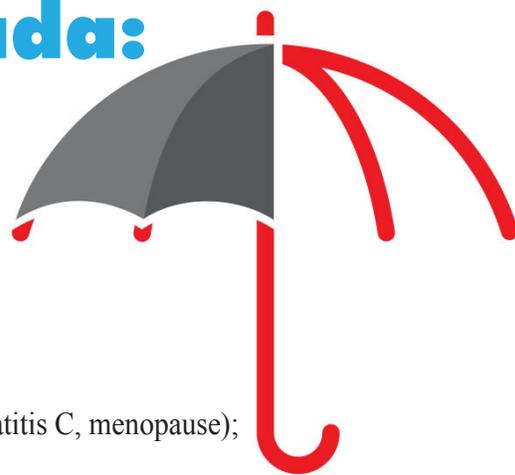


HIV and Aging in Canada: Physiological effects and considerations



Several inter-related factors affect the health of older Canadians living with HIV, including:

- the effects of HIV itself on the body;
- the effects of HIV treatment;
- the aging process itself;
- other health conditions (for example: conditions associated with aging, or hepatitis C, menopause);
- treatment for those other health conditions; and,
- modifiable risk factors (diet, smoking, alcohol and drug use, exercise, nutrition).

A range of social determinants of health also play a key role in how HIV and aging affect Canadians, including housing, income support, employment, food security, gender and social exclusion.¹

Changes to immune system

As we age, our immune system becomes less effective at protecting our body from infection and disease.² HIV also weakens the immune system. Because the immune system is the body's defence against germs, a weakened immune system can make us more susceptible to infections and illnesses. HIV treatment can help strengthen the immune system, so that it is better able to fight off germs and keep us healthy.

Inflammation

Inflammation is one of our body's biological responses to something harmful, like bacteria, a toxin or the presence of a foreign object in the body (i.e. a splinter). Localized inflammation can cause redness, increased heat, pain, and swelling that result from increased blood flow to the area and the influx and activation of white blood cells. This is meant to repair and defend against damage to bodily tissue.³

Inflammation can be short-term (acute). Examples include heat, redness and swelling around a cut, and the body-wide aches and fever when fighting the flu.

However, lower levels of inflammation may persist for

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years without any obvious symptoms. This is called chronic inflammation, which can lead to damage in the body. For example, inflammation can directly contribute to heart disease or rheumatoid arthritis.

HIV infection causes a state of persistent inflammation, even among those taking anti-HIV medication.⁴ Treatment reduces the levels of some inflammation biomarkers, but not others. Levels of immune activation and inflammation still remain higher among HIV-positive individuals than among HIV-negative people, even when treatment has produced years of durable viral suppression.⁵ This could explain at least in part the higher rates and younger age of onset of other chronic diseases among people living with HIV.⁶

Published by:



In association with:



Funded in part by:



Updated: November 2013

Co-morbidities

Sometimes one or more diseases or conditions are present in addition to a primary disease or disorder. When this happens, those additional diseases or conditions are called “co-morbidities”. In the case of HIV (the primary disease we are discussing), co-morbidities can include heart disease, cancer, bone loss, diabetes, liver and kidney disease and premature frailty.⁷ Menopause may occur at an earlier age and cause more symptoms in women living with HIV.⁸ HIV-positive individuals are likely to have more illnesses than HIV-negative individuals, regardless of age.⁹ HIV-positive individuals are also more likely to multimorbidity, defined in one study as a combination of at least one medical issue, one substance use issue and one psychiatric conditions, than HIV-negative individuals, regardless of age.¹⁰ In addition, the combined effects of aging and HIV increase the risk of liver disease, cardiovascular disease and diabetes.¹⁰

There are several challenges associated with co-morbidities:

