

PRIMARY CARE APPROACH TO THE HIV-INFECTED PATIENT

I. INTRODUCTION

RECOMMENDATIONS:

Both HIV Specialists and primary care clinicians should be capable of evaluating HIV-infected patients at all stages of HIV infection. Primary care clinicians should consult with an HIV Specialist when initiating or changing treatment. (III)

Clinicians should involve patients in decisions regarding HIV treatment. (III)

Clinicians should schedule routine monitoring visits at least every 4 months for all HIV-infected patients who are clinically stable. (III)

As the treatment of HIV has continued to reduce mortality and increase the number of clinically stable patients, the primary care approach to HIV-infected patients has evolved. In addition to the management of HIV infection, a renewed emphasis on general preventive medicine has emerged.

The recommendations in this chapter are intended for the management of both HIV-infected patients who are receiving ARV therapy and those who are not. The following aspects of care are discussed:

- Medical history and physical examination
- Laboratory assessments and diagnostic testing
- Health maintenance and preventive care
- Coordination of care
- Use of chronic care services

All patients who are clinically stable should be monitored at least every 4 months; this includes both patients who are receiving ARV therapy and those who are not. Visits may need to be scheduled more frequently at entry to care, for management of acute problems, or when starting or changing ARV regimens.

For ARV treatment considerations, see [Antiretroviral Therapy](#), which includes recommendations regarding initiation of ARV therapy, selection of an ARV regimen, monitoring for ARV-specific side effects, optimizing treatment adherence, and changing regimens.

II. BASELINE HISTORY

RECOMMENDATIONS:

Clinicians should obtain an HIV-related history at baseline (see Table 1). (I)

Clinicians should use vocabulary that patients can understand, regardless of education level, when obtaining the history. (III)

Clinicians should use translator or sign language services when language barriers exist. (III)

Clinicians should obtain medical records from past medical providers, including documentation of a positive HIV ELISA antibody test result or a positive rapid test result that was confirmed by serum Western blot. (II)

Clinicians should address the importance of partner notification and stress the confidential nature of discussions regarding sexual history and substance use.

Specific components of an HIV-related history are listed in Table 1. Effective communication between the patient and provider can ensure that the clinician obtains an accurate and complete history. Clinicians should use vocabulary, both orally and in written form, that is well organized and easy to understand. When language barriers exist, clinicians should use translator or sign language services.

TABLE 1 ELEMENTS OF AN HIV-RELATED HISTORY	
General history	<ul style="list-style-type: none"> ▪ Review of sources of past medical care; obtain medical records whenever possible ▪ Past hospitalizations, past and current illnesses ▪ Tuberculosis history <ul style="list-style-type: none"> ○ Possible recent exposure to tuberculosis ○ History of positive TST (TB skin test, commonly known as PPD), TB disease, or treatment of latent TB infection ▪ History of hepatitis, if known ▪ Current prescription and non-prescription medicines, including complementary and alternative medicines and hormones ▪ Vaccination history ▪ Reproductive history, including pregnancies, births, termination of pregnancy; current contraceptive use and needs ▪ Partner information for disclosure of HIV status ▪ Transfusion or blood product history, especially before 1985 ▪ Allergies ▪ Travel history/place of birth ▪ Occupational history and hobbies ▪ Pets/animal exposures
HIV treatment and staging	<ul style="list-style-type: none"> ▪ HIV exposure history <ul style="list-style-type: none"> ○ Date and place of the diagnosis ○ Route of exposure, if known ▪ Most recent viral load and CD4 count ▪ Nadir CD4 and peak viral load ▪ Drug-resistance testing ▪ Current and previous ARV regimens and date of initiation of ARV therapy ▪ Previous adverse ARV drug reactions ▪ Opportunistic infections ▪ Previous adverse reactions to drugs used for OI prophylaxis ▪ Providers who have been involved in the patient's HIV treatment ▪ Patient's understanding of HIV disease and treatment

Mental health history	<ul style="list-style-type: none"> ▪ Mental health diagnoses, especially <ul style="list-style-type: none"> ○ Depression ○ Anxiety ○ Post-traumatic stress disorder ○ Suicidal/violent behavior ○ Severe and persistent mental illness ▪ Psychotropic medications ▪ Past psychiatric hospitalizations ▪ Contact information for mental health providers if applicable
Substance use history	<ul style="list-style-type: none"> ▪ Types of drugs; past and current use <ul style="list-style-type: none"> ○ Street drugs—marijuana, cocaine, heroin, methamphetamine, MDMA/ecstasy ○ Illicit use of prescription drugs ○ Alcohol ○ Tobacco ▪ Frequency of use and usual route of administration ▪ Risk behaviors—drug/needle sharing, exchanging sex for drugs, sexual risk-taking while under the influence of drugs or alcohol ▪ History of treatment and barriers to treatment
Sexual history	<ul style="list-style-type: none"> ▪ Current sexual activity ▪ History of sexually transmitted infections—syphilis, herpes simplex, genital warts, chlamydia, gonorrhea, chancroid ▪ Sexual practices—vaginal, anal, oral ▪ Gender identity ▪ Past and current partners ▪ Risk behavior assessment, including use of latex or polyurethane barriers, number of partners
Psychosocial assessment	<ul style="list-style-type: none"> ▪ Housing status ▪ Employment and insurance status ▪ Educational level ▪ Family and partner contacts ▪ Stability of personal relationships <ul style="list-style-type: none"> ○ Domestic violence screening ▪ Legal Issues <ul style="list-style-type: none"> ○ Living will and health care proxy ○ Permanency planning for dependent children
Review of systems	<ul style="list-style-type: none"> ▪ Constitutional—weight loss, malaise, fevers, night sweats, changes in appetite, changes in sleep, adenopathy ▪ Eyes—change in vision, including blurry vision, double vision, flashes of light, or loss of vision ▪ Head, ears, nose, throat—headache, dysphagia,odynophagia, hearing loss, discharge, dental pain, periodontal disease, oral herpes simplex ▪ Pulmonary—cough, dyspnea at rest or on exertion, hemoptysis ▪ Cardiac—chest pain, palpitations, heart murmur ▪ Abdominal—nausea, vomiting, diarrhea, constipation, blood per rectum, hemorrhoids ▪ Genitourinary: <ul style="list-style-type: none"> ○ Vaginal or penile discharge, vaginal pain, dysuria, genital/rectal warts (HPV), classic and atypical herpes simplex virus ○ OB/GYN—menstrual status, bleeding, infections, last Pap test and result ▪ Extremities—muscle wasting, muscle weakness, muscle pain, joint swelling ▪ Neurologic—cognitive changes, tingling, burning, pain, or numbness in the extremities, weakness

Although clinicians may obtain all elements of a comprehensive history during the first few visits to the clinic, it is important to address sexuality and non-prescription drug use during the initial clinical encounter. The confidential nature of these discussions should be stressed. Clinicians should note that although the patient may choose not to disclose all pertinent personal information during the first visit, a sympathetic and nonjudgmental attitude can help establish trust and facilitate discussion of these issues during subsequent visits. Patient disclosure of sexual history and substance use should be when the patient feels safest and most comfortable to do so.

When obtaining a sexual history, labels to which the patient may not relate, such as lesbian, homosexual, or gay, should be avoided. Questions should relate to the patient's behavior and not to "sexual identity." The information derived will be more useful to the clinician and the questions less threatening to many at-risk patients. For example, when talking to a male patient, the clinician should ask, *Do you have sex with men?*, and not, *Are you a homosexual?* or *Are you gay?*, because the patient may not identify with the words "homosexual" or "gay."

