

HIV Infection: Detection, Counseling, and Referral

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HIV infection typically begins with a brief acute retroviral syndrome, transitions to a multi-year chronic illness that progressively depletes CD4 T-lymphocytes critical for maintenance of effective immune function, and ends with symptomatic, life-threatening immunodeficiency. This late stage of infection, known as acquired immunodeficiency syndrome (AIDS), develops over months to years with an estimated median time of approximately 11 years (289). In the absence of treatment, virtually all persons with AIDS will die from AIDS-related causes; however with antiretroviral therapy, persons provided early effective treatment can expect to live a near normal lifespan (290-292). Early diagnosis of HIV infection and linkage to care are essential not only for the patients' own health but also to reduce the risk for transmitting HIV to others. As of March 2012, U.S. guidelines recommend all persons with HIV infection diagnoses be offered effective antiretroviral therapy (70).

As of 2011, approximately 16% of the estimated 1.2 million persons with HIV infection in the United States are unaware of their infection ([Monitoring Selected National HIV Prevention and Care Objectives by Using HIV Surveillance Data](#)). Knowledge of HIV-infection status has important clinical implications, because HIV infection alters the immune system and thereby affects the diagnosis, evaluation, treatment, and follow-up of some other STDs. Diagnosing HIV infection during the acute phase of disease is particularly important (see [Acute HIV Infection](#)). Persons with acute HIV infection are highly infectious, because HIV concentrations are extremely high in plasma and genital secretions following initial infection (293-296). However, tests for HIV antibodies are often negative during this phase of infection, causing persons to mistakenly believe they are uninfected and unknowingly continue to engage in behaviors associated with HIV transmission. Of persons with acute HIV infection, 50%-90% are symptomatic, many of whom seek medical care (297,298). Because persons with no HIV-associated symptoms might present for assessment or treatment of a concomitantly acquired STD, providers serving persons at risk for STDs are in a position to diagnose HIV infection in persons during the acute phase of infection.

Despite the availability of effective antiretroviral therapy, many cases of HIV infection continue to be diagnosed at advanced stages, as evidenced by low CD4 cell counts. Nationally, the proportion of patients who receive AIDS diagnoses at or within 12 months of their HIV diagnosis in 2010 was 32% (299). Since 2006, CDC has recommended efforts to increase HIV testing by streamlining the consent process and expanding opt-out testing to all health-care settings, including those serving persons at risk for STDs (122). HIV testing facilitates early diagnosis, which reduces the spread of disease, extends life expectancy, and reduces costs of care. However, rates of testing remain low: CDC estimates that in 2008, only 45% of adults aged 18-64 years had ever been tested (300), and that during 2006-2009 approximately 41% of persons with newly diagnosed HIV infection had never been previously tested (301).

Comprehensive HIV treatment services are usually not available in facilities focusing primarily on STD treatment (e.g., STD clinics). In such settings, patients with a new diagnosis of HIV infection or those with an existing diagnosis of HIV infection who are not engaged in regular on-going care should be linked promptly to a health-care provider or facility experienced in caring for HIV-infected patients (70). Providers working in STD clinics should be knowledgeable about the treatment options available in their communities, educate HIV-infected persons about their illness, and link these patients to HIV-related care and support services. Provision of care also should include behavioral and psychosocial services, especially for alcohol and drug addiction and for mental health problems.

A detailed discussion of the complex issues required for the management of HIV infection is beyond the scope of this report; however this information is available elsewhere (17, 70,247). These HIV care and management resources are updated frequently, and the most current versions are available online (see URLs accompanying each reference). These resources provide additional information about the diagnosis, medical management, and counseling of persons with HIV infection, referral for support services, and management of sex and injection-drug partners in STD-treatment facilities. In addition, subsequent sections of this report briefly discuss HIV infection during pregnancy and among infants and children.

Detection of HIV Infection: Screening

All persons who seek evaluation and treatment for STDs should be screened for HIV infection. Screening should be routine, regardless of whether the patient reports any specific behavioral risks for HIV infection. Persons at high risk for HIV infection with early syphilis, gonorrhea, or chlamydia should be screened at the time of the STD diagnosis, even if an HIV test was recently performed. Some STDs, especially rectal gonorrhea and syphilis, are a risk marker for HIV acquisition (142, 145,156).

