

# CATIE STATEMENT

**on the use of antiretroviral treatment (ART)  
to maintain an undetectable viral load as a  
highly effective strategy to prevent the sexual  
transmission of HIV**

*The consistent and correct use of antiretroviral treatment (ART) by people living with HIV to maintain an undetectable viral load is a highly effective strategy to prevent the sexual transmission of HIV. When this strategy is used consistently and correctly the risk for HIV transmission is negligible.*

*Negligible = so small or unimportant as to be not worth considering; insignificant.*

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Canada's source for  
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*Over the past several years the HIV prevention toolbox has expanded significantly. This is due to a rapid growth in our knowledge of effective approaches that help prevent the transmission of HIV. However, to maximize the impact on the HIV epidemic, we must effectively increase awareness, uptake and proper use of these approaches.*

The CATIE statements summarize the best available evidence on the effectiveness of three approaches to help prevent the sexual transmission of HIV. These statements were developed to help service providers in Canada adapt their programs and incorporate this evidence into their messaging.

There are three highly effective strategies to reduce the risk of the sexual transmission of HIV:

- The consistent and correct use of antiretroviral treatment (ART) by people living with HIV to maintain an undetectable viral load
- The consistent and correct use of oral Truvada as pre-exposure prophylaxis (PrEP)
- The consistent and correct use of condoms

When any highly effective strategy is used consistently and correctly as part of a comprehensive plan for sexual health, the risk for HIV transmission ranges from very low to negligible.

The following statement focuses on the use of antiretroviral treatment (ART) by people living with HIV to maintain an undetectable viral load. A simple key message is followed by recommendations for service providers and a list of available tools and resources. A review of the evidence is also provided that service providers can use for more specific discussions around risk according to clients' needs. Please consult the companion statements for more information on the other two highly effective strategies.

#### **KEY MESSAGE**

The consistent and correct use of antiretroviral treatment (ART) by people living with HIV to maintain an undetectable viral load is a highly effective strategy to prevent the sexual transmission of HIV. When this strategy is used consistently and correctly the risk for HIV transmission is negligible.

Negligible = so small or unimportant as to be not worth considering; insignificant.

For more information, please see the evidence review at the end of this statement.

#### **RECOMMENDATIONS FOR SERVICE PROVIDERS**

In addition to improving the health of people living with HIV, it is now clear that ART also has important HIV prevention benefits when it is used to maintain an undetectable viral load. People working with communities at risk for or living with HIV have an important role to play in promoting this approach as a highly effective prevention strategy.

Below are recommendations on how you might better integrate the use of ART for prevention into your programming.

#### **Improve awareness of the use of ART to maintain an undetectable viral load as a highly effective HIV prevention strategy, including the factors important for maximizing its effectiveness.**

Any educational and counselling activities provided for HIV-positive and HIV-negative clients should include information on the prevention benefits of ART and an undetectable viral load and how to use it consistently and correctly.

Education and counselling activities should also include discussion of other prevention strategies such as, but not limited to, condoms and pre-exposure prophylaxis (PrEP). Encourage clients to choose the combination of strategies that will work most effectively for them.

It is important that clients – whether people living with HIV or those at risk for HIV – be given information and offered counselling about the use of ART to maintain an undetectable viral load as a highly effective strategy to prevent the sexual transmission of HIV. When talking to clients, you can explain to them that a body of evidence shows that people on ART who maintain an undetectable viral load and are engaged in care do not transmit HIV. Discussions should include the factors necessary for maximizing the effectiveness of this strategy. Emphasize that:

- Adherence to ART is essential for the achievement and maintenance of an undetectable viral load (defined as less than 40 or 50 copies of the virus per millilitre of blood) is dependent on the consistent daily use of antiretroviral therapy.
- It usually takes three to six months to achieve an undetectable viral load. A viral load test is the only way to know if the viral load has reached undetectable levels.
- Maintenance of a sustained undetectable viral load for at least six months is necessary for this approach to be effective. Regular viral load testing is the only way to monitor for a sustained undetectable viral load.
- Regular medical visits are required for ongoing care, including viral load monitoring.

When discussing with a client the use of ART to maintain an undetectable viral load, it is important to recognize that each client has the right to decide whether or not to take ART based on their own assessment of what is best for their health and well-being.

You can also lead or support efforts to improve awareness of the use of ART to maintain an undetectable viral load as a prevention approach among a range of service providers in your area including doctors, nurses, pharmacists and non-clinical staff at community-based organizations.

**Facilitate and support appropriate uptake of the use of ART to maintain an undetectable viral load as a prevention strategy.**

Several treatment guidelines now recommend the offer of ART to all people living with HIV, regardless of their CD4 count. This recommendation is based on the health benefits of starting ART early for people living with HIV, although an important secondary benefit is HIV prevention. If your client is HIV positive, you should help the client link to HIV care if they are not already in care. The client's decision to start ART should be well-informed. ART requires a life-long commitment to daily pill-taking and regular visits with a healthcare provider. Facilitating informed decision-making for clients may require provision of services that support the doctor-patient relationship.