When assessing alcohol and substance use, clinicians should avoid judgmental language that can exacerbate stigma, such as "substance abuse" or "alcohol abuse." Instead of asking, *Do you drink?*, the clinician can ask, *What do you like to drink: beer, wine, or liquor?* A clinician's use of street terms for substances and substance use can also help promote honest responses from patients. Example: *So when was the last time you smoked any weed?*, may get a more accurate answer than, *Do you use marijuana?*. Phrasing a question with "even once," such as, *Did you ever even once shoot up to get high?*, may provide useful information for the clinician.

Clinicians who are uncomfortable asking questions about substance and alcohol use or different sexual behaviors should seek training to enhance their comfort level. For information regarding risk-reduction counseling related to sexual transmission, refer to the *HIV Prevention Guidelines: Prevention of HIV Transmission*. For scripted dialog for assessing substance use, refer to the *HIV and Substance Use Guidelines: [Screening and Ongoing Assessment for Substance Use](#)*.

III. COMPREHENSIVE PHYSICAL EXAMINATION

RECOMMENDATION:

Clinicians should perform a baseline and annual comprehensive physical examination, with particular attention to areas potentially affected by HIV (see Table 2).

A. Vital Signs, Symptoms, and General Appearance

RECOMMENDATIONS:

Clinicians should assess vital signs and weight at each visit. (III)

Clinicians should inquire about new symptoms at each visit. (III)

Clinicians should note changes in general appearance, body habitus, and physical well-being. (III)

TABLE 2
HIV-RELATED PHYSICAL EXAMINATION^a

Vital signs, weight, and symptoms^b	<ul style="list-style-type: none"> ▪ Assess at each visit
Pain assessment	<ul style="list-style-type: none"> ▪ Assess at each visit
Ophthalmologic	<ul style="list-style-type: none"> ▪ Perform or refer for a funduscopy examination^c
Head, ears, nose, throat	<ul style="list-style-type: none"> ▪ Sinus infection, odynophagia, dysphagia, hearing loss
Oral	<ul style="list-style-type: none"> ▪ Oral candidiasis (thrush), hairy leukoplakia (examine lateral borders of tongue), Kaposi's sarcoma, gingival disease, aphthous ulcers
Dermatologic	<ul style="list-style-type: none"> ▪ Rash, pruritus, psoriasis, molluscum contagiosum, seborrheic dermatitis, maceration of the gluteal cleft, Kaposi's sarcoma, onychomycosis, diffuse folliculitis with pruritus, melanoma
Lymph nodes^d	<ul style="list-style-type: none"> ▪ Particular attention to axillary, posterior cervical chain, supraclavicular, submental, axillary, epitrochlea, femoral
Endocrinologic	<ul style="list-style-type: none"> ▪ Abnormal subcutaneous fat redistribution
Pulmonary	<ul style="list-style-type: none"> ▪ Lung fields for wheezes, rhonchi, rales, or dullness
Cardiac examination	<ul style="list-style-type: none"> ▪ Heart rhythm, heart murmur, click, or rub
Abdominal	<ul style="list-style-type: none"> ▪ Hepatosplenomegaly, multiple lipomata in the subcutaneous fat, increased visceral fat
Genital	<ul style="list-style-type: none"> ▪ Genitourinary—vaginal or penile discharge, vaginal pain, ulcerative genital disease ▪ OB/GYN—careful pelvic examination
Rectal	<ul style="list-style-type: none"> ▪ Visible anal lesions or evidence of skin abnormality around the anus ▪ Digital rectal exam ▪ Symptoms—itching, diarrhea, pain
Musculoskeletal	<ul style="list-style-type: none"> ▪ Extremities, muscle wasting ▪ Peripheral pulses ▪ Evidence of peripheral vascular disease
Neuropsychological	<ul style="list-style-type: none"> ▪ Reflex, sensory, motor, and cerebellar function ▪ Signs of multifocal motor and sensory nerve abnormalities especially peripheral neuropathy ▪ Cranial nerves ▪ Cognitive status examination ▪ Mental health and substance use assessment

^a Except where indicated, each element should be performed at baseline and at least annually.

^b Assessment of symptoms may require direct questioning because patients may not consider their symptoms important until after the symptoms have already caused significant morbidity.

^c Patients with CD4 counts <50 cells/mm³ should be examined by an ophthalmologist at baseline and every 6 months.

^d Significant abnormalities may present as clusters of large nodes, asymmetry, tenderness, or sudden increases in size or firmness of nodes.

Vital signs, symptoms, and general appearance should be assessed at each visit. Weight should be included because weight gain or loss can be the first sign of therapy success or failure, even before laboratory test results are available.

Assessment of symptoms may require direct questioning because patients may not consider their symptoms important until significant morbidity has occurred, or they may simply forget to tell the clinician about new symptoms during the visit.

B. Pain Assessment

RECOMMENDATIONS:

Clinicians should ask HIV-infected patients about pain at each visit, as well as document any complaints of pain, attempt to identify underlying causes, and respond with efforts to alleviate it. (III)

Clinicians should not deny treatment of pain because of a patient's history of addiction. (III)

Clinicians should assess patients with chronic pain for fatigue and mental health disorders and include referral to a pain-management specialist as a treatment option. (III)

HIV-infected patients are at increased risk for development of certain painful conditions, particularly neuropathy, which can be due to medications, diabetes, or the underlying HIV infection. Some opportunistic infections are painful, such as chronic herpes simplex virus or varicella zoster virus. Treatment of pain can be complicated if the patient has a history of substance use, and the extended use of opioid analgesics and benzodiazepines may require consultation with substance use treatment professionals. However, no patient should be denied treatment for pain because of a history of substance use. For further guidance on pain management in HIV-infected substance users, refer to the HIV and Substance Use Guidelines: [*Pain in the HIV-Infected Substance User*](#).

C. Ophthalmologic Assessment and Referral

RECOMMENDATIONS:

Patients with CD4 counts <50 cells/mm³ should be examined by an ophthalmologist at baseline and every 6 months. (III)

Patients with visual disturbances or unremitting ocular symptoms, regardless of CD4 cell count, should be evaluated by an ophthalmologist. (III)

Eye examinations by an ophthalmologist, ideally one experienced with the ocular complications of HIV infection, are important, especially for patients at higher risk for CMV retinitis resulting from declining immune function. This examination should include a dilated funduscopy assessment with indirect ophthalmoscopy. See [*Ophthalmologic Complications of HIV Infection*](#).

D. Oral Examination

RECOMMENDATION:

Clinicians should ascertain whether their patients have a regular oral health provider and should refer all HIV-infected patients for annual hygiene and intraoral examinations, including dental caries and soft-tissue examinations. (III)

Clinicians should make an annual dental referral for every HIV-infected patient under their care. As part of the annual physical examination, the clinician should visually examine and palpate the patient's lips, labial and buccal mucosa, all surfaces of the tongue and palate, and the floor of the mouth. The gingiva should be examined for signs of erythema, ulceration, or recession. Appropriate access to urgent dental care should be identified. See [Oral Health Complications of HIV Infection](#).

