial vaginosis. The Centers for Disease Control and Prevention (CDC) provides general recommended and alternative regimens for the treatment of STDs. In the shelter setting, many experts prefer to designate single dose, directly observed therapy regimens as the recommended approach for treatment of STDs where such an approved treatment exists. This regimen uses metronidazole 2 grams orally as a single dose. This dose will concomitantly treat trichomoniasis, if present. Other CDC recommended regimens include:
 - 1) metronidazole 500 mg orally twice a day for 7 days; or
 - 2) metronidazole gel 0.75%, one full applicator (5 gm) intravaginally, once a day for 5 days; or
 - 3) clindamycin cream 2%, one full appli-

cator (5 gm) intravaginally at bedtime for 7 days.

- Trichomoniasis. The treatment is metronidazole 2 grams orally in a single dose.
- Vulvovaginal candidiasis. When possible, shelter guests should receive a single 150 mg oral tablet of fluconazole. Alternatively, there are 5 over-the-counter intravaginal preparations and 8 prescription formulations that can be used for varying numbers of days.

Mucopurulent Cervicitis (MPC)

Causes of mucopurulent cervicitis

Vaginal discharge due to mucopurulent cervicitis can be associated with STDs as well as other non-infectious conditions. Sexually-transmitted causes of MPC include *C. trachomatis*, *N. gonorrhoeae*, and herpes simplex virus (HSV). Additionally, *T. vaginalis* and HSV can infect the cervix without producing cervical and vaginal discharge. However, evidence of inflammation is present when examining a gram stain of cervical secretions in the absence of visible mucopus.

Signs and symptoms

Women with MPC often complain of the recent onset of increasing amounts of yellow to green vaginal discharge. On speculum examination, mucopus is usually visible in the cervical os. Small amounts of mucopus may not be visible to the naked eye, but the tip of a cotton swab of sample secretions from the cervical os will be distinctly yellow when compared to the tip of a fresh swab (positive swab test). In the absence of mucopus, edema or easy bleeding of the region of cervical ectopy suggests cervicitis and some experts consider these to be the equivalent of MPC. Importantly, cervical infection with *N. gonorrhoeae*, *C. trachomatis*, or HSV may be present without any clinical findings in more than 50% of cases. The importance of a laboratory diagnosis cannot be overemphasized due to the potential for severe adverse outcomes in women with untreated cervical infections.

Diagnosis

A sample of cervical secretions should be collected and tested for *N. gonorrhoeae*, *C. trachomatis*, and HSV. A Gram stain of cervical secretions is not a definitive diagnostic tool in women. Although the identification of Gram negative diplococci requires treatment for presumed gonorrhea, other non-gonococcal organisms can have this

appearance in women. Additionally, Gram stain is negative in over 50% of infected women. Rectal cultures should also be collected because up to 50% of women with cervical gonococcal infection will have rectal colonization without a history of anal receptive intercourse. This may be the only site of infection in up to 10% of women. A throat culture for gonorrhea should also be collected, if history suggests possible exposure. This is occasionally the only site of infection and appears to be associated with a higher incidence of disseminated infection. Vaginal secretions should be collected and examined for evidence of vaginitis as previously described. Definitive diagnostic tests are key because as many as 40% of MPC cases are not associated with an isolated pathogen.

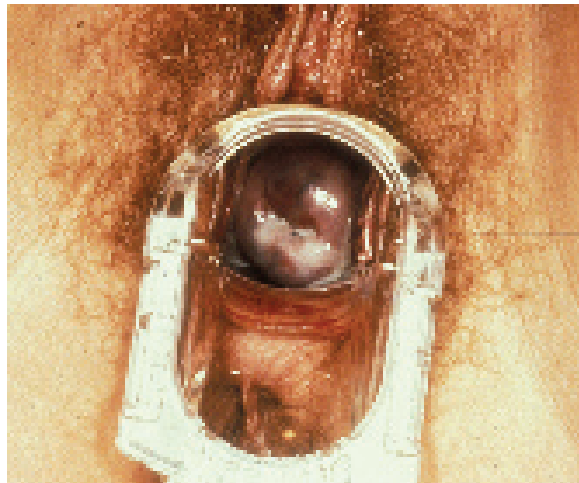
Prevalence

Data on the prevalence of MPC is scant at best. Some estimates have indicated that 18% of women visiting STD clinics for the first time will have evidence of MPC on examination. The prevalence of the individual STD pathogens associated with MPC vary greatly and depend upon the population studied.

