

Sexually Transmitted Diseases: Introduction

Gail Skowron, MD

SEXUALLY TRANSMITTED DISEASES (STDs), also called **Sexually Transmitted Infections (STIs)**, have been documented in the human population since at least the sixteenth century. The burden of disease from STDs has been closely tied to society's sexual practices, the availability of sensitive and specific diagnostic testing, and access to appropriate antibiotics. Recent advances in technology, such as smart phone sex-locator apps, and the rise of social media contribute to the spread of STDs today. Many STDs, including HIV, may be transmitted over the course of years, due to an infectious yet asymptomatic state.

In this issue, we address recent trends in STDs in Rhode Island and their optimal management. In general, STDs are most common in adolescents and young adults, who may be otherwise healthy and may not access medical care if asymptomatic. Primary care providers, as well as subspecialists, need to be comfortable taking a sexual history to identify risks for asymptomatic infection, vigilant for signs and symptoms that may indicate an STD, and able to initiate appropriate diagnostic testing and treatment or referral (Diaz, et. al., **Sexually Transmitted Diseases in Primary Care**). The importance and the concomitant challenges of partner

notification/contact tracing in the context of HIV and the 2010 rise in cases of infectious syphilis cases in Rhode Island is discussed by Alexander and colleagues from the Rhode Island Department of Health (**Interrupting Transmission of HIV and other Sexually Transmitted Infections in Rhode Island**). Infectious syphilis is further addressed with detailed diagnostic and management guidelines outlined by Skowron, et. al. (**Infectious Syphilis: The Return of the Great Imitator to Rhode Island**). Kojic discusses the only vaccine-preventable STD, **Human Papillomavirus (HPV)**, and the importance of more sensitive diagnostic tests and treatment of male partners in the optimal management of *Trichomonas vaginalis* (**Human Papillomavirus (HPV) and Trichomonas: Common, Concerning, and Challenging Sexually Transmitted Infections**). *Chlamydia trachomatis* (the most common STD in Rhode Island) and *Neisseria gonorrhoeae* are associated with substantial long-term morbidity, including pelvic inflammatory disease, infertility, pregnancy complications and neonatal infections; Chan, et. al., discuss improved diagnostic testing for these STDs in all exposed mucosal sites (**Recommendations for the Diagnosis of *Neisseria gonorrhoeae* and *Chlamydia trachomatis*,**

including Extra-genital sites.) Post-exposure management of the above STDs, as well as HIV, Hepatitis B and Hepatitis C, is addressed by Hardy in a series of likely Q & A's. (**Post-Exposure Testing and Treatment after Non-occupational Exposures To STDs and HIV**). Heightened awareness of STD trends in Rhode Island, their diagnosis and treatment, and how to facilitate partner notification and treatment, will move us closer to achieving the goal of reducing the incidence of STDs in the years to come.

Gail Skowron, MD, is Chief of the Division of Infectious Diseases at Roger Williams Medical Center and a Professor of Medicine at the Boston University School of Medicine.

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CORRESPONDENCE

Gail Skowron, MD
Division of Infectious Diseases
Roger Williams Medical Center
825 Chalkstone Ave.
Providence, RI 02908
phone: (401) 456-2437
e-mail: gail_skowron@brown.edu

Sexually Transmitted Diseases in Primary Care

Joseph A. Diaz, MD, MPH, Valeria Fabre, MD, and Marguerite A. Neill, MD

WITH APPROXIMATELY 19 MILLION NEW sexually transmitted infections occurring each year, **sexually transmitted diseases (STDs)** are a major public health challenge¹ both nationally and in Rhode Island (Table 1). The clinical burden of STDs ranges from acute conditions to serious and even life-threatening sequelae including cancer, ectopic pregnancy, infertility, chronic pelvic pain, spontaneous abortion, stillbirth, low birth weight, prematurity, congenital and perinatal infections, neurological damage, and death. Women, minority populations, and adolescents are disproportionately affected by STDs. Although STDs affect people of all ages,

and sexual orientation, nearly half of new STDs occur among young people (age 15-25 years), and the incidence of STDs and their sequelae are higher among African Americans and Latinos than among non-Latino Whites.

Most patients with STDs are treated by physicians in family or internal medicine, obstetrics or gynecology^{2,3} making it critical that **primary care providers (PCPs)** are skilled and knowledgeable of components of STD management. Primary care physicians, however, often feel that their STD counseling skills are ineffective and their STD training inadequate.³ Many PCPs are unsure of STD treatment

regimens and unfamiliar with CDC guidelines,⁴ presenting a barrier to appropriate screening⁵ as well as recognition and treatment of STDs.⁴ Many physicians are uncertain of STD reporting requirements and partner notification standards⁵ which likely contributes to the increasing disease burden locally and nationally.

