Pneumococcus

All persons with HIV should receive a dose of PCV14 (Prevnar13), followed by a dose of PPV23 (Pneumovax) at least 8 weeks later. If previously vaccinated with PPV23, the patients should receive PCV13 at least 1 year after PPV23. Patients should have a CD4 cell count greater than or equal to 200/microliter. A second PPV23 dose is recommended 5 years after the first PPV23.

Influenza Virus

Persons with HIV have excess morbidity and mortality associated with influenza and its complications. They should receive seasonal influenza vaccination yearly.

Herpes Zoster

Reactivation of herpes zoster viral infection, resulting in shingles, is a significant cause of morbidity among persons with HIV disease. Because the singles vaccine is a live attenuated vaccine, additional studies were conducted to assess the safety of this vaccine in persons with HIV. Although there were no reports of excess risk in these trials, final review is still pending, and the vaccine does not carry an indication from the U.S. Food and Drug Administration (FDA) for use in persons with HIV.

Human Papillomavirus

The CDC recommends use of the human papillomavirus (HPV) vaccine in boys or girls at age 11 or 12 regardless of HIV status, in MSM, and in persons with immune compromise, including those with HIV, up to the age of 26 if not previously vaccinated.

Hepatitis A and B Viruses

Persons with HIV should be assessed by serology for prior exposure to hepatitis A and B. Those found to be susceptible to infection should receive immunization.

Other Health Screening

Cervical Cancer

HIV-infected women should have two Pap smears 6 months apart; if the they are both normal, Pap smears should be repeated once a year. Persons with cellular atypia on a Pap smear should be referred for colposcopy.

Rectal Cancer

HPV is associated with risk of cervical cancer in women and rectal cancer in both men and women. Although some advocate for regular screening, clear guidelines have not yet been developed for rectal cancer.

ANTIRETROVIRAL THERAPY

The goal of ART is to ensure that HIV-infected persons can lead symptom-free, productive lives. Currently available therapy makes achieving this goal possible in almost all individuals with early, asymptomatic HIV infection who have not acquired major resistance mutations as a result of earlier, suboptimal ART. The current recommendations in the United States are that therapy should be offered to all persons infected with HIV. In much of the world, thresholds for treatment based on CD4 count are still in effect, reflecting in part the allocation of limited resources to those who are likely to experience the most immediate benefits.

Antiretroviral Drug Regimens

Evidence-based guidelines for ART have been developed by the U.S. Department of Health and Human Services. The most commonly used antiretroviral agents are presented in Table 101-3. The current preferred and alternative regimens for first-line treatment are summarized in Table 101-4. With rare exceptions, all recommended regimens consist of at least three fully active drugs. Increasingly, coformulation of medications has allowed the combination of multiple drugs to be taken in single tablets. Three single-tablet daily regimens are currently approved for the treatment of HIV, and more are in development. The reduced pill burden can significantly improve adherence to treatment and minimize the risk of treatment failure. The World Health Organization publishes guidelines for HIV treatment programs in resource-limited settings. They delineate first- and second-line therapies selected based on efficacy, cost, and availability.

Clinical trials assessing the benefits of early treatment have demonstrated the many health impacts of HIV that occur even before the onset of demonstrable immune deficiency. Persons who undergo structured treatment interruptions and delay treatment until their CD4 count drops to less than 500 cells/mm^3 experience higher rates of cardiovascular disease, kidney disease, liver disease, and neurocognitive disorders. Although the risk increases with declining CD4 count and worsening immune function, early effects can in some cases be demonstrated before the onset of marked immunodeficiency. The demonstrated benefit of initiating ART before the CD4 count drops to less than 500 cells/mm^3 was primarily attributable to these noninfectious complications of HIV disease.

TABLE 101-3 MOST FREQUENTLY USED ANTIRETROVIRAL MEDICATIONS BY CLASS

DRUG CLASS	MEDICATION
Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs)	Tenofovir
	Abacavir
	Lamivudine
	Emtricitabine
	Zidovudine
	Didanosine*
	Stavudine*
Non-nucleoside reverse transcriptase inhibitors (NNRTIs)	Efavirenz
	Nevirapine
	Etravirine
	Rilpivirine
Protease inhibitors†	Atazanavir
	Darunavir
	Fosamprenavir
	Lopinavir
	Saquinavir
Integrase inhibitors	Raltegravir
	Elvitegravir
	Dolutegravir
CCR5 inhibitor	Maraviroc
Fusion inhibitor	Fuseon

*Infrequently used due to toxicity.

†Most protease inhibitors require a second medication to boost the levels of the drug by inhibiting drug metabolism. Ritonavir at a dose of 100 mg daily is most commonly used. Cobicistat was recently approved for use as part of a fixed-dose combination, and its potential for expansion is currently being studied.