- Gonorrhea prevalence, although decreasing in recent years, has shown upward trends in some risk groups and some areas of the country. Asymptomatic, untreated infection among females is a critical factor in the persistence of this infection in a community.
- Chlamydia is the most common reported bacterial STD worldwide. Prevalence figures for all clinical forms of Chlamydia cervical infection range from 3 to 5% in asymptomatic sexually active women to 20% in women presenting to STD clinics.
- HSV can affect the cervix alone without involving the external genitalia. The prevalence of this site of infection is unknown, whether alone or in combination with external genitalia infection. HSV manifesting as MPC may be the result of a primary infection or reactivation of an existing infection. Among women with primary genital HSV infection, up to 90% may have HSV cervicitis. The prevalence of cervicitis with recurrent HSV is unknown.

Complications

The complications associated with MPC are related to the infecting pathogens.



Gonorrhea of the Cervix.
Gonorrhea often involves the cervix in women and may be asymptomatic. Pelvic inflammatory disease can be a complication.
Photo by
Nicholas Fiumara MD

- Gonorrhea can cause local and systemic complications, including pelvic inflammatory disease, disseminated gonococcal infection, endocarditis, and meningitis. Pregnant women can pass the infection to the newborn during parturition leading to ocular, respiratory, or disseminated infection.
- Chlamydia can cause both local and systemic complications, including pelvic inflammatory disease, perihepatitis, and (rarely) endocarditis. In immunocompromised persons, it can cause bronchitis and pneumonitis.
- HSV manifesting as MPC may be the result of a primary infection or reactivation of an existing infection. It is unknown whether solitary HSV infection of the cervix is associated with the same spectrum of complications as genital herpes, but it is assumed to be similar (See previous chapter).

Treatment

The results of sensitive tests for gonorrhea, Chlamydia, and HSV should be used to guide treatment for MPC unless there is a high likelihood that the woman has either a gonorrhea or Chlamydia infection. In such cases, empiric treatment should be considered if the prevalence of either or both of these infections is known to be high among the shelter guest population in your community. It is important to remember that MPC can persist despite repeated courses of antibiotics, and these women only rarely have gonorrhea or Chlamydia infection.

- Empiric MPC therapy. See the treatment for gonorrhea below.
- Chlamydia. Azithromycin 1 gram orally as

a single dose, directly observed therapy is the preferred form of treatment in shelter guests. This treatment appears to be safe and effective in pregnant women.

- Gonorrhea. Treatment depends on the amount of fluoroquinolone-resistant *N. gonorrhoeae* in the shelter population. Shelters located in Hawaii and California have a high prevalence and fluoroquinolones should not be used for treatment. Cephalosporin-resistant gonorrhea is also increasing, and practitioners should check with local or state health departments for information regarding resistance in your area. Cefixime, an oral cephalosporin used for single dose therapy, is no longer available. If Chlamydial infection has not been ruled out at the time of treatment for gonorrhea, concurrent treatment is the standard of care because Chlamydia accompanies 10 to 30% of gonococcal infections, and the cost of treatment is less than the cost of testing. Any of the following single dose, directly-observed treatments are effective in the treatment of cervical, rectal, or oropharyngeal gonococcal infection:

- ciprofloxacin 500 mg orally in a single dose, or;
- ofloxacin 400 mg orally in a single dose, or;
- levofloxacin 250 mg orally in a single dose, or;
- ceftriaxone 125 mg IM in a single dose. This treatment is suitable for pregnant women.
- In penicillin-allergic pregnant women, spectinomycin 2 gm IM as a single dose can be given. Follow-up cultures are required if spectinomycin is used. If Chlamydia has not been ruled out, then a single oral dose of azithromycin 1 gram should be given at the time of treatment for gonorrhea.

B. Upper Genital Tract Infection (Pelvic Inflammatory Disease or PID)

Causes of Pelvic Inflammatory Disease

Approximately two-thirds of all PID cases are due to STDs, usually *C. trachomatis* or *N. gonorrhoeae*. The remaining cases of PID are due primarily to anaerobic Gram-positive cocci and

Escherichia coli. Several other organisms appear to be associated with a small number of cases. Many cases of PID appear to be polymicrobial. All the organisms are believed to cause PID following ascension of the organisms to the upper genital tract via the endometrium. PID includes infection involving any of the structures of the upper genital tract, including the endometrium (endometritis), fallopian tubes (salpingitis), or pelvic peritoneum (peritonitis). Tubo-ovarian abscess is also included within the PID spectrum.