E. Dermatologic Examination

Dermatologic findings, such as rash, lesions of Kaposi's sarcoma, and vasculitis, may all be the first signs of progression of HIV, comorbid diseases, or toxicities of treatment. Seborrheic dermatitis can be an indicator of immune deficiency. Maceration of the gluteal cleft may not be noticed by the patient but could be a result of *Candida* infection or herpes simplex virus. Molluscum contagiosum may appear slightly larger and in more clusters in HIV-infected patients. Onychomycosis may involve all fingernails and toenails. Diffuse folliculitis with associated pruritus may occur with immunodeficiency.

F. Lymph Node Examination

Generalized lymphadenopathy is a common finding during all stages of HIV disease. Reactive lymph nodes may be prominent in early stages of HIV, diminish as disease progresses, and return with immune reconstitution after effective ARV treatment has been established. Presentation of asymmetry, clusters of large nodes, or sudden increase in size, firmness, or tenderness of nodes may signal infection, malignancy, or opportunistic infections. Lymph node clusters that are normally quiescent, including posterior cervical chain, submental, supraclavicular, epitrochlear, axillary, and femoral nodes, should not be overlooked.

G. Chest Examination

The chest examination should include cardiac and pulmonary assessments (see Table 2). HIV infection can cause cardiac abnormalities; however, the prevalence of cardiac disease in HIV-infected individuals is not clear. Pericardial effusion and myocarditis are among the most commonly reported abnormalities, although cardiomyopathy, endocarditis, and coronary vasculopathy also have been reported. The evaluation of respiratory symptoms in HIV-infected patients can be challenging because they may be due to a wide spectrum of illnesses, which may or may not be related to HIV. HIV-related conditions include both opportunistic infections and neoplasms.

H. Abdominal Examination

Hepatosplenomegaly may be caused by infection, medications, alcohol, or other infiltrative disease processes. Certain combinations of HAART may increase the likelihood of finding multiple lipomata in the subcutaneous fat. Increased visceral fat associated with HAART may cause abdominal distension, requiring radiologic imaging to evaluate for other processes such as ascites.

I. Genital and Rectal Examination

RECOMMENDATIONS:

Clinicians should examine all HIV-infected patients for ulcerative lesions. (III)

Clinicians should perform a gynecologic examination in all HIV-infected women or refer them to a gynecologist at baseline and at least annually. (II)

At baseline and as part of the annual physical examination for all HIV-infected adults, regardless of age, clinicians should (III):

- **Inquire about rectal symptoms, such as itching, bleeding, diarrhea, or pain**
- **Perform a visual inspection of the perianal region**
- **Perform a digital rectal examination**

Clinicians should refer women with cervical HSIL and any patient with abnormal anal physical findings, such as warts, hypopigmented or hyperpigmented plaques/lesions, lesions that bleed, or any other lesions of uncertain etiology, for high-resolution anoscopy and/or examination with biopsy of abnormal tissue.

Because patients may be reluctant to report signs or symptoms of sexually transmitted infections (STIs) or other genital abnormalities, it is important that clinicians examine for vaginal or penile discharge and carefully inspect the anogenital area, including the vulva and vagina in women, for ulcerative lesions. Lesions attributable to HPV, syphilis, and classic herpes simplex virus (HSV) should be examined for, as well as atypical HSV presentations, such as non-healing gluteal cleft maceration. In addition to a genital examination, a careful pelvic examination is essential for women.

During the rectal examination, evidence of skin abnormality around the anus should be referred for high-resolution anoscopy (HRA) and/or examination with biopsy of abnormal tissue. For additional information, see [Neoplastic Complications of HIV Infection](#).

J. Neuropsychological Examination

1. Neurologic Examination

RECOMMENDATIONS:

Clinicians should examine for sensory and motor abnormalities, cerebellar function, motor and sensory abnormalities, especially peripheral neuropathy, and cognitive impairment.

Clinicians should refer patients with more complex suspected or proven peripheral neuropathy syndromes to a neurologist to assist with the diagnosis and management.

HIV-related neurologic changes can occur, even without the neurologic side effects of medications, especially as the infection progresses. For further information regarding neurologic complications, including screening tools for cognitive impairment, see [Neurologic Complications of HIV Infection](#) and the HIV and Mental Health Guidelines: [Cognitive Disorders and HIV/AIDS](#).

2. Mental Health and Substance Use Assessment

RECOMMENDATIONS:

Clinicians should perform a mental health assessment at baseline and at least annually.

The assessment should include the following components (I):

- **Depression, anxiety, post-traumatic stress disorder, suicidal/violent ideation, and substance use**
- **Sleep habits and appetite assessment**
- **Psychiatric history, including psychotropic medications**
- **Psychosocial assessment, including domestic violence and housing status**

Clinicians should refer patients to appropriate mental health and substance use treatment providers when indicated. (II)

Clinicians should incorporate selected brief screening instruments into the assessment process. The chosen screening instruments should be tailored for optimal use at initial, annual, and interim visits and adjusted for the patient’s mental health or substance use history. (III)

A number of mental health and substance use screening tools are available for use by primary care providers (see [Appendix A](#)). For further information on mental health screening and treatment, refer to the [HIV and Mental Health Guidelines](#) and [Screening Tools for Completing Mental Health Assessments in HIV Primary Care Settings](#). For further information on substance use screening and treatment, refer to the [HIV and Substance Use Guidelines: Screening and Ongoing Assessment for Substance Use](#).

IV. LABORATORY ASSESSMENT AND DIAGNOSTIC TESTING

RECOMMENDATION:

Clinicians should order appropriate laboratory assessments and screening tests for management of HIV-infected patients (see Table 3). (III)

TABLE 3
ROUTINE LABORATORY ASSESSMENT AND DIAGNOSTIC SCREENING

Assessment	Diagnostic Screen	Frequency
Immunologic assessment	<ul style="list-style-type: none"> CD4 lymphocyte count and percentage; to produce reliable results, the same testing laboratory should be used 	Baseline and at least every 4 months
Virologic assessment	<ul style="list-style-type: none"> Quantitative HIV RNA testing for viral load assessment; the same testing laboratory should be used^a Resistance testing 	Baseline and at least every 4 months 1) Baseline in the setting of acute infection (genotypic testing) <i>and</i> 2) Prior to initiating treatment in ARV therapy-naïve patients (genotypic testing) <i>and</i> 3) When patients experience virologic failure or incomplete viral suppression while receiving ARV therapy (genotypic and/or phenotypic testing ^b)
Tuberculosis evaluation	<ul style="list-style-type: none"> TST^c or other FDA-approved test for patients with no previous history of TB or no previous positive TST Chest x-ray for patients known to have a history of TB or known to be TST positive 	Baseline and annually
Screening for sexually transmitted infections^d	<ul style="list-style-type: none"> RPR or VDRL for syphilis with verification of positive test by confirmatory FTA-Abs or TP-PA Gonorrhea and chlamydia^e <ul style="list-style-type: none"> Sexually active women <25 years of age Women ≥25 years of age with risk factors^f All HIV-infected men with ongoing high-risk behavior 	<ul style="list-style-type: none"> Baseline and at least annually; every 3 months for patients with continued high-risk behavior Baseline and at least annually
Cytologic screening	<ul style="list-style-type: none"> Cervical Pap tests Anal Pap tests <ul style="list-style-type: none"> For men who have sex with men Any patient with a history of anogenital condylomas Women with abnormal cervical/vulvar histology 	<ul style="list-style-type: none"> Baseline, 6 months after baseline, then annually as long as results are normal^g Baseline and annually
Hematologic assessment	<ul style="list-style-type: none"> Complete blood count, including differential 	Baseline and at least every 4 months
Renal assessment	<ul style="list-style-type: none"> Urinalysis Serum creatinine^h, BUN, total protein, albumin 	<ul style="list-style-type: none"> Baseline and at least annually Baseline and at least every 4 months