- They may increase the risk of serious health outcomes¹¹
- They require managing complex treatment regimens.
- They may negatively impact quality of life.
- It may become difficult to determine the cause of symptoms (i.e. is it HIV, age, treatment, a co-morbidity?).
- Increase in co-morbidities makes people less physically, emotionally, socially, financially secure.¹²

Cancer

Before more effective anti-HIV drugs were introduced in the mid-1990s, the most common cancers in people living with HIV were AIDS-related cancers, such as Kaposi’s sarcoma, non-Hodgkin’s lymphoma and cervical cancer.¹³ Now, thanks to more effective HIV treatment, these cancers are less likely to occur when you have HIV.¹⁴ On the other hand, the chances of developing both AIDS-related and non-AIDS-related cancers increase as you age.¹⁵ For example, both men and women 50 or older are at greater risk of developing colon and rectal (colorectal) cancer.¹⁶

People living with HIV are more likely to have the following cancers than the general population: anal, vaginal, liver, lung, melanoma, leukemia, colorectal and renal.¹⁷

Heart disease

Heart disease (or cardiovascular disease) is a broad term that includes coronary heart disease, heart attack, stroke and other conditions that affect the heart and blood vessels.

There are several risk factors for heart disease, whether you are HIV-positive or HIV-negative. Some of them are within your control, while others are not.

Risk factors within our control include smoking, being overweight, lack of exercise, poor diet, excessive alcohol intake, high levels of blood cholesterol, diabetes and high blood pressure (or hypertension).¹⁸

Age and family history are not within our control, but they are important risk factors for heart disease. Postmenopausal women and men over 55 are at higher risk of developing heart disease. If someone’s family member—father, mother, an uncle, an aunt or a sibling, for instance—has heart disease, their risk of developing heart disease is higher than that of a person who does not have a family history.

The relationship between HIV and heart problems is not fully understood but is being studied. Some studies show that certain anti-HIV drugs, such as some protease inhibitors, may increase the risk of heart problems by raising the level of cholesterol and triglycerides in the blood,¹⁹ but other studies seem to contradict this finding.²⁰ Other research suggests that HIV itself increases the risk of heart attack by 50%.²¹ Increased risk persists in those whose HIV is well controlled by anti-HIV medication. In either case, the benefits of HIV treatment far outweigh the risks of heart disease.

Kidneys

People living with HIV and older adults are at greater risk of kidney disease. Three out of ten HIV-positive patients (30 per cent) have abnormal kidney function,²² compared to about 6 per cent of Canadians in the general population.²³ HIV itself and the drugs used for treating HIV can sometimes cause kidney damage. The risk is increased among people living with HIV who are over the age of 65. Also, comorbidities like diabetes, high blood pressure and hepatitis C infection can also increase the likelihood of a person living with HIV getting kidney disease.²⁴



Bone loss

Bones are living and growing. The strength of bones, or bone density, is determined by the amount of calcium, phosphorous and other minerals they contain.

As we get older, we are more likely to develop bone problems.²⁵ Older women are at higher risk than older men of developing osteoporosis, a condition that causes bones to become thin and fragile, and more prone to breaking, particularly bones in the hip, spine and wrist.

This is partly because women have 30 per cent less bone mass than men. Women are particularly vulnerable to osteoporosis after menopause, when the hormone estrogen—key to maintaining bone strength in women—is no longer produced by the ovaries. On the other hand, HIV appears to cause more bone loss in men than in women, cancelling out or even reversing the advantage that men usually have.

People living with HIV are at increased risk of some bone disorders, whether or not they are on treatment. Research suggests that up to two-thirds of people living with HIV may have reduced bone mineral density, or osteopenia/osteoporosis. In a meta-analysis of cross-sectional studies, the prevalence of osteoporosis was more than 3 times more common in HIV-positive people compared with HIV-negative people.²⁶

There are probably multiple factors causing the higher risk of osteoporosis in HIV-positive women and men, with possible contributions from antiretroviral therapy, HIV infection itself, and other factors like smoking, getting little or no exercise, and a family history of osteoporosis.²⁷

Osteopenia: a reduction in bone mineral density that may lead to osteoporosis

Osteoporosis: thinning and weakening of the bones that may cause fractures

People living with HIV are at increased risk of some bone disorders, whether or not they are on treatment.



