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Definitions

Board and staff
MISSION
The Center for AIDS Information & Advocacy empowers people living with HIV to make informed decisions about their health care by providing the latest research and treatment information and by advocating for accessible, affordable, and effective treatment options until there’s a cure.

About HIV Treatment Alerts!

HIV Treatment Alerts! is a publication of The Center for AIDS Information & Advocacy (The CFA). This newsletter is intended for those affected by HIV and their caregivers. The statements and opinions expressed in this newsletter do not impy recommendations or endorsement. Always consult your doctor before altering a prescribed drug regimen or taking any drug or supplement.

HIV Treatment Alerts! is published twice a year. The print version of the newsletter is available for free at the L. Joel Martinez Information Center at Legacy Montrose Clinic, 1415 California Street, Houston, TX 77006. Access to the newsletter is available online from The CFA website (www.centerforaids.org).

The CFA also publishes Research Initiative/Treatment Action! (RITA!), a literature-review journal that covers issues in HIV research and policy. This and other publications are available on The CFA website (www.centerforaids.org).

HIV Treatment ALERTS! thanks Stephen Berry, Kathryn Bottinari, Nancy Crum-Cianflone, H. Irene Hall, Shenghan Lai, Sidonie Lambert-Niclot, Pragna Patel, Sadeep Shrestha, Keith Sigel, Michael Silverberg, Staci Sudenga, Thersa Sweet, and Zian Tseng for reviewing the reports on their research.

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HIV-positive people in a 2860-person San Francisco study had sudden cardiac death at a rate 4.5 times higher than would be expected in a local HIV-negative population. Sudden cardiac death explained 13% of all deaths in this HIV group and 86% of deaths due to heart disease.

As HIV-positive people live longer thanks to improved antiretroviral therapy, the risks of cardiovascular disease and death rise. Sudden cardiac death causes anywhere from 5% to 15% of all deaths in the United States, often in people who do not know they have heart disease.

People with HIV have higher heart disease rates than HIV-negative people, probably for a combination of reasons: standard heart risk factors (like high blood pressure and smoking), inflammation due to HIV infection, and higher lipids (blood fats) caused by antiretroviral therapy.

However, rates of sudden cardiac death had not been examined in HIV-positive people until this study of 2860 HIV-positive adults in San Francisco. Researchers planned the study to see how many HIV-positive adults die from sudden cardiac death from year to year. The researchers also wanted to define the features and predictors of sudden cardiac death in this group.

**How the study worked.** The study focused on 2860 HIV-positive people at least 18 years old. All these people were in care for HIV between April 2000 and August 2009 at a large public HIV clinic in San Francisco. Researchers figured how many people died by checking clinic records and the National Death Index. They determined the cause of death by reviewing clinic records and checking death certificates and the National Death Index. The researchers defined sudden cardiac death according to terms set out by the International Classification of Diseases and the World Health Organization.

The research team classified causes of death as (1) sudden cardiac death, (2) AIDS, (3) natural causes, or (4) trauma, suicide, drug overdose, or other. They searched all death records for evidence of heart disease and its risk factors.

For comparison with HIV-positive people who died of sudden cardiac death, the researchers determined the expected sudden cardiac death rate in the overall adult San Francisco population according to age, race, and gender, based on a previous thorough determination of the city’s sudden cardiac death rate.

**What the study found.** Of the 2860 study participants, 2478 (87%) were men and 1515 (53%) were white. Among 2482 study participants with a known HIV risk factor, 72% were gay, 7% were injection drug users, and 21% became infected during sex between men and women.

**Median** age when people entered the study group was 39, median **CD4 count** was 358, and median **viral load** was about 12,000 copies. About 1 in 5 people had a viral load below 200 copies. Median follow-up for each study participant was 3.7 years.

The researchers counted 230 deaths, 30 of them (13%) due to sudden cardiac death, 131 (57%) due to AIDS, 25 (11%) due to other natural causes, and 44 (19%) due to trauma, suicide, overdose, or other causes (Figure 1).

**Figure 1.** Sudden cardiac death caused more than 1 in 10 deaths among 2860 people in care for HIV between 2000 and 2009. Sudden cardiac death caused 86% of all heart-disease deaths. “Suicide, overdose, other” also includes trauma.

*Words in bold are defined in the Technical Word List at the end of this issue of *HIV Treatment Alerts!*
People who died of sudden cardiac death did not differ from those who died of AIDS in race or gender. But people who died of sudden cardiac death were an average 4.1 years older than people who died of AIDS, and they had a higher CD4 count (312 versus 87) and a lower viral load (about 6000 versus 65,000 copies).

Thirty-five people died of heart disease, so the 30 sudden cardiac deaths accounted for 86% of all heart-disease deaths. Over the 2000-2009 study period, sudden cardiac death became the leading non-AIDS cause of death in 2003 and remained a leading non-AIDS cause in each following year.

More than half of the people who died of sudden cardiac death had smoked, drank alcohol, or used drugs. Five of these 30 people had a close family member with heart disease. Twenty-four of 30 people with sudden cardiac death (80%) had known heart risk factors. Twenty-five of these 30 people had a prescription for a heart drug.

Compared with people who died of AIDS and other natural causes combined, people who died of sudden cardiac death were more likely to have evidence of a prior heart attack (17% versus 1%), heart muscle disease (23% versus 3%), heart failure (30% versus 9%), abnormal heart rhythms (20% versus 3%), high blood pressure (67% versus 27%), and high cholesterol or triglycerides (20% versus 6%).

Compared with people in the general population of San Francisco, these HIV-positive people had a 4.5 times higher rate of sudden cardiac death.

**What the results mean for you.** In this group of 2860 HIV-positive people seen at an HIV clinic over the course of 10 years, sudden cardiac death explained 13% of all deaths and 86% of deaths due to heart disease. This sudden cardiac death rate in HIV-positive people was 4.5 times higher would be expected in the general population of San Francisco.

Among people with sudden cardiac death and recent lab studies, more than half had an undetectable viral load. This finding suggests that people taking effective antiretroviral therapy still run a risk of sudden cardiac death. People who had sudden cardiac death had CD4 counts and viral loads similar to those of the whole study group. In both groups, CD4 counts were relatively high and viral loads relatively low. Those findings suggest that people with mild HIV disease may run a risk of sudden cardiac death.

Another important finding of this study is that most people who had sudden cardiac death had one or more signals of heart trouble before they died. These signals included heart rhythm problems, high blood pressure, and high cholesterol or triglycerides. Health workers caring for these people knew they had heart problems because more than 80% of these people had prescriptions for heart drugs.

These findings underline the importance of paying attention to heart disease signals. Many factors that raise the risk of heart disease and sudden cardiac death can be prevented or controlled, including high cholesterol or triglycerides, high blood pressure, diabetes or prediabetes, overweight and obesity, smoking, lack of physical activity, an unhealthy diet, and stress (see the box “Risk Factors for Sudden Cardiac Death.”)

Some people with abnormal heart rhythms need pacemakers and defibrillators. By sending electrical energy to the heart, defibrillators can correct dangerous abnormal heart rhythms. Previous research showed that defibrillators can be life-saving in certain situations. But so far no studies have tested the value of defibrillators in people with HIV.

Older age is a well-known risk factor for heart disease and heart-related death. As people with HIV live longer, it becomes increasingly important to understand heart risk factors and to change those than can be changed. The researchers who conducted this study advise HIV providers that “aggressive primary prevention of cardiovascular disease should be considered in HIV-infected patients, especially those with traditional risk factors.”

Another possible risk factor for higher sudden cardiac death rates in HIV-positive people is that many antiretrovirals increase the QT interval on an ECG (heart rhythm test). An increased QT interval is a strong risk factor for the dangerous heart rhythm changes that cause sudden cardiac death.
Risk Factors for Sudden Cardiac Death

- Coronary heart disease
  
  **Risk factors for coronary heart disease are:**
  - High cholesterol or triglycerides
  - High blood pressure
  - Diabetes and prediabetes
  - Overweight and obesity
  - Smoking
  - Lack of physical activity
  - Unhealthy diet
  - Stress

- Personal or family history of sudden cardiac arrest
- Personal or family history of disorders that make you prone to heart rhythm disturbances
- Personal history of heart rhythm disturbances
- Prior heart attack
- Drug or alcohol abuse
- Certain medications that prolong QT interval on ECGs (see text)

**Warning Signs of Sudden Cardiac Arrest**

- Racing heart
- Feeling dizzy or light-headed
- Chest pain
- Shortness of breath
- Nausea
- Vomiting


**References**


Rates at which HIV-positive people got admitted to the hospital because of AIDS fell sharply from 2001 through 2008 in a four-city US study. But heart, kidney, and lung disease became more frequent causes of hospital admission in this group during the study period. Non-AIDS infections accounted for the largest proportion of hospital admissions during the study, and that rate did not change from 2001 through 2008.

Strong antiretroviral combinations greatly improved the health of HIV-positive people over the past 15 years. But people with HIV still get admitted to the hospital at higher rates than people without HIV. Ten years ago, a study by the HIV Research Network in the United States found that AIDS illnesses were the main cause of hospital admission, followed by digestive system and liver disease, psychiatric illness (like severe depression), and cardiovascular (heart) disease. Recently this same study group found an overall drop in the hospital admission rate from 35 to 27 admissions per 100 person-years in people with HIV from 2002 through 2007.

Understanding why HIV-positive people are going to the hospital in the current antiretroviral treatment era could help healthcare providers focus on at-risk people to improve their health and prevent hospital admissions. To learn more about reasons for hospital admissions and changing admission rates in people with HIV, the HIV Research Network conducted a new study of people cared for from 2001 through 2008.

**How the study worked.** The HIV Research Network includes 12 centers that care for HIV-positive adults in 11 US cities. This analysis focused on 4 sites, 2 in the West, 1 in the South, and 1 in the Northeast. This study included all HIV Research Network participants at least 18 years old and in care at some point from 2001 through 2008.

The researchers defined years of active care as those years in which an HIV patient had at least 1 clinician visit and 1 CD4 count measurement. Each study participant stopped contributing data to the analysis if he or she fell out of active care.

The HIV Research Network team counted how many times each person went to the hospital during active care. The researchers then carefully determined the reason for each hospital admission. They used standard statistical methods to determine (1) whether each of the main reasons for hospital admission accounted for more or fewer hospital admissions from year to year and (2) factors that influenced each of the main reasons for hospital admission (like age and CD4 count).

**What the study found.** The study included 11,645 people with HIV. Some people were in active care for just 1 year between 2001 and 2008. Others were in active care for 2 years, others for 3 years, and so on all the way through 8 years. The whole study group was in care for an average of 3 years.

In 2001, the first study year, 72% of study participants were men, 43% black, 39% white, and 15% Hispanic. Gay/bisexual men made up 40% of the study group in 2001 and 41% in 2008. People infected with HIV during male-and-female sex made up 26% of the study group in 2001 and 28% in 2008. People who got infected with HIV while injecting drugs made up 28% of the group in 2001 and 20% in 2008.

Median age of people in the study group was 40 in 2001. Median CD4 count when first measured in each person rose from 350 in 2001 to 700 in 2008. The percentage of people with a CD4 count above 350 rose from 49% in 2001 to 60% in 2008. The percentage of people with a viral load below 400 copies climbed from 35% in 2001 to 59% in 2008. These improvements in CD4 count and viral load during the study period probably mean (1) people were taking more effective antiretroviral combinations as the study progressed and (2) people were starting antiretroviral therapy at higher CD4 counts in more recent years.

During active care for HIV infection, 4423 people (38% of the 11,645-person study group) went to the hospital at least once. There were 13,323 hospital admissions during the study period. The rate of admission to the hospital for any cause fell from 37.1 per 100 person-years in 2001 to 28.9 per 100 person-years in 2008, an average incidence rate drop of 2% per year.

Non-AIDS infections (like bacterial pneumonia) caused the largest proportion of hospital admission (26.2%), followed by AIDS illnesses (15.3%), heart disease (7.5%), psychiatric illness such as severe depression (7.1%), digestive system and liver disease (7.1%), kidney, genital, and urinary system disease (5.2%), non-AIDS cancers (4.5%), lung disease (4.4%), and a cluster of diseases in-
volving the endocrine system, the immune system, metabolism, and nutrition (4.3%).

To calculate whether these illnesses caused more or fewer hospital admissions from one year to the next, the researchers used a statistical analysis that weighed the impact of age, race, CD4 count, viral load, and whether a person injected drugs. This analysis found the hospital admission rate for AIDS illnesses fell 6% yearly, while the admission rate rose 9% yearly for lung disease, 9% yearly for kidney disease, and 6% yearly for heart disease (Figure 1). However, throughout the study AIDS illnesses remained a more frequent cause of hospital admission than lung, kidney, or heart disease. Year-to-year hospital admission rates changed very little or not at all for non-AIDS infections, psychiatric illness, non-AIDS cancers, digestive system and liver disease, endocrine and immune diseases, and for any cause.

This statistical analysis also identified factors that raised hospital admission rates for any condition and for each of the major illnesses already discussed (Tables 1 and 2). Being 50 or older was linked to a higher hospital admission rate than being 35 or younger for every disease category except AIDS illnesses and psychiatric illness. Among people 50 or older, heart disease passed AIDS illness as the second most-frequent cause of hospital admission, after non-AIDS infection. A lower CD4 count raised chances of hospital admission for every major illness considered. African Americans, women, and injection drug users tended to have higher hospital admission rates for most of the major illnesses considered.