Metabolic assessment	<ul style="list-style-type: none"> • Fasting blood glucose • Fasting lipid profile, including cholesterol 	<ul style="list-style-type: none"> • For patients receiving HAART: before initiating HAART, 3 to 6 months after initiating, and annually thereafter • For patients not receiving HAART: at baseline and annually
Hepatic assessment	<ul style="list-style-type: none"> • Hepatitis A serology • Hepatitis B serology • Hepatitis C serologyⁱ • Serum liver enzymes 	<ul style="list-style-type: none"> • Baseline • Baseline and at least every 4 months for patients receiving ARV therapy
Additional tests^j	<ul style="list-style-type: none"> • Amylase and lipase testing • <i>Toxoplasma gondii</i> antibody screening • Varicella antibody screening for adults without a history of chickenpox 	Baseline

^a The initial test performed to measure HIV viral load in an ARV therapy-naïve individual should be a standard viral load assay, not an ultrasensitive test; those with <400 copies/mL should be retested with an ultrasensitive test; the same testing laboratory and the same assay should be used thereafter.

^b For additional information regarding genotypic and phenotypic testing, refer to [HIV Resistance Assays](#) in [Antiretroviral Therapy](#).

^c Tuberculin skin test, commonly known as PPD.

^d Patients who continue to engage in unsafe sexual practices are at increased risk for other STIs. Patients with any other STIs, whether ulcerative or not, are at higher risk for HIV transmission. Recent increases in STIs among men who have sex with men warrant screening of asymptomatic sexually active patients¹ (see [Management of STIs in HIV-Infected Patients](#)).

^e All sites of possible exposure are screened. For specific recommendations regarding the types of assays used, refer to [Gonococcal and Chlamydial Infections](#) in [Management of STIs in HIV-Infected Patients](#).

^f Risk factors for women ≥25 years of age include one of the following: recent STI, having multiple sexual partners, having had a new sexual partner, or having a sexual partner with symptoms of an STI.

^g Colposcopy should be performed for all HIV-infected women with abnormal Pap tests. Follow-up would then vary on a case-by-case basis. Abnormal Pap tests should be repeated every 3 to 6 months thereafter until there have been two successive normal cervical Pap tests. Women with cervical HSIL also should be referred for high-resolution anoscopy and/or examination with biopsy of abnormal tissue.

^h Routine calculation of estimated glomerular filtration rate is also recommended.

ⁱ A qualitative HCV RNA PCR should be obtained when no hepatitis antibodies are detectable in a patient with elevated serum liver enzymes and risk factors for HCV.

^j Depending on the patient's history, these additional baseline tests may be needed.

A. Immunologic Assessment

RECOMMENDATION:

The CD4 lymphocyte profile should include both the absolute count and percentage. (I)

A decline in absolute CD4 count may occur in some situations, such as after interferon therapy, when all lymphocyte populations are suppressed; however, the percentage of CD4 lymphocytes will remain relatively constant. A stable CD4 percentage generally indicates stable immune function even in the presence of declining absolute counts.

B. Virologic Assessment

RECOMMENDATIONS:

Clinicians should use a standard viral load assay, not an ultrasensitive test, for initial measurement of HIV viral load in an ARV therapy-naïve individual. (III)

Clinicians should obtain viral load before vaccinations and not during intercurrent illness because these situations may lead to a transient elevation in viral load. (III)

Clinicians should perform resistance testing under the following circumstances:

- **At baseline in the setting of acute HIV infection, regardless of whether ARV therapy is being initiated (genotypic testing)**
- **In ARV therapy-naïve patients before initiation of ARV therapy (genotypic testing)**
- **In patients experiencing treatment failure or incomplete viral suppression while receiving ARV therapy (genotypic and/or phenotypic testing)**

Clinicians should seek expert consultation for interpretation of genotypes. (III)

There are several methods of measuring HIV viral load levels (e.g., PCR, bDNA, NASBA), each with different ranges (e.g., standard, ultrasensitive). The same assay should be used consistently to avoid confusion. The range of detection for the standard PCR assay is 400 to 750,000 copies/mL, whereas the range for the ultrasensitive assay is 50 to 75,000 copies/mL. The initial test performed in an ARV therapy-naïve individual should be a standard assay in order to document a potentially high viral load level. All patients with a viral load <400 copies/mL according to the standard assay should be re-tested using the ultrasensitive assay (see [Diagnostic, Monitoring, and Resistance Tests for HIV](#)).

Resistance testing should be performed 1) at baseline in the setting of acute infection, regardless of whether ARV is being initiated (genotypic testing); 2) prior to initiating treatment in ARV therapy-naïve patients to determine whether they are infected with drug-resistant virus (genotypic testing); and 3) in patients experiencing virologic failure or incomplete viral suppression while receiving ARV therapy (genotypic and/or phenotypic testing). Most currently available assays require a viral load level of >500 to 1000 copies/mL for detection. For more information regarding resistance testing, refer to the section [HIV Resistance Assays](#) in [Antiretroviral Therapy](#).

C. Tuberculosis Evaluation

RECOMMENDATIONS:

Clinicians should obtain a TST (tuberculin skin test, commonly known as PPD) or other FDA-approved test for diagnosis of latent tuberculosis infection, unless the patient has previously tested positive or has had previously documented TB. (I)

After active tuberculosis has been excluded, clinicians should prescribe TB prophylaxis when a TST results in induration of ≥ 5 mm or when another FDA-approved test indicates the presence of latent TB infection. (I)

Induration of ≥ 5 mm with a TST (tuberculin skin test, commonly known as PPD) is considered a positive reaction in the HIV-infected population and warrants prophylaxis. In general, anergy testing is no longer recommended.² See [Mycobacterial Infections](#).

D. Laboratory Screening for Sexually Transmitted Infections

RECOMMENDATIONS:

Clinicians should screen HIV-infected patients for syphilis by obtaining a non-treponemal test (RPR or VDRL) with verification of reactive test by confirmatory fluorescent treponemal antibody absorbance (FTA-Abs) or treponema pallidum particle agglutination (TP-PA) tests at baseline and at least annually. Patients with continued high-risk behavior should be screened for syphilis every 3 months.

Clinicians should screen sexually active HIV-infected women under the age of 25 for gonorrhea and chlamydia at baseline and at least annually. Clinicians should screen all sites of possible exposure, including the cervix, rectum, and pharynx. Culture or nucleic acid amplification tests (NAT) should be used to screen for gonorrhea.

Immunofluorescence or DNA amplification should be used for chlamydia.

Clinicians should screen women 25 years of age or older for gonorrhea and chlamydia at baseline and at least annually if they have or have had a recent sexually transmitted infection, have multiple sexual partners, have had a new sexual partner, or have a sexual partner with symptoms of an STI.

Clinicians should screen all HIV-infected men with ongoing high-risk sexual behaviors for gonorrhea and chlamydia at baseline and at least annually. Clinicians should screen all sites of possible exposure, including the urethra, rectum, and pharynx.

The FTA-Abs and TP-PA confirmatory tests remain positive for life if there has been a history of syphilis infection. Some individuals previously treated for syphilis will continue to have a low serum antibody-positive RPR or VDRL. A 4-fold increase in RPR serum antibody indicates acute infection or re-infection with syphilis.

