

Management of an HIV Patient Population

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Summary

Advances in treatment have changed AIDS into a chronically managed disease. Patients need to be identified early after initial HIV infection to prevent further spread of the infection and improve their life expectancy. Changes have been made to the health care setting recommendations for HIV screening to promote early and wide identification of HIV infections.

Key Points

- Many HIV infected persons are not aware of their infection.
- Many HIV-infected persons access health care but are not tested for HIV until late in the disease process.
- HIV screening is recommended for all patients 13 to 64 years of age who are seen in a health care setting.
- Awareness of infection reduces the risk of transmission significantly.
- Early identification and treatment of HIV infection can improve overall survival.

IT IS ESTIMATED THAT OVER ONE MILLION Americans are infected with the human immunodeficiency virus (HIV). About 21 percent of the infected people are unaware of their infection. There are an estimated 56,300 infections each year.^{1,2} There is disparity in the cases of AIDS in the U.S. with 49 percent of cases being in African Americans (Exhibit 1).³ The prevalence of HIV infections is highest in African American males followed by African American females. In 2006, the overall rate of new infections was 22 per 100,000 people in the U.S. As shown in Exhibit 2, the rate of new infections in African American males is four times as high.³

Testing for HIV is an important topic for managed care. Forty percent of adults age 18–64 have been tested with 53 percent of these tests having been

done by a private physician or health maintenance organization.³ The publicly funded HIV testing sites conduct about 10 percent of HIV tests and identify approximately 20 percent of positive cases.

Unfortunately nearly 40 percent of HIV positive cases are identified late (i.e., years after initial infection and within 1 year of acquired immune deficiency syndrome [AIDS] diagnosis). Two thirds of the people tested late are tested because they have already developed an AIDS defining illness (Exhibit 3).⁴ The CDC is seeking to shift testing to an earlier point, primarily during routine care, in order to prevent spread of the infection.

A study from South Carolina illustrates why early testing is important. Of the 4,315 HIV cases reported in that state, 73 percent of the patients had made 20,271 health-care visits prior to their first positive HIV test.⁵ The diagnosis codes at 77 percent of those prior visits would not have prompted an HIV test. The patients who developed AIDS within a year of testing had a similar rate of health care visits prior to testing. Of the HIV positive patient's median 4 health care visits, 79 percent were visits to emergency departments.

Based on the missed opportunities for HIV screening, the CDC published revised recommendations for HIV testing in health care settings (Exhibit 4).⁶ A lot of HIV screening does occur in community based outreach settings but other health care setting, as noted previously, are where the majority of testing is occurring and where are the location for the majority of missed opportunities. Routine screen-

Exhibit 1³: AIDS Diagnoses and US Population by Race/Ethnicity, 2006

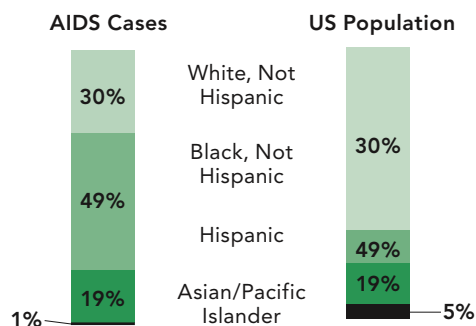


Exhibit 2³: Estimated Rate of New HIV Infections by Race/Ethnicity

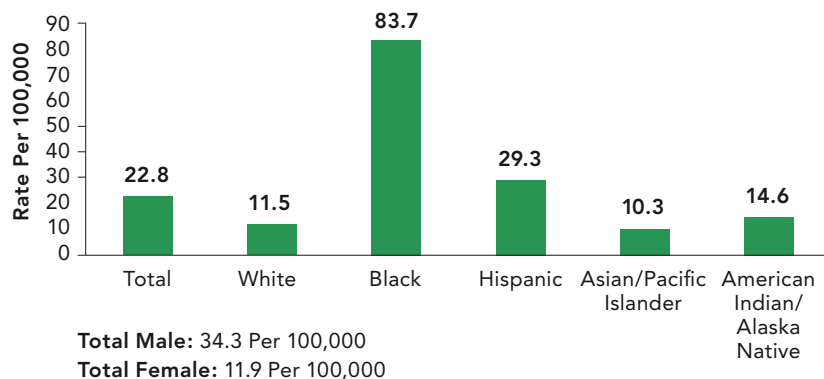
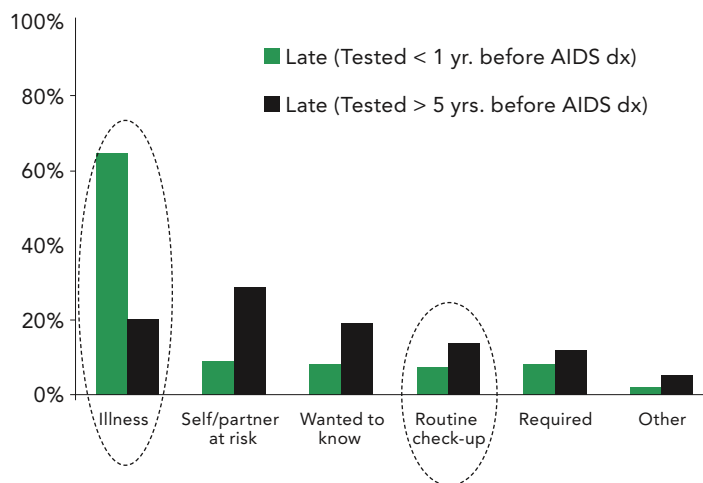


