

# because you asked

## New infection breakdown

Which population groups in Canada are most affected by new HIV infections today?

**Dr. Chris Archibald replies:** The groups most affected by HIV in Canada are men who have sex with men (MSM), injection drugs users (IDU), and a diverse group of people exposed through heterosexual contact. The Public Health Agency of Canada has recently estimated that between 2300 and 4500 new HIV infections occurred in Canada in 2005. MSM continue to comprise the greatest number of new infections at an estimated 1100 to 2000 or 45% of the total. Between 950 and 1650 new infections (37% of the total) occurred as a result of heterosexual exposure. And between 350 and 650 or 14% of new infections occurred in IDUs. People who were both MSM and IDU accounted for between 70 and 150 new infections or 3% of the total.

The heterosexual exposure category is diverse and may be further separated into people born in countries where HIV is very prevalent (mainly sub-Saharan Africa and the Caribbean) and people born in countries where it's less prevalent (mainly Canada). People from high-prevalence countries infected through heterosexual contact are over-represented in Canada's HIV epidemic, with an estimated 400 to 700 new infections in 2005, or 16% of total infections, while according to the 2001 Census, only 1.5% of the Canadian population were born in a country with high HIV prevalence. The number of people infected through heterosexual exposure who weren't born in a high-prevalence country was between 550 and 950, or about 21% of the total new infections in 2005.



There were 620 to 1240 new HIV infections among women in 2005, representing 27% of all new infections; 76% of these new infections were attributed to heterosexual exposure and the remainder to IDU.

Aboriginal people are another group that's over-represented in Canada's HIV epidemic. They make up 3.3% of the Canadian population and yet comprised an estimated 200 to 400 (9%) of new HIV infections in 2005. The overall infection rate among Aboriginal people is about 2.8 times higher than among non-Aboriginal persons. Among Aboriginal people infected in 2005, 53% were IDU, 33% were infected through heterosexual exposure, 10% were MSM and 3% were MSM-IDU.

Approximately 58,000 Canadians were estimated to be living with HIV infection in 2005. This number is likely to increase as new infections continue to occur and survival improves due to new treatments.

## Progress on lipo

Is lipodystrophy still such a big problem with newer antiretrovirals?

**Dr. Sharon Walmsley replies:** Lipodystrophy is a term used to describe a syndrome of fat accumulation or loss that increases fat on the middle of the body (central hypertrophy) while causing fat loss in the limbs and face (lipoatrophy). In the first people taking HAART, lipodystrophy occurred in anywhere from 30-80%. Now almost 10 years after the initial reports of lipodystrophy, we still don't know exactly why the condition occurs.

Some ARVs are known to play a much bigger role in the syndrome, including d4T (Zerit™) and AZT (zidovudine, Retrovir®) for lipoatrophy and indinavir (Crixivan®) for central hypertrophy. Lipoatrophy is thought to be produced through the effect of the nucleoside reverse transcriptase inhibitor (NRTI) on mitochondrial DNA and, in test tube models, some drugs are more likely to cause damage than others. Newer agents such as abacavir (Ziagen®), lamivudine (3TC®), FTC and tenofovir (Viread® and also in Truvada®) are less likely to cause problems. A recent study in mice confirmed mitochondrial damage with AZT and d4T but not with 3TC, but this has not yet been proven in humans.

**Dr. Chris Archibald** has been Director of the division responsible for HIV/AIDS epidemiology and surveillance in the Centre for Infectious Disease Prevention and Control, Public Health Agency of Canada, Ottawa, since 1995. In addition to his national responsibilities, Dr. Archibald has worked on HIV/AIDS projects in Colombia, the Caribbean, Eastern Europe and South Asia and in support of the Centre's role as a UNAIDS Collaborating Centre.

**Dr. Sharon Walmsley** is Associate Professor of Medicine at the University of Toronto and Director of HIV Clinical Research at the University Health Network in Toronto.

**Dr. Valentina Montessori** is Director of the Immuno-deficiency Clinic and Co-Chair of the BC Therapeutic Guidelines Committee for the Treatment of HIV/AIDS. She practices in the Division of Infectious Diseases at St. Paul's Hospital, University of British Columbia.

A number of “switch studies” have shown small improvements in peripheral fat loss when either AZT or d4T have been switched to abacavir or tenofovir. The Gilead 934 study showed a loss of fat in those taking AZT/3TC compared to no loss in those taking tenofovir/FTC in the short term (48-96 weeks). A comparative study of atazanavir (Reyataz™) and efavirenz (Sustiva®) (both with an AZT/3TC backbone) showed similarly low rates of mild to moderate increase in weight and in central fat with either drug. The impact of ritonavir (Norvir®) boosting of atazanavir remains unknown.



## The unanswered question is whether these new combinations will NOT cause fat redistribution, will cause LESS fat redistribution or will only DELAY fat redistribution

I think we can be optimistic, based on evidence so far that lipodystrophy won't be as big a problem with the new ARVs. However, there's no guarantee that any combination will not lead to problems, and the role of individual patient genetics is unclear.

The unanswered question is whether these new combinations will NOT cause fat redistribution, will cause LESS fat redistribution or will only DELAY fat redistribution. We'll only find out the answer to this question by studying the combinations we use today, which we believe to be “lipodystrophy friendly,” over the long term.

### Liver and kidney effects

**How do HIV meds affect my liver and kidneys?  
Are some drugs less harmful than others?**

**Dr. Montessori replies:** The effects of antiretrovirals (ARVs) on the liver and kidneys are not yet completely understood. However, it's important to monitor liver and kidney function regularly with blood and urine tests to make sure they're not being compromised by the ARVs.

Many HIV medications cause changes in liver blood tests. Alanine aminotransferase (ALT) and aspartate aminotransferase (AST) are enzymes usually found in the liver itself. When the liver is irritated by an infection or a medication, these substances can reach high levels in the blood. We're especially careful with HIV medications in people who already have liver difficulties either from other infections (hepatitis B or C) or alcohol use. At the same time, we know

that people with weak immune systems have more difficulty with hepatitis infections. Most researchers now think that it's better to improve the immune system with HIV treatments in people with hepatitis B or C (and perhaps see some increase in liver blood tests) than to have them live with untreated HIV and weak immune systems.

There have been many studies trying to sort out which HIV medications are most likely to cause liver problems. Nevirapine (Viramune®) has been linked to quite severe liver problems and even liver failure, especially in women with CD4 counts greater than 250. In many other people, however, even those with hepatitis B or C, it's very well tolerated. Didanosine (DDI) and stavudine (D4T), when given together, appear to cause fat accumulation in the liver. While protease inhibitors (PIs) can affect the liver, no particular PI (except full dose ritonavir) is thought to be especially problematic.

The PI indinavir (Crixivan®) can cause kidney stones and chronic kidney problems if the drug is taken for a long time. This PI isn't used much any more and the newer PIs don't usually affect the kidney. More recently, tenofovir (Viread® and also in Truvada®) has been linked to abnormal blood and urine tests for kidney function, and rarely to severe kidney problems. Serious kidney problems with this drug are unusual except in people who are otherwise at risk for kidney disease, including those with diabetes, high blood pressure, hepatitis B or C, or who are taking other medications that are hard on the kidney. Like tenofovir, a number of the nucleosides (e.g. DDI, D4T, 3TC) are cleared by the kidneys, so people whose kidneys aren't working properly should take lower doses of these medications.

It's important to remember that although the medications may cause changes in the liver and kidney tests, these changes are rarely life-threatening and most doctors believe the benefits of treatment (improvement in the immune system and protection against AIDS and death) are much greater than the negative effects on liver and kidney. **R**