Testing and Treatment After Non-Occupational Exposures To STDs and HIV

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Women may present to an emergency room, a dedicated **Sexually Transmitted Disease (STD)** clinic, or their primary care provider with concern for a STD including **Human Immunodeficiency Virus (HIV)** after a sexual exposure. The goal of this review is to provide an overview of current recommendations for the prophylaxis, testing, and treatment of the adult patient for STDs and HIV after a sexual exposure, including sexual assault. Issues surrounding appropriate referral, follow up care, and emergency contraception will also be addressed. Recently updated recommendations for the treatment of sexually transmitted infections, as well as recommendations for antiretroviral postexposure prophylaxis after sexual, injection-drug use, or other nonoccupational exposure to HIV are available from the Centers for Disease Control and Prevention.[1,2] These guidelines, as well as other recent data and expert opinion form the basis of this review.

Case

A 20 year old primary care patient is a sophomore in college and is currently home for the summer. She calls the office for an urgent visit. When you see her that afternoon, she reports that 2 days prior, she was at a party with some friends from high school, and that evening she had sexual intercourse with a male acquaintance. No condom was used, and she is worried that she may have acquired a sexually transmitted infection. She requests "STD testing." What questions should you ask?

Important questions in the history of a sexual exposure to a possible STD including HIV:

- When did the exposure occur?
- What type of exposure? (e.g. Penile-vaginal, penile-anal, penile oral, digital only, oral only)
- How many people were you exposed to? Do you know anything about their health status including HIV status?
- Was there condom or other barrier protection used?
- Were you forced to have this sexual contact? Did you feel unsafe? (Assesses for sexual assault in which case more urgent referral for evidence collection may be needed.)

Factors associated with risk of acquiring an STD following a sexual exposure

She asks the following questions: "What are my chances of acquiring an STD?"

The risk of acquiring an STD after a sexual exposure depends on many factors, including the underlying prevalence of the STD in the community (reviewed in detail in this issue for the most common STDs), the type of exposure, the presence of mucosal trauma, the STD involved, and the number of sources or exposures (or assailants, in the case of a sexual assault). Another active STD at the time of the exposure, especially genital ulcer disease such as genital herpes or syphilis, may increase the risk of contracting a subsequent STD.[3] The overall goal of treatment or prophylaxis after a sexual exposure is to prevent the most prevalent infections among those who have been exposed. In most areas, this is Chlamydia, gonorrhea, trichomonas, and, in some cases or populations, syphilis, highlighting the importance of familiarity with the local prevalence of STDs.

STD risk after sexual assault

There are few prospective studies examining the risk of STD acquisition after sexual assault. Most studies have examined prevalence at the time of examination for assault, and infection may predate the assault, falsely elevating the prevalence. There is data that an exposure in the context of sexual assault compared to consensual exposure may increase transmission risk of HIV due to even microscopic genital trauma.[4]

Testing verus empiric treatment after sexual exposure

"Do I need to be tested or treated for STDs?"

While according to the recent recommendations of the CDC, both options are acceptable, most experts recommend empiric treatment after exposure, especially in the context of sexual assault. Infection may not be established immediately after exposure, so depending on the time from exposure to presentation for medical care, enough time may not have elapsed for a STD test to be positive. In addition, follow up can be poor in many patients and the opportunity for treatment and therefore potentially preventing further exposures may be lost. If testing in the absence of empiric treatment is employed, then testing should not be guided by symptoms alone, as many STDs may be asymptomatic and yet still have the potential to cause significant morbidity and transmission to others.[5]

Recommendations for prophylaxis/treatment of STDs after a sexual exposure

"What medications will I need to take?"

The CDC has published recommendations for treatment to prevent sexually transmitted infections after a sexual exposure, including gonorrhea, chlamydia, trichomonas, as well as hepatitis B and HIV.[1] In the adult patient, empiric treatment, rather than testing (unless symptoms are present) is recommended by most experts. Syphilis is less prevalent, however, depending on the population, empiric treatment might be appropriate. Treatment for gonorrhea with ceftriaxone also likely will treat incubating syphilis.