Exhibit 3⁴: Reasons for Testing: Late Versus Early Testers



ing is now recommended in all patients regardless of risk factors. In settings with low or unknown HIV prevalence, screening programs should be initiated but discontinued if the yield from screening is less than 1 per 1000 positive cases. In health care settings, HIV screening should be treated like glucose screenings. A separate informed consent and extensive pre and post testing counseling are not recommended in these settings. Since the change in recommendations, about 2.4 million more people have had an HIV test than normally would and the number of cases identified annually has increased 15 percent.⁷

In addition, the CDC recommends routine, voluntary HIV testing as a part of early prenatal care for all pregnant women. The guidelines also advocate simplified pretest counseling and a flexible consent process for pregnant women. Prenatal testing is one of the success stories of HIV in America.

Prenatally acquired HIV cases have declined 95 percent with the combination of prenatal screening and prophylaxis with antivirals in known positive mothers.

Effective medications for HIV have change AIDS from a death sentence to a chronic disease. Exhibit 5 shows how the death rate from HIV has significantly declined since the availability of highly active antiretroviral therapy (HAART).⁸ There have been four eras of antiretroviral therapy (ART). The first era, from 1996 to 1997, marked the beginning of HAART. The second era, from 1998 to 1999, included the sequential use of two unique antiretroviral regimens with improved efficacy. From 2000-2002, 3 effective regimen options were available, with guidance from genotypic resistance testing. The most recent era, beginning in 2003, brought improved drug tolerability, decreased pill burdens,

Exhibit 4⁶: Revised HIV Screening Recommendations for Adults and Adolescents

- Routine, voluntary HIV screening for all persons 13-64 in health care settings, not based on risk
- All patients with TB or seeking treatment for STDs should be screened for HIV
- Repeat HIV screening of persons with known risk at least annually
- Opt-out HIV screening with the opportunity to ask questions and the option to decline testing
- Separate signed informed consent should not be required
- Prevention counseling in conjunction with HIV screening in health care settings should not be required

and included the introduction of new drug classes. There are currently 25 antiretrovirals approved for HIV treatment. There are now medications that can intervene at every stage of the virus's life cycle. The advances in ART have resulted in almost three million years of survival. Exhibit 6 illustrates the survival benefit of HAART compared with interventions for other diseases.⁹ In addition to survival benefits, the age of HAART has brought significant declines in the incidence of HIV related hospitalizations.¹⁰

The overall costs to care for a patient with HIV infection varies. Exhibit 7 illustrates the mean annual per patient costs stratified by CD4 cell count at diagnosis.¹¹ Patients with more advanced disease, as marked by low CD4 count, have significantly higher costs. Because patients with higher cell counts at diagnosis have a longer life expectancy, lifetime costs of care depend on CD4 count at diagnosis (Exhibit 8).¹² The life expectancy by cell count at initial di-

agnosis illustrates that there is a substantial benefit in terms of survival to early diagnosis.

The cost-effectiveness of routine HIV screening in health care settings, even in relatively low-prevalence populations, is similar to that of commonly accepted interventions. Screening is cost effect (less than \$50,000 per QALY) even in a population with a 0.05 percent prevalence.¹³

In general, data on HIV testing and management of infected patients in managed care settings are quite limited. Most health plans cite legal reasons for not previously collecting such data. There are no explicit data documenting consistent refusal to pay or specific plan testing rates. This will likely change if new Healthcare Effectiveness Data and Information Set (HEDIS) measures on HIV testing rates are implemented.