Signs, Symptoms, and Diagnosis

Acute PID has a wide spectrum of clinical presentations and is difficult to diagnose. Many asymptomatic or minimally symptomatic cases are known to carry a high burden of long-term adverse outcomes, including infertility, ectopic pregnancy, and chronic pelvic pain. Definitive diagnosis of PID is dependent upon the upper genital tract structure involved, requires a technically-demanding procedure (such as laparoscopy), and is expensive. As a result, the diagnosis and empiric treatment of PID are usually based upon clinical findings alone.

Empiric treatment for PID should be initiated in any sexually active woman at risk for STDs if either of the following criteria is present:

- uterine or adnexal tenderness;
- cervical motion tenderness.

Other symptoms that may suggest the presence of PID include:

- dysuria;
- monometrorrhagia;
- dyspareunia;
- new onset of pain with menses.

Additional physical findings that help to support the diagnosis of PID include the following:

- oral temperature $>38.3^{\circ}\text{C}$ ($>101^{\circ}\text{F}$);
- abnormal cervical or vaginal mucopurulent discharge (MPC is common);
- laboratory documentation of *C. trachomatis* or *N. gonorrhoeae* cervical infection;
- elevated C-reactive protein;
- elevated erythrocyte sedimentation rate.

Prevalence

The prevalence of PID is unknown. However, approximately 60% of PID cases are asymptomatic, 36% associated with mild to moderate symptoms, and 4% classified as severe infection. Among women infected with *N. gonorrhoeae*, approximately 10 to 20% have PID. *C. trachomatis* is thought to

be associated with the greatest number of “silent” PID cases, with up to 80% of Chlamydia cervical infections in women thought to be asymptomatic.

Treatment and Follow-up

The empirical regimens recommended for PID aim to cover the broad-spectrum of likely pathogens. Antibiotics are aimed at treating gonorrhea, Chlamydia, anaerobes, Gram negative facultative bacteria, and Streptococcus. For milder cases, oral therapy or mixed parenteral and oral therapy can be given. Ongoing parenteral therapy should be provided in the inpatient setting. All patients with PID should demonstrate clinical improvement within 72 hours of treatment initiation. Patients who do not improve should be reevaluated in the inpatient setting. Those failing inpatient therapy should be further evaluated for the need for surgical intervention. The criteria for hospitalization of women with suspected PID include:

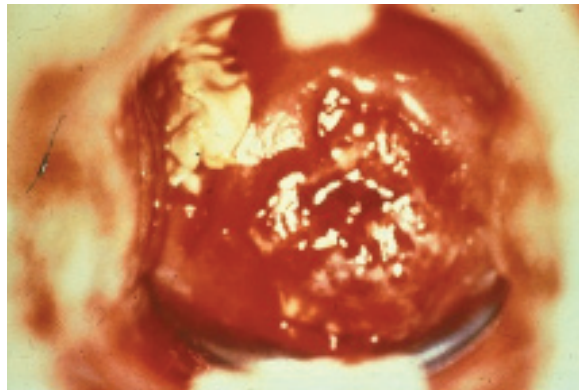
- a surgical emergency, such as appendicitis, can not be ruled out;
- pregnancy (PID can occur in the first trimester);
- the presence of a tubo-ovarian abscess;
- a high fever, nausea and vomiting, or severe illness;
- inability to follow or tolerate an outpatient oral regimen; and
- failure to respond clinically within 48 to 72 hours to oral therapy.

The treatment of PID is divided into outpatient and inpatient regimens. Outpatient treatment, which should not be used in pregnant women, consists of either an oral or a mixed oral and parenteral regimen. The oral regimen is as follows:

- ofloxacin 400 mg twice a day for 14 days; or
- levofloxacin 500 mg once a day for 14 days;
- metronidazole 500 mg twice a day for 14 days is optional as a second drug. Some experts recommend that this be included in the oral regimen for vulnerable populations, including those represented among shelter guests.

The mixed oral and parenteral regimen is:

- ceftriaxone 250 mg IM as a single dose plus doxycycline 100 mg orally twice a day for 14 days;
- metronidazole 500 mg orally twice a day for 14 days is optional as a second drug, with the same recommendations as above.



Herpes Simplex Cervicitis.
Photo courtesy of the CDC

Two basic inpatient treatment regimens are utilized. One utilizes an IV cephalosporin with oral or IV doxycycline, while another uses IV clindamycin together with gentamicin.