Refer to [Management of STIs in HIV-Infected Patients](#) for more information about screening for STIs.

E. Cytologic Screening

1. Cervical Pap Tests

RECOMMENDATIONS:

Clinicians should obtain cervical Pap tests for all HIV-infected women at baseline, 6 months after baseline, and then repeat annually, as long as results are normal.

Colposcopy should be performed for women with abnormal Pap tests. Follow-up would then vary on a case-by-case basis.

Clinicians should repeat abnormal Pap tests every 3 to 6 months thereafter until there have been two successive normal cervical Pap tests. Women with cervical HSIL also should be referred for high-resolution anoscopy and/or examination with biopsy of abnormal tissue.

Clinicians should obtain at least an annual Pap test in HIV-infected women who have undergone either a supracervical or total hysterectomy.

The purpose of cervical screening is to prevent the development of invasive cancer by identifying and treating individuals with precursor lesions that are at risk for progression to cancer. Widespread screening of all women with cervical cytology or Pap tests has led to a decline in morbidity and mortality from cervical cancer. The benefit of screening and treatment protocols for cervical abnormalities in HIV-infected women is also well-established. Although cervical cytology (Pap tests) has lower sensitivity compared to actual tissue histology, colposcopy with Pap tests has increased the effectiveness of the evaluation of women with HIV infection, particularly those women with a report of atypical squamous cells of undetermined significance (ASC-US) by delineating likely abnormal tissue for biopsy and histologic evaluation.³

Recurrent dysplasia on the vaginal cuff can be seen in women with a history of cervical dysplasia, and both HIV and HPV infections increase the risk of vaginal intraepithelial neoplasia. Therefore, women who have undergone a hysterectomy should still receive annual Pap tests.

2. Anal Pap Tests

RECOMMENDATIONS:

Clinicians should obtain anal cytology at baseline and annually in the following HIV-infected populations:

- **Men who have sex with men**
- **Any patient with a history of anogenital condylomas**
- **Women with abnormal cervical/vulvar histology**

Clinicians should refer patients with abnormal anal cytology for high-resolution anoscopy and/or examination with biopsy of abnormal tissue. (III)

Like cervical cancer, invasive squamous cell cancers of the anal canal are associated with certain types of human papillomavirus (HPV) infection, most notably, HPV-16 and HPV-18. Although this is a new practice that may not be routinely available, screening for cellular dysplasia is prudent and recommended, particularly in persons at high risk for infection with papilloma viruses. For additional information, see [*Neoplastic Complications of HIV Infection*](#).

V. HEALTH PROMOTION AND BEHAVIORAL HEALTH COUNSELING

RECOMMENDATION:

Clinicians should provide routine HIV risk-reduction counseling and behavioral health counseling for HIV-infected patients (see Table 4). (I)

Patients' behaviors change over time as the course of their disease changes and their social situations vary. The clinician will need to tailor routine risk-reduction counseling and behavioral health counseling not only to the individual patient but also to the particular point in time in the patient's life.⁴

TABLE 4 HEALTH PROMOTION AND BEHAVIORAL HEALTH COUNSELING	
Safer-sex practices	<ul style="list-style-type: none"> ▪ Partner notification ▪ Latex and polyurethane barriers ▪ Behaviors that carry transmission risk and those that do not
Substance use counseling	<ul style="list-style-type: none"> ▪ Counseling if indicated based on assessment <ul style="list-style-type: none"> – Brief interventions and/or motivational interviewing* – Harm-reduction counseling – Referral for treatment ○ For injection drug users <ul style="list-style-type: none"> – Safe injection practices – Safe disposal of sharps – Access to sterile injecting equipment
Tobacco use	<ul style="list-style-type: none"> ▪ Smoking cessation education
Reproductive health counseling	<ul style="list-style-type: none"> ▪ Family planning ▪ Options for the HIV-infected pregnant woman ▪ HIV transmission prevention ▪ Risk of HIV transmission through breastfeeding
Psychosocial assessment	<ul style="list-style-type: none"> ▪ Housing status ▪ Employment and insurance ▪ Educational level ▪ Family and partner contacts ▪ Stability of personal relationships <ul style="list-style-type: none"> ○ Domestic violence screening ▪ Legal Issues <ul style="list-style-type: none"> ○ Living will and health care proxy ○ Permanency planning for dependent children
Diet and exercise	<ul style="list-style-type: none"> ▪ Nutrition and exercise counseling ▪ Diabetes and lipid abnormality counseling

* For a detailed discussion regarding brief interventions, motivational interviewing, and harm reduction for patients who are actively using alcohol or other substances, see the [HIV and Substance Use Guidelines: Working With the Active User](#).

A. Safer Sex Education

RECOMMENDATIONS:

Clinicians should discuss safer sexual practices with HIV-infected patients on a routine and ongoing basis. (I)

Clinicians should routinely discuss with patients the importance of disclosure to partners. Patients should be educated about the options for voluntary partner notification. These discussions should be clearly documented. Information about HIV reporting and partner notification in New York State is available at www.health.state.ny.us (I)

Clinicians should emphasize that transmission of HIV may occur during unprotected sex, even when patients have undetectable HIV plasma viral loads. (I)

Clinicians should recommend the correct and consistent use of latex or, when latex allergies exist, polyurethane male condoms and should discuss the option of using polyurethane female condoms. (I)

Clinicians should instruct patients in the proper use of condoms, dental dams, and other barriers to reduce the risk of HIV transmission. (I)

Clinicians should educate their patients to avoid using condoms and creams containing nonoxynol-9. (I)

For patients who are sexually active, discussion should include a review of safer practices to prevent the transmission of HIV or other STIs. It is important to note that risk for transmission of HIV is increased in the setting of STIs, underscoring the importance of correct and consistent use of barrier protection during vaginal, rectal, or oral intercourse. Patients should be informed that because condoms do not cover all exposed areas, they are more effective in preventing infections transmitted by fluids from mucosal surfaces than in preventing infections transmitted by skin-to-skin contact.

The use of both male and female condoms among patients should be encouraged, despite adverse attitudes toward them in some communities. Condoms should be offered along with instructions, support, counseling, and referral to community-based organizations.

Clinicians should also inform patients that condoms containing nonoxynol-9, a topical spermicide used to prevent conception, should be avoided. In at least one large placebo-controlled study of sex workers using nonoxynol-9, there was an increase in new HIV infection.⁵

B. Substance Use Counseling

RECOMMENDATIONS:

When current alcohol or other substance use is identified, clinicians should discuss the possible effects of such use on the patient's general health and HIV medications, as well as options for treatment if indicated. These discussions should be properly documented in the patient's chart. (I)

Clinicians should evaluate for possible interactions among illicit drugs and prescription drugs. (I)

Clinicians should issue prescriptions for new needles and syringes to patients who inject drugs.

Clinicians should discuss with patients other options for accessing new needles and syringes, including use of the Expanded Syringe Access Demonstration Program and Syringe Exchange Programs, New York State's two syringe access initiatives. (I)

Clinicians should collaborate with social work staff and other mental health providers, when available, to determine which treatment programs or substance use services best meet the patient's needs. (I)

The [HIV and Substance Use Guidelines](#) contain information on the management of HIV-infected substance users. For specific information regarding interactions between illicit drugs and prescription drugs, refer to the [HIV and Substance Use Guidelines: *Drug-Drug Interactions Between ARV Agents, Medications Used in Substance Use Treatment, and Recreational Drugs*](#).