Kaiser Permanente is the second largest provider of HIV care in the U.S. with 18,000 active HIV-infected patients. The majority of their cases are Caucasian men who have sex with other men but they have rising numbers of African American and Hispanic patients. The majority of their patients are in the 30 to 50 age range. Just over 200 HIV-infected patients are 19 years old or less. They have data on greater than 100,000 total HIV-infected patient years. In their system, mortality is significantly less (1.6 percent) than the national average (3.4 percent).

Within the Kaiser system, most regions/clinics employ a multi-disciplinary care team for HIV. Teams may include an HIV specialist, a case manager, nurse, pharmacist, social worker, mental health support practitioners, and health educator. Larger regions also have a regional coordinator. Kaiser also has system wide HIV care quality measures (Exhibit 9).

Overall, just over 20 percent of their population has ever been tested for HIV. For comparison, the Veteran's Administration, the number one provider

Exhibit 5⁸: Mortality and HAART Use Over Time

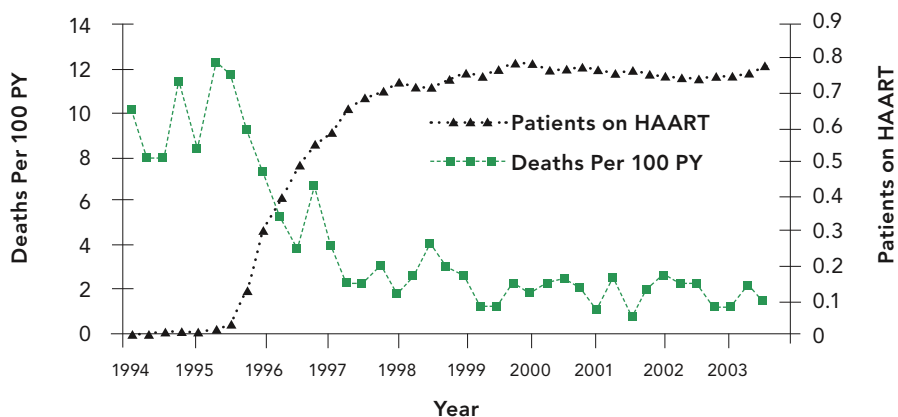
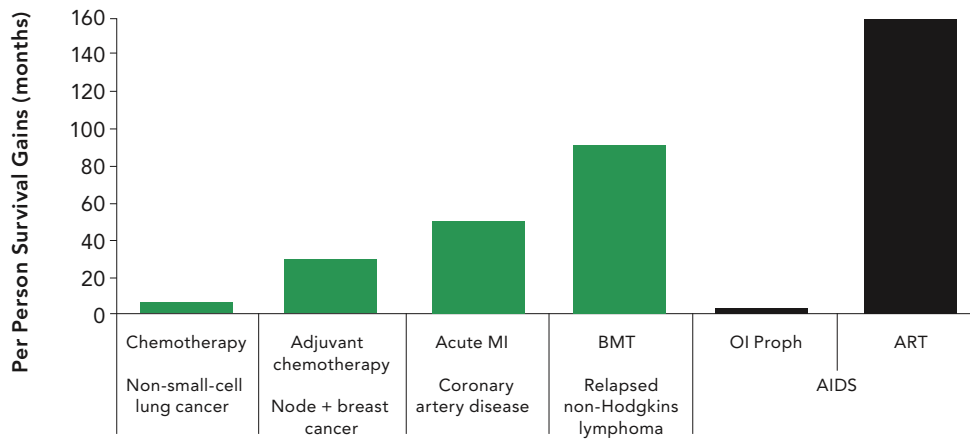


Exhibit 6⁹: Survival Gains with Various Disease Interventions



BMT, bone-marrow transplant; OI, opportunistic infection; ART, antiretroviral therapy

Exhibit 7¹¹: Mean Annual Per-Patient Cost by CD4 Strata

CD4 Category	Total Cost	ARV Meds	Other Meds	Hospital	Physician
<50	\$36,532	\$10,855	\$14,882	\$8,353	\$533
50-199	\$23,864	\$11,862	\$6,685	\$3,369	\$532
200-349	\$18,274	\$11,935	\$3,452	\$1,186	\$336
>350	\$13,855	\$9,407	\$1,855	\$1,408	\$285

of HIV care, estimates nationally that less than 10 percent of their inpatients and less than 5 percent of outpatients have been tested.¹⁴ In examining the testing rates of STD positive patients, it was found that 55 percent actually got an HIV test after the diagnosis of an STD but there was regional variation in testing rates. They also examined the rate of HIV testing in patients with hepatitis B and C. Even lower rates were seen in this population (~40 percent), again with regional variation. Patients with STDs or hepatitis infection are at risk for HIV and should be tested. Managed care needs systems in place to ensure that it happens.