Suppose a 24 year-old man with a new maculopapular rash or a 50 year-old woman who just learned her husband was having an affair came to your office as an acute visit. Do you know what questions to ask, what tests to order, whether to start treatment and with what, and what diagnoses to report to the Department of Health?

Table 1. Trends in STDs, US and RI, 2010

Pathogen	US Cases	RI Cases
<i>Chlamydia trachomatis</i> Most common bacterial STD Highest in persons < 25 yrs	1,307,893	3,480
Gonorrhea Emergence of antibiotic resistance Concerns for possible treatment failure	309,341	291
Syphilis (primary and secondary) Increasing in men More common in cities, southeast US	13,774	61
<i>Herpes simplex</i> Majority of genital infection due to HSV-2 Half are asymptomatic	Estimated 1 million (not reportable)	
HIV Majority of transmission from undiagnosed cases, either newly infected and/or untreated	40,000 new cases	106
HPV Half of sexually active women infected with one type Associated with cervical and anogenital cancers	Estimated 5.5 million (not reportable)	

Table 2. The Five P's: Partners, Prevention of Pregnancy, Protection from STDs, Practices, and Past History of STDs.

1. Partners

- "Do you have sex with men, women or both?"
- "In the past 2 months, how many partners have you had sex with?"
- "In the past 12 months, how many partners have you had sex with?"
- "Is it possible that any of your sex partners in the past 12 months had sex with someone else while they were still in a sexual relationship with you?"

2. Prevention of pregnancy

- "What are you doing to prevent pregnancy?"

3. Protection from STDs

- "What do you do to protect yourself from STDs and HIV?"

4. Practices

- "To understand your risks for STDs, I need to understand the kind of sex you have had recently."
- "Have you had vaginal sex, meaning 'penis in vagina sex'?"
If yes, "Do you use condoms: never, sometimes, or always?"
- "Have you had anal sex, meaning 'penis in rectum/anus sex'?"
If yes, "Do you use condoms: never, sometimes, or always?"
- "Have you had oral sex, meaning 'mouth on penis/vagina'?"
For condom answers:
If "never:" "Why don't you use condoms?"
If "sometimes:" "In what situations (or with whom) do you not use condoms?"

5. Past history of STDs

- "Have you ever had an STD?"
- "Have any of your partners had an STD?"
Additional questions to identify HIV and viral hepatitis risk include:
"Have you or any of your partners ever injected drugs?"
"Have any of your partners exchanged money or drugs for sex?"
"Is there anything else about your sexual practices that I need to know about?"

TAKING A SEXUAL HISTORY

An effective sexual risk assessment starts with a thorough sexual history. Unfortunately, sexual health is under-addressed in US primary care settings.⁶ Of adults seen at a university primary care clinic 44% had never been asked their sexual history.⁷ Another survey reported that while 58% of primary care doctors asked patients about sexual activity, only a few asked for additional details.⁸ Factors contributing to this gap are clinician discomfort and lack of interview skills for the topic, and patients' disquiet in discussing sexual practices with their doctors and fear of disapproval.

A sexual history should be taken in a professional, sensitive and non-judgmental manner, and patients reassured of confidentiality. The question "Are you sexually active? "can be followed by" do you have sex with men, women or both?" creating an atmosphere of open communication. The CDC proposes the "5Ps" as an effective way to elicit the most relevant information of the sexual history (Table 2).⁹ The "5 Ps" refers to: *Partners* (number and gender, length of relationship, risk factors of partner), *Prevention of pregnancy* (determine whether pregnancy is desired), *Practices* (condom use), *Protection from STDs* (determine the risk level and understanding of "high risk" behaviors) and *Past history of STDs* (educate about STDs and offer testing).

STD CLINICAL SYNDROMES

Early diagnosis and treatment are key to easing the clinical and public health burden of STDs. For the primary care doctor genital lesions are easily recognized as a possible STD. However, patients may present with non-genital manifestations and therefore pose a diagnostic challenge.

Clinical symptoms and findings affecting the genital area may be grouped into syndromes associated with specific organisms (Table 2).¹⁰ The prevalence and incidence of STDs vary depending on the region and population analyzed. A recent observational study of STDs and HIV infected patients in the primary care setting reported that the most commonly diagnosed infections were rectal chlamydia, oropharyngeal gonorrhea, and chlamydial urethritis among the men and trichomoniasis among the women.¹¹

Table 3. Genital clinical syndromes of STDs.