Figure 1.
Among the major causes of hospital admission of HIV-positive people from 2001 through 2008, four changed significantly in how often they caused admissions over those years. The admission rate for AIDS illnesses fell 6% yearly, while the admission rates for lung, kidney, and heart disease rose.

*Yearly change was statistically adjusted to account for factors like age and race, as well as for clinical factors.
People admitted to the hospital with an AIDS illness had the longest hospital stays, averaging 10.5 days, followed by lung disease (8.3 days), psychiatric illness (7.9 days), non-AIDS cancers (7.7 days), and non-AIDS infections (7.3 days).

**What the results mean for you.** This large study of US adults with HIV made several important findings about hospital admission rates and reasons for hospital admission.

First, AIDS illnesses caused fewer hospital admissions over the 2001-2008 study period. AIDS caused 18% of all admissions in 2001 and 8% in 2008. This drop reflects the improving CD4 counts and falling viral loads in the study group, which probably result from easier-to-take and stronger antiretroviral combinations. Also, people were probably starting antiretroviral therapy at higher CD4 counts and so spending less time with a dangerously low CD4 count. Still, AIDS remained a relatively frequent cause of hospital admission.

Second, non-AIDS infections like bacterial pneumonia caused most hospital admissions throughout the study period. From 2001 through 2008, researchers found no decline in the rate at which people went to the hospital with a non-AIDS infection. Preventing these infections remains a highly important part of HIV care. Factors that raise the risk of bacterial pneumonia include older age, lower CD4 count, smoking, other lung diseases, and heart disease.4

Third, the rates at which heart, kidney, and lung disease caused hospital admissions rose over the study period. The researchers say more work is needed to examine these results, because some other studies of people with HIV did not make similar findings. A large study in Denmark did find a rising rate of hospital admissions for heart disease for 1995 through 2007.5 At the same time, many studies show that heart, kidney, and lung disease are serious threats to people with HIV, even if they do not always send people to the hospital. HIV-positive people should take steps to avoid these diseases by quitting smoking, avoiding obesity, and exercising.

In people with and without HIV, older age raises the risk of hospital admission. By weighing the impact of other factors that increase chances of hospital admission, this

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**Table 1.** Factors that independently affect risk of hospital admission in 5 disease categories

<table>
<thead>
<tr>
<th>Reason for hospital admission (incidence rate ratios)</th>
<th>All causes</th>
<th>Non-AIDS infection</th>
<th>AIDS illness</th>
<th>Heart disease</th>
<th>Psychiatric illness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 36-49*</td>
<td>↑1.10×</td>
<td>—</td>
<td>—</td>
<td>↑2.01×</td>
<td>—</td>
</tr>
<tr>
<td>Age 50+*</td>
<td>↑1.44×</td>
<td>↑1.19×</td>
<td>—</td>
<td>↑5.01×</td>
<td>—</td>
</tr>
<tr>
<td>Female vs male</td>
<td>↑1.34×</td>
<td>↑1.20×</td>
<td>↑1.26×</td>
<td>↑1.33×</td>
<td>—</td>
</tr>
<tr>
<td>Black vs white</td>
<td>↑1.38×</td>
<td>↑1.35×</td>
<td>↑1.31×</td>
<td>↑1.76×</td>
<td>↑1.80×</td>
</tr>
<tr>
<td>Hispanic vs white</td>
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<td>—</td>
<td>↑1.57×</td>
<td>—</td>
<td>↓0.67×</td>
</tr>
<tr>
<td>IDU vs non-IDU</td>
<td>↑1.61×</td>
<td>↑1.75×</td>
<td>—</td>
<td>↑1.50×</td>
<td>↑2.83×</td>
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<tr>
<td>CD4 at or under 50†</td>
<td>↑4.83×</td>
<td>↑4.39×</td>
<td>↑34.8×</td>
<td>↑2.24×</td>
<td>↑2.05×</td>
</tr>
<tr>
<td>CD4 51-200†</td>
<td>↑2.53×</td>
<td>↑2.57×</td>
<td>↑10.3×</td>
<td>↑1.58×</td>
<td>↑1.78×</td>
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<td>CD4 201-350†</td>
<td>↑1.45×</td>
<td>↑1.57×</td>
<td>↑3.06×</td>
<td>↑1.31×</td>
<td>—</td>
</tr>
<tr>
<td>VL 400-49,999‡</td>
<td>↑1.19×</td>
<td>↑1.51×</td>
<td>↑1.39×</td>
<td>↑1.23×</td>
<td>—</td>
</tr>
<tr>
<td>VL 50,000+ or missing‡</td>
<td>↑1.46×</td>
<td>↑2.03×</td>
<td>↑2.29×</td>
<td>↑1.34×</td>
<td>—</td>
</tr>
</tbody>
</table>

*Compared with 18 to 35. †Compared with over 350. ‡Compared with under 400 copies. CD4, CD4 count; IDU, injection drug user; VL, viral load.

An up arrow (↑) means increased risk. A down arrow (↓) means decreased risk. A dash (—) means no significant association between the risk factor and hospital admission.
Table 2. Factors that independently affect risk of hospital admission in 5 disease categories

<table>
<thead>
<tr>
<th>Reason for hospital admission (incidence rate ratios)</th>
<th>Digestive/ liver disease</th>
<th>Kidney/ genitourinary</th>
<th>Non-AIDS cancer</th>
<th>Lung disease</th>
<th>Endocrine/ immune‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 36-49*</td>
<td>—</td>
<td>↑ 1.44×</td>
<td>↑ 2.20×</td>
<td>↑ 1.87×</td>
<td>↑ 1.55×</td>
</tr>
<tr>
<td>Age 50+</td>
<td>↑ 1.58×</td>
<td>↑ 2.16×</td>
<td>↑ 3.86×</td>
<td>↑ 3.00×</td>
<td>↑ 2.38×</td>
</tr>
<tr>
<td>Female vs male</td>
<td>—</td>
<td>↑ 1.31×</td>
<td>—</td>
<td>↑ 2.01×</td>
<td>↑ 1.41×</td>
</tr>
<tr>
<td>Black vs white</td>
<td>—</td>
<td>↑ 3.45×</td>
<td>—</td>
<td>—</td>
<td>↑ 2.01×</td>
</tr>
<tr>
<td>Hispanic vs white</td>
<td>↑ 1.50×</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>IDU vs non-IDU</td>
<td>↑ 1.62×</td>
<td>↑ 1.82×</td>
<td>—</td>
<td>↑ 2.37×</td>
<td>↑ 1.34×</td>
</tr>
<tr>
<td>CD4 at or under 50†</td>
<td>↑ 2.73×</td>
<td>↑ 4.77×</td>
<td>↑ 2.55×</td>
<td>↑ 4.21×</td>
<td>↑ 5.87×</td>
</tr>
<tr>
<td>CD4 51-200†</td>
<td>↑ 2.76×</td>
<td>↑ 2.66×</td>
<td>↑ 2.96×</td>
<td>↑ 3.05×</td>
<td>↑ 3.13×</td>
</tr>
<tr>
<td>CD4 201-350†</td>
<td>—</td>
<td>↑ 1.39×</td>
<td>↑ 1.66×</td>
<td>↑ 1.88×</td>
<td>↑ 1.44×</td>
</tr>
<tr>
<td>VL 400-49,999‡</td>
<td>—</td>
<td>—</td>
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<td>—</td>
</tr>
<tr>
<td>VL 50,000+ or missing‡</td>
<td>—</td>
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</tr>
</tbody>
</table>

*Compared with 18 to 35. †Compared with over 350. ‡Compared with under 400 copies.
‡Includes endocrine, nutritional, metabolic, and immune diseases.
An up arrow (↑) means increased risk. A dash (—) means no significant association between the risk factor and hospital admission.

Among the risk factors that a person can change, CD4 count may be the most important. A US government panel now recommends that anyone with HIV start antiretroviral therapy—whatever their CD4 count. Among the risk factors that a person can change, CD4 count may be the most important. A US government panel now recommends that anyone with HIV start antiretroviral therapy—whatever their CD4 count. Among the risk factors that a person can change, CD4 count may be the most important. A US government panel now recommends that anyone with HIV start antiretroviral therapy—whatever their CD4 count. Among the risk factors that a person can change, CD4 count may be the most important. A US government panel now recommends that anyone with HIV start antiretroviral therapy—whatever their CD4 count. Among the risk factors that a person can change, CD4 count may be the most important. A US government panel now recommends that anyone with HIV start antiretroviral therapy—whatever their CD4 count. Among the risk factors that a person can change, CD4 count may be the most important. A US government panel now recommends that anyone with HIV start antiretroviral therapy—whatever their CD4 count. Among the risk factors that a person can change, CD4 count may be the most important. A US government panel now recommends that anyone with HIV start antiretroviral therapy—whatever their CD4 count. Among the risk factors that a person can change, CD4 count may be the most important. A US government panel now recommends that anyone with HIV start antiretroviral therapy—whatever their CD4 count.

References

HIV-positive African Americans with low vitamin D had more than a doubled risk of coronary artery disease in a study of 674 men and women in Baltimore, Maryland.\(^1\) Other traditional risk factors also raised the odds of coronary artery disease in these people, including high blood pressure, high low-density lipoprotein (LDL) cholesterol, and cocaine use.

As HIV-positive people live longer thanks to antiretroviral therapy, heart disease—including coronary artery disease—has become a more frequent cause of sickness and death. Traditional heart risk factors play a big role in higher heart disease rates among people with HIV. Taking certain antiretrovirals and HIV infection itself have also been linked to a higher risk of heart disease.

Some recent research suggests that low vitamin D levels may raise the risk of coronary artery disease.\(^2,3,5\) Vitamin D levels are often low in African Americans, partly because dark skin blocks the type of sunlight that helps make vitamin D in the body. Poor diet may also contribute to low vitamin D levels. African Americans have a higher death rate from coronary artery disease than other racial and ethnic groups in the United States.

Researchers in Baltimore planned this study to analyze the impact of vitamin D deficiency (low levels) and other heart risk factors on coronary artery disease in HIV-positive African Americans without known coronary artery disease or physical signs or symptoms of coronary artery disease.

**How the study worked.** The study involved 674 African-American adults in Baltimore who did not have coronary artery disease or symptoms of coronary artery disease. Everyone was 25 years old or older. The study did not include pregnant women or people with poor kidney function indicated by a glomerular filtration rate at or below 60 mL/min/1.73m\(^2\).

Study participants were interviewed to determine drug-use behavior, smoking habits, and other factors that may affect risk of coronary artery disease. Researchers measured everyone’s lipids (blood fats), blood pressure, and vitamin D levels. Participants underwent computed tomography angiography, a scanning technique that creates a picture of coronary artery narrowing caused by build-up of plaques. The researchers defined significant coronary artery narrowing as 50% or greater narrowing.

The investigators used standard statistical methods to identify factors associated with significant coronary artery narrowing regardless of what other risk factors a person might have.

**What the study found.** The study group included 427 men (63%) and 247 women (37%). Median age was 46 years. Study participants had taken antiretrovirals for a median of 25 months. Median time on protease inhibitors stood at 5.5 months, while few study participants had used nonnucleoside reverse transcriptase inhibitors. The group had a median **CD4 count** of 329 when the study began.

Median blood pressure stood at 117/73 mm Hg, below a target healthy blood pressure of 120/80 mm Hg. According to the Framingham score, which estimates heart disease risk, 355 of 427 men (83%) and 230 of 247 women (93%) had a low risk of coronary artery disease.

Median vitamin D level in study participants was 17 ng/mL. There were 135 people (20% of the study group) with vitamin D deficiency, defined as a level below 10 ng/mL. Among people whose vitamin D level was above 10 ng/mL, 7.7% had significant coronary artery narrowing. In contrast, 14.9% with a vitamin D level below 10 ng/mL had significant narrowing.

While 5.9% of people taking antiretrovirals for fewer than 6 months had significant coronary artery narrowing, 11.2% of those taking antiretrovirals for more than 6 months had significant narrowing. Rates of significant coronary artery narrowing were 7.7% in those who never used cocaine or used cocaine fewer than 15 years versus 12.5% in those who used cocaine for 15 years or more.

Statistical analysis that considered many coronary artery disease risk factors found seven factors that raised the risk of significant coronary artery narrowing regardless of whatever other risk factors a person had (**Figure 1**). A vitamin D level below 10 ng/mL more than doubled the odds of significant coronary artery narrowing. Joining the study group in more recent years (after 2005) lowered the risk of significant coronary artery narrowing.
What the results mean for you. This study found that vitamin D deficiency—by itself—raises the odds of significant coronary artery narrowing in African-American men and women with HIV infection. Almost 10% of people in this study group had significant coronary artery narrowing (50% or greater narrowing), even though almost 90% of the group had a low heart disease risk determined by a reliable risk score.

Several well-known risk factors also made significant coronary artery narrowing more likely: male gender, high blood pressure, and high “bad” LDL cholesterol. Using cocaine more than 15 years almost doubled the risk of coronary artery narrowing, and taking antiretrovirals for more than 6 months more than doubled the risk of coronary artery narrowing. That last finding does not mean people should stop taking antiretrovirals or delay starting treatment. Numerous studies, including a large randomized trial, show that taking antiretrovirals lowers the overall risk of serious heart disease and other non-AIDS diseases.

This study does not prove that low vitamin D levels cause coronary artery narrowing. Low vitamin D may be a signal of other factors that make heart disease more likely, including poverty, poor health care, and poor health habits like smoking. Almost 85% of people in this study smoked cigarettes, and more than 85% drank alcohol.