C. Tobacco Use Assessment and Counseling

RECOMMENDATION:

Clinicians should assess smoking status and should encourage those who smoke to stop. (I) Pharmacotherapy and referrals to smoking cessation programs should be provided if the patient is interested.

Smoking increases a patient's risk of developing thrush, cryptococcal meningitis, bacterial pneumonias, and coronary artery disease. In addition, HIV infection further increases the risk of lung and other cancers associated with smoking.

Smoking cessation interventions delivered during routine visits will reach many smokers who are already receiving care for their HIV infection. Patients who are interested in quitting smoking within the next month should be helped to set a quit date, offered pharmacotherapy with nicotine replacement or bupropion, and referred to a counseling program. For further guidance on smoking cessation, refer to [Smoking Cessation in HIV-Infected Patients](#).

D. Reproductive Counseling

RECOMMENDATION:

Clinicians should discuss family planning with patients, including risks to the mother and fetus during pregnancy.

Many patients have questions about having children even though they or their partners are infected with HIV. Risks to the mother and fetus, as well as the risk of HIV transmission through breastfeeding, should be discussed. Alternative or supplemental family planning methods beyond condom use may also be addressed.

For additional information, refer to the *Women's Health Guidelines: Preconceptional Care for the HIV-Infected Woman*.

E. Domestic Violence

RECOMMENDATIONS:

Clinicians or a member of the healthcare team should screen all male and female HIV-infected patients for current and lifetime domestic violence at baseline and annually. (I)

Prior to screening patients for domestic violence, clinicians should discuss confidentiality and exceptions to confidentiality, including instances of suspected child abuse and maltreatment and intent to harm self or others.

Domestic violence screening should be performed only when the patient is alone.

When real or potential domestic violence is recognized, social work services should be involved and referrals should be made to domestic violence organizations or domestic violence counseling. In the absence of social work services, clinicians should be familiar with resources available in the community and mechanisms of referral.

The following are questions that may be used for screening:

1. *Do you ever feel unsafe at home?*
2. *Are you in a relationship in which you have been physically hurt or felt threatened?*
3. *Have you ever been or are you currently concerned about harming your partner or someone close to you?*

Other questions regarding sexual abuse, such as forced sexual activity, coercion, etc., may be applicable depending on the case.

For more information regarding assessment for domestic violence, refer to the New York State Office for the Prevention of Domestic Violence, available at: <http://opdv.state.ny.us>

F. Psychosocial Assessment

RECOMMENDATIONS:

The clinician or a member of the healthcare team should perform a psychosocial assessment of HIV-infected patients, including housing status, at baseline and at least annually. (I)

The clinician should work with the patient's case manager to provide necessary medical guidance related to psychosocial issues that are potential barriers to treatment adherence. (I)

When case managers are unavailable, clinicians will need to be able to refer their patients to social workers who can provide psychosocial services and facilitate referrals to supportive services. See Table 4 for elements of a psychosocial assessment.

G. Diet and Exercise Counseling

Diet and exercise counseling can enhance the management of and the patient's knowledge about the risks associated with diabetes, hypertension, problems associated with lipid abnormalities, and potential side effects of medications.

For more information regarding nutrition among HIV-infected patients, refer to [General Nutrition, Weight Loss, and Wasting Syndrome](#).

VI. PREVENTIVE MEDICINE

A. Standard Health Maintenance

RECOMMENDATIONS:

Clinicians should discuss general preventive health care and health maintenance with all HIV-infected patients routinely and, at a minimum, annually. (I)

Clinicians should perform standardized age- and sex-appropriate health-maintenance interventions, such as cancer screening, in HIV-infected patients according to the same guidelines used for non-HIV-infected patients (see Table 5). (I)

Clinicians should instruct patients on how to perform breast and testicular self-examinations. (III)

TABLE 5 AGE-APPROPRIATE DIAGNOSTIC SCREENING	
<ul style="list-style-type: none">• Mammogram<ul style="list-style-type: none">○ Annually for women aged ≥ 40• Prostate-specific antigen (PSA)<ul style="list-style-type: none">○ Annually, with digital rectal exam, for men aged ≥ 50 with at least a 10-year life expectancy○ Annually for men aged ≥ 45 who are African American or who have a father, brother, or son who was diagnosed with prostate cancer at a young age• Colorectal cancer screen^a<ul style="list-style-type: none">○ Screen at age ≥ 50^b<ul style="list-style-type: none">▪ Colonoscopy every 10 yearsor▪ Annual fecal occult blood testing (FOBT) with flexible sigmoidoscopy every 5 yearsor▪ Annual FOBT and double-contrast barium enema every 5 years	

^a Although the optimal screening strategy has not been established, one of the colorectal cancer screens listed above should be used.

^b Screening African Americans at age ≥ 45 may be advisable. African Americans have a young mean age of onset of colorectal cancer and a greater incidence of cancerous lesions in the proximal large bowel.⁵

Colorectal Cancer

Colorectal cancer is the second leading cause of cancer death in the United States. According to the United States Preventive Services Task Force, universal screening for colorectal cancer in the general population should begin at age 50 in the absence of specific risk factors, such as previous colorectal cancer, strong family history, familial polyposis, or inflammatory bowel disease. Some data support screening African Americans aged ≥ 45 because they have a younger mean age of onset of colorectal cancer compared with other groups and a greater incidence of cancerous lesions in the proximal large bowel.⁶

B. Opportunistic Infection Prophylaxis

RECOMMENDATION:

Clinicians should initiate prophylaxis for specific opportunistic infections as indicated in Table 6 and discontinue it as indicated in Table 7. (I)

Prophylaxis for opportunistic infections may be withdrawn for patients who are on effective ARV therapy and who have evidence of recovery of immunologic competence.

TABLE 6 INITIATION OF PRIMARY OI PROPHYLAXIS^a			
Pathogen	Initiate Prophylaxis	Preferred Agent	Alternative Agents
<i>Pneumocystis jirovecii</i> pneumonia^b	CD4 <200 cells/mm ³ or <14% or a history of oropharyngeal candidiasis	TMP/SMX qd or 3x/week	<ul style="list-style-type: none"> • Dapsone^c • Dapsone^c + pyrimethamine + leucovorin • Atovaquone • Aerosolized pentamidine
<i>Mycobacterium avium</i> complex (MAC)	CD4 <50 cells/mm ³	Azithromycin Clarithromycin	<ul style="list-style-type: none"> • Rifabutin • Azithromycin + rifabutin
<i>Toxoplasma</i> encephalitis (TE)	CD4 <100 cells/mm ³ and Positive serology for <i>Toxoplasma</i> (IgG+)	TMP/SMX qd	<ul style="list-style-type: none"> • Dapsone^c + pyrimethamine + leucovorin • Atovaquone with or without pyrimethamine + leucovorin
Cytomegalovirus (CMV)	Not routinely recommended	NA	NA
<i>Cryptococcus neoformans</i>	Not routinely recommended	NA	NA
<i>Candida</i>	Not routinely recommended	NA	NA

^a For information regarding prophylaxis treatment for patients with a TST test result of >5 mm induration or patients with close exposure to a known case of tuberculosis, please refer to [Infectious Complications Associated With HIV Infection: Mycobacterial Infections](#).

^b Formerly *Pneumocystis carinii*.

^c Screen for G6PD deficiency before initiating dapsone.

