

Spotlight on Health

Preventing HIV: PrEP and Laboratory Testing

Although the overall rate of new HIV infection is declining, it is still occurring at epidemic proportions.¹ Fortunately, the development of antiretroviral (ARV) drugs has allowed persons with HIV to live essentially normal lives. To reduce the risk of infection, ARV drugs are also used in a preventative treatment called HIV pre-exposure prophylaxis (PrEP). PrEP markedly reduces the chances that a person will contract HIV.² The Centers for Disease Control and Prevention (CDC) provides guidelines for using PrEP in conjunction with comprehensive laboratory testing.²

This newsletter will discuss PrEP, as well as the role of laboratory testing before and during PrEP.

Pre-Exposure Prophylaxis

In 2012, the Food and Drug Administration (FDA) approved a once-daily, fixed-dose combination of the ARV drugs emtricitabine and tenofovir disoproxil fumarate (FTC/TDF; Truvada®). To become pharmacologically active, both FTC and TDF are taken up into cells, where they are phosphorylated. In an HIV-negative individual, sufficient levels of these drugs stop HIV from entering cells and replicating.³

This treatment regimen (PrEP) reduces the risk of HIV infection in uninfected individuals who are at high risk of contracting HIV.³ Daily PrEP reduces risk of HIV infection by more than 70% for people who inject drugs, and by more than 90% for people at risk of getting HIV from sex.² PrEP is intended to be used with other safe sex practices—proper and consistent use of condoms reduces the risk of contracting HIV from sex even further.²

Who Should Receive PrEP

The CDC recommends that PrEP should be considered for HIV-negative individuals who are at high risk of contracting the infection. The CDC recommends that PrEP be offered to²

- Anyone who is in an ongoing sexual relationship with an HIV-infected partner
- A gay or bisexual man who has had sex without a condom or has been diagnosed with a sexually transmitted infection within the past 6 months, and is not in a mutually monogamous relationship with a partner who recently tested HIV negative
- A heterosexual man or woman who does not always use condoms when having sex with partners known to be at risk for HIV (for example, injection drug users or bisexual male partners of unknown HIV status), and is not in a mutually monogamous relationship with a partner who recently tested HIV negative
- Anyone who has within the past 6 months injected illicit drugs and shared equipment or been in a treatment program for injection drug use



Infections and Health-Related Problems Associated With HIV

HCV, HBV, and tuberculosis are much more common in persons with HIV than the general population^{4,5}:

- Hepatitis C occurs in 25% of people with HIV.
- Hepatitis B occurs in 10% of people with HIV.
- Tuberculosis occurs in about 6% of people with HIV.

Other medical conditions are also more common in persons with HIV. These include^{6,7}

- Cardiovascular disease
- Liver disease
- Kidney disease
- Anal cancer
- Cervical cancer
- Lymphomas
- Progressive multifocal leukoencephalopathy
- Cytomegalovirus
- Herpes simplex
- Herpes zoster (shingles)
- HIV-related neurocognitive disorders
- HIV wasting syndrome

Laboratory Testing Before Beginning PrEP and During Administration

Laboratory testing is important before a patient begins PrEP, and for monitoring HIV status and other conditions during PrEP.^{2,3}

CDC guidelines recommend that, before beginning PrEP, patients should be tested for HIV-1/HIV-2 antigen and antibodies. Because PrEP can lead to ARV-resistant infection in people who are HIV positive, a person *must* be HIV negative before beginning PrEP. New-onset kidney disease, or mild worsening of kidney function, can occur during PrEP. As such, testing renal function (creatinine level and estimated glomerular filtration rate [eGFR]) is necessary. PrEP is not recommended when the eGFR is <60 mL/min. Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are more common in persons with HIV than in the general population (see Sidebar on previous page). Thus, testing for these infections is recommended. Testing for syphilis, chlamydia, and gonorrhea should also be performed, as these infections are also more common in persons with HIV. Women should also receive a pregnancy test, because it is not known if PrEP can harm a developing fetus.

According to the CDC, patients should receive HIV testing at least every 3 months (women should also receive a pregnancy test) during PrEP. CDC also recommends that renal function testing, and testing for gonorrhea and chlamydia, should be performed at least every 6 months.²

How the Laboratory Can Help

Quest Diagnostics offers all tests recommended in the CDC guidelines to assist in the management of patients beginning and receiving PrEP.²

Additional information about HIV is available at QuestDiagnostics.com/HIV.

References

1. HIV in the United States: at a glance. Centers for Disease Control and Prevention website. <https://www.cdc.gov/hiv/statistics/overview/ata glance.html>. Updated August 6, 2018. Accessed October 1, 2018.
2. US Public Health Service: preexposure prophylaxis for the prevention of HIV infection in the United States—2017 update: a clinical practice guideline. Centers for Disease Control and Prevention website. <https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf>. Published March 2018. Accessed October 1, 2018.
3. U.S. and global health guidelines recommend Truvada for PrEP in combination with safer sex practices to help reduce the risk of sexually acquired HIV-1 in individuals at risk. Truvada website. <https://www.truvada.com/hcp/guidelines>. Accessed October 1, 2018.
4. HIV and viral hepatitis. Centers for Disease Control and Prevention website. <https://www.cdc.gov/hiv/pdf/library/factsheets/hiv-viral-hepatitis.pdf>. Published June 2017. Accessed November 20, 2018.
5. Centers for Disease Control and Prevention (CDC). *Reported tuberculosis in the United States, 2016*. Atlanta, GA: US Department of Health and Human Services, CDC; 2017. https://www.cdc.gov/tb/statistics/reports/2016/pdfs/2016_Surveillance_FullReport.pdf. Accessed October 1, 2018.
6. Triant VA. Cardiovascular disease and HIV infection. *Curr HIV/AIDS Rep*. 2013;10:199-206.
7. HIV-related conditions. AIDSsource website. <https://aids.nlm.nih.gov/topic/1092/hiv-related-conditions>. Accessed October 1, 2018.

This information is provided for informational purposes only, and is not intended as medical advice. A physician's test selection and interpretation, diagnosis, and patient management decisions should be based on his/her education, clinical expertise, and assessment of the patient.

The treating healthcare professional should refer to the manufacturer's approved labeling for prescribing, warnings, side effects, and other important information.

Image content features models and is intended for illustrative purposes only.

QuestDiagnostics.com

Quest, Quest Diagnostics, any associated logos, and all associated Quest Diagnostics registered or unregistered trademarks are the property of Quest Diagnostics. All third-party marks-® and ™-are the property of their respective owners. ©2018 Quest Diagnostics Incorporated. All rights reserved. SH8010 12/2018