Because all study participants were African Americans living in a big city, it is unclear whether the findings apply to other groups in the United States or other countries. African Americans and other people with dark skin have a higher risk of low vitamin D because their skin blocks the sun rays that help make vitamin D in the body. However, several other recent studies found high rates of vitamin D deficiency in other HIV-positive groups in the United States and elsewhere. And these findings add to other evidence suggesting that low vitamin D may raise the risk of coronary artery disease. (See “People with a high risk of low vitamin D” for more information on risk factors.)

Figure 1. Low vitamin D levels and other factors shown here independently raised the odds of significant coronary artery narrowing in a study of 674 HIV-positive African Americans. Joining the study group after 2005 lowered the odds of significant coronary artery narrowing (not shown in graph). BP, diastolic blood pressure; LDL, low-density lipoprotein cholesterol; ART, antiretroviral therapy.

People with a high risk of low vitamin D

- Older adults
- People with limited sun exposure
- People with dark skin
- People who absorb fat poorly
- People who are obese or who have had gastric bypass surgery
- Breastfed infants


Vitamin D is necessary for bone health, for muscle function, and for a healthy immune system. Getting as little as 10 minutes of sun exposure daily may help prevent vitamin D deficiency. Few foods contain high amounts of vitamin D. Those that do include cod liver oil, swordfish, salmon, tuna, and vitamin D-fortified orange juice, milk, and yoghurt. For a full list of foods rich in vitamin D, use the link at reference 13 below.
The US National Institutes of Health says some people may need vitamin D supplements to maintain healthy levels.13 Your healthcare provider can help determine whether you need vitamin D supplements by measuring your vitamin D level and reviewing your risk for low vitamin D.

For more information on vitamin D, see the National Institutes of Health Fact Sheet linked at reference 15 below.

It is also very important for people with HIV to address other heart risk factors like those found in this study (high blood pressure, high LDL cholesterol, and cocaine use) and those established by other research (such as smoking, overweight, obesity, diabetes, and physical inactivity). These are all problems that can be prevented or treated with the help of your HIV provider.

References


HIV-positive people had a higher rate of new anal cancer than HIV-negative people in a comparison involving thousands of people in the United States and Canada.¹ HIV-positive gay and bisexual men had more than an 80 times higher anal cancer rate than HIV-negative people in this study.

Because strong antiretroviral combinations that HIV-positive people started taking in the 1990s greatly lowered the AIDS death rate, a growing proportion of people with HIV now die of cancer, especially cancers caused by infections. Anal cancer can be caused by human papillomavirus (HPV) infection in men and women. Like HIV, HPV can pass from one person to another during sex, so many people with HIV also have HPV. In the United States, 2700 women and 1500 men get HPV-related anal cancer every year.²

Previous large studies found that HIV-positive people have a 30 times higher anal cancer rate than the general population.³,⁴ But anal cancer incidence—the rate of newly diagnosed cancers in a given period—has varied widely from study to study. Gay and bisexual men have the highest anal cancer rates in these studies, but it’s unclear how anal cancer rates differ in gay men, straight men, and women with HIV when compared with HIV-negative people.

To learn more about anal cancer rates in different groups of HIV-positive people, US and Canadian researchers planned this new study.

**How the study worked.** The study involved HIV-positive men and women who were members of 10 US and 3 Canadian HIV study groups from 1996 through 2007. A comparison group of HIV-negative men and women came from 3 of the 10 study groups. The analysis did not include anyone who already had anal cancer when they entered their study group.

Researchers counted the number of new anal cancers detected (anal cancer incidence) during the study period. The main goal of the study was to estimate anal cancer incidence in three HIV-positive groups: gay and bisexual men, “other men” who became infected with HIV during sex with women or when injecting drugs, and women.

The researchers used standard statistical methods to compare anal cancer incidence in these groups with incidence in HIV-negative men and women according to year (1996-1999, 2000-2003, and 2004-2007), age (in 5-year groups), and race or ethnicity. They also figured how cancer incidence changed in these groups through the three study periods (1996-1999, 2000-2003, and 2004-2007).

In addition, the research team analyzed anal cancer incidence in the HIV-positive groups by calculating standardized incidence ratios. This statistic compared anal cancer rates in the HIV-positive groups with rates in a nationwide US database called SEER (for Surveillance, Epidemiology, and End Results). This analysis accounted for the potential impact of age and race or ethnicity on cancer rates. The researchers conducted this analysis because the HIV-negative group in the main comparison included people from only 3 of the 10 study groups—and the research team wanted to make sure that comparison was accurate.

**What the study found.** The study involved 18,855 HIV-positive gay or bisexual men (55% of the HIV group), 6492 other HIV-positive men (19% of the HIV group), and 8842 HIV-positive women (26% of the HIV group). The comparison group had 102,607 HIV-negative men and 11,653 HIV-negative women.

Median age was similar across all of these groups at about 38 years. Whites made up 63% of the gay/bisexual HIV group, while blacks made up 52% of the other HIV-positive men and 54% of HIV-positive women. Among HIV-positive women and other men with HIV, about 60% picked up HIV during sex.

Anal cancer incidence (the new diagnosis rate) per 100,000 person-years was 131 for HIV-positive gay/bisexual men, 46 for HIV-positive other men, 30 for HIV-positive women, and 2 for HIV-negative men. Anal cancer developed in no HIV-negative women during the study period. Compared with HIV-negative men, HIV-positive gay/bisexual men had an 80.3 times higher rate of new anal cancer and HIV-positive other men had a 26.7 times higher rate.
For HIV-positive gay/bisexual men, other men, and women, anal cancer incidence was lowest in 1996-1999, the first years of the combination antiretroviral therapy era (*Figure 1*). The new anal cancer rate rose sharply in 2000-2003 and remained at about that level in 2004-2007.

Another analysis compared the new anal cancer rate in the three HIV-positive groups with the rate in a large US national database (*Table 1*). This analysis showed much higher anal cancer rates in the HIV-positive groups than in the general population. The anal cancer rate difference between the HIV-positive groups and the general US population was highest for gay or bisexual men.

Finally, statistical analysis that figured in the impact of several cancer risk factors found a significant difference in risk of new anal cancer in the following groups:

- HIV gay/bisexual men versus other HIV-positive men: 3.3 times higher risk
- Every additional 10 years of age: 30% higher risk
- People cared for in 1996-2003 versus 2000-2003: 50% lower risk
- People of nonwhite race or ethnicity versus whites: 70% lower risk
- People with CD4 count at or above 500 versus below 200: 80% lower risk

*Figure 1.* Rates at which anal cancer developed in HIV-positive people rose substantially from the first study period (1996-1999) to the second study period (2000-2003), then remained at about that level in the third study period (2004-2007). The new anal cancer rate was higher in HIV-positive gay or bisexual men than in other HIV-positive men or HIV-positive women.

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**Table 1.** New anal cancer rates in three HIV-positive groups compared with the US general population*

<table>
<thead>
<tr>
<th>Rate compared with general population*</th>
<th>Gay/bisexual HIV+ men</th>
<th>Other HIV+ men</th>
<th>HIV+ women</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996-1999</td>
<td>73.9</td>
<td>17.4</td>
<td>0†</td>
</tr>
<tr>
<td>2000-2003</td>
<td>115.6</td>
<td>24.8</td>
<td>41.5</td>
</tr>
<tr>
<td>2004-2007</td>
<td>78.7</td>
<td>20.3</td>
<td>24.4</td>
</tr>
</tbody>
</table>

*Rates are reported as standardized incidence ratios. A standardized incidence ratio of 73.9 in 1996-1999, for example, means that gay/bisexual had a 73.9 times higher rate of new anal cancer than the general population in those years.†Rate was 0 in 1996-1999 because anal cancer developed in only 1 HIV-positive woman in those years and data on her were incomplete.
What the results mean for you. This large US-Canadian study found that HIV-positive people have higher rates of new anal cancer than HIV-negative people or people in the general population. The comparative rate is highest for HIV-positive gay or bisexual men, who have over an 80 times higher new anal cancer rate than HIV-negative people.


The higher anal cancer rate in HIV-positive people than in HIV-negative people is not surprising because both HIV and HPV (which can cause anal cancer) can be passed from one sex partner to another. People with many sex partners and people who don’t use condoms during sex run a high risk of getting infected with HIV or HPV.

Always wearing a condom during anal or vaginal sex greatly lowers the risk of HIV or HPV infection. There are also vaccines to protect people from HPV infection. The CDC recommends the vaccine Cervarix or Gardasil for all 11- and 12-year-old girls and for all girls and women from 13 to 26 years old who did not get any or all of the three vaccine shots when they were younger. Gardasil is available for boys and men from 9 through 26 years of age.

Research must determine whether these vaccines will prevent anal cancer in people with HIV.

The American Cancer Society lists the following risk factors for anal cancer: HPV infection, HIV infection, many sex partners, receptive anal intercourse, smoking, low CD4 count, and previous cancer of the cervix, vagina, or vulva. At the link provided at reference 5 below, the American Cancer Society offers helpful online information explaining anal cancer, its causes, risk factors, and prevention, early detection, and treatment.

Anal cancer can be detected early with a digital rectal exam. A Pap test can detect anal cancer or cell changes that may develop into anal cancer. The New York State AIDS Institute recommends yearly digital rectal exams for all HIV-positive people and Papanicolaou testing for (1) gay or bisexual men, (2) people who have had anal or genital warts, and (3) women with abnormal cells in the cervix or vulva. The researchers who conducted this study note that further research is needed to determine whether this approach will lower anal cancer rates in people with HIV.

The US-Canadian research team believes their results suggest that anal cancer prevention efforts should be aimed at all people with HIV infection, not selected groups.

References


HIV raises risk of lung cancer 70% in large US veterans group

Having HIV infection raised the risk of lung cancer 70% in a study of more than 110,000 US veterans, even after researchers accounted for the impact of smoking.1 By itself, smoking boosted lung cancer risk more than 6 times. This large study offers perhaps the clearest estimate so far on how HIV infection affects lung cancer risk.

Lung cancer is the most deadly cancer among both men and women in the United States.2 In 2012, more than 226,000 people in the United States were diagnosed with lung cancer and 160,340 died.3 Although smoking is the major cause of lung cancer, this cancer can develop in people who never smoked.

Several previous studies found higher rates of newly diagnosed lung cancer in people with HIV than in the general population. But because of the size or design of these studies, they could not pin down reasons for the higher lung cancer rate in people with HIV.

HIV-positive people may run a higher risk of lung cancer because they tend to smoke more than people without HIV. The earlier studies either did not weigh the impact of smoking on lung cancer risk—or those studies were limited by (1) how they estimated lung cancer rates, (2) lack of an HIV-negative comparison group, (3) small size, or (4) completion early in the current antiretroviral era, when many more people died of AIDS than they do now.

To address these study limitations, researchers working with the Veterans Aging Cohort Study Virtual Cohort (VACS-VC) conducted this study. The VACS-VC includes veterans with and without HIV. Information on past and current smoking is available for most people in this large study group.

How the study worked. US veterans—most of them men—entered the VACS-VC study group from 1997 through 2008. All HIV-positive people in the study had free access to combination antiretroviral therapy, which came into wide use in 1996. For each HIV-positive person in the lung cancer study, researchers selected two HIV-negative veterans, matching them to HIV-positive people by age, gender, race or ethnicity, and Veterans Affairs healthcare site.

The researchers tracked all HIV-positive and negative people until lung cancer diagnosis, death, or the last recorded visit in the VACS-VC study. Cases of lung cancer diagnosed after people joined the VACS-VC were identified in the Veterans Affairs Central Cancer Registry. All of these lung cancer cases were confirmed by lab testing.
The VACS-VC team also determined which study participants had other lung diseases, including chronic obstructive pulmonary disease and bacterial pneumonia. The researchers could classify about 80% of study participants as current smokers, former smokers, or people who never smoked.

The investigators used standard statistical methods to identify factors that raised the risk of lung cancer, regardless of any other lung cancer risk factors a person might have.

**What the study found.** The study included 37,294 HIV-positive veterans and 75,750 veterans without HIV. Researchers tracked these people for a median of 5.8 years to see if they were diagnosed with lung cancer.

Almost all study participants (98%) were men, 48% were black, 39% white, and 7% Hispanic. Median age of the study group was 46 years. The HIV-positive group included a higher proportion of current smokers than did the HIV-negative group (48% versus 46%), a lower proportion of former smokers (11% versus 15%), and a lower proportion of people who never smoked (20% versus 24%). Only 16% of HIV-positive people were taking combination antiretroviral therapy.

During the study period, 1071 veterans were diagnosed with lung cancer. There were 457 new lung cancer cases in the HIV-positive group and 614 in the twice-larger HIV-negative group. Lung cancer incidence (the new diagnosis rate) was much higher in the HIV-positive group than in the HIV-negative group: 204 versus 119 new lung cancers per 100,000 person-years.

Median age at lung cancer diagnosis was lower in the HIV-positive group (57 versus 59 years).

A comparison of HIV-positive veterans who did and did not get lung cancer revealed these differences:

- Median age 51 with lung cancer and 45 without lung cancer
- Higher proportion of whites with versus without lung cancer: 47% versus 38%
- Higher proportion of current smokers with versus without lung cancer: 57% versus 48%
- Lower proportion of never smokers with versus without lung cancer: 4% versus 20%
- Higher proportion with chronic obstructive pulmonary disease with versus without lung cancer: 11% versus 4%
- Higher proportion with bacterial pneumonia with versus without lung cancer: 8% versus 5%
- Higher proportion with versus without lung cancer died: 70% versus 30%

To identify factors that raised the risk of lung cancer, the researchers performed a statistical analysis that considered the impact of several cancer risk factors: age, gender, race or ethnicity, smoking, and previous diagnosis of chronic obstructive pulmonary disease or bacterial pneumonia. In this analysis, HIV infection raised the risk of new lung cancer 70%—no matter what other cancer risk factors a person had (Figure 1). Current smoking had more than a 6 times higher risk of lung cancer, and former smokers had a 3 times higher risk. Figure 1 shows all the independent lung cancer risk factors.