TABLE 7 DISCONTINUATION OF OI PROPHYLAXIS		
Pathogen	Discontinuation of Primary Prophylaxis	Discontinuation of Secondary Prophylaxis
<i>Pneumocystis jirovecii</i> pneumonia (PCP)	Patient receiving HAART with increase in CD4 to >200 cells/mm ³ for ≥3 months	<ul style="list-style-type: none"> • CD4 >200 cells/mm³ for ≥3 months in response to HAART • Adequate viral suppression • If PCP occurred with CD4 >200 cells/mm³, prophylaxis should be maintained
<i>Toxoplasma</i> encephalitis (TE)^a	Patient receiving HAART with increase in CD4 to >200 cells/mm ³ for ≥3 months	<ul style="list-style-type: none"> • CD4 >200 cells/mm³ for ≥6 months in response to HAART • Completed initial therapy • Asymptomatic for TE
<i>Mycobacterium avium</i> complex (MAC)	CD4 increase to >100 cells/mm ³ for ≥3 months in response to HAART	<ul style="list-style-type: none"> • CD4 increase to >100 cells/mm³ for ≥6 months in response to HAART • Completed at least 12 months of treatment for disseminated MAC^b • Asymptomatic for MAC
Cryptococcosis	NA	<ul style="list-style-type: none"> • CD4 increase to >100 to 200 cells/mm³ for ≥6 months • Completed initial therapy • Asymptomatic for cryptococcosis
Cytomegalovirus (CMV)	NA	<ul style="list-style-type: none"> • CD4 >100 to 150 cells/mm³ for ≥6 months • No evidence of active disease • Regular ophthalmologic examination

^a HIV-infected adults or adolescents with a history of toxoplasmosis in childhood should be administered lifelong prophylaxis to prevent recurrence.

^b Obtaining blood cultures or bone marrow cultures may be advisable to ascertain disease activity.

For more information on management of opportunistic infections, see [Infectious Complications Associated With HIV Infection](#).

C. Immunizations

Immunizations against infectious diseases are an extremely important component of care for patients with immune suppression. Concerns regarding vaccinations in HIV-infected individuals include:

- The potential danger from live virus vaccines
- The ability of HIV-infected patients to mount an appropriate immune response to vaccine

In general, the more intact the immune system is, the more effective and safe the vaccines are. The use of live virus vaccines is generally undertaken when an inactivated version does not exist and when the risk of the disease clearly outweighs the theoretical risk of vaccination. Table 8 contains recommended immunizations for HIV-infected adults.

TABLE 8 RECOMMENDED IMMUNIZATIONS FOR NON-PREGNANT HIV-INFECTED ADULTS		
Vaccine	Indications	Schedule
Tetanus, Diphtheria, and Pertussis (Tdap),* and Tetanus-Diphtheria (Td)*	For patients who have not received the primary series	Administer 1 dose of Tdap, followed by a dose of Td at 1 month and a second dose of Td 6-12 months later
	For patients who have already received the primary series	Administer 1 dose of Tdap booster every 10 years
Influenza	For all patients	Administer 1 annual dose. Do not use FluMist because it contains live virus.
Pneumococcal polysaccharide	For all patients	Administer 1 dose followed by one revaccination after 5 to 6 years (or more) have elapsed since initial vaccination
Hepatitis A*	All HIV-infected patients who are negative for HAV IgG	Administer 2 doses (0 and 6-12 months)
Hepatitis B*	For patients without serologic evidence of prior HBV infection or who have not previously received the complete series of HBV vaccination	Strongly encourage the vaccine series—3 doses (0, 1 to 2, and 6 months)
Measles, Mumps, Rubella (MMR)*	For all asymptomatic HIV-infected patients who do not have evidence of severe immunosuppression and who are seronegative for antibody to MMR	Administer 1 dose
	For patients with severe immunosuppression (<200 cells/mm ³)	Do not administer vaccine
Human Papillomavirus (HPV)	For women between the ages of 9 and 26 years	Administer 3 doses (at 0, 2, and 6 months)
Varicella*	For persons who are susceptible	Consider administering 2 doses (at 0 and 4-8 weeks)

For other vaccines, see CDC recommendations. Available at: www.cdc.gov/vaccines

Table 8 continues...

* Covered by the Vaccine Injury Compensation Program. For information on how to file a claim, call 1-800-338-2382, or visit www.hrsa.gov/vaccinecompensation. To file a claim for vaccine injury write: U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington D.C. 20005, (202) 219-9657.

Tetanus, Diphtheria, and Pertussis: *MMWR Recomm Rep* 2006;55(RR-15):1-48. Available at:

www.cdc.gov/mmwr/preview/mmwrhtml/rr5515a1.htm

Influenza: *MMWR Recomm Rep* 2002;51(RR-3):1-31. Available at:

www.cdc.gov/mmwr/preview/mmwrhtml/rr5103a1.htm

Pneumococcal: Vaccination effectiveness improves when CD4 count is >200 cells/mm³. *MMWR Recomm Rep* 1997;46(RR-8):1-24. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00047135.htm

Hepatitis A: Persons at higher risk for HAV infection should receive postvaccination antibody testing to verify vaccine efficacy and to identify patients who might benefit from vaccine boosting. Patients at higher risk include those with chronic liver disease (e.g. hepatitis B or C); men who have sex with men; travelers to countries with high endemicity of infection; persons who live in a community experiencing an outbreak of HAV infection; illicit drug users, particularly injection drug users; persons who have clotting-factor disorders; persons at occupational risk for infection. For persons who are susceptible to both hepatitis A and hepatitis B, the combined hepatitis A and B vaccine can be used: 3 doses at 0, 1, and 6 months.

Hepatitis B: For persons who are susceptible to both hepatitis A and hepatitis B, the combined hepatitis A and B vaccine can be used: 3 doses at 0, 1, and 6 months.

MMR:

Measles component: Adults born before 1957 may be considered immune to measles. Adults born after 1957 should receive at least one dose of MMR unless they are severely immunosuppressed, [*MMWR Recomm Rep* 1998;47(RR-8):1-57. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00053391.htm], or there is documentation of at least one dose or other acceptable evidence of immunity (e.g., titers). A second dose of MMR is recommended for adults who were recently exposed to measles or in an outbreak setting; were previously vaccinated with killed measles vaccine; were vaccinated with an unknown vaccine between 1963 and 1967; are students in post-secondary educational institutions; work in healthcare facilities; plan to travel internationally. Foreign-born patients who have never received the vaccine should receive the full series. Consider administering 2 doses to persons with occupational, geographic, or other risk (optional). (Recommended Immunizations for Adults with Medical Conditions; Recommendations of the Advisory Committee on Immunization Practices, CDC, October 2002.)

Mumps component: 1 dose of MMR should be adequate for protection. (Recommended Immunizations for Adults with Medical Conditions; Recommendations of the Advisory Committee on Immunization Practices, CDC, October 2002.)

HPV: Protects against HPV types 6, 11, 16, and 18. HPV testing is not required before administration of the vaccine. The vaccine has been demonstrated to produce high levels of neutralizing antibody for 5 years. HPV vaccine is most effective in women who are not yet sexually active. However, most women, regardless of whether they are sexually active, may benefit from vaccination. In clinical trials, only 1 in 1,000 women showed evidence of exposure to all four types of HPV prevented by the vaccine. Gardasil may also provide some cross-protection against HPV genotypes other than 6, 11, 16, and 18. However, additional data are required before the vaccine can be recommended for the prevention of cross-reactive HPV types. Clinicians should continue to perform regular cervical screening with Pap tests and visual inspection of the vulva and vagina during annual pelvic examinations in women who have received the HPV vaccine. Most of the data regarding HPV vaccine safety and efficacy are derived from studies in non-HIV-infected females. Immune response to the vaccine may be decreased in the setting of HIV infection. Studies are currently underway to provide more extensive data regarding the safety and efficacy of the vaccine in the HIV-infected population. The Food and Drug Administration has approved the HPV vaccine Gardasil for use in boys and men 9 to 26 years of age. A recommendation regarding vaccination for HIV-infected boys and men is currently under consideration by the Committee for the Care of Children and Adolescents With HIV Infection and is not yet addressed in these guidelines.