CDC recommends HIV screening for patients aged 13-64 years in all health-care settings (122). Persons should be notified that testing will be performed, but retain the option to decline or defer testing (an opt-out approach) (302). Consent for HIV screening should be incorporated into the general informed consent for medical care in the same manner as other screening or diagnostic tests. A separate consent form for HIV testing is not recommended.

Providing prevention counseling in conjunction with HIV diagnostic testing or as part of HIV screening programs should not be required in health-care settings. However, some persons might be more likely to think about HIV and consider their risk-related behavior when undergoing an HIV test. HIV testing presents providers with an opportunity to conduct HIV/STD prevention counseling and communicate risk-reduction messages.

Diagnosing HIV Infection

HIV infection can be diagnosed by serologic tests that detect antibodies against HIV-1 and HIV-2 and by virologic tests that detect HIV antigens or ribonucleic acid (RNA). Testing begins with a sensitive screening test, usually an antigen/antibody combination or antibody immunoassay (IA). Available serologic tests are both highly sensitive and specific and can detect all known subtypes of HIV-1. Most can also detect HIV-2 and uncommon variants of HIV-1 (e.g., group O and group N). Rapid HIV tests enable clinicians to make a preliminary diagnosis of HIV infection within 30 minutes. However, most rapid antibody assays become reactive later than conventional laboratory-based antibody or combination antigen/antibody serologic assays, and thus can produce negative results in recently infected persons.

The recommended diagnostic algorithm for HIV infection consists of a laboratory-based immunoassay, which if repeatedly reactive is followed by a supplemental test (e.g., an HIV-1/HIV-2 antibody differentiation assay, Western blot, or indirect immunofluorescence assay). However, available HIV laboratory antigen/antibody immunoassays detect HIV infection earlier than these supplemental tests. Therefore, during very early stages of HIV infection, discordant HIV test results (reactive immunoassay results with negative supplemental test results) have been erroneously interpreted as negative (303). This problem is minimized by use of a combination HIV-1/HIV-2 antigen-antibody (Ag/Ab) immunoassay, which if reactive is followed by an HIV-1/HIV-2 antibody differentiation assay (304). This algorithm confers an additional advantage, as it can detect HIV-2 antibodies after the initial immunoassay. Although HIV-2 is uncommon in the United States, accurate identification is important because monitoring and therapy for HIV-2 differs from that for HIV-1 (305). RNA testing is performed on all specimens with reactive immunoassay but negative supplemental antibody test results to determine whether the discordance represents acute HIV infection.

The following are specific recommendations that apply to testing for HIV infection.

- HIV screening is recommended for all persons who seek evaluation or treatment for STDs. This testing should be performed at the time of STD diagnosis (e.g., early syphilis, gonorrhea, and chlamydia) in populations at high risk for HIV infection.
- HIV testing must be voluntary and free from coercion. Patients must not be tested without their knowledge.
- Opt-out HIV screening (notifying the patient that an HIV test will be performed, unless the patient declines) is recommended in all health-care settings.
- Specific signed consent for HIV testing should not be required. General informed consent for medical care is considered sufficient to encompass informed consent for HIV testing.
- Use of Ag/Ab combination tests is encouraged unless persons are unlikely to receive their HIV test results.
- Preliminary positive screening tests for HIV infection must be followed by additional testing to definitively establish the diagnosis.
- Providers should be alert to the possibility of acute HIV infection and perform an antigen/antibody immunoassay or HIV RNA in conjunction with an antibody test. Persons suspected of recently acquired HIV infection should be referred immediately to an HIV clinical-care provider.

Acute HIV Infection

Health-care providers should be knowledgeable about the symptoms and signs of acute retroviral syndrome, which develops in 50%–90% of persons within the first few weeks after they become infected with HIV (298). Acute retroviral syndrome is characterized by nonspecific symptoms, including fever, malaise, lymphadenopathy, and skin rash. Suspicion of acute retroviral syndrome should prompt urgent assessment with an antigen/antibody immunoassay or HIV RNA in conjunction with an antibody test. If the immunoassay is negative or indeterminate, then testing for HIV RNA should follow. Clinicians should not assume that a laboratory report of a negative HIV antibody test result indicates that the necessary RNA screening for acute HIV infection has been conducted. Further, HIV home-testing kits only detect HIV antibodies and therefore will not detect acute HIV infection.