Syndrome	Symptoms	Signs	Cause
Vaginal discharge	Vaginal discharge Dysuria Dyspareunia	Abnormal vaginal discharge	Vaginitis: -Trichomonas Cervicitis: -Gonorrhea -Chlamydia
Urethral discharge Dysuria	Urethral discharge Urinary frequency	Urethral discharge	Gonorrhea Chlamydia
Genital ulcer	Painless Painful Painful Painless Painless	Indurated base Necrotic material Beefy red, rolled edges	Syphilis Chancroid Genital herpes LGV Granuloma inguinale
Genital wart	Genital wart	Genital wart	Syphilis HPV
Lower abdominal pain	Dyspareunia Lower abdominal pain	Vaginal discharge Abdominal tenderness on exam Temp >38°C	Gonorrhea Chlamydia
Scrotal swelling	Scrotal swelling and pain	Scrotal swelling	Gonorrhea Chlamydia
Inguinal lymphadenopathy	Painful enlarged inguinal lymph nodes	Enlarged inguinal lymph nodes Abscess or fistula	LGV Chancroid

Adapted from Training modules for the syndromic management of sexually transmitted infections 2007, accessed from http://www.who.int/topics/sexually_transmitted_infections.

Each STD genital syndrome is not pathognomonic for a single specific pathogen. There also are geographic considerations for some agents such as chancroid, common in tropical areas but uncommon in the US. These considerations provide the rationale for testing for more than one pathogen at the time of presentation and for followup assessment of response to treatment.

The non-genital manifestations of STDs refer to a wide range of physical findings outside the genital tract (Table 4). Some are seen commonly in primary care (pharyngitis, skin rash) and clinicians unaware of the association with an STD will miss the opportunities to obtain relevant history and subsequently, appropriate testing. Some clinical presentations are rapidly linked to a specific STD like

Pneumocystis pneumonia and HIV. Others are well known associations but easier to miss because they are less common, such as recurrent aseptic meningitis (Mollaret meningitis) and HSV-2 (12). Lastly, clinicians should also be aware that some pathogens do not cause STDs but can be transmitted sexually, such as the viral hepatitis A, B and C, *Giardia lamblia*, *Entamoeba histolytica* and *E. dispar*.

DIAGNOSTIC TESTING

Clinicians will usually need to first consider the clinical context for STD testing so that the correct tests are performed. Patient age and sex, whether asymptomatic, presence (and history) of clinical signs or symptoms and number of sex partners will be important parameters for initial assessment. Use of condoms

and/or microbicides can decrease risk of STD transmission but not to the point of obviating testing.

Testing for STDs can be confusing, in part because of the need to usually test for pathogens simultaneously, the different types of tests and the specifics of which clinical specimen is appropriate. The most common of the currently available tests used in the US are summarized in Table 5.

Most circumstances surrounding STD evaluation entail simultaneous testing for more than one pathogen for several reasons: first, transmission can occur from asymptomatic individuals infected with more than one pathogen; second, some patients have multiple sex partners; third, genital ulcer disease increases the risk for transmission of other non-ulcerative STDs. The pathogens for which simultaneous testing is most commonly done in the US include *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, syphilis and HIV, all of which can have long asymptomatic periods during which patients are infectious to others. Because transmission of these pathogens to partners or offspring is a potential high impact occurrence, routine inclusion of screening for these in several settings is emphasized rather than screening based on perceived risk.

The two patients mentioned in the Introduction should be tested for chlamydia, gonorrhea, syphilis and HIV, with HSV PCR of any genital or rectal ulcers if present.

NEWER HIV TESTING REGULATIONS IN RHODE ISLAND

To foster earlier diagnosis and limit transmission, changes have been made to HIV testing in RI that went into effect over 2008 – 2010. HIV testing is to be offered in all health care settings as part of routine medical care including prenatal care. Verbal consent for testing is now acceptable but must be documented in the chart. There also should be documentation on the information about HIV testing that was provided to the patient. Discussion of the results should include counseling tailored to the individual patient's circumstance. Annual screening (or more frequently) should be offered to those at high risk, such as those with multiple sexual partners. Neonates without documented prenatal testing can be tested at birth.¹³

Table 4. Non-genital manifestations of STDs.