Varicella: Varicella vaccine may be considered for asymptomatic HIV-infected persons with CD4 percentages $\geq 25\%$ and who do not have reliable clinical history of varicella infection, or serologic evidence of varicella zoster virus (VZV) infection. *Note:* Greater than 90% of US-born adults are immune to VZV.

For more information regarding immunizations, including immunizations for pregnant HIV-infected women, refer to the [HIV Prevention Guidelines: Prevention of Secondary Diseases](#).

VII. COORDINATION OF CARE

RECOMMENDATIONS:

As part of the initial visit, the clinician or other member of the healthcare team should educate new patients about the following items (III):

- **How to access emergency services (provide a phone number for 24-hour services)**
- **Whom to contact to schedule appointments**
- **How to obtain laboratory and radiology results, medical records, and other reports**

After receiving patient consent, clinicians should share information with other agencies from which their patients are receiving services. (III)

Case management should be used to enhance coordination of care provided by agencies such as home care, nutrition services, and nursing services and to prevent duplication of services. (III)

Clinicians should regularly involve case managers in case conferences to discuss psychosocial issues that may affect a patient's ability to adhere to care. (III)

Comprehensive HIV care often involves multidisciplinary care with involvement of more than one provider. To facilitate adherence to all facets of care, the clinician should work with the case management team to coordinate medical care, referrals, and ongoing services in the community.

VIII. APPROPRIATE USE OF ACUTE CARE SERVICES

RECOMMENDATIONS:

Outpatient clinicians who do not provide inpatient care should have a network of practitioners with whom they can communicate easily should their patients require hospitalization. (III)

Inpatient clinicians should ensure that the details of hospitalization, including the discharge medications and plans, are sent in a timely fashion to outpatient clinicians. (III)

Communication among practitioners is essential when patients move between primary care clinicians and other healthcare settings. When patients are referred to the emergency room, communication with the emergency room physician, both by phone and by transmission of essential data, such as pertinent medical conditions, the medication list, the patient's most recent CD4 count and viral load, and any other pertinent clinical data, can improve the patient's care and help prevent unnecessary testing or hospitalization. If the patient needs to be hospitalized and the primary care clinician is not the admitting physician, communication of these data to the admitting physician is essential.

IX. APPROPRIATE USE OF CHRONIC CARE SERVICES

Communication is essential between outpatient practitioners and all professionals involved in the patient's care. This includes both nursing services and other consultants and ancillary providers such as physical therapists.

A. AIDS Adult Day Health Care Program

AIDS Adult Day Health Care Programs (ADHCs) are designed to assist in meeting the healthcare needs of patients with HIV/AIDS who require a greater range of comprehensive healthcare services than can be provided in any single ambulatory setting but who do not require the level of services provided in a hospital or skilled nursing facility. Through a therapeutic environment, ADHCs are intended to improve and stabilize the health of patients with HIV/AIDS, assist patients with adherence support, reduce hospital stays, eliminate unnecessary visits to primary care clinicians and emergency rooms, and provide interventions in the form of one-on-one counseling and structured group activities for substance use and mental health disorders. Nursing care, nutritional services, case management, and HIV risk reduction, as well as auricular acupuncture and therapeutic massage, are also provided. For more information on these programs, contact (518) 474-8162.

B. Home Health Care

RECOMMENDATION:

Home health nurses should be provided with a copy of the patient's medication list and information regarding current medical conditions and mental health or substance use disorders. (III)

Home care, including infusion therapy, can help maintain the patient's health and reduce the need for hospitalization. AIDS Home Care Programs (AHCPs) ensure patients' access to enhanced physician services, dental care, HIV prevention and education services, substance use and treatment services, pastoral care, mental health services, peer support, HIV clinical trials, and HIV therapies. AHCP services may be provided by a long-term home health care program or a Designated AIDS Center specifically authorized to provide these services.

AHCPs are responsible for arranging and/or providing the following: nursing services, home health aide services, medical supplies, equipment and appliances, physical and occupational therapy, speech pathology, nutritional services, medical social services, personal care services, and housekeeping services. Long-term home health care programs may also provide personal emergency response, meals on wheels, housing improvement, home maintenance, moving assistance, social daycare, and social transportation services.

C. End-of-Life Care

RECOMMENDATIONS:

Clinicians should encourage patients to prepare an advanced directive and designate a health care proxy and should review these arrangements at least annually.

As HIV disease progresses, clinicians should discuss patients' feelings about end-of-life care before they are unable to make decisions. Any medical decisions that are made should be in conjunction with the patient, or, if the patient is unable to decide for neurologic reasons, with the patient's health care proxy. (III)

Clinicians should be familiar with hospice services available in their area and should make referrals to them early enough for the patient to receive the full benefit of their support (III). Clinicians should work in conjunction with hospice staff to establish which medical interventions may still be appropriate as quality of life evolves or changes. (III)

End-stage HIV infection often involves a series of treatments for opportunistic infections, tumors, or other life-threatening comorbid conditions, such as liver failure. When both the patient and the clinician agree that aggressive care is no longer desired or likely to succeed, supportive care with a goal to maximize comfort is appropriate.

Clinicians should work with hospice staff to establish which interventions may still be appropriate as quality of life declines. For example, continuing aggressive care of cytomegalovirus retinitis to prevent blindness is a treatment that may need to be continued even though the patient has elected to discontinue other active medications.

REFERENCES

1. Palefsky J, Holly E, Ralston M, et al. Prevalence and risk factors for anal human papillomavirus infection in human immunodeficiency virus (HIV)-positive and high-risk HIV-negative women. *J Infect Dis* 2001;183:383-391. [[PubMed](#)]
2. Centers for Disease Control and Prevention. Anergy skin testing and tuberculosis preventive therapy for HIV-infected persons: Revised recommendations. *MMWR Recomm Rep* 1997;46(RR-15):1-10. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00049386.htm
3. Franco EL, Duarte-Franco E, Ferenczy A. Cervical cancer: Epidemiology, prevention and the role of human papillomavirus infection. *CMAJ* 2001;164:1017-1025. [[PubMed](#)]
4. Schreiber T, Friedland G. Human immunodeficiency virus infection prevention: Strategies for clinicians. *Clin Infect Dis* 2003;36:1171-1176. [[PubMed](#)]
5. Van Damme L, Ramjee G, Alary M, et al. Effectiveness of COL-1492, a nonoxynol-9 vaginal gel, on HIV-1 transmission in female sex workers: A randomised controlled trial. *Lancet* 2002;360:971-977 (Erratum in: *Lancet* 2002;360:1892). [[PubMed](#)]
6. Agrawal S, Bhupinderjit A, Bhutani MS, et al.; for the Committee of Minority Affairs and Cultural Diversity, American College of Gastroenterology. Colorectal cancer in African Americans. *Am J Gastroenterol* 2005;100:515-523. [[PubMed](#)]