The regimens recommended for empiric treatment of bacterial STDs after a sexual exposure are as follows:

- For **Chlamydia**: azithromycin 1000mg orally in a single dose (alternative: doxycycline 100mg orally twice a day for seven days – doxycycline is relatively contraindicated in pregnancy and in children less than eight years old).
- For **Gonorrhea**: ceftriaxone 250mg intramuscularly in a single dose (alternative if ceftriaxone not an option: cefixime 400mg orally in a single dose; alternative in the severely penicillin allergic patient, azithromycin 2000mg orally in a single dose although there are concerns with emergence of resistance with azithromycin). *Quinolones are no longer recommended for the treatment of gonorrhea due to unacceptable levels of resistance*.
- For **Trichomonas**: metronidazole 1gm orally in a single dose (avoid use with alcohol). (A single dose of metronidazole is no longer considered adequate for the treatment of bacterial vaginosis, in which case a longer course is required).[1]

Recommendations for follow-up testing for bacterial STDs

"Will I need to be tested again? How will I know the treatment worked?"

Empiric treatment is generally recommended, and if administered appropriately, follow up testing is not needed in the absence of symptoms. Re-testing is recommended in the following situations:

- Signs of symptoms of infection (such as vaginal or penile discharge).
- Patient requests testing (as they may have had another exposure of which the provider is unaware).
- Initial treatment (all or part) was omitted or refused by the patient. In this case testing should be performed approximately two weeks after the exposure. Samples should be collected from all areas that were exposed (e.g. vagina, rectum, and/or pharynx).

Recommendations for the prevention of Hepatitis B and C after a sexual exposure

"Do I need to worry about Hepatitis?"

Hepatitis B

- If the patient is unvaccinated or known not to have responded to a complete Hepatitis B vaccine series, AND exposed to a source known to be Hepatitis B infected: 1) Hepatitis B Immunoglobulin in a one time intramuscular dose of 0.05mL/kg (ideally within 14 days of a sexual exposure); AND 2) administer Hepatitis B vaccine series.
- If the patient is unvaccinated or known not to have responded to a complete Hepatitis B vaccine series, AND exposed to a source with an unknown Hepatitis B status: Initiate the Hepatitis B vaccine series if not already vaccinated and/or immune, with first dose given as soon as possible, but ideally within 14 days of exposure.
- Pregnancy is not a contraindication to Hepatitis B vaccination if otherwise indicated.

Risk of HIV acquisition after sexual exposure, like the risk of other STDs, depends on characteristics of the exposure and of the source patient.

Hepatitis C

Sexual transmission of Hepatitis C was thought to occur rarely, however, there have been more recent reports of sexual transmission occurring, especially among HIV-infected persons and men who have sex with men. The CDC reported that 10% of individuals with acute hepatitis C reported contact with a known HCV-infected sex partner as their only risk factor for infection.[6] The risk for acquisition of hepatitis C increases with the number of sexual partners, especially of those sex partners are co-infected with HIV.

There is no effective postexposure prophylaxis against hepatitis C at this time and viral kinetics suggest that established infection is necessary for treatment to work. Because of this, follow up testing after possible exposure is important in order to identify acute or early infection, the treatment of which may have better outcomes.[7] Suggested timing of follow up testing for hepatitis C (with HCV antibodies and HCV RNA) should be at six weeks and again at three months after sexual exposure.

Pregnancy prevention after sexual exposure

"How do I prevent pregnancy?"

Progestin-only emergency contraception has been shown to be 98.5% effective in preventing pregnancy if taken within 120 hours after unprotected intercourse. It should be taken as soon as possible after the exposure as efficacy likely decreases with time. It should not be given if a patient is already pregnant, but there is no evidence that it causes abortion or harm to the pregnancy if given in an already established pregnancy. Emergency contraception (Plan B, and others) is available for purchase in a pharmacy without a prescription for women and men 17 years of age or older.

- Dose = levonorgestrel or Plan B (1.5mg orally in a one time dose, taken up to 120 hours after unprotected intercourse)

Risks of HIV transmission after sexual exposure

"What are my chances of getting HIV?"