Clinical finding	Possible Causes
Constitutional symptoms (fever, malaise, weight loss, sore throat)	Secondary syphilis, acute HIV, acute HBV
Ocular uveitis, optic neuritis purulent conjunctivitis inclusion conjunctivitis	Syphilis Gonorrhea Chlamydia
Oral ulcers and mucosal patches	Syphilis, HIV
Pharyngitis	Syphilis, acute HIV, gonorrhea
Generalized lymphadenopathy	Syphilis HIV
Skin rash maculopapular pustular seborrheic dermatitis Herpes zoster Molluscum contagiosum vasculitis photosensitivity and blistering (sporadic porphyria cutanea tarda) lichen planus	Secondary syphilis, HIV, Gonorrhea HIV HIV HIV HBV, HCV HCV HCV
Alopecia	Syphilis
Arthritis	Gonorrhea, HBV
Aseptic meningitis	HSV, Syphilis, HIV
Respiratory Pneumocystis pneumonia Severe bacterial pneumonia	HIV
GI Oral or esophageal candidiasis Hepatitis Perihepatitis Chronic diarrhea Proctitis and ulcerative colitis-type picture	HIV HBV, HCV, HIV, Syphilis Chlamydia and gonorrhea HIV LGV
Glomerulonephritis	HCV, HBV, syphilis

Table 5. Common Tests for STD Diagnosis

Pathogen	Testing	Specimens
C. trachomatis	Nucleic acid amplification tests (NAATs) Not all NAATs are FDA cleared for all clinical specimens	Urine (20-30 ml) of first catch without cleaning genitalia; use container without preservatives; transport to lab ASAP; process < 24hrs from collection Cervical, self-collected vaginal, male urethral or rectal swab with special swab from test kit
Gonorrhea	NAAT (same caveat as Chlamydia) Culture (special media)	Urine and clinical specimens same as Chlamydia except excluding rectal Cervical, urethral
Syphilis	Usually 2-step Ab testing; Initial non-treponemal test (VDRL or RPR); if positive, confirmation with treponemal test (FTA-ABS) and VDRL or RPR titer	Serum or plasma; CSF VDRL
Herpes simplex	PCR preferred over culture	Swab of genital or rectal ulcer using swab from special collection kit Serum or plasma
HIV	HSV type specific IgG in some situations	Serum or plasma
HPV	HIV 1 and 2 Ab (by EIA and western blot) Quantitative viral load	Blood
	Clinical appearance of genital warts and response to treatment Cervical cancer screening in women > 30yrs	Biopsy in selected cases Viral nucleic acid or capsid protein detection

STD TREATMENT AND REPORTING

STDs are reportable in RI and embedded in the report is requested documentation of treatment. Current treatment regimens for STDs (including drug, dose and duration) are found on the RI confidential case report form.¹⁴

PARTNER MANAGEMENT

Of substantial importance in STD treatment and control is partner management.⁸ This starts with partner notification with follow through for their evaluation and treatment. Clinicians can encourage and support the index patient with partner notification, or if the patient is unwilling or unable, specific assistance can be requested from the RI DOH. **Expedited partner therapy (EPT)** is permissible by RI regulation for sex partners of persons with chlamydia or gonorrhea, allowing the provision of a prescription or pills for the sex partner without prior evaluation. However, EPT is not recommended for men who have sex with men.¹⁴

PREVENTION

Primary prevention of STDs starts with education on risk reduction and avoidance. Vaccination, preferably pre-exposure, can prevent sexual transmission of HAV, HBV, and HPV. Secondary prevention includes rapid diagnosis and treatment along with partner management of persons with overt clinical disease as well as those asymptotically infected.

RESOURCES

Information on Rhode Island case reporting, partner services and specialty referral:

<http://www.health.ri.gov/diseases/sexuallytransmitted/for/providers/>

Expedited Partner Therapy for STDs: Guidance for Medical Providers in Rhode Island:

<http://www.health.ri.gov/publications/guidelines/provider/2011ExpeditedPartnerTherapy.pdf>

CDC Training Courses and STD Educational Materials:

<http://www.cdc.gov/std/training/default.htm>

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Joseph Diaz, MD, is an Associate Professor of Medicine at the Alpert Medical School of Brown University and Chief, Division of General Internal Medicine, Memorial Hospital of Rhode Island

Valeria Fabre, MD, was a third year resident in Internal Medicine at Memorial Hospital at the time that this article was written; she is currently an Infectious Disease fellow at the Johns Hopkins Medical Center, Baltimore, Maryland

Marguerite A. Neill, MD, is an Associate Professor of Medicine at the Alpert Medical School of Brown University and Attending Physician in Infectious Diseases at Memorial Hospital

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CORRESPONDENCE

Marguerite A. Neill, MD
Division of Infectious Diseases
Memorial Hospital of Rhode Island
111 Brewster St.
Pawtucket, RI 02860
phone: (401) 729-2534
e-mail: Marguerite_neill@brown.edu