II. Acute Inflammatory STDs in Men

Urethritis

Causes of Urethritis

A “drip” or urethral discharge is the most frequent STD syndrome seen in men. Drips are usually classified as gonococcal (GCU) or non-gonococcal urethritis (NGU). The primary causes of NGU include *C. trachomatis*, *Ureaplasma urealyticum*, *Mycoplasma genitalium*, *Trichomonas vaginalis*, and HSV.

Signs and symptoms of urethritis

Most men with GCU and NGU have dysuria or genital itching in conjunction with urethral discharge. Approximately 75% of men with GCU have purulent discharge, whereas NGU is more likely to manifest with mucoid or clear discharge. Notably, 5 to 15% of men with gonorrhea and up to 70% of men with Chlamydia infection may be asymptomatic.

Diagnosis

The diagnosis of urethritis in men begins with a history and directed physical examination, followed by a microscopic examination of the urethral discharge by Gram staining. The finding of >5 polymorphonuclear leukocytes (PMNs) per high power oil-immersion field (1000X) confirms the presence of urethritis. The presence of intracellular gram negative diplococci is considered confirmatory for *N. gonorrhoea* infection in men (not in women), and no further confirmatory testing for this pathogen is needed. Men who have recently engaged in anal receptive intercourse should have a rectal swab collected for culture. In exposed

persons, a throat culture should also be collected. Testing for *C. trachomatis* is strongly recommended for all men with urethritis. Diagnostic testing for other pathogens should only be undertaken in those patients who have recurrent or persistent urethritis following treatment.

Prevalence

The prevalence of urethritis in men is unknown.

- GCU. Because the majority of men with GCU have symptoms and the incubation period is short, the incidence provides an approximation for this reportable disease. The highest prevalence is among men age 15 to 29 years and is highest in the summer months. Urban and rural low socioeconomic groups have a higher incidence than other groups. Rates of infection are increasing in men who have sex with men.
- Chlamydia urethritis. Routine testing of men for this reportable STD is much less frequent than routine testing in women and prevalence estimates are variable. It is estimated that 3 to 5% of all men with symptomatic urethritis are infected with Chlamydia. Among STD clinic attendees, Chlamydia urethritis prevalence may be as high as 20%, whereas pharyngeal infection prevalence may be between 3 and 6%.

Complications

- GCU. Complications of GCU include epididymitis, seminal vesiculitis, acute prostatitis, disseminated gonococcal infection, and very rarely endocarditis and meningitis.
- Chlamydia urethritis. Complications of Chlamydia urethritis in men include epididymitis, Reiter's syndrome (urethritis, conjunctivitis, arthritis, and characteristic mucocutaneous lesions), and tenosynovitis.

Treatment

The treatment of either GCU or NGU is the same as for cervicitis and MPC in women (see above).

Epididymitis

Causes of Epididymitis

Like PID, epididymitis can be caused by STDs (two-thirds of cases) and by non-sexually transmitted

pathogens. Men under the age of 35 years are more likely to have STD-associated epididymitis. Gonorrhea and Chlamydia account for essentially all of the STD-associated disease. *E. coli* accounts for most of the non-sexually transmitted infection and a small portion of the STD-associated infection in men who engage in insertive anal intercourse.

Signs and Symptoms

The predominant presenting features in epididymitis are unilateral scrotal pain and swelling, usually with associated discharge. However, because this presentation is also consistent with a surgical emergency - testicular torsion - immediate referral for a radionuclide or Doppler flow study is needed if the patient has the following constellation: 1) sudden onset, 2) excruciating pain, 3) age < 20 years, and 4) testicular elevation. If after this evaluation testicular torsion is not strongly suspected, epididymitis should be considered.

Diagnosis

The evaluation of a man with suspected epididymitis includes: 1) a Gram stain of urethral discharge for evidence of urethritis (either NGU or GCU); 2) culture or nucleic acid application test of the discharge for *C. trachomatis* and *N. gonorrhoeae*, and; 3) examination of the first voided uncentrifuged urine for white cells if the Gram stain of the discharge is negative.

Prevalence

No reliable data are available regarding the prevalence of epididymitis.

Complications

The most serious complications seen with epididymitis are infarction of the testicle and testicular abscess. Infertility is a poorly documented long-term adverse outcome.