Within the Kaiser population, 28.8 percent of those who tested positive for HIV already had AIDS at the time of testing. They have been able to improve their rate of late diagnosis from 40 percent but still have significant regional variation.

In addition, 85 percent of their HIV positive pa-

Exhibit 8¹²: Lifetime Per-Person Costs by Initial CD4 Count

Initial CD4 Count	Life Expectancy	Lifetime Medical Costs
>500	24.4 years	\$230,044
200-499	15.4 years	\$195,318
<199	8.5 years	\$192,325

tients who should be on HAART receive therapy. Because they have a well-established HIV care program, they have excellent medication adherence rates of 93.8 percent. Over 80 percent of their patients achieve maximum viral control.

Although they are getting good results, Kaiser is

Exhibit 9

Diagnosing HIV

- Testing for HIV among HIV patients diagnosed with STD

- Determining % of new HIV diagnoses who met AIDS criteria (CD4 < 200/ μ L)

Getting Patients Into Care

- Time until newly diagnosed KP HIV-infected members receive 1st CD4 count

Care Processes

- % of HIV-infected members seen at least twice annually (at least 60 days apart each visit)*

- % of HIV-infected members with CD4+ cell count performed at least once every 6 months*

- % of HIV-infected members with CD4 <200/ μ L taking PCP prophylaxis*

- % of HIV-infected members with CD4 <200/ μ L taking HAART (will increase to <350)*

Care Results

- % of HIV-infected patients on HAART who have maximal viral control*

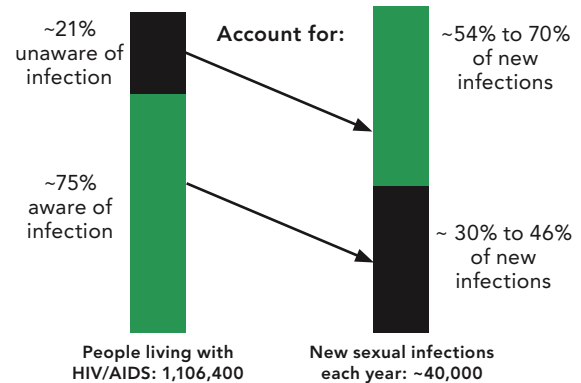
- % of HIV-infected patients on HAART with appropriate adherence

developing some additional steps to improve quality measures. Two areas they identified that would benefit from quality improvement efforts are pneumocystis pneumonia prophylaxis and HIV screening. Because they identified regional variations in care, they will evaluate interregional differences and explore the potential for different demographics and HIV risk behaviors as explanations. They also plan to reconcile their internal measures with eventual national quality measures.

Unlike most other chronic diseases, HIV is a communicable disease. The spread of the infection can be reduced by making the infected person aware they are infected and by lowering viral levels with antiretroviral agents. After people become aware they are HIV-positive, the prevalence of high-risk sexual behavior is reduced substantially.¹⁵ A person who is aware of their infection is 3.5 times less likely to transmit the disease compared with someone who is unaware. More than half of new HIV infections are believed to be transmitted by people who do not know their status (Exhibit 10).¹⁶

Prevention of HIV infection has progressed over the years. We have moved from just education and behavior modification to more biomedical interventions. Several studies have found that circumcision significantly reduces risk of HIV infection in both men and women. The American Academy of Pediatrics is reviewing their recommendations on circum-

Exhibit 10¹⁶: Awareness of Serostatus Among People with HIV, and Estimates of Transmission



cision given this new information. The newest prevention techniques being studied are pre-exposure prophylaxis and test and treat models. Pre-exposure prophylaxis is giving ART to someone who is not infected but who practices high-risk behaviors. The test and treat model has patients start ART as soon as a positive result is obtained. Using universal, annual, voluntary testing, any positive cases are immediately started on ART irrespective of CD4 counts. Using this model, it is predicted that new cases could be reduced by 95 percent in the next 10 years. There are two large clinical trials planned using this model.

Conclusion

Many HIV-infected persons access health care but are not tested for HIV until symptomatic. Effective treatment is available which improves life expectancy if used early. Prevention of HIV infections is another benefit of HIV screening. Awareness of HIV infection leads to substantial reductions in high-risk sexual behavior. **JMCM**

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