**Figure 1.** HIV infection—by itself—raised the risk of lung cancer 1.7 times (70%) in US veterans. Current smoking and former smoking had an even bigger impact on lung cancer risk. COPD, chronic obstructive pulmonary disease; y, year.
A separate analysis figured that HIV infection raised the risk of lung cancer 50% in current smokers, 70% in former smokers, and 60% in people who never smoked. These findings confirm that HIV itself boosts the risk of lung cancer regardless of whether a person used to smoke, smokes now, or never smoked.

Finally, the researchers found that most lung cancers in people with HIV and people without HIV got diagnosed at a late stage. Late-stage cancers are the hardest to treat and therefore pose the highest risk of death.

What the results mean for you. This large, well-planned study produced convincing evidence that people with HIV infection run a higher risk of lung cancer than people without HIV infection. This finding held true regardless of whether an HIV-positive person smoked at the time of the study, had stopped smoking, or never smoked.

At the same time, the study confirmed the huge impact smoking has on lung cancer risk: People who used to smoke had a 3 times higher risk of lung cancer than people who never smoked. And people who smoked during the study period had a 6 times higher risk of lung cancer than people who never smoked. So the lung cancer risk was lower in former smokers than current smokers. Smoking causes or contributes to several other deadly diseases, including other cancers and heart disease. If you smoke, you should talk to your healthcare provider about finding ways to stop. See the box “How to quit smoking.”

The study also found that people who have already had a lung disease have a higher risk of lung cancer. Men had a higher risk of lung cancer in this mostly male study group, but that does not mean women don’t have to worry about lung cancer. In the United States more people die of lung cancer every year than die of breast cancer, colon cancer, and prostate cancer combined.2

Besides smokers, people with a high risk of lung cancer include (1) people who have already had lung cancer, (2) people whose immediate family members have had lung cancer, (3) people exposed to high levels of air pollution, and (4) people exposed to asbestos (Figure 2), radon gas, arsenic, or radiation therapy to the lungs.2

How to quit smoking: advice from the National Cancer Institute4

- Ask your healthcare provider about medicine or nicotine replacement therapy, such as a patch, gum, lozenge, nasal spray, or inhaler. Your provider can suggest a number of treatments that help people quit.
- Ask your provider to help you find local programs or trained professionals who help people stop using tobacco.
- Call staff at the National Cancer Institute’s Smoking Quitline (1-877-44U-QUIT) or instant message them through LiveHelp (http://www.cancer.gov/livehelp). They can tell you about:
  - Ways to quit smoking
  - Groups that help smokers who want to quit
  - National Cancer Institute publications about quitting smoking
  - How to take part in a study of methods to help smokers quit
- Go online to Smokefree.gov (http://www.smokefree.gov), a Federal Government Web site. It offers a guide to quitting smoking and a list of other resources.
The veterans study found that most people in whom lung cancer developed during the study had advanced lung cancer. That finding probably means that veterans’ healthcare providers did not find lung cancer more often in people with HIV than without HIV because they were looking harder in people with HIV.

The researchers who conducted this study warn that, “as HIV-infected patients are aging on effective combination antiretroviral, lung cancer may become an increasingly common and often fatal diagnosis.” Everyone can take steps to lower their risk of lung cancer, as explained above and in the online information linked below at references 2, 3, and 4.

References

HIV can be detected in semen of men who have an undetectable viral load in blood, according to results of a 304-man study. This finding underlines the importance of using condoms when having sex, even if a man is taking antiretroviral therapy and has an undetectable viral load in blood. If HIV can be detected in semen—even at low levels—there may be a chance that it can be transmitted to a female or male sex partner.

Several studies show that sex partners of HIV-positive people taking antiretrovirals have a lower risk of becoming infected with HIV than do partners of people not taking antiretrovirals. As a result, some HIV experts and public health officials believe everyone with HIV should start antiretroviral therapy as a way to prevent the spread of HIV. US antiretroviral guidelines say everyone with HIV should start antiretroviral therapy, regardless of CD4 count.

Some officials argue that antiretroviral-treated people with an undetectable viral load in blood and without another sexually transmitted infection can safely have sex without a condom because they are highly unlikely to pass their HIV along to a sex partner. But this proposal remains controversial, partly because studies in the past 10 years show that HIV can be detected in semen even when it is not detected in blood.

Questions about HIV transmission risk during sex are particularly important to heterosexual couples who want to have a baby although the male partner is HIV-positive. In France, where the new study was done, such couples can take advantage of “sperm washing.” This technique nearly eliminates the possibility of HIV transmission from an HIV-positive man to an HIV-negative woman. But this approach requires the man to ejaculate outside the woman. Of course most couples would rather conceive a child while having sex in the usual way.

To address these issues, French researchers planned this study of blood and semen samples from HIV-positive men who wanted to have sperm washing to safely conceive a child with an HIV-negative woman.

How the study worked. The study focused on HIV-positive French men who requested sperm washing from 2002 through 2011. All men were heterosexual and had a stable relationship with a female partner. All men were taking combination antiretroviral therapy.

The researchers measured virus (as HIV RNA) in paired blood and semen samples from each man. The tests used to measure HIV could detect as few as 40 copies of HIV RNA per milliliter of blood and 100 copies per milliliter of semen.

In one third of the men, the researchers also used more sensitive tests to measure HIV RNA in blood and HIV DNA in blood cells. HIV DNA is the form HIV takes when resting inside cells that it infects. These sensitive tests could detect 1 copy of HIV RNA per milliliter of blood and 5 copies of HIV DNA per 150,000 blood cells.

What the study found. The study involved 304 men who gave 628 paired blood and semen samples between January 2002 and June 2011. Of the 314 blood samples, 107 (34%) had detectable HIV RNA. Of the 314 semen samples, 49 (16%) had detectable HIV RNA.

Twenty of 304 men (6.6%) with an undetectable viral load in blood (HIV RNA below 40 copies per milliliter) had a detectable viral load in semen. In these 20 men, viral loads in semen ranged from a low of 115 copies per milliliter of semen to a high of 1750 copies per milliliter. All of these men were taking three or four antiretrovirals including either a protease inhibitor, a nonnucleoside reverse transcriptase inhibitor, or the integrase inhibitor Isentress (raltegravir).

Rates of detectable HIV RNA in blood and in semen did not change much over the 10-year study period (Figure 1). Even in the most recent years of the study, when men were taking the latest antiretroviral combinations, 5% to 10% of men with an undetectable viral load in blood had a detectable viral load in semen.

In a subgroup of 98 men, 55% had under 1 copy of HIV RNA per milliliter of blood and 11% had fewer than 5 copies of HIV DNA per 150,000 blood cells. Six of these 98 men (6%) had detectable HIV RNA in semen; 4 of these 6 had under 1 copy of HIV RNA per milliliter of blood, and all 6 had under 40 copies of HIV RNA per milliliter of blood.

What the results mean for you. This study clearly shows that men with an undetectable viral load in blood may have detectable HIV in semen. About 1 in 20 men who had a blood viral load below 40 copies had HIV that could be detected in semen.
Research has not determined if the low levels of HIV in these men’s semen could result in HIV transmission from a man to a woman, or from a man to a man. But certainly there is some risk that a man with detectable HIV in semen can pass the virus to a sex partner.

The researchers who conducted this study believe health workers should advise couples with an HIV-positive male partner to continue using condoms during sex and to use safe techniques like sperm washing if they want to conceive a child.

Taking antiretroviral therapy lowers the risk of transmitting HIV to a sex partner. And reaching an undetectable viral load in blood greatly lower the risk of transmission. But the findings of this study suggest that the transmission risk may not be zero when viral load is undetectable in blood.

It is also important to note that the rate of detectable HIV RNA in semen with undetectable HIV RNA in blood did not change in more recent years. This finding suggests that even the newest antiretroviral combinations do not always eliminate HIV RNA in semen. Some antiretrovirals get into the male genital compartment better than others. But the researchers note two studies that found no link between antiretroviral ability to penetrate the male genital compartment and HIV levels in semen.6,7

This study included only heterosexual men. But there is no reason to assume that the main result does not apply to gay men as well: Men with an undetectable viral load in blood may have detectable HIV in semen. For now, even men who have an undetectable viral load in blood should probably use condoms when having sex.

Figure 1. From 2002 through 2011, the percent of semen samples with detectable HIV RNA when HIV RNA was not detectable in blood did not change substantially. The overall rate was 6.6%. Numbers in parentheses are the number of men with fewer than 40 copies of HIV RNA in blood.

References

High rates of HSV-2 infection in HIV-positive teens in United States

Rates of herpes simplex virus type 2 (HSV-2) infection were much higher in teens with HIV or with a high risk of HIV than in the general population, according to results of a large study at 15 centers across the United States. HSV-2 prevalence, the proportion of teens already infected when they entered the study, was more than 20 times higher in the study group than in the general population. And HSV-2 incidence, the proportion of teens infected with HSV-2 over the course of the study, was more than 40 times higher in the study group than in the general population. Being infected with HIV tripled the risk that a teen would have HSV-2 when entering this study.

HSV-2 infection is one of the most common sexually transmitted infections in the world. A nationwide 2005-2008 US study found that 16% of people 14 to 49 years old had HSV-2. HSV-2 rates are usually higher in HIV-positive people, because HSV-2 and HIV are both transmitted during sex. About 60% to 70% of HIV-positive people in the United States may have HSV-2 infection, and that estimate is even higher in African Americans.

HSV-2 can cause painful sores in genital areas, and these sores can reappear. The US Centers for Disease Control (CDC) warns that women should be careful to avoid HSV-2 during pregnancy because the virus can be transmitted to newborns and may sometimes kill a baby. A sex partner can give you HSV-2 even if the partner does not have visible herpes sores.

Because little is known about HSV-2 infection rates and risks in teens with HIV and at risk for HIV, researchers at the University of Alabama at Birmingham conducted this analysis in the REACH study group.

How the study worked. This study involved members of the REACH study group who were HIV-negative or were infected with HIV through risky behavior, usually sex. Researchers tested blood samples for HSV-2 when these young people entered the study and again at the end of the study. They also tested blood samples for HIV when teens entered the study and then every 6 months. The analysis did not include anyone who became infected with HIV during the study period.

The researchers used standard statistical methods to identify risk factors for HSV-2 infection by comparing three groups:

- Teens positive for HSV-2 versus negative for HSV-2 when they entered the study
- Teens who became HSV-2-positive during the study versus teens who did not become HSV-2 positive
- HIV-positive teens who became HSV-2-positive during the study versus HIV-positive teens who did not become HSV-2 positive

What the study found. The study involved 513 teens—386 girls and 127 boys. Of the study participants, 343 (67%) were HIV-positive. Age averaged about 17 years when the study began and did not differ between teens who had HSV-2 when the study started and those who did not.

When the study began, 179 youngsters (about one third) had HSV-2 infection. HSV-2 prevalence (the rate when the study began) was 39% in blacks (138 of 352), 21% in Hispanics (21 of 101), and 17% in whites (4 of 23). Teens who had HSV-2 when the study began were more likely to be heterosexual (81% versus 69%), girls (91% versus 67%), non-Hispanic blacks (78% versus 64%), HIV-positive (82% versus 59%), and also infected with chlamydia, another sexually transmitted infection (25% versus 16%).

Statistical analysis that considered many HSV-2 risk factors identified three factors that raised the odds of HSV-2 when the study began. Regardless of what other risk factors a person had, girls had more than 7 times higher odds than boys, HIV-positive teens had 3 times higher odds than HIV-negative teens, and youngsters still uncertain about their sexual preference had almost 4 times higher odds. Compared with blacks, Hispanics had about 60% lower odds of HSV-2 when entering the study.

During almost 2 years, 47 teens became infected with HSV-2. Incidence of HSV-2 (the new infection rate) was 7.35 cases per 100 person-years. HSV-2 incidence was higher in girls (7.70 versus 6.64 per 100 person-years), blacks (7.62 versus 6.89), and teens with HIV (8.50 versus 5.58).

Teens who became infected with HSV-2 during the course of the study were older (19.4 versus 18.8 years), were more likely to drink alcohol (51% versus 32%) or use drugs (57% versus 37%), had more sex partners (average 6.6 versus 3.4), and were more likely to be HIV-
There were 197 HIV-positive youngsters (124 girls and 73 boys) who started the study without HSV-2 infection. During the study, 33 HIV-positive teens (17% of 197) became infected with HSV-2. The researchers compared these 33 teens with 63 HIV-positive teens who did not get infected with HSV-2 during the study. The HSV-2-positive and negative groups did not differ by age, gender, race, or rates of other sexually transmitted infections.

Compared with HIV-positive teens who remained HSV-2 negative, teens who picked up HSV-2 infection were more likely to trade sex for food, housing, or drugs (15.2% versus 3.2%), had higher \textbf{CD4 counts} (average 569 versus 451), and had lower HIV \textbf{viral loads} (about 3000 versus 8000 copies) when entering the study. Statistical analysis that considered many HSV-2 risk factors found only one that raised the risk of new HSV-2 infection regardless of what other risk factors a person had: Every 50-cell higher CD4 count raised the HSV-2 risk 17%.

