



# HIV- and AIDS-Associated Cancers

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One of the most significant world epidemics in history, HIV/AIDS, has been a research priority since its discovery in 1981. This review article provides an update on HIV/AIDS, with a specific focus on the diagnosis and care of patients with HIV- and AIDS-associated cancers.

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Since HIV/AIDS was first identified in 1981, researchers have established several significant breakthroughs in treatment (AIDSinfo, 2013; Centers for Disease Control and Prevention [CDC], 2012; Office of AIDS Research Advisory Council [OARAC], 2013). In addition, activists, policy makers, and the health-care establishment have worked to better characterize those at risk for HIV infection, improve testing, clarify the HIV/AIDS diagnoses, and mobilize systems to improve patient access to care and treatments. The results of these efforts have made inroads in the myriad challenges presented by the epidemic. HIV attacks the immune system's white blood cells, thus jeopardizing the body's ability to fight infections and certain types of malignancies. An estimated 33.2 million people were HIV-positive (HIV+) in 2012 (Nokta, 2011). By the time a person is given an AIDS diagnosis, the HIV infection is in an advanced stage (Malfitano, Barbaro, Perretti, & Barbarini, 2012; National Cancer Institute [NCI], 2013a). Figure 1 shows AIDS diagnoses and deaths in the United States from 1985–2009.

In addition to prevention strategies, other key strategies to address the HIV/AIDS epidemic have included the development of effective antiretroviral drugs and therapies for those already affected. Coupled with drug development have been efforts to ensure patient access to

drugs, the prompt start of treatment, and patient compliance when taking medications long-term.

Starting HIV+ treatment early may have a number of potential benefits, including a decreased risk for the occurrence of HIV-associated nephropathy, liver disease progression from hepatitis B or C, cardiovascular disease, malignancies, and neurocognitive decline (OARAC, 2013). In addition, early treatment may decrease the risk of sexual, blood-borne, and mother-to-child transmission of HIV (OARAC, 2013). The improved effectiveness of treatment, anchored by highly active antiretroviral therapy (HAART), began in 1996. Data have shown steady therapeutic progress toward suppressing the virus and slowing the development of AIDS and AIDS-related malignancies (NCI, 2012b; Nokta, 2011). For more information about U.S. Food and Drug Administration (FDA)–approved HAART agents, visit <http://bit.ly/tvXVTc>.

A number of AIDS-associated malignancies are termed AIDS-defined cancers and non-AIDS-defined cancers. In fact, about 80,000 patients with AIDS were diagnosed with cancer from 1991–2005 (Shiels et al., 2011). As HAART has reduced the number of deaths from AIDS, the HIV+ population has grown and aged. The fastest-growing proportion of HIV-infected individuals is the group

aged older than 40 years. Therefore, patients who are HIV+ now are developing cancers common of aging, referred to as non-AIDS-defined cancers (NCI, 2011; Shiels et al., 2011). Diagnoses of non-AIDS-defining cancers have increased threefold from 1991–2005 (Shiels et al., 2011). With HAART as an initial strategy for treatment, cancer is now the most common cause of death in patients who are HIV+ (Nokta, 2011).

## AIDS-Defined Cancers

People with AIDS may develop specific cancers, particularly those caused by viruses, such as Kaposi sarcoma (KS) and cervical cancer, or cancers of the immune system (i.e., lymphomas). Those cancers usually are more aggressive and difficult to treat in patients with AIDS because of the morbidities caused by these viruses (e.g., human herpesvirus, Epstein Barr virus [EBV], human papillomavirus [HPV], hepatitis B virus, hepatitis C virus [HCV]). Researchers have implicated these viruses, at the very least, as contributors to the metabolic environment that prompts these cancers to occur (NCI, 2011; Nokta, 2011).

### Kaposi Sarcoma

Along with non-Hodgkin lymphoma (NHL), KS is one of the most common cancers in the U.S. AIDS population (Shiels et al., 2011). In the United States, most cases of epidemic KS have been diagnosed in HIV+ individuals from the risk groups of homosexual or bisexual men (NCI, 2012b). HAART protocols have greatly reduced the incidence of KS in the HIV+ population and increased overall survival; however, the risk of patients who are HIV+ to be diagnosed with KS still is higher than for the general population (Malfitano et al., 2012; NCI, 2011).