Persons with acute HIV infection are highly infectious because the concentration of virus in plasma and genital secretions is extremely elevated during this stage of infection (294,306). Antiretroviral therapy during acute HIV infection is recommended, because it substantially reduces infectiousness to others, improves laboratory markers of disease, may decrease severity of acute disease, lowers viral set-point, reduces the size of the viral reservoir, decreases rate of viral mutation by suppressing replication, and preserves immune function (70). Persons who receive an acute HIV infection diagnosis should be referred immediately to an HIV clinical-care provider, provided prevention counseling (e.g., advised to reduce number of partners and to use condoms correctly and consistently), and screened for STDs. Information should be provided on the availability of postexposure prophylaxis for sexual and needle-sharing partners not known to have HIV infection if the most recent contact was within the 72 hours preceding HIV diagnosis (www.cdc.gov/hiv (<https://www.cdc.gov/hiv/>)).

After Establishing a New HIV Diagnosis

Persons with newly diagnosed HIV infection should be informed about 1) the importance of promptly initiating medical care for their own health and to reduce further transmission of HIV, 2) the effectiveness of HIV treatments, and 3) what to expect as they enter medical care for HIV infection (70). They should be linked promptly to a health-care provider or facility experienced in caring for patients with HIV. Persons with symptoms or signs that suggest advanced HIV infection (e.g., fever, weight loss, diarrhea, cough, shortness of breath, and oral candidiasis) should be immediately evaluated or referred for evaluation. Persons experiencing psychologic distress should be referred accordingly (see [Counseling for Persons with HIV Infection and Referral to Support Services](#)). Detailed and regularly updated recommendation for the initial management of persons with HIV infection can be found elsewhere (17, 70,247).

Counseling for Persons with HIV Infection and Referral to Support Services

Providers should expect persons with HIV infection to be distressed when first informed of a positive test result. Such persons face multiple major adaptive challenges, including coping with the reactions of others to a stigmatizing illness, developing and adopting strategies for maintaining physical and emotional health, initiating changes in behavior to prevent HIV transmission to others, and reducing the risk for acquiring additional STDs. Many persons will require assistance with making reproductive choices, gaining access to health services, and coping with changes in personal relationships. Therefore, behavioral and psychosocial services are an integral part of health care for persons with HIV infection.

Persons testing positive for HIV infection have unique needs. Some require referral for specific behavioral interventions (e.g., a substance abuse program), mental health disorders (e.g., depression), and emotional distress, while others require assistance with securing and maintaining employment and housing. Women should be counseled or appropriately referred regarding reproductive choices and contraceptive options, and persons with multiple psychosocial problems might be candidates for comprehensive risk-reduction counseling and other support services.

The following are specific recommendations for HIV counseling and linkage to services that should be offered to patients before they leave the testing site.

- Persons who test positive for HIV should be counseled, either on-site or through referral, concerning the behavioral, psychosocial, and medical implications of HIV infection.
- Health-care providers should assess the need for immediate medical care and psychosocial support.
- Providers should link persons with newly diagnosed HIV infection to services provided by health-care personnel experienced in the management of HIV infection. Additional services that might be needed include substance abuse counseling and treatment, treatment for mental health disorders or emotional distress, reproductive counseling, risk-reduction counseling, and case management. Providers should follow up to ensure that patients have received services for any identified needs.
- Persons with HIV infection should be educated about the importance of ongoing medical care and what to expect from these services.

Several successful, innovative interventions to assist persons with HIV infection reduce the possibility of transmission to others have been developed for diverse at-risk populations, and these can be locally replicated or adapted ([12](#), [15,307-310](#)). Involvement of nongovernment and community-based organizations might complement such efforts in the clinical setting.

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Management of Sex Partners and Injection-Drug Partners

Clinicians providing services to persons with HIV infection should determine whether any partners should be notified concerning possible exposure to HIV ([122](#), [311](#)). In the context of HIV management, “partner” includes sex partners and persons with whom syringes or other injection equipment is shared. Partner notification is an important component of disease management, because early diagnosis and treatment of HIV infection reduces risk for HIV transmission, decreases individual morbidity and mortality risk, and provides the opportunity to modify risk behaviors. Partner notification for HIV infection should be confidential. Specific guidance regarding spousal notification varies by jurisdiction. Detailed recommendations concerning identification, notification, diagnosis, and treatment of exposed partners are available in CDC’s *Recommendations for Partner Services Programs for HIV Infection, Syphilis, Gonorrhea, and Chlamydial Infections* (See [Partner Services](#)) ([311](#)).