- **What the results mean for you.** This large study of US teens with HIV or with a high risk of HIV found that one third had HSV-2 infection (a sexually transmitted infection) when the study began. Among teens without HSV-2 when the study started, 17% became infected with HSV-2 during the nearly 2-year study period.

The 35% HSV-2 rate when the study began (HSV-2 prevalence) is more than 20 times higher than the 1.6% HSV-2 prevalence found among US teens in a nationwide study.\(^2\) The rate at which teens became infected with HSV-2 during the study period (HSV-2 incidence) is more than 40 times higher than incidence among teens in the nationwide study\(^2\) (7.35 versus 0.18 new infections per 100 person-years).

Having HIV infection tripled the risk of being HSV-2-positive when the study began. Girls had more than a 7 times higher HSV-2 risk than boys. And teens uncertain about their sexual preference had almost a 4 times higher HSV-2 risk than teens who knew their sexual preference.

The researchers note that teens who remained unsure whether they were straight or gay were more likely to have HIV infection, to have anal sex, and to have sex in return for food, housing, or drugs. They also had more sex partners than teens who already knew if they were straight or gay. The researchers suggest that having more sex partners may mean these teens were inclined to have more sex as they tried to figure out their own sexual leaning. Together, all of these factors would raise a person’s risk of HSV-2 infection.

Among teens who did not have HSV-2 when the study began, using recreational drugs more than doubled the risk of getting infected with HSV-2 during the study period. People who use party drugs or illegal drugs—and especially people who use them during sex—are more likely to get sexually transmitted infections like HSV-2 and HIV.

Because most teens who became infected with HSV-2 during the study already had HIV infection, the researchers stress that these HIV-positive teens continued to take sexual risks that made them more likely to get infected with HSV-2 and other sexually transmitted infections. Because sexually transmitted infections often don’t make a person feel sick and sometimes do not cause sores, they can be hard to diagnose. Infections that remain undiagnosed can have a negative long-term impact on a person’s health.
Among teens who had HIV infection when the study began, having a higher CD4 count raised their risk of becoming infected with HSV-2. That finding may mean teens with higher CD4 counts felt healthier and so were having more sex. HIV-positive teens who are taking antiretrovirals and feeling well should understand that they still run a risk of getting sexually transmitted infections like HSV-2. Those infections can have a negative impact on a person’s HIV infection and can raise the risk that a person will transmit HIV to a sex partner.

HSV-2 can cause painful sores in genital areas (Figure 2).4 Once a person is infected with HSV-2, those sores can clear up then reappear later. Genital HSV-2 infection in a woman may cause deadly infection in a baby born to that woman.

No treatment cures HSV-2 infection. Drug therapy can prevent reappearance of herpes sores and can shorten the time that these sores last. HSV-2 treatment can also lower chances of passing HSV-2 to sex partners.

Not having sex or having sex with a single partner who does not have sexually transmitted infections is the surest way to avoid getting HSV-2 infection.4 Even a person without visible herpes sores or signs of herpes infection can pass HSV-2 to a sex partner. Correct and steady condom use can cut the risk of genital herpes.

US guidelines recommend testing HIV-positive people for HSV-2 every 3 to 6 months if they have new sex partners.3 The CDC has an information sheet on HSV-2 with other valuable information on this sexually transmitted infection. See the link at reference 4 below.

References


Regular testing and counseling lower sexual infection rate in gays with HIV

Getting tested for sexually transmitted infections (STIs) every 6 months and receiving brief risk counseling from HIV providers lowered the rate of new STIs in gay and bisexual men with HIV. In this study in four US cities, only 11% of detected STIs caused signs or symptoms noticed by the infected person: That finding underlines the importance of regular testing for STIs in sexually active people, because many STIs cause no signs or symptoms that indicate infection.

Most people who become infected with HIV get infected during sex. If an HIV-positive person has unprotected sex, that person runs a risk of picking up another STI, such as chlamydia, gonorrhea, or syphilis. Having an STI can raise an HIV-positive person’s viral load and can make it easier for that person to infect someone else with their HIV.

Gay and bisexual men in the United States and other countries often run a high risk of infection with HIV and other STIs because many men have multiple sex partners, have sex without condoms, and do other things that make picking up an STI more likely (such as drink alcohol or use drugs before having sex).

The Centers for Disease Control and Prevention (CDC) advises HIV providers to talk to patients regularly about how to avoid STIs. The CDC also says sexually active people should get tested regularly for STIs, even if they have no signs or symptoms of infection. An STI may cause no visible sores or rashes and may not make a person feel sick. So regular testing is often the only way to detect STIs.

One brief STI counseling approach recommended by the CDC is called Partnership for Health. CDC researchers and other HIV experts conducted this study to see if Partnership for Health could lower the rate of new STIs in HIV-positive gay and bisexual men in the United States.

How the study worked. The study involved gay and bisexual men who were members of the SUN Study. The SUN Study is an ongoing study of HIV-positive men and women in Denver, Minneapolis, Providence, and St. Louis. SUN Study members come for check-ups every 6 months. At these visits everyone gets tested for STIs and everyone completes a computer-assisted interview about STI risk factors and habits like smoking and recreational drug use.

The new study focused on HIV-positive men who said they had had sex with another man before joining the SUN Study. All these men were tested for gonorrhea, chlamydia, and syphilis when they entered the SUN Study and every 6 months after that. The men also reported possible signs or symptoms of STIs whenever they got tested.

All these men and their HIV providers took part in the Partnership for Health program. A full description of this program can be read at the link following reference 2 below. Briefly, whenever people visit the HIV clinic they see messages about safer sex behavior in posters, brochures, and flyers. During each person’s health check-up, their HIV provider reinforces these messages. HIV providers and all other clinic staff receive training in the Partnership for Health program.

SUN Study participants get tested for STIs every 6 months. The researchers who ran this STI study analyzed data from two SUN Study visits 12 months apart. The first study visit was the one at which the study participant was first exposed to the Partnership for Health program. The second study visit was the one that took place 12 months after the first study visit.

Finally, the researchers compared the number of new STIs at the first study visit with the number at the second study visit. They also compared sex behaviors at those two visits.

What the study found. The study included 216 gay or bisexual HIV-positive men who had complete STI testing data and risk behavior data available from the first study visit and the second study visit (12 months after the first). At the first visit, these men had a median age of 44. Most men (77%) were white, 11% were black, and 11% were Hispanic.

Median CD4 count when the study began stood at 511. Of the 216 men studied, 179 (83%) were taking combination antiretroviral therapy and 182 (84%) had an undetectable viral load. When the study started, 163 men (75%) said they were sexually active. Among the 53 men not sexually active when the study began, 28 (53%) became sexually active during the 12-month study period. Only 3% of men who were sexually active when the study began were not sexually active 12 months later.
Seventy-eight men (36%) said they had unprotected anal or vaginal intercourse at some point. Eighty-two men (38%) had more than four alcoholic drinks in the past month, and 81 (38%) had used any drug (not counting marijuana), 67 (31%) used inhaled nitrites, 46 (21%) used an erection drug (such as Viagra), and 16 (7%) used methamphetamine.

Almost half of the men in this study—103 or 48%—said they had depression. (For more on depression, see the article in this issue, “Depression and Wider Waist Linked to Sleeping Problem in People With HIV.”)

The overall rate of newly detected STIs fell from 8.8% at the first study visit to 4.2% at the second study months—12 months after men started participating in the Partnership for Health program. In other words, the new STI rate fell by half over the course of the study, as providers engaged HIV-positive men in discussing safer sex, and as men continued regular STI testing.

The rate of newly detected STIs in the anus and rectum fell from 6.9% at the first study visit to 2.8% at the second study visit 12 months later. In other words, the rate of this kind of STI fell by more than half during the study.

Of the 28 new STIs detected during the study, only 3 (11%) had noticeable signs or symptoms. So 25 of these new STIs would not have been detected without regular STI testing of all these men, and those undetected STIs could have been transmitted to other people.

Despite these improvements in STI rates, rates of anal or vaginal sex without a condom remained about the same—36% at the first study visit and 38% at the second study visit 12 months later. The rate of condom-free receptive or insertive anal intercourse rose from 19% to 25% with HIV-positive partners. But that rate did not change with HIV-negative partners or with partners whose HIV status was not known.

Self-reported rates of alcohol use or drug use did not change from the first to the second study visit.

**What the results mean for you.** This study found that the rate of new sexually transmitted infections (STIs) fell by half in the year after HIV-positive gay and bisexual men began getting tested for STIs every 6 months and started a program aimed to help them reduce risky sexual behavior. The rate of new anal or rectal STIs fell by almost 60%.

Nearly 90% of the new STIs detected during this study caused no signs or symptoms and did not make these men feel sick. If these men had not been tested for STIs every 6 months, these STIs would not have been detected. Treatment of STIs like gonorrhea, chlamydia, and syphilis is usually very simple. But if these infections are not treated, they can cause serious health problems. In addition, the bacteria that can gonorrhea, chlamydia, or syphilis can be passed on to a sex partner.

The Centers for Disease Control and Prevention (CDC) recommends regular STI testing for sexually active people. How often you get tested depends on how much sex you have and what risks you take when having sex. Gay and bisexual men who have several sex partners, who don’t know their sex partners personally, or who have sex while drinking alcohol or taking drugs should probably get tested for STIs every 3 to 6 months.

Regular STI testing can help lower the rate of new infections by reminding people about avoiding STI risks. Because having an STI raises the risk of picking up other STIs, detecting hidden STIs and treating them could lower the STI rate. Regular testing also reminds HIV providers to counsel their patients about avoiding STIs. Table 1 lists other advice on avoiding STIs.
Because of the way this study was designed, the researchers could not figure whether regular STI testing or STI risk counseling—or both—explain the falling STI rate in the men studied. They suggest that both twice-yearly STI testing and risk-reduction counseling contributed to the falling STI rate and that these two strategies should be combined.

A previous study of the Partnership for Health program in 585 HIV-positive Californians found that it lowered the rate of condom-free anal or vaginal sex by 38% in people with two or more sex partners. Another 13-center study found that brief prevention counseling by HIV providers lowers rates of unprotected vaginal or anal sex with HIV-negative partners or partners with an unknown HIV status.

It is also hard to explain why the study did not find a drop in risky sex behavior even though the new STI rate fell. The overall rate of sex without a condom remained the same from the first study visit to the second study visit 12 months later. It could be that some men did start practicing less risky sex recently, but that the survey they completed did not pick up that change.

Although the rate of anal sex without condoms with HIV-positive partners rose slightly during the 12-month study period, the rate of this kind of sex with HIV-negative partners did not change. Those findings suggest that some men may have adopted the strategy called serosorting—having sex only with partners of the same HIV status (positives only with positives and negatives only with negatives). Although serosorting may lower the risk of picking up HIV infection, it does not cut the risk of picking up a new STI.

Wearing condoms during anal sex lowers the risk of getting infected with HIV and with other sexually transmitted infections. Consistent condom use is the surest and easiest way to prevent the spread of HIV and other STIs during sex.

References

5. Myers JJ, Shade SB, Rose CD, et al. Interventions delivered in clinical settings are effective in reducing risk of HIV transmission among people living with HIV. Results from the Health Resources and Services Administration (HRSA)'s special projects of national significance initiative. AIDS Behav. 2010;14:483-492.
HIV-positive people with depression and those with wider waists ran a higher risk of insomnia (difficulty falling asleep or staying asleep) in a study of people cared for by the US military healthcare system. Compared with people without insomnia, those with insomnia were 3 times more likely to have declines in activities of daily living.

Insomnia and daytime sleepiness are common problems in people with and without HIV. In people with HIV, several factors may cause or contribute to sleep disturbances: (1) ability of HIV to infect the central nervous system (brain and spine), (2) HIV-related central nervous system infections, (3) antiretroviral side effects, (4) mental health problems like anxiety and depression, and (5) drug or alcohol abuse. Several other factors (Table 1) may cause insomnia in people with or without HIV. Depression is marked by ongoing feelings of sadness, loss, anger, or frustration.

One study of people with HIV found that three quarters suffered from insomnia. But that study was done more than 15 years ago, before use of current antiretroviral combinations greatly improved the health of HIV-positive people. And the earlier study did not compare sleep patterns in HIV-positive people and HIV-negative people.

To provide up-to-date insights into sleep disturbances in people with HIV, researchers conducted the following study.

**How the study worked.** Researchers invited 18- to 50-year-old people at three US military HIV clinics to join the study. Participants could be active members of the military, retired from the military, or the dependents of military personnel. Everyone is HIV-negative when entering the military and gets tested for HIV regularly.

The 200 HIV-positive people invited to join this study had tested positive for HIV while in the military, and all had free access to medical care for their infection. People who said they had thoughts of suicide or who had a major illness could not enter the study. The researchers created a comparison group of 50 people without HIV who matched the HIV group in age, gender, race, and military rank.

All study participants completed a series of question-and-answer tests to assess (1) insomnia, (2) daytime sleepiness, (3) depression, and (4) activities of daily living. The researchers also collected other information on each person’s health (including information related to weight) and habits (such as smoking and use of alcohol or illegal drugs).

