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## CATIE-News

CATIE's bite-sized HIV and hepatitis C news bulletins.

### **Ontario researchers find heart attacks occur earlier in people with HIV**

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Studies have found that some HIV-positive people are at heightened risk for cardiovascular disease. The reasons for this are not clear but may be due to one or more of the following factors:

- smoking and/or other substance use
- elevated inflammation caused by HIV
- the presence of co-existing health conditions such as elevated blood pressure, type 2 diabetes, obesity
- exposure to older HIV medicines

A number of studies from the U.S. have found that HIV-positive people who had a heart attack and who were hospitalized were more likely to die than HIV-negative people who were also hospitalized because of a heart attack.

#### **A study in Ontario**

These results from the U.S. prompted researchers at St. Michael's Hospital in Toronto to analyze health-related information from HIV-negative and HIV-positive people in Ontario who had a heart attack and were hospitalized, in order to assess their survival. The research team accessed several databases and reviewed information from nearly 260,000 people (0.13% were HIV positive) across the province. The researchers found that, on average, HIV-positive people tended to have a heart attack about 15 years before HIV-negative people. However, survival rates in both populations were similar once people were hospitalized. Overall, these results are reassuring about survival but point to the urgent need for interventions to improve cardiovascular health among HIV-positive people in Ontario.

#### **Study details**

Researchers accessed several databases in Ontario that have been collecting health-related information from residents. The researchers focused on adults who had their first heart attack between January 2002 and December 31, 2014.

#### **Results**

Researchers analysed data from a total of 259,475 people; 345 of them (0.13%) were HIV positive.

At the time participants had their first heart attack researchers found the following:

- HIV-positive people were on average younger, about 55 years old
- HIV-negative people were on average older, almost 70 years old
- only 13% of HIV-positive people with heart attacks were women, compared to 38% of HIV-negative people

HIV-positive people were generally less likely to have co-existing conditions—such as higher-than-normal blood pressure and type 2 diabetes—that can play a role in cardiovascular disease. The exception to this was that both HIV-negative and HIV-positive people had similar rates of chronic kidney disease.

#### **In the hospital**

The researchers found that HIV-positive people were less likely to die (7%) while in the hospital compared to HIV-negative people (14%).

Heart attacks can occur because the vessels that supply oxygen-rich blood to the heart gradually become narrowed due to deposits of fatty material and debris that form plaques inside the arteries. If a plaque breaks open, it releases these materials into the blood and a clot can form where the plaque has broken. If too much clotting occurs, the clots can block the artery, leading to a heart attack. Substance use, particularly stimulants such as cocaine or amphetamine, can trigger spasms in arteries, causing them to shut off the flow of blood to the heart.

To help people recover from a heart attack doctors can perform procedures to improve the flow of blood to the heart, including the following:

- opening closed arteries and keeping them open by installing a tiny flexible tube called a stent
- grafting blood vessels from another part of the body around the heart, bypassing the blocked vessels altogether

These and other similar procedures are called revascularization.

The research team found that there was no difference between the HIV-positive and HIV-negative people in any of the following:

- undergoing interventions to improve the flow of blood to the heart
- re-admission to the hospital after the heart attack because of additional or recurring cardiovascular-related issues

## **Bear in mind**

The researchers did not have access to data about HIV-positive participants' CD4+ counts, viral load, type of HIV drugs used and, in the case of all participants, smoking status and cholesterol levels. Such information could plausibly have led to more refined analyses with the data from HIV-positive people.

The researchers found a possible signal of concern: HIV-positive people seemed to have a two-fold greater risk of death in the month following their discharge from hospital. The researchers cautioned that because of the "small number" of deaths, this apparent trend should be interpreted cautiously and requires confirmation from a study with a much larger number of people.

There are many steps that can be taken to reduce one's risk of cardiovascular disease. As a result of their findings, the researchers stated that "developing, implementing and evaluating interventions to optimize [prevention of initial and any subsequent heart attacks], including smoking cessation, is an increasing priority for people with HIV."

## **Resources**

[The CIHR Canadian HIV Trials Network trial - Reprieve study](#)

[HIV and cardiovascular disease](#) - CATIE fact sheet

—Sean R. Hosein

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