Support clients who are using ART with education about its consistent and correct use to maintain an undetectable viral load as a prevention strategy. You may have to deliver, or link clients to, interventions to support medication adherence and continued engagement in medical care. Encourage clients to have regular viral load testing if they want to use ART to maintain an undetectable viral load for prevention, in addition to the benefit to their own health. They should also discuss their viral load test results with their partner(s) on an ongoing basis (if possible).

Encourage and support clients to communicate openly with their sex partner(s). Clients may need support to disclose their HIV status to a sex partner. If a client is in a serodiscordant relationship, important discussion topics for the couple may also include whether there are sexual partners outside the relationship, and the results of viral load monitoring and sexually transmitted infection (STI) tests. Educating HIV-negative clients about HIV viral load and what it means to be undetectable may give them a better understanding of the concept of treatment as prevention.

**Encourage a comprehensive plan for sexual health.**

Discuss how the use of ART to maintain an undetectable viral load fits into a comprehensive plan for sexual health including regular STI testing and safer sex practices.

There are circumstances in which HIV transmission can occur when a person living with HIV is on ART. There is a risk of HIV transmission just after starting ART before the viral load becomes undetectable. There is also a risk of HIV transmission if treatment fails to maintain the positive partner's viral load at undetectable levels. This can be due to low treatment adherence, drug resistance, and drug toxicity. If this occurs, the person should discuss options with their doctor. However, studies show that the main risk of transmission to the HIV-negative partner comes from sexual partners outside a serodiscordant relationship, where highly effective prevention strategies may not be used.

It is important that clients understand these risks and the options available to them so they can make an informed decision about using ART as part of a comprehensive sexual health plan to further minimize the risk for HIV transmission over the long term. A comprehensive sexual health plan also helps to protect against STIs because ART does not provide any protection against STIs.

**Address underlying risk of HIV transmission.**

HIV prevention counselling offers an opportunity to engage individuals in additional services. You can help your clients address the underlying factors that may increase their HIV risk, such as depression or alcohol and other substance use; reinforce safer sex strategies; and facilitate the increased use of all appropriate prevention strategies. You may find that counselling alone is not enough. You may need to provide – or link clients to – appropriate and relevant support services.

**Offer comprehensive couples-based counselling.**

For couples, you may want to offer to counsel both partners in the relationship at the same time (couples-based counselling) as this may be more effective than counselling partners individually. Couples-based counselling can create a supportive space where clients can come to a consensual agreement on how to reduce their risk of HIV transmission, develop ways to support each other in using HIV prevention strategies consistently and correctly, and discuss potentially sensitive issues relevant to HIV prevention. Be prepared to discuss issues such as what a couple wants from sex and the type of sex they enjoy most; the desire for pleasure, intimacy, conception, and monogamy or non-monogamy; and disclosure of sex outside the relationship. This counselling can also support non-

monogamous clients to develop strategies or agreements to help prevent transmission of HIV or STIs from outside partners, such as the consistent and correct use of condoms for sex outside the relationship.

**Incorporate information about the use of ART to maintain an undetectable viral load as prevention into all prevention programming to increase its impact.**

In-person counselling is one way to convey information about ART as a highly effective prevention strategy. However, this information can be integrated into a variety of other communication channels, such as print publications, websites and campaigns to increase its reach and impact.

**Be prepared to discuss the legal issues around HIV disclosure.**

In Canada, people living with HIV may be charged with a criminal offence if they do not disclose their HIV-positive status before having sex that poses a “realistic possibility” of transmitting HIV. There are resources available to you and your clients to help you understand and discuss HIV disclosure and the law.

**TOOLS AND RESOURCES**

**CATIE resources**

HIV treatment and an undetectable viral load to prevent HIV transmission – Fact sheet

Undetectable viral load and HIV sexual transmission

Negligible Risk: Updated results from two studies continue to show that antiretroviral treatment and an undetectable viral load is a highly effective HIV prevention strategy – *CATIE News*

Insight into HIV transmission risk when the viral load is undetectable and no condom is used (overview of the PARTNER study) – *CATIE News*

Couples HIV testing and counselling – *Prevention in Focus*

**Guidelines, position papers and consensus statements**

Canadian Consensus Statement on the health and prevention benefits of HIV antiretroviral medications and HIV testing – CTAC, CATIE, [positivelife.com](http://positivelife.com)

Risk of sexual transmission of HIV from a person with HIV who has an undetectable viral load: Messaging primer – Prevention Access Campaign

Community Consensus Statement on access to HIV treatment and its use for prevention – AVAC, EATG, MSMGF, GNP+, HIV i-Base, the International HIV/AIDS Alliance, ITPC, NAM/aidsmap

Expert Consensus: Viral Load and Risk of HIV Transmission – Institut National de Santé Publique du Quebec (INSPQ)

Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations – World Health Organization (WHO)

**HIV disclosure**

Criminal law and HIV non-disclosure in Canada – Canadian HIV/AIDS Legal Network

HIV disclosure to sexual partners: Question and answers for newcomers (2015) – Canadian HIV/AIDS Legal Network

HIV disclosure and the law: What you need to know (2015) – Positive Women’s Network

Legal and clinical implications of HIV non disclosure: A practical guide for HIV nurses in Canada (2013) – CANAC (Canadian Association of Nurses in AIDS Care), CATIE

**EVIDENCE**

In people living with HIV, successful ART can reduce the amount of virus (viral load) in the blood and other bodily fluids to undetectable levels, usually within three to six months of starting treatment.<sup>1</sup> In Canada, an undetectable viral load is defined as fewer than 40 or 50 copies of the virus per millilitre of blood.

We know that the amount of HIV in the fluid of someone living with HIV is an important predictor of HIV transmission to an HIV-negative person after a sexual exposure. Research shows that a lower blood viral load is associated with a reduced risk of sexual HIV transmission.<sup>2</sup> This is because when the viral load in the blood decreases, it also decreases in the sexual fluids (semen, vaginal fluid and rectal fluid) that are commonly involved in the sexual transmission of HIV.<sup>3</sup>

The first study to conclusively show that ART has a prevention benefit was the randomized-controlled trial known as HPTN 052.<sup>4</sup> In this trial, interim results showed that treatment reduced the risk of HIV transmission by 96% among heterosexual serodiscordant couples who had mostly

vaginal sex. In the final analysis of HPTN 052, 78 HIV-negative partners became infected with HIV during the entire study.<sup>1,4</sup> However, none of these infections occurred when the HIV-positive partner was on treatment and had maintained an undetectable viral load. Genetic analysis of the virus from the previously HIV-negative partners showed that 26 of the 78 (33%) were infected by a sexual partner outside of the primary relationship, and 46 (59%) came from the HIV-positive partner with whom they enrolled in the study. Of the 46 HIV infections that originated from the HIV-positive partner that was enrolled in the study, only eight occurred when the partner was on ART.<sup>1,4</sup> However, despite being on ART the viral load of the HIV-positive partner was detectable in all eight cases. Four infections occurred within the first three months of the HIV-positive partner starting ART (before the viral load had become undetectable) and four occurred when the HIV-positive partner experienced a return of the viral load to detectable levels. Genetic analysis could not determine whether or not the viruses were linked for six of the 78 new infections. The results of HPTN 052<sup>4,5</sup> supported the findings from three previously conducted observational studies among heterosexual serodiscordant couples that ART is a highly effective HIV prevention strategy.<sup>6–8</sup>

Results from a large observational study known as PARTNER showed that ART and an undetectable viral load is a highly effective HIV prevention strategy for both heterosexual and same-sex male couples in the absence of other forms of HIV prevention (condoms, PrEP or PEP).<sup>9,10</sup> Overall, there were a large number of unprotected sex acts (no condoms, PrEP or PEP) when the viral load was undetectable – approximately 22,000 among gay couples and 36,000 among heterosexual couples enrolled in the study. By the end of the study, 11 of the HIV-negative partners had become infected with HIV (10 gay men and one heterosexual person). Genetic analysis of the virus from the previously HIV-negative partners showed that all 11 were infected by a sex partner outside of the relationship, and not by the HIV-positive partner with whom they enrolled in the study. This meant that there were no HIV transmissions between the couples enrolled in the study, despite the large number of unprotected sex acts between them.<sup>10</sup>

A preliminary analysis of an observational study similar to PARTNER, called Opposites Attract, also found no HIV transmission among serodiscordant same-sex male couples when the viral load was undetectable despite over 5,000 condomless anal sex acts.<sup>11</sup>

The results of these (and earlier) studies provide a strong body of evidence showing that people living with HIV who are adherent to ART and engaged in healthcare, and who have a sustained undetectable viral load have a negligible risk of sexually transmitting HIV. The PARTNER and Opposites Attract studies show this is true even when condoms are not used. Both of these studies are continuing to follow gay male serodiscordant couples to gather more data on unprotected sex.

There is one case study reported in the literature where sexual HIV transmission is suspected to have occurred in a couple where the HIV-positive partner likely had an undetectable viral load at the time of transmission.<sup>12</sup> This was an exceptional suspected case within a large body of evidence, and did not occur within the context of any of the large trials.

All study participants in the HPTN 052, PARTNER and Opposites Attract studies were engaged in ongoing healthcare services, including adherence counselling and regular medical care to monitor viral load. Partners in all three studies were also tested and treated for STIs on an ongoing basis and received prevention counselling, including free condoms. The risk reduction provided by ART may be lower for couples who do not receive similar appropriate supports. For example, in several observational studies of heterosexual serodiscordant couples where study investigators did not provide these additional services and supports, ART was