**Table 1.** Major causes of sleep disturbance and risk factors for sleep disturbance

<table>
<thead>
<tr>
<th>Possible causes of sleep disturbance</th>
<th>Possible risk factors for sleep disturbance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>Being a woman</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Age over 60</td>
</tr>
<tr>
<td>Depression</td>
<td>Mental health disorders</td>
</tr>
<tr>
<td>Medications</td>
<td>Stress</td>
</tr>
<tr>
<td>Caffeine, nicotine, or alcohol</td>
<td>Work at night or in changing shifts</td>
</tr>
<tr>
<td>Medical conditions</td>
<td>Long-distance travel</td>
</tr>
<tr>
<td>Changes in environment or work schedule</td>
<td></td>
</tr>
<tr>
<td>Poor sleep habits</td>
<td></td>
</tr>
<tr>
<td>Eating too much late in the evening</td>
<td></td>
</tr>
</tbody>
</table>

Source: Mayo Clinic Health Information. Insomnia. See reference 2 below for a link with more information on this topic from the Mayo Clinic.
The study team compared sleep disturbance patterns in the HIV-positive group and the HIV-negative group. Finally, the researchers used standard statistical methods to single out risk factors for sleep disturbances.

**What the study found.** The study involved 193 adults with HIV and 50 without HIV. In the HIV group, average age was 36 years, 95% were men, 50% white, 29% black, and 13.5% Hispanic. One quarter of the HIV group was obese, and one half had HIV-related body fat abnormalities (lipodystrophy). Only 1 person had less than a high-school education; 7% had depression (based on a standard test called the Beck Depression Inventory).

People with HIV had relatively well-controlled HIV infection. The group CD4 count averaged 567, and only 15% ever had a CD4 count below 200. Two thirds of HIV-positive study participants were taking combination antiretroviral therapy, and 55% had an undetectable viral load.

Test results showed that 89 HIV-positive people (46%) had insomnia, and 59 (29.5%) had daytime sleepiness. The HIV-positive group included 103 people (53%) who said sleepiness interfered with regular daily activities.

Testing determined that 19 people (38%) in the HIV-negative comparison group had insomnia and 10 (20%) had daytime sleepiness. These rates did not differ significantly from rates in the HIV-positive group.

Despite these relatively high rates of sleeping difficulties in people with and without HIV, only a small proportion of study participants said they took sleeping pills: 17% of HIV-positive people and 16% of HIV-negative people reported taking sleeping pills at least once a week.

There was a strong link between insomnia and symptoms of depression: insomnia affected 31% of people without depression, 71% with mild depression, 89% with moderate depression, and 93% with severe depression.

People with depression had a higher chance of having insomnia than people without depression (Figure 1). Increased waist size and illegal drugs also increased chances of insomnia, and people with fewer years of education had a higher chance of insomnia. No HIV-related factor (including HIV infection itself) affected chances of insomnia.

**Figure 1.** Depression raised chances of insomnia almost 17 times in a study of 243 people with and without HIV. Higher waist size almost tripled the odds of insomnia, while each additional year of schooling lowered the odds 20%. Illegal drug use raised the odds of insomnia 8 times, though this association fell short of statistical significance (adjusted odds ratio 8.07, 95% confidence interval 0.91 to 74.41, \( P = 0.06 \)).

Increased waist size also independently raised chances of loud snoring 4 times, while doubling chances of daytime sleepiness and poor daytime function (Figure 2).

**Figure 2.** Increased waist size raised chances of insomnia, loud snoring, poor daytime function, and daytime sleepiness in a study of 193 adults with HIV and 50 without HIV.
Among people with insomnia, 22% reported a decline in activities of daily living, compared with 9% without insomnia. Statistical analysis determined that insomnia tripled chances of a decline in activities of daily living.

■ What the results mean for you. This is one of the largest studies of sleeping disturbances in people with HIV. And it’s one of the few sleeping studies in HIV-positive people that had a comparison group without HIV. The study is also important because it took place in an HIV group with free access to the latest antiretroviral medications.

Almost half of HIV-positive people in this study group—46%—had insomnia, and almost 30% had daytime sleepiness. Although these rates were not much higher than those in the HIV-negative comparison group, they show that sleeping problems are common in HIV-positive people. Despite these high rates of sleeping problems, few people were taking medications to help them sleep.

Almost everyone has trouble sleeping now and then, and one night of tossing and turning should not cause concern. But ongoing insomnia — trouble falling asleep, staying asleep, or both — can have negative consequences. Health workers at the Mayo Clinic list these possible results of persistent insomnia:

- Lower performance on the job or at school
- Slowed reaction time while driving and higher risk of accidents
- Psychiatric problems, such as depression or an anxiety disorder
- Overweight or obesity
- Poor immune system function
- Increased risk and severity of long-term diseases, such as high blood pressure, heart disease, and diabetes

This study in US military clinics confirmed that sleeping poorly has a negative impact on performance of daily activities. The study also found links between overweight (increased waist size) and insomnia and between depression and insomnia. A study like this cannot determine whether overweight caused insomnia or insomnia caused overweight in these people. In the same way, this study cannot say whether depression caused insomnia or insomnia caused depression.

But it’s clear that insomnia, overweight, and depression can all negatively affect health. HIV-positive people with any of these problems should talk about them with their HIV providers. All three conditions can be treated in several ways. The next article in this issue of HIV Treatment Alerts! discusses depression in more detail. The US National Institute of Mental Health has a useful booklet on depression in people with HIV, available at the link in reference 4 below.

These researchers point out that they conducted their study in people cared for at US military clinics and that most of these people learned they had HIV and started receiving care early in the course of their infection. As a result, the findings of this study may not apply to all HIV-positive people in the United States.

Still, this study underlines the high rate of insomnia and daytime sleepiness in people with HIV. If you feel you have a sleeping problem, discuss it with your HIV provider. At the same time, these researchers note, providers should realize that tests for insomnia and daytime sleepiness* are quick, inexpensive, and easy to use. The research team calls for prompt diagnosis and treatment of sleep disturbances in people with HIV as one way to improve quality of life.

*In this study researchers used the Pittsburgh Sleep Quality Index to assess insomnia and the Epworth Sleepiness Scale to assess daytime sleepiness.

References


In a study of US veterans with HIV infection and depression, people who took antidepressant drugs according to schedule (good adherence) also took their antiretrovirals according to schedule most of the time. This finding is important because many people with HIV suffer from depression (feeling sad or unmotivated much of the time), and depression can negatively affect treatment of HIV and other diseases. The study also pinpointed other factors that affected antiretroviral and antidepressant adherence.

Depression is "a mood disorder in which feelings of sadness, loss, anger, or frustration interfere with everyday life for weeks or longer." Depression often affects people with HIV because of the many ongoing problems caused by HIV infection and other life problems. HIV providers may not notice depression in their patients because patients don’t think about calling attention to “sadness” or “the blues.” But depression is a disease that can be treated effectively with antidepressant drugs, with counseling (psychotherapy), or with both.

Much medical research shows that depression interferes with antiretroviral adherence in people with HIV. Poor adherence can lead to antiretroviral treatment failure and to development of resistant HIV that is more difficult to control. Prior research also shows that depressed HIV-positive people who take antidepressant medications have better adherence to antiretrovirals.

Veterans Affairs researchers conducted this new study to measure adherence in depressed HIV-positive veterans who were taking (1) antiretrovirals, (2) antidepressants, or (3) both antiretrovirals and antidepressants. The researchers also aimed to identify factors that made good adherence more or less likely. Finally, they wanted to see if people with good antidepressant adherence also had good antiretroviral adherence, and if people with good antiretroviral adherence also had good antidepressant adherence.

What the study found. The adherence study focused on 225 HIV-positive veterans with depression, including 192 (85%) taking antiretrovirals, 146 (65%) taking antidepressants, and 113 (50%) taking both antiretrovirals and antidepressants. Almost all study participants (97%) were men, and most (93%) graduated from high school.

Most study participants (60%) were African American, a proportion that reflects the HIV rate by race across the United States. Age in this study group averaged 50, which is somewhat older than the average age of HIV-positive people in the United States.

According to standard test results, more than 75% of study participants had major depression, and 75% had at least one other mental health disorder.
Two thirds to three quarters of study participants reported 90% or better adherence, depending on whether they were taking antiretrovirals, antidepressants, or both antiretrovirals and antidepressants:

- 145 of 192 people (75.5%) with an antiretroviral prescription reported 90% or better antiretroviral adherence
- 112 of 146 people (76.7%) with an antidepressant prescription reported 90% or better antidepressant adherence
- Among 113 people prescribed both antiretrovirals and antidepressants:
  - 11 (9.7%) reported less than 90% adherence to both antiretrovirals and antidepressants
  - 16 (14.2%) reported antiretroviral adherence below 90% and antidepressant adherence of 90% or higher
  - 10 (8.9%) reported antiretroviral adherence of 90% or higher and antidepressant adherence below 90%
  - 76 (67.3%) reported both antiretroviral and antidepressant adherence of 90% or higher

Statistical analysis singled out four factors that affected chances or antiretroviral adherence or antidepressant adherence, regardless of whatever other risk factors a person had (Figure 1): Older age and less severe HIV symptoms independently raised chances of 90% or better antiretroviral adherence. More education lowered chances of good antiretroviral adherence. Having a generalized anxiety disorder independently raised chances of 90% or better antidepressant adherence.

Further analysis determined that good antidepressant adherence predicted good antiretroviral adherence. In other words, people who took their antidepressants on schedule 90% of the time or more also usually took their antiretrovirals on schedule 90% of the time or more. However, antiretroviral adherence did not predict who would take their antidepressants on schedule.

What the results mean for you. This study found high rates of adherence to antiretrovirals and antidepressants in HIV-positive US veterans with depression. Among three quarters of study participants taking antiretrovirals took them on schedule at least 90% of the time, and three quarters of those taking antidepressants took them on schedule at least 90% of the time. Among people prescribed both antiretrovirals and antidepressants, two thirds took both on schedule at least 90% of the time.

Poor antiretroviral adherence (missing doses) can result in treatment failure and can allow HIV to become resistant to the antiretrovirals you’re taking. Resistant virus may no longer respond to those antiretrovirals or to other antiretrovirals in the same drug class, and that makes planning another antiretroviral combination more difficult.

People with untreated depression run a high risk of poor antiretroviral adherence when they become too sad or unmotivated to care about their health. That’s why it’s important for HIV-positive people with depression to talk to their HIV provider about their feelings and to begin treatment for depression if necessary. Depression can be treated with drugs (antidepressants), with counseling (psychotherapy), or with both.

The National Library of Medicine has a useful guide to depression online (see link at reference 2 below). The National Institute of Mental Health (NIMH) has helpful online booklets about depression, including booklets en Español, easy-to-read booklets, and a booklet on depression in people with HIV. To find them, go to this link: http://www.nimh.nih.gov/health/publications/depression-listing.shtml. The NIMH lists the following signals of depression:

- Ongoing sad, anxious, or empty feelings
- Feeling hopeless
- Feeling guilty, worthless, or helpless
- Feeling irritable or restless
- Loss of interest in activities or hobbies once enjoyable, including sex
- Feeling tired all the time

Figure 1. Three factors independently affected chances of 90% or better antiretroviral adherence in a study of 225 US veterans with HIV and depression. One factor independently raised chances of 90% or better antidepressant adherence.
Difficulty concentrating, remembering details, or making decisions
Difficulty falling asleep or staying asleep, or sleeping all the time
Overeating or loss of appetite
Thoughts of death and suicide or suicide attempts
Ongoing aches and pains, headaches, cramps, or digestive problems that do not ease with treatment

Several studies done before this one found that depressed HIV-positive people taking antidepressants had better adherence to antiretrovirals. This new study confirms that people with good adherence to antidepressants are more likely to have good adherence to antiretrovirals. Good adherence to both types of medicine is necessary to control depression and to control HIV.

Among people taking antidepressants, it may be necessary to continue taking these drugs for a while even after feelings of depression disappear. One study showed that fewer than half of people completed a recommended 6-month course of antidepressant therapy. Stopping antidepressant therapy before the recommended date can allow symptoms of depression to reappear.

This study identified four factors that affect chances of adherence to antiretrovirals or antidepressants (Figure 1). Older people had better antiretroviral adherence in this study, as in several earlier studies. That could mean older people generally take greater responsibility for their own health than younger people. Even young people with HIV should realize that HIV infection and depression are serious illnesses: HIV cannot be controlled without good antiretroviral adherence, and good adherence to antidepressants is essential if your provider prescribes them.

The study also found that people with less severe HIV symptoms adhered to antiretrovirals better than people with more severe symptoms. The researchers suggest that people who feel better when their HIV symptoms improve may be more motivated to maintain their good health by taking their antiretrovirals as scheduled. People who still have symptoms of HIV infection after they begin treatment should realize that taking antiretrovirals regularly is necessary to control their HIV symptoms.

Unlike some previous studies, this study found that people with more education had worse antiretroviral adherence. The researchers point out that this finding is hard to interpret because almost all study participants had at least a high-school education.

People with an anxiety disorder had better adherence to antidepressants than people without anxiety. The researchers say that could mean that people with anxiety and a tendency to worry may pay more attention to adherence. At the same time, no one wants to have continuing anxiety, and people with ongoing anxiety should talk about it with their provider. There are effective treatments for anxiety disorder.

The researchers point out an important limitation of their study: All study participants were veterans, almost all of them were men, and the average age was older than in most HIV groups in the United States. So findings may not apply to other HIV groups, including women and younger people. But the study did include a high proportion of African-American men with HIV. And the study provides important reminders for everyone with HIV about getting treatment for depression and taking antidepressants and antiretrovirals regularly, according to your provider’s instructions.

References


Among Hispanics living in 40 US states and Puerto Rico, the HIV diagnosis rate fell among both men and women from 2006 through 2009, according to results of a study by the Centers for Disease Control and Prevention (CDC). The biggest declines were seen among Hispanics born in Puerto Rico.

