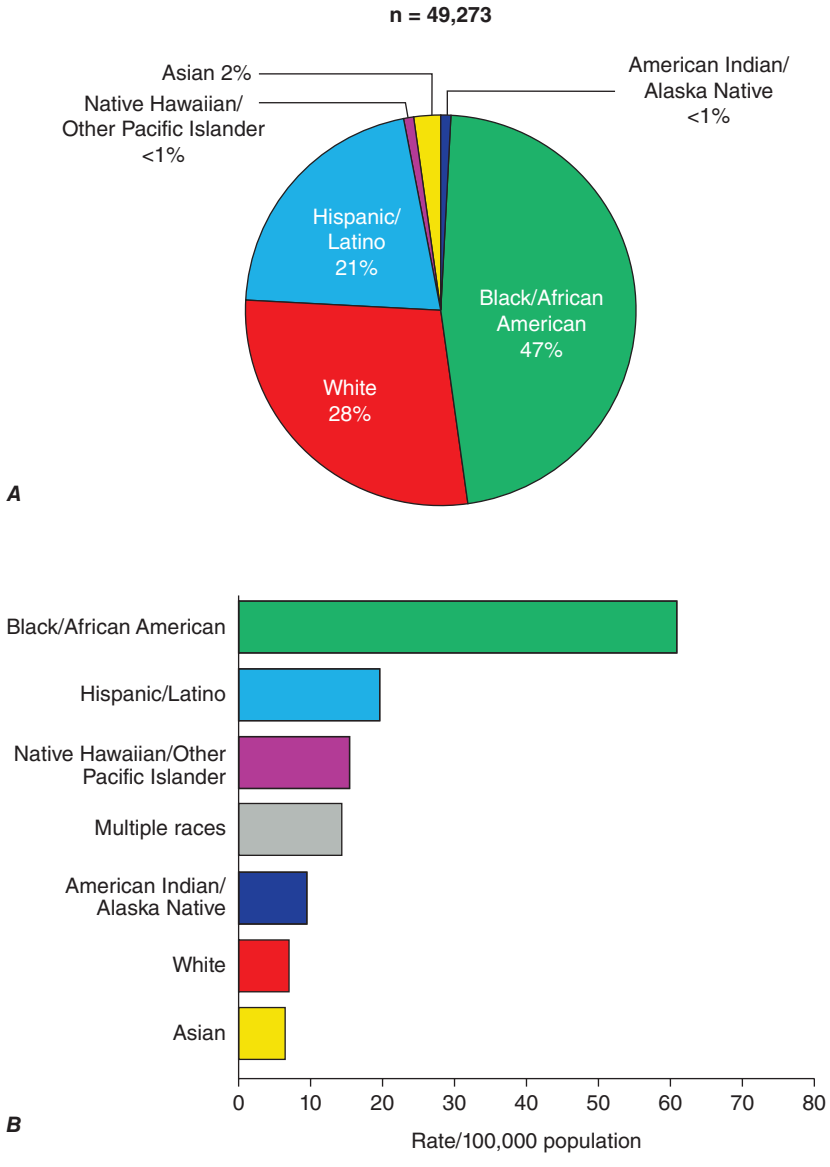

FIGURE 226-15 **Race/ethnicity of persons (including children) diagnosed with HIV infection (regardless of stage) during 2011 in the United States.** ***A.*** Estimated proportion of new infections by race/ethnicity. ***B.*** Estimated rate of new infections by race/ethnicity (per 100,000 population). *(From CDC.)*

However, the most influential factor clearly has been the increased use of potent antiretroviral drugs, generally administered in a combination of three or four agents.

Although the HIV/AIDS epidemic on the whole is plateauing in the United States, it is spreading rapidly among certain populations, stabilizing in others, and decreasing in others. Similar to other STIs, HIV infection will not spread homogeneously throughout the population of the United States. However, it is clear that anyone who practices high-risk behavior is at risk for HIV infection. In addition, recent increases in infections and AIDS cases among young men who have sex with men as well as the spread in pockets of poverty in both urban and rural regions (particularly among underserved minority populations in the southern United States with inadequate access to health care) testify that the epidemic of HIV infection in the United States remains a public health problem of major proportion.

PATHOPHYSIOLOGY AND PATHOGENESIS

The hallmark of HIV disease is a profound immunodeficiency resulting primarily from a progressive quantitative and qualitative deficiency of the subset of T lymphocytes referred to as *helper T cells* occurring in a setting of polyclonal immune activation. The *helper* subset of T cells is defined phenotypically by the presence on its surface of the CD4 molecule **(Chap. 372e)**, which serves as the primary cellular receptor for HIV. A co-receptor must also be present together with CD4 for efficient binding, fusion, and entry of HIV-1 into its target cells (Figs. 226-3 and 226-4). HIV uses two major co-receptors, CCR5 and CXCR4, for fusion and entry; these co-receptors are also the primary receptors for certain chemoattractive cytokines termed *chemokines* and belong to the seven-transmembrane-domain G protein–coupled family of receptors. A number of mechanisms responsible for cellular depletion and/or immune dysfunction of CD4+ T cells have been demonstrated in vitro; these include direct infection and destruction of these cells by HIV, as well as indirect effects such as immune clearance of infected cells, cell death associated with aberrant immune activation, and immune exhaustion due to aberrant cellular activation

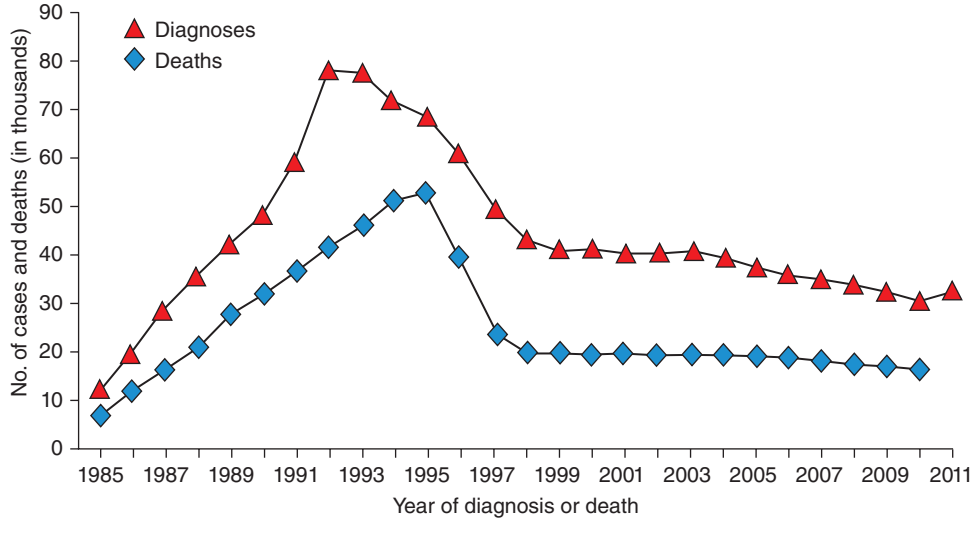

FIGURE 226-16 **Estimated number of AIDS** cases and AIDS deaths, United States, 1985–2011. *(From CDC.)*