Risk of HIV acquisition after sexual exposure, like the risk of other STDs, depends on characteristics of the exposure and of the source patient. Characteristics of the exposure which can influence HIV risk include the type of exposure, the presence of mucous membrane trauma, the presence of concomitant STD (in the patient or the source) especially genital ulcer disease such as herpes or syphilis, and the number of sexual contacts. There is variability among data sources, but the estimated risk of HIV transmission from a known HIV-infected source patient, from consensual vaginal intercourse may be approximately 0.1-0.2% and for receptive anal intercourse approximately 0.5-3%.[8,9] The risk for insertive anal intercourse may

be slightly lower at 0.06%, and the risk from oral sex is likely substantially lower, although not zero.[9] Sexual assault may increase transmission risk compared to consensual sex.[4]

The risk of HIV transmission and whether to offer HIV postexposure prophylaxis also depends on whether the source patient has HIV. Characteristics of the source patient that increase the risk of HIV would be men who have sex with men, persons with multiple sexual partners, intravenous drug users, commercial sex workers, persons with concomitant genital ulcer disease, those with a history of incarceration, or those from an area with an HIV prevalence of 1% or more. The HIV seroprevalence has been evaluated in several special populations. In a Rhode Island inmate population, the HIV seroprevalence was 1% in sexual assailants, 3% in the prison population, compared to 0.3% in the general male population of the state.[10]

HIV postexposure prophylaxis (PEP) after sexual exposure

Is there medication I can take to prevent HIV?

Postexposure prophylaxis therapy with a 28 day course of antiretroviral medications after exposure to HIV has gained widespread acceptance despite lack of efficacy data in the setting of sexual exposure. In 2005, the CDC developed recommendations for its use, and several states have consensus guidelines for HIV PEP, however as the HIV treatment field expands, specific regimens used in practice may change before guidelines are updated.[11,12] Its efficacy is extrapolated from animal data, from a study of healthcare workers who were given zidovudine after a needlestick injury which reduced the risk of HIV acquisition by 81%,[13] from the success of reducing the risk of perinatal HIV transmission by almost 70%,[14] and from observational studies of PEP after sexual exposure to HIV in high risk populations.[15] More recently, data on preexposure prophylaxis (the use of antiretrovirals prior to HIV exposure to prevent HIV infection in high risk groups) appears promising.[16 17]

HIV PEP may be warranted if the following criteria are met:

- A significant exposure has occurred (exposure of the vagina, rectum or any mucous membrane to potentially infectious blood, semen, or vaginal/rectal secretions) AND
- The patient presents within 72 hours of the exposure AND
- The source patient is known to be HIV infected* or HIV status is unknown but is at high risk of being HIV infected (as in risk groups outlined above). HIV PEP may be considered in other cases where the source patient's HIV status is unknown or is at lower risk of HIV on a case-by-case basis. (* In which case the source patient's treatment history, if known, must be taken into consideration with the assistance of an HIV treatment specialist when devising a PEP regimen)

The specific regimens for HIV postexposure prophylaxis is beyond the scope of this review, however in general, two nucleoside reverse transcriptase inhibitors are used with the possible addition of a protease inhibitor in higher risk exposures, extrapolating from HIV treatment data.

If HIV PEP is to be initiated, then an HIV test should be performed at baseline (to avoid initiating PEP in an HIV infected patient). Follow up HIV testing should be performed at 6 weeks, 3 months, and 6 months after exposure, whether or not HIV PEP was initiated.

A note about sexual assault

In Rhode Island, it is estimated that one in eight women have been sexually assaulted during their lifetime.[19] Rape occurs in men as well, although the prevalence is likely lower based on other population studies. If an adult patient presents after a sexual assault and wishes to have evidence collection, they should be referred to a local emergency room for evaluation and evidence collection, as well as STD and HIV PEP if indicated. College health services can often provide many of these services, although not evidence collection. The time limits for evidence collection vary by jurisdiction and range from 72-120 hours (96 hours in Rhode Island).[20]

Summary

Sexual exposure to STDs including HIV and hepatitis is common. Sexual assault is also prevalent and should be screened for in a patient presenting for medical care after potential sexual exposure to STDs. Primary care providers should be familiar with current recommendations for STD prophylaxis and treatment after sexual exposure to STDs, and be aware that HIV postexposure prophylaxis is effective and available if indicated after sexual exposure to HIV. Providers should also be aware of the need for prompt referral for evaluation and medical care of the adult patient after a sexual assault.

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