Treatment

Empiric treatment is always indicated prior to culture results. Therapy for epididymitis includes both antimicrobials and adjunctive therapy including bed rest, scrotal elevation, and analgesia until fever and local inflammation have decreased. All patients should be re-evaluated within 72 hours of commencing treatment to assess response to therapy. Failure to respond requires a comprehensive re-evaluation including consideration of alternative diagnoses.

Treatment of epididymitis due to gonococcal or

Chlamydia infections is as follows:

- ceftriaxone 250 mg IM in a single dose; and
- doxycycline 100 mg orally twice a day for 14 days.

Treatment of epididymitis likely due to enteric organisms or in persons allergic or intolerant of the regimen above include the following:

- ofloxacin 300 mg orally twice a day for 10 days; or
- levofloxacin 500 mg orally once daily for 10 days.

Prevention and Control of Acute Inflammatory STDs

All health care providers have critical roles in the prevention and control of STDs. Among the acute inflammatory STDs, gonorrhea and Chlamydia are reportable diseases throughout the USA. Diagnosed cases should be reported to the local or state health department. STD and HIV reports are kept strictly confidential by these authorities.

Prevention messages that providers offer to shelter guests should be tailored to each patient's risk profile. Male latex condoms are highly effective in preventing the transmission of Chlamydia, gonorrhea, trichomoniasis, and sexually transmitted HIV. Condoms are only somewhat effective in preventing HSV transmission. Laboratory studies suggest that the female condom is an effective barrier to HIV. Nonoxynol-9 vaginal spermicides should be avoided because they can induce local inflammation in some women which may increase the risk for transmission and acquisition of HIV.

Many individuals exposed to STDs benefit from partner notification services. Providers need to encourage shelter guests diagnosed with STDs to urge their partners to seek evaluation for detection of a possible HIV.

Women bear the disproportionate burden of the long-term adverse consequences of STDs as do their fetuses and newborn infants. All pregnant shelter guests should be offered HIV counseling and testing in addition to testing for the inflammatory STDs, syphilis, and hepatitis B. A Papinicolaou smear should also be obtained. All sexually active female shelter guests who are not in a long-term, mutually monogamous relationship should be routinely offered screening and testing for STDs every 6 months. Women known to be commercial sex workers or to exchange sex for drugs, money, or life essentials should be offered STD screening and

treatment whenever they present for primary care services.

Summary

STDs associated with discharges or “drips” may be present when a shelter guest comes to the clinic for other health-related problems. A sexual history and focused physical examination should be included for all sexually active patients to provide treatment and interrupt further transmission when possible. Key concepts to keep in mind when caring for shelter guests with STDs include:

- single dose, directly observed therapy is the preferred form of therapy when such a regimen is proven to be efficacious;
- persons with inflammatory STDs are at increased risk for HIV acquisition and transmission (if HIV infected);
- the presence of one STD increases the risk for a second STD and also is a marker for possible exposure to HIV. Therefore, all patients diagnosed with an STD should receive HIV counseling and testing, as indicated;
- women and their unborn children bear the greatest burden of adverse outcomes from STDs; women are more likely to have asymptomatic STDs than men;
- Chlamydia and gonorrhea are reportable diseases and must be reported to the local or state health department. ■■

STDs Part II: “Drips” & Discharges Medication List

Generic	Brand	Cost
metronidazole	Flagyl	\$
metronidazole gel 0.75%	MetroGel-Vaginal	\$\$\$
clindamycin cream 2%	Cleocin	\$\$
fluconazole	Diflucan	\$
azithromycin	Zithromax	\$\$
ciprofloxacin	Cipro, Cipro XR	\$\$\$
ofloxacin	Floxin	\$\$\$\$
levofloxacin	Levaquin	\$\$\$
ceftriaxone	Rocephin	\$\$\$\$\$
doxycycline	Adoxa, Doryx, Monodox, Vibramycin, Vibra-Tabs	\$
cefotetan	Cefotan	\$\$\$\$\$
cefoxitin	Mefoxin	\$\$\$\$\$
clindamycin	Cleocin	\$\$
gentamicin	Garamycin	\$\$

References

Centers for Disease Control and Prevention. Sexually transmitted disease treatment guidelines. *MMWR* 2002;51(RR06;1).

Holmes KK, Sparling PF, Mardh P-A, et al., eds. *Sexually Transmitted Diseases*. 3rd ed. New York, New York: McGraw Hill; 1999.

Hynes NA. *Johns Hopkins POC-IT Antibiotic (ABX) Guide*.
<https://www.hopkins-abxguide.org/> Last updated 2003 with planned ongoing updates.