TABLE 226-11 NIH/CDC/IDSA 2013 GUIDELINES FOR THE PREVENTION OF OPPORTUNISTIC INFECTIONS IN PERSONS INFECTED WITH HIV (*CONTINUED*)

Pathogen	Indications	First Choice(s)	Alternatives
Streptococcus pneumoniae		Reimmunize patients initially immunized at a CD4+ T cell count <100/μL whose CD4+ T cell count then increases to >200/μL	
Human papillomavirus	All patients 13–26 years of age	HPV vaccine; 3 doses	
Recommended for Prevention of Severe or Frequent Recurrences			
Herpes simplex	Frequent/severe recurrences	Valacyclovir 500 mg bid PO *or* Acyclovir 400 mg bid PO *or* Famciclovir 500 mg bid PO	
Candida	Frequent/severe recurrences	Fluconazole 100–200 mg/d PO	Posaconazole 400 mg bid PO

Abbreviations: ARV, antiretroviral; bid, twice daily; DS, double-strength; PCP, *Pneumocystis jiroveci* pneumonia; PO, by mouth; SS, single-strength; TB, tuberculosis.

common finding on chest x-ray is either a normal film, if the disease is suspected early, or a faint bilateral interstitial infiltrate. The classic finding of a dense perihilar infiltrate is unusual in patients with AIDS. In patients with PCP who have been receiving aerosolized pentamidine for prophylaxis, one may see an x-ray picture of upper lobe cavitary disease, reminiscent of TB. Other less common findings on chest x-ray include lobar infiltrates and pleural effusions. Thin-section CT may demonstrate a patchy ground-glass appearance. Routine laboratory evaluation is usually of little help in the differential diagnosis of PCP. A mild leukocytosis is common, although this may not be obvious in patients with prior neutropenia. Elevation of lactate dehydrogenase is common. Arterial blood-gases may indicate hypoxemia with a decline in Pa_{O_2} and an increase in the arterial-alveolar (a–A) gradient. Arterial blood-gas measurements not only aid in making the diagnosis of PCP but also provide important information for staging the severity of the disease and directing treatment (see below). A definitive diagnosis of PCP requires demonstration of the organism in samples obtained from induced sputum, bronchoalveolar lavage, transbronchial biopsy, or open-lung biopsy. PCR has been used to detect specific DNA sequences for *P. jiroveci* in clinical specimens where histologic examinations have failed to make a diagnosis.

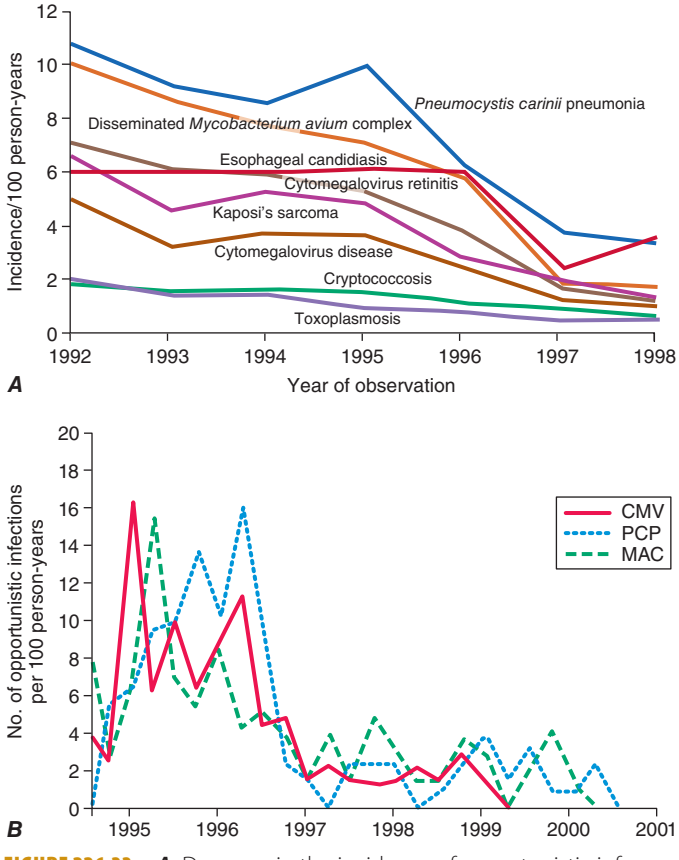

FIGURE 226-33 ***A.*** Decrease in the incidence of opportunistic infections and Kaposi's sarcoma in HIV-infected individuals with CD4+ T cell counts <100/μL from 1992 through 1998. *(Adapted and updated from FJ Palella et al: N Engl J Med 338:853, 1998, and JE Kaplan et al: Clin Infect Dis 30[S1]:S5, 2000, with permission.)* ***B.*** Quarterly incidence rates of cytomegalovirus (CMV), *Pneumocystis jiroveci* pneumonia (PCP), and *Mycobacterium avium* complex (MAC) from 1995 to 2001. *(From FJ Palella et al: AIDS 16:1617, 2002.)*

In addition to pneumonia, a number of other clinical problems have been reported in HIV-infected patients as a result of infection with *P. jiroveci*. Otic involvement may be seen as a primary infection, presenting as a polypoid mass involving the external auditory canal. In patients receiving aerosolized pentamidine for prophylaxis against PCP, one may see a variety of extrapulmonary manifestations of *P. jiroveci*. These include ophthalmic lesions of the choroid, a necrotizing vasculitis that resembles Burger's disease, bone marrow hypoplasia, and intestinal obstruction. Other organs that have been involved include lymph nodes, spleen, liver, kidney, pancreas, pericardium, heart, thyroid, and adrenals. Organ infection may be associated with cystic lesions that may appear calcified on CT or ultrasound.

The standard treatment for PCP or disseminated pneumocystosis is trimethoprim/sulfamethoxazole (TMP/SMX). A high (20–85%) incidence of side effects, particularly skin rash and bone marrow suppression, is seen with TMP/SMX in patients with HIV infection. Alternative treatments for mild to moderate PCP include dapsone/trimethoprim, clindamycin/primaquine, and atovaquone. IV pentamidine is the treatment of choice for severe disease in the patient unable to tolerate TMP/SMX. For patients with a Pa_{O_2} <70 mmHg or with an a–A gradient >35 mmHg, adjunct glucocorticoid therapy should be used in addition to specific antimicrobials. Overall, treatment should be continued for 21 days and followed by secondary prophylaxis. Prophylaxis for PCP is indicated for any HIV-infected individual who has experienced a prior bout of PCP, any patient with a CD4+ T cell count of <200/μL or a CD4 percentage <15, any patient with unexplained fever for >2 weeks, and any patient with a recent history of oropharyngeal candidiasis. The preferred regimen for prophylaxis is TMP/SMX, one double-strength tablet daily. This regimen also provides protection against toxoplasmosis and some bacterial respiratory pathogens. For patients who cannot tolerate TMP/SMX, alternatives for prophylaxis include dapsone plus pyrimethamine plus leucovorin, aerosolized pentamidine administered by the Respirgard II nebulizer, and atovaquone. Primary or secondary prophylaxis for PCP can be