

Update on Human Immunodeficiency Virus



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KEYWORDS

- Human immunodeficiency virus (HIV) • HIV care continuum
- Opportunistic infection (OI) • Antiretroviral therapy (ART)
- Acute retroviral syndrome (ARS) • Pre-exposure prophylaxis (PrEP)

KEY POINTS

- Only 83% of people living with human immunodeficiency virus (HIV) in the United States are aware of their HIV infection, and only 25% of people living with HIV have full viral suppression.
- HIV acquisition risk can be reduced by identifying at-risk individuals and educating them on safe sex practices including condom use, identifying and treating sexually transmitted infections, pre-exposure prophylaxis, and in certain groups, male circumcision.
- Health care providers should consider HIV and opportunistic infections in the differential diagnosis of acutely ill patients.
- Antiretroviral therapy is very effective at treating HIV, and patients who achieve full viral suppression have improved long-term survival, and reduced risk for cardiac, renal, and neoplastic diseases.

INTRODUCTION

Human immunodeficiency virus (HIV) disease continues to be a major health issue, and recent public health efforts are focused on identifying at-risk and newly infected individuals. In the United States, African American men who have sex with men (MSM) have the highest risk for acquiring HIV.¹ Early treatment with the newer and more tolerable antiretroviral drugs reduces the rate of opportunistic infections (OI) and aims to reduce the spread of HIV infections.² Health care providers should screen patients at risk for HIV acquisition and offer testing.³ OIs still occur in undiagnosed and untreated patients, and HIV disease and OIs should be considered in the differential diagnosis of acutely ill patients. Newer medications are much more tolerable than in the past, and most patients can take medications once daily or even single-tablet regimens (STR).

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EPIDEMIOLOGY

Despite excellent advances in prevention and treatment, the HIV epidemic continues with greater than 35 million people living with HIV (PLWHIV) worldwide. Sub-Saharan Africa remains most severely affected, with 25 million people, nearly 1 in every 20 adults, living with HIV.⁴ Outside of Africa, most new infections are in key populations with specific risk factors.

More than 1.2 million people in the United States are living with HIV infection, and almost 1 in 8 (12.8%) are unaware of their infection. Gay, bisexual, and other MSM of all races and ethnicities remain the most profoundly affected by HIV.¹ Significant racial disparities exist with 40% of diagnoses in 2014 identified in African American men, whereas African American men made up 12% of the total US population (Fig. 1, Table 1). Rates of acquired immunodeficiency syndrome (AIDS) diagnosis and deaths due to AIDS also disproportionately affect African Americans, with the death rate nearly 4 times higher than any other ethnic group (Fig. 2).

Recent public health efforts have focused on treatment as prevention (TasP) and increasing the identification and treatment of newly infected individuals, because the overall viremia in these patients is much higher, which may increase the risk of transmission. HIV surveillance in the United States shows that only 30% of PLWHIV have VL suppression¹ (Fig. 3). The HIV care continuum goals are to diagnose at-risk patients, link patients to care, prescribe antiretroviral therapy (ART), and achieve full viral suppression.

VIRAL CHARACTERISTICS

HIV is an enveloped RNA lentivirus with an icosahedral structure and external protein spikes formed by GP 120 and GP 41 proteins. HIV infects CD4 cells by binding to the GP 120 protein and CCR5 or X4 receptors, causing a conformational change in the virus that allows it to enter into the cytoplasm of host cells. HIV uses the enzyme reverse

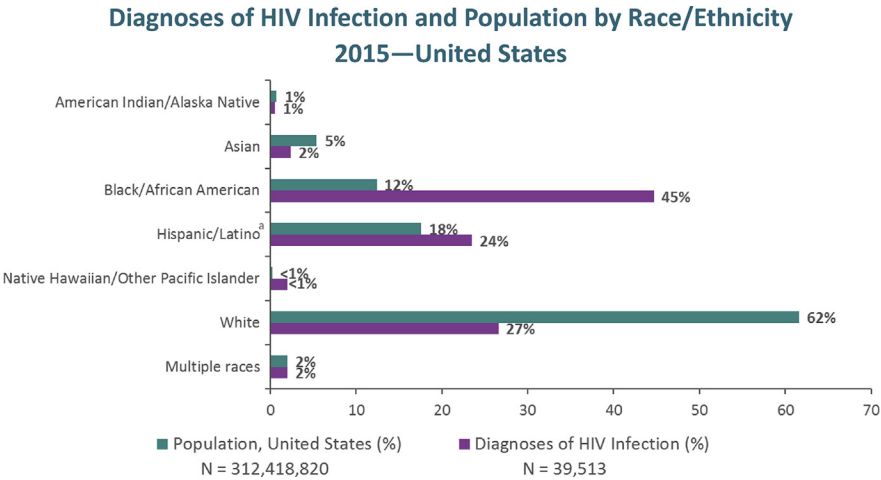


Fig. 1. Diagnoses of HIV infection population and race in men. Note: Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Data for the year 2015 are preliminary and based on 6 months reporting delay. ^a Hispanics/Latinos can be of any race. (From CDC Resource Library. HIV Surveillance by Race/Ethnicity (through 2015). Available at: <http://www.cdc.gov/hiv/library/slidesets/index.html>. Accessed September 2, 2016.)

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