Early menopause

For most women, menopause occurs between the mid-40s and early 50s. During the years before and after menopause—which is called perimenopause—the production of the female hormones estrogen and progesterone declines, eventually causing menstruation (periods) to stop completely.²⁸

Menopause appears to occur earlier in some women living with HIV.⁸ Low CD4 counts (indicating poor immune function) may be associated with earlier menopause. History of intravenous drug use and ethnicity may also contribute to this phenomenon among both HIV-positive and HIV-negative women.²⁹

Menopause, HIV infection and anti-HIV drug side effects may produce similar symptoms.⁸ This can make it difficult to determine the cause of symptoms and can result in a missed or late diagnosis of HIV. These symptoms include:²⁸

- changes in the menstrual cycle
- hot flashes
- night sweats
- skin and hair changes
- trouble sleeping
- forgetfulness
- fatigue
- emotional changes or mild depression

Menopause brings with it an increased risk of many health problems, such as osteoporosis, heart disease, cancer of the breast, lung or ovaries, and other conditions.



Liver

As HIV-positive people live longer and opportunistic illnesses become less common due to effective treatment, liver disease and other major organ diseases have become an important cause of illness and death among HIV-positive people. In a ten year study (1996-2006), liver disease accounted for 7% of all deaths with known causes among a large cohort of people living with HIV.³⁰

Liver disease among people living with HIV is often related to hepatitis B virus (HBV) and/or hepatitis C virus (HCV) coinfection. Excess alcohol consumption, the effects of metabolic syndrome on the liver, and the toxicity of antiretroviral drugs may also play a role.³¹



Diabetes occurs when the pancreas cannot make enough insulin or does not respond appropriately to the insulin that is produced. Insulin is a hormone produced by the pancreas to control the amount of sugar or glucose in the blood.³²

As people living with HIV age, their chances of getting Type 2 diabetes increases, as it does with the HIV-negative population.³³

The role of HIV treatment in the development of Type 2 diabetes is still being researched. Some anti-HIV drugs—especially some of the older ones—have been associated with an increased risk of diabetes. The risk of developing diabetes as a side-effect of HIV treatment is lower with the drugs used today.

Among HIV-positive people, aging, length of time living with HIV, poor immune function, high viral load, high body mass index, poverty, co-infection with hepatitis C, low levels of growth hormone, fat redistribution in the body and certain anti-HIV treatments can all contribute to metabolic syndrome, a collection of risk factors which increase the risk of diabetes.³⁴



People living with HIV can have a healthy and satisfying sex life. It can reduce stress, express intimacy and simply feel good.

Sexual changes and low libido (low sex drive) can occur in men and women, especially as they get older.³⁵ This can be a sensitive issue that gets ignored. A low sex drive can be the result of HIV, the side effects of drugs,³⁶ hormone imbalances (including low testosterone in women and men³⁷), heart disease, diabetes, stress or depression.³⁸ It's important to talk to a doctor about sexual changes because chances are something can be done about them.

It is also important to take steps to prevent getting or passing sexually transmitted infections (STIs). People living with HIV are at greater risk of acquiring STIs and, if they get one, the symptoms may be more severe. While being sexually active, it's a good idea to get tested regularly for STIs, such as gonorrhea, chlamydia and syphilis. Using condoms greatly reduces the risk of passing HIV to a partner,³⁹ and also protects you from sexually transmitted infections like gonorrhea and chlamydia. Keep in mind, though, that condoms do not protect you from all STIs. Take steps to protect yourself and your sex partner(s).

People living with HIV can have a healthy and satisfying sex life. It can reduce stress, express intimacy and simply feel good.

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