In 2009 the HIV diagnosis rate was highest among Hispanics from Central America and lowest among those from Mexico. A shorter time from HIV diagnosis to AIDS was more likely among Hispanic men than women, more common in foreign-born Hispanics than US-born Hispanics, and more common in people not living in cities.

Hispanics (people of Latin origin living in the United States) made up 15% of the US population in 2009, but they represented 21% of all US residents diagnosed with AIDS that year. Most research on HIV in Hispanics in the United States considers them as one group. Yet Hispanics clearly differ in many ways that may affect their risk of HIV infection—for example, their reason for coming to the United States, and whether they live in cities or rural areas. Previous research showed that Hispanics in the United States also differ in (1) knowledge of HIV infection, (2) HIV risk factors, (3) views on personal HIV risk, and (4) use of HIV prevention services.

Almost 50 million Hispanics lived in the United States in 2009, and another 4 million lived in Puerto Rico. Hispanics make up at least one fifth of the population in several states: New Mexico (46%), California (37%), Texas (37%), Arizona (31%), Nevada (26%), Florida (22%), and Colorado (20%).

CDC researchers conducted this study to estimate rates of HIV diagnosis in each year from 2006 through 2009 among Hispanics living in 40 US states or Puerto Rico.

How the study worked. The CDC team used data on people 13 years old or older who tested positive for HIV from 2006 through 2009. All of these new HIV cases were reported to the CDC through June 2010. Data came from Puerto Rico and from 40 US states, including Texas, Florida, and New York, but not including California. (See reference 5 for the full list.)

The researchers defined Hispanics as people who trace their origin to Mexico, Puerto Rico, Cuba, Central and South America, and other Spanish cultures. Hispanics can be of any race. In this study, “US born” means born in one of the 50 states or Washington, DC.

The CDC investigators used standard statistical methods to estimate the year-to-year percent change in HIV diagnosis rate by sex, age group, birthplace, and area of residence. They also examined differences among Hispanic subgroups in (1) less than a 12-month interval between HIV diagnosis and AIDS diagnosis, and (2) survival more than 36 months after HIV diagnosis.

What the study found. From 2006 through 2009 in Puerto Rico and the 40 states surveyed, 33,498 Hispanics tested positive for HIV. More than half of the study group (57%) became infected with HIV during sex between men, while 27% became infected during sex between men and women, 13% became infected while injecting drugs, and 13% became infected during sex between men or while injecting drugs.
The yearly HIV diagnosis rate from 2006 through 2009 fell 4.3%. In Hispanic men the yearly diagnosis rate fell 2.8%, while in Hispanic women the rate fell 9.8% (Figure 1).

Among Hispanic men 20 to 29 years old, the HIV diagnosis rate rose 4.2% over the study period, whereas the rate fell 6.6% for men 30 to 39 and fell 4.7% for men 40 to 49. For women the yearly diagnosis rate fell in every age group analyzed up to 60 years and older: The rate fell 16.7% in 13-to-19-year-olds, 10.8% in 20-to-29-year-olds, 7.4% in 30-to-39-year-olds, 9.8% in 40-to-49-year-olds, and 10.5% in 50-to-59-year-olds.

From 2006 through 2009 the HIV diagnosis rate dropped 3.5% among Hispanic men born anywhere outside the United States and 13.1% among men born in Puerto Rico. But the rate did not fall among Hispanic men born in the United States. Among Hispanic women, the HIV diagnosis rate fell 6.8% among those born in the United States, 10.7% among those born anywhere outside the United States, 12.2% among those born in Central American, and 13.2% among those born in Puerto Rico.

Over the 2006-2009 study period, the HIV diagnosis rate dropped 16.8% among rural Hispanic men, but not among men living in cities. The HIV diagnosis fell 32.2% among rural Hispanic women and 8.7% among Hispanic women living in cities.

Among 6657 Hispanic people diagnosed with HIV in 2009 with a reported place of birth, 55% were born outside the United States. The HIV diagnosis rate was 23.1 per 100,000 people among those born outside the United States and 26.8 per 100,000 among those born in the United States. In 2009 the HIV diagnosis rate was highest in people born in Central America and lowest in those born in Mexico:

<table>
<thead>
<tr>
<th>Place of Birth</th>
<th>HIV Diagnosis Rate per 100,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central America</td>
<td>33.7</td>
</tr>
<tr>
<td>United States</td>
<td>26.8</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>26.3</td>
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<td>Cuba</td>
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</tbody>
</table>

Among Hispanics diagnosed with HIV from 2006 through 2009, 39% had AIDS within 12 months of their positive HIV test. Having AIDS within 12 months of a positive HIV test was more likely among Hispanic men than women (Figure 2), more likely among Hispanics born outside the United States than in the United States, and more likely in nonurban areas than in cities.
Compared with people 13-to-29-years-old, having AIDS within 12 months of a positive HIV test was 46% more likely in 30-to-39-year-olds, 64% more likely in 40-to-49-year-olds, and 83% more likely in people 50 and older (Figure 2).

The proportion of Hispanics who survived more than 36 months after a positive HIV test was highest among 13-to-29-year-olds (96%) and lower among 30-to-49-year-olds (90%) and 50-and-older people (78%). Survival more than 36 months after HIV diagnosis was lower in people living in rural areas than in city dwellers (83% versus 91%) and lower in injection drug users (84%) than in gay men who injected drugs (90%), people infected during sex between men and women (91%), and gay men who did not inject drugs (92%).

Hispanics born in South American or the United States had the highest proportion who survived more than 36 months after a positive HIV test, while those born in Mexico, Puerto Rico, or Central America had the lowest proportion:

<table>
<thead>
<tr>
<th>Survival beyond 36 months after HIV diagnosis by birthplace:</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ South America: 93%</td>
</tr>
<tr>
<td>▶ United States: 91%</td>
</tr>
<tr>
<td>▶ Cuba: 89%</td>
</tr>
<tr>
<td>▶ Central America: 88%</td>
</tr>
<tr>
<td>▶ Mexico: 88%</td>
</tr>
<tr>
<td>▶ Puerto Rico: 88%</td>
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</tbody>
</table>

What the results mean for you. This study in 40 US states and Puerto found that the rate at which Hispanics tested positive for HIV fell from 2006 through 2009. The falling HIV diagnosis rate held true for both men and women. These encouraging results could mean fewer Hispanics are getting infected with HIV and/or that fewer Hispanics are getting tested for HIV.

Other recent research showed a higher HIV testing rate among Hispanics than among whites in the United States from 2001 through 2009. So it seems likely that the falling HIV diagnosis rate in Hispanics mainly reflects a falling HIV infection rate. That probably means more Hispanic men and women in the United States, Mexico, South America and elsewhere are becoming more aware of HIV and are taking steps to protect themselves from infection—like consistently wearing condoms during sex.

People who already have HIV can help slow its spread by telling sex partners they have HIV and by always using a condom during sex. Using condoms consistently is important even when two HIV-positive people have sex, because condoms protect you from getting infected with a second HIV virus, and they protect you from getting other sexually transmitted infections (like chlamydia and syphilis).

This study was large enough to track yearly HIV diagnosis rates in several Hispanic subgroups. These analyses showed that the HIV diagnosis rate is not falling in every subgroup and that it is rising in some subgroups. For example, the rate rose 4.2% from 2006 through 2009 in Hispanic men 20 to 29 years old. Also, among Hispanic men the HIV diagnosis rate fell sharply (13.1%) among those from Puerto Rico, but not among those from the United States, Cuba, Mexico, Central America, or South America. For Hispanic women, the HIV diagnosis rate fell significantly for those born in Puerto Rico (13.2%), Central America (12.2%), and the United States (6.8%), but not for those born in Cuba, Mexico, or South America. These findings underline possible differences in HIV awareness and risk-taking between Hispanics born in different countries.

Many Hispanics come to the United States to work in farming in rural areas or to join family or friends in cities. Migration itself can raise the risk of HIV infection by resulting in homelessness, loneliness, isolation, and poverty. The researchers point out that these factors can lead migrants to new sex partners, commercial sex, and drug use; they can also make it more difficult to access health care. Undocumented migrants may avoid health care or HIV testing because they fear being sent back to their home country.

A short time from a positive HIV test to AIDS may indicate HIV testing late in the course of HIV infection (at a lower CD4 count). A short HIV-to-AIDS time may also indicate poor access to health care or poor care. Hispanics who work as migrant farmers, have no health insurance, or have difficulty working with a healthcare system in an English-speaking country may have poor access to care.

Lower survival rates among Hispanics living in rural areas rather than cities could reflect later HIV diagnosis, lack of health care, or lack of insurance.
See the box for AIDS Hotlines that offer help en español.

### AIDS Hotlines en español

**CDC, HIV/AIDS**
1-800-CDC-INFO (1-800-232-4636)

**AIDSinfo, US Department of Health and Human Services**
1-800-HIV-0440 (1-800-448-0440)  
Outside US: 1-301-519-0459  
Monday to Friday 12:00 PM to 5:00 PM Eastern time

**California hotline**
1-800-367-AIDS (1-800-367-2437)  
In San Francisco or outside California: 1-415-863-2437

**New York State hotline**
1-800-233-7432

**Florida hotline**
Español: 1-800-545-SIDA (1-800-545-7432)  
Haitian Creole 1-800-243-7101

**Texas hotline**
1-800-299-2437

For other hotlines: [http://www.projectinform.org/hotlines/](http://www.projectinform.org/hotlines/)

**References**


A large study of adult women and men in the United States found that 15% of women and 5% of men had been sexually abused as children. Among both women and men, sexual abuse was more common among bisexuals, lesbians and gays, and heterosexuals who had same-sex partners than among heterosexuals without same-sex partners. Adults who had been sexually abused as children had higher rates of infection with HIV or other sexually transmitted infections (STIs).

Several previous studies found higher rates of childhood sexual abuse among lesbians, gays, and bisexuals than among heterosexual women and men. But many of these studies were too small to analyze differences between bisexuals and lesbians or gays, and most previous studies focused only on women or only on men. These studies had another disadvantage when trying to figure out the impact of childhood sexual abuse: they lacked a comparison group of heterosexuals.

Being sexually abused as a child is not rare in the United States. People who are sexually abused as children often grow to adolescence and adulthood facing several problems (including alcohol and drug use), and adopting sexual behaviors that put them at risk of STIs including HIV infection.

Yet many people—especially men—are reluctant to talk about being sexually abused as a child or even to admit that it happened. As a result, it can be difficult to determine how many adults were abused as children and what impact this experience had on their behavior and infection risk as they grew up.

To learn more about the impact of childhood sexual abuse in lesbians, gays, bisexuals, and heterosexuals, researchers took advantage of a large US survey involving more than 34,000 people across the United States. Because of this survey’s large size, the researchers were able to make comparisons and analyze data in ways that were not possible in smaller studies.

■ How the study worked. The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) is a large, ongoing study that has had two waves, the first in 2001-2002 and the second in 2004-2005. NESARC participants complete a face-to-face computer-assisted interview in their homes.

This childhood-abuse study included people who participated in wave 2. Researchers focused on men and women who answered questions about childhood sexual abuse and their current sexual orientation, attractions, and behaviors.

The researchers defined childhood sexual abuse as a sexual experience with any other person when the individual did not want to have the sexual experience or was too young to know what was happening. The sexual experience could include (1) being touched or fondled in a sexual way, (2) being forced to touch another in a sexual way, (3) sexual intercourse, or (4) attempted sexual intercourse.

The research team rated the frequency of childhood sexual abuse as (1) never, (2) almost never, or (3) sometimes/frequent. They divided people who completed the survey into five sexual-orientation groups: (1) gay or lesbian, (2) bisexual, (3) heterosexual with at least some same-sex partners, (4) heterosexual with some same-sex attraction but no same-sex partners, or (5) heterosexual with no same-sex partners or attraction.

The researchers used standard statistical methods to calculate (1) the association between sexual orientation and childhood sexual abuse and (2) the impact of childhood sexual abuse on risk of HIV and other STIs.

■ What the study found. Of the nearly 20,000 women who completed the survey, 142 (0.6%) called themselves lesbians, 159 (0.8%) bisexual, 311 (1.5%) heterosexual with some same-sex partners, 946 (4.6%) heterosexual with some same-sex attraction, and 18,407 (92.5%) heterosexual with no same-sex partners or attraction.

Among all the women studied, 14.9% reported some childhood sexual abuse, including 7.2% who reported abuse sometimes or frequently and 7.7% who reported abuse almost never. Childhood sexual abuse was more frequent among bisexual women (43.5%), lesbi-
Compared with heterosexual women with no same-sex partners or attractions, bisexual women were more than 5 times as likely to report childhood sexual abuse, while lesbians and heterosexual women with same-sex partners were about 3 times as likely to report childhood sexual abuse (Figure 1).

Of the 14,297 men surveyed, 188 (1.1%) identified themselves as gay, 80 (0.4%) as bisexual, 363 (2.4%) as heterosexual with some same-sex partners, 293 (1.8%) as heterosexual with some same-sex attraction, and 13,373 (94.3%) as heterosexual with no same-sex partners or attraction.

Among all men, 5.2% reported some childhood sexual abuse, including 1.8% abused sometimes or frequently and 3.5% abused almost never. Any childhood sexual abuse was reported by similar proportions of bisexual men (19%), gay men (18.6%), and heterosexual men with same-sex partners (19.4%), while 4.6% of heterosexual men without same-sex partners or attractions reported any childhood sexual abuse.