The following are specific recommendations for implementing partner-notification procedures:

- Health-care providers should inform persons with HIV infection about partner services including processes, benefits, and risks.
- Persons with HIV infection should be encouraged to notify their partners and to refer them for counseling and testing.
- Health-care providers should assist in the partner-notification process, either directly or by referral to health department partner-notification programs, which might attempt to contact them.
- If persons with HIV infection are unwilling to notify their partners or cannot ensure their partners will seek counseling, HIV care staff or health department personnel should use confidential partner notification procedures. Health department staff are trained to employ public health investigation strategies to confidentially locate persons who are hard to reach, whereas most clinical providers do not have the time or expertise to conduct this type of partner notification.
- Partners who have been reached and are not known to have HIV infection should be offered postexposure prophylaxis with combination antiretrovirals if they were exposed to genital secretions or blood of a partner with HIV infection through sex or injection-drug use within the preceding 72 hours ([312](#)).

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STD Testing During HIV Care

At the initial HIV care visit, providers should test all sexually active persons with HIV infection for curable STDs (e.g., syphilis, gonorrhea, and chlamydia) and perform testing at least annually during the course of HIV care ([12](#)). Specific testing includes syphilis serology and NAAT for *N. gonorrhoeae* and *C. trachomatis* at the anatomic site of exposure, as the preferred approach. Women with HIV infection should also be screened for trichomonas at the initial visit and annually thereafter. Women should be screened for cervical cancer precursor lesions by cervical Pap tests per existing guidelines ([247](#)).

More frequent screening for curable STDs might be appropriate depending on individual risk behaviors and the local epidemiology of STDs. Many STDs are asymptomatic, and their diagnosis might indicate risk behavior that should prompt referral for partner services and prevention counseling ([10](#)). Pathogen-specific sections of this document provide more detailed information on screening, testing, and treatment.

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Special Considerations

Pregnancy

All pregnant women should be tested for HIV infection during the first prenatal visit. A second test during the third trimester, preferably at <36 weeks’ gestation, should be considered for all pregnant women and is recommended for those known to be at high risk for acquiring HIV, those who receive health care in jurisdictions with elevated incidence of HIV or AIDS among women, and women seen in clinical settings in which prenatal screening identifies at least one pregnant woman with HIV infection per 1,000 women screened ([122](#)). Diagnostic algorithms for HIV infection in pregnant women are not different than those for nonpregnant women (See [Diagnosis, HIV Infection](#)). Pregnant women should be informed about being tested for HIV as part of the panel of prenatal tests ([103](#), [122](#)); for women who decline,

providers should address concerns that pose obstacles to testing and encourage testing at subsequent prenatal visits. Women who decline testing because they have had a previous negative HIV test result should be informed about the importance of retesting during each pregnancy. Women with no prenatal care should be tested for HIV at the time of delivery.

Testing pregnant women is important not only because knowledge of infection status can help maintain the health of the woman, but because it enables receipt of interventions (i.e., antiretroviral and obstetrical) that can substantially reduce the risk for perinatal transmission of HIV. After a pregnant woman has been identified as having HIV infection, she should be educated about the benefits of antiretroviral treatment for her health and for reducing the risk for transmission to her infant. In the absence of antiretroviral treatment, a mother's risk of transmitting HIV to her neonate is approximately 30% but can be reduced to <2% through antiretroviral treatment, obstetrical interventions (i.e., elective cesarean section at 38 weeks of pregnancy), and breastfeeding avoidance (105). Pregnant women who have HIV infection should be linked to an HIV care provider and given appropriate antenatal and postpartum treatment and advice. Detailed and regularly updated recommendations for the initial management of persons with HIV infection and pregnancy are available in existing guidance at <http://aidsinfo.nih.gov/guidelines> (<http://aidsinfo.nih.gov/guidelines>).

HIV Infection Among Neonates, Infants, and Children

Diagnosis of HIV infection in a pregnant woman indicates the need to evaluate and manage the HIV-exposed neonate and consider whether the woman's other children might be infected. Detailed recommendations regarding diagnosis and management of HIV in neonates and children of mothers with HIV infection are beyond the scope of this report and can be found at <http://aidsinfo.nih.gov/guidelines> (<http://aidsinfo.nih.gov/guidelines>). Exposed neonates and children with HIV infection should be referred to physicians with such expertise.

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