Compared with heterosexual men without same-sex partners or attractions, bisexuels were almost 13 times as likely to report childhood sexual abuse, while gays were 9.5 times as likely, and heterosexuals with same-sex partners were 7.9 times as likely (Figure 2).

**Figure 1.** Among women surveyed in a large US study, bisexuals, lesbians, and heterosexuals with same-sex partners or attractions were more likely to be sexually abused as children than heterosexuals (HTX) without same-sex partners or attractions.

Women and men who experienced childhood sexual abuse were more likely to have HIV infection or another sexually transmitted infection as an adult:

Compared with women not sexually abused as a child, (1) heterosexual women almost never abused were 1.6 times as likely to become infected with HIV or another STI and (2) heterosexual women sometimes or frequently abused were 2.8 times as likely to get HIV or another STI. Compared with women not sexually abused as a child, (1) lesbians, bisexuals, and heterosexuals with same-sex partners who were almost never sexually abused were 7 times as likely to get HIV or an STI and (2) lesbians, bisexuals, and heterosexuals with same-sex partners who were sometimes or frequently abused were 3.8 times as likely to get HIV or an STI.

Compared with men not sexually abused as a child, (1) heterosexual men sometimes or frequently abused were 1.5 times as likely to get infected with HIV or another STI, and (2) gay, bisexual, or heterosexual men with same-sex partners who were sometimes or frequently abused were 4.2 times as likely to become infected with HIV or another STI.
**What the results mean for you.** Because of the large size of this study of childhood sexual abuse, the results probably apply to everyone in the United States. One big advantage of this study is that it compares (1) bisexuals, lesbians, gays, and heterosexuals with same-sex partners or attractions with (2) heterosexuals who don’t have same-sex partners or feel same-sex attractions. The groups with same-sex partners had much higher rates of childhood sexual abuse than heterosexuals without same-same partners.

This overall finding does not mean that childhood sexual abuse causes people to become lesbian, gay, or bisexual. A more likely explanation for this link is that children who showed lesbian, gay, or bisexual behaviors early in life are more vulnerable and more likely to become targets of sexual abuse. In previous studies, lesbian, gay, and bisexual adults remember feeling sexually different as children and—as a result—being sexually or physically abused by adults or other youngsters.

Children and teenagers who feel attracted to youngsters of the same sex do not have to put up with this kind of abuse—from other youngsters or from *any* family members or other adults. Youngsters who are sexually or physically abused should tell an adult they trust right away, starting with a parent or a school counselor or teacher you trust.

Lesbian and gay support groups for youngsters are available in many areas. If you need a support group and can’t find one on your own, talk to a school counselor, a teacher you trust, your healthcare provider, or another adult you trust. To find these groups online, see the box “Finding Gay and Lesbian Support Groups for Youngsters and Adults.”

This study found that adults who were sexually abused as children were much more likely to become infected with HIV or another sexually transmitted infection (STI). The reasons for this link are complicated. Sexual abuse during childhood often has a lifelong impact. Because abused children sometimes feel that they caused the abuse, they may feel sad and guilty, and they may be more likely to do other risky things (like drink alcohol, use drugs, or have sex without a condom).

It’s difficult even for adults to talk about childhood sexual abuse. But talking about such abuse with a healthcare professional can help you understand what happened. And that understanding can be a first step to overcoming behavior problems that may have begun with childhood sexual abuse. Your primary healthcare provider can recommend a counselor or therapist who will make it easier for you to talk about childhood sexual abuse and the impact it has on your life.

Many studies, including this one, find that men report childhood sexual abuse less often than women. Girls may be victims of sexual abuse more than boys. But it also seems clear that men are more uncomfortable talking about childhood sexual abuse than women. As this study shows, men who were sexually abused as boys continue to suffer consequences of that abuse as adults. Men should not feel ashamed of being abused during childhood. They should make an effort to talk about it with a healthcare professional.
Finding Gay and Lesbian Support Groups for Youngsters and Adults

- The Gay, Lesbian and Straight Education Network (GLSEN) strives to assure that each member of every school community is valued and respected regardless of sexual orientation or gender identity/expression. [http://www.glsen.org/](http://www.glsen.org/).

- Parents, Families and Friends of Lesbians and Gays (PFLAG) promotes the health and well-being of lesbian, gay, bisexual, and transgender persons, their families and friends. [http://community.pflag.org](http://community.pflag.org).

- Human Rights Campaign (HRC) is the largest civil rights organization in the United States working to achieve lesbian, gay, bisexual, and transgender equality. [http://www.hrc.org/](http://www.hrc.org/).

- The It Gets Better Project features online videos and an MTV special showing young people talking about growing up gay: [http://www.itgetsbetter.org/](http://www.itgetsbetter.org/).

- The Gay & Lesbian Alliance Against Defamation (GLAAD) empowers people to share their stories, holds the media accountable for the words and images they present, and helps grassroots organizations communicate effectively. [http://www.glaad.org/](http://www.glaad.org/).

- MTV’s A Thin Line Campaign empowers young people nationwide to draw their own line between digital use and digital abuse—including cyberbullying, sexting, and all types of digital harassment. [http://www.athineline.org/](http://www.athineline.org/).

- The Trevor Project focuses on crisis and suicide prevention efforts among lesbian, gay, bisexual, transgender, and questioning (LGBTQ) youth. If you or someone you know needs help, call the Trevor Lifeline at 866-4-U-TREVOR (866-488-7386) to speak with a trained counselor. It’s toll-free and available 24/7. [http://www.thetrevorproject.org](http://www.thetrevorproject.org).

Reference

Many HIV-positive people in US fail to begin care or remain in care

Only two thirds of people newly diagnosed with HIV in 2008 in 13 areas in the United States established care for their infection within 12 months. And only 45% of persons living with HIV in 2009 were in care. Blacks and Hispanics established and stayed in care less often than whites, and heterosexual males established and stayed in care less often than heterosexual females.

Once a person tests positive for HIV, it is critical to begin regular care as soon as possible. And once a person enters care, it is very important to keep all scheduled appointments. HIV-positive people who delay starting care or miss HIV care visits tend to start antiretroviral therapy later and to reach an undetectable viral load less often. They are more likely to pass their HIV to another person, and they are more likely to die.

US experts on HIV infection recommend that HIV-positive people have a CD4 count and viral load test every 3 to 4 months. When people with HIV start antiretroviral therapy and reach an undetectable viral load, US experts believe they should get their CD4 count measured every 6 to 12 months. But a recent analysis combining several studies found that only 54% of people who tested positive for HIV in the United States had at least two HIV care visits within a year.

To determine recent rates of entering care and staying in care among HIV-positive people, the Centers for Disease Control and Prevention (CDC) conducted this new study.

How the study worked. The study involved people older than 12 who tested positive for HIV by the end of 2008 and were living with HIV at the end of 2009. At the time of their HIV diagnosis, all these people lived in one of 13 areas across the United States—Delaware, Indiana, Iowa, Kentucky, Missouri, Nebraska, New York State (excluding New York City), North Dakota, San Francisco, South Carolina, Washington, DC, West Virginia, or Wyoming.

The CDC researchers counted the number of HIV-positive people who had (1) at least one CD4 count or viral load test in the past year and (2) two or more CD4 counts or viral load tests at least 3 months apart. The researchers defined an HIV care visit as a visit in which the CD4 count or viral load was measured. Among people diagnosed with HIV in 2008, the CDC team defined establishing HIV care as having at least two CD4 counts or viral load tests (at least 3 months apart) within 12 months of testing HIV-positive.

The CDC team also figured the percent of people who reached a viral load below 400 copies and the percent who reached a CD4 count above 350.

What the study found. The study involved 100,375 people diagnosed with HIV through the end of 2008 and living at the end of 2009. This number represents about 12% of all HIV-positive people in the United States. Among these 100,375 people, only 58,772 (59%) had at least one HIV care visit in 2009, and only 44,920 (45%) had at least two HIV care visits at least 3 months apart.

A higher proportion of white people had at least one HIV care visit in 2009 (64%) than did black people (55%) or Hispanics (49%). Whites also had a higher proportion of people with 2 or more HIV care visits in 2009 (50%) than did blacks (41%) or Hispanics (40%). A higher proportion of people between 13 and 24 years old had at least one HIV care visit in 2009 (62%) than did 25-to-44-year-olds (59%), 45-to-64-year-olds (58%), or people 65 or older (51%).
The CDC researchers also determined percentages of people who had HIV care visits according to HIV transmission category (how they got infected with HIV). Women who got HIV infection during sex with men had the highest proportion making at least one HIV care visit in 2009 and the highest proportion who had two or more care visits in 2009 (Figure 1). After women infected with HIV during sex, gay or bisexual men who injected drugs had the highest proportion making at least one HIV care visit, followed by gay or bisexual men who did not inject drugs, men infected during sex with women, women who injected drugs, and men who injected drugs.

Among people diagnosed with HIV in 2008, women infected during sex with men were the most likely to establish HIV care within 12 months (Figure 2), followed by gay/bisexual men who injected drugs, gay/bisexual men who did not inject drugs, men infected during sex with women, women who injected drugs, and men who injected drugs.

Among people who tested HIV-positive in 2008, 64% established HIV care (had 2 or more visits within 12 months of testing positive). The percentage was higher for whites (75%) than for Hispanics (69%) or blacks (54%). In the four age groups studied, the percentage that established care within 12 months of testing positive was highest for 25-to-44-year-olds (66%), followed by 45-to-64-year-olds (64%), 13-to-24-year-olds (56%), and people 65 or older (56%).

Among 5136 people who tested positive for HIV in 2008 and were alive 12 months after testing positive, 80% had a viral load test within those 12 months. In this group, only 42% had a viral load at or below 400 copies within 12 months of their HIV test.

What the results mean for you. This 100,375-person US study found that only 59% of people with a positive HIV test by the end of 2008 and alive at the end of 2009 had at least one HIV care visit within the past 12 months. Only 45% of that group had steady HIV care, defined as having two HIV care visits at least 3 months apart. These low rates mean that a high proportion of people living with HIV were not in steady care for HIV.

HIV-positive people who do not establish and maintain steady care run a high risk that their HIV infection will get worse and a high risk that they will pass their HIV on to sex partners or drug-injecting partners. If you are HIV-positive, it is critically important to begin care for...
your HIV infection promptly and to keep all HIV care appointments.

The researchers who conducted this study list several factors that may explain why people who test positive do not begin HIV care promptly or do not continue care:

- Mental health problems
- Substance abuse
- HIV stigma (fear of discrimination because of HIV infection)
- Lack of health insurance
- Lower education level
- Poverty
- Unemployment
- Homelessness
- Lack of transportation

Counselors where you have your HIV test should help you find an HIV provider you can see promptly and regularly. You can also get help finding an HIV provider from local HIV/AIDS organizations or from any other healthcare provider you may see.

Once you have begun care, your HIV provider can direct you to counselors or social workers (sometimes within the provider’s office) who can help you address problems that make it difficult to keep appointments at your HIV clinic. These workers can help you work with government and nongovernment programs that deal with many of the problems listed above. Counseling and treatment are available for mental health problems and substance abuse. If you need help with these problems, ask your HIV provider or social worker to recommend services that deal with them.

You should not assume that you can put off HIV care because you feel healthy when you test positive. HIV may not make a person sick for years after infection. But the virus is damaging your health whenever you are not being treated, and it may not be possible to correct some of this damage.

If you start antiretroviral therapy for HIV, your CD4 count will probably go up and your viral load will go down. If you were sick before you started treatment, you will probably feel better as treatment continues. But these improvements do not mean you can stop antiretroviral therapy, and they do not mean you can stop keeping HIV care appointments. Antiretrovirals do not cure HIV infection; you will have HIV infection for the rest of your life. Only steady care and effective antiretroviral treatment can keep your HIV under control.

References


Technical word list

**Adherence** means taking medications, such as antiretrovirals, according to the schedule set by your healthcare provider.

**Antidepressants** are medicines used to treat depression (defined below).

**Antiretrovirals** are drugs used to treat HIV infection.

**CD4 cells** are one type of cell necessary to fight infection. HIV attacks CD4 cells, so CD4 counts fall when a person is not taking antiretrovirals to control HIV or when treatment fails.

**CD4 count** measures the number of CD4 cells in a cubic millimeter of blood. People with CD4 counts below 500 have a harder time controlling infections. The risk of uncontrolled infection gets higher as the CD4 count gets lower.

**Depression** is a mood disorder in which feelings of sadness, loss, anger, or frustration interfere with everyday life for weeks or longer. (Source: PubMed Health. Major depression.)

**Diabetes** is a lifelong disease in which there are high levels of sugar in the blood. Diabetes can be caused by too little insulin, resistance to insulin, or both.

**Incidence** is the rate at which an event (like infection with a virus) occurs over a defined period of time.

**Insomnia** is difficulty falling asleep, difficulty staying asleep, or both.

A **median** is the number above which half of all the numbers recorded lie, and below which half of all the numbers recorded lie. The median number differs from the average (or mean) number. For example, in the series 1, 3, 8, 9, and 14, the median is 8 because half of the other numbers lie above it and the remaining half lie below. But the average of 1, 3, 8, 9, and 14 is 7.

A **person-year** is a measure of time used in medical studies. A single person-year is 1 year lived by 1 person. An HIV rate of 2 per 100 person-years means 2 of 100 people are infected within a year.

**Prevalence** is a rate measured at a single point in time, for example, at the beginning of a study.

**Viral load** is the number of HIV particles in a milliliter of blood or another body fluid, such as semen or cerebrospinal fluid.
If you have HIV, what are the **25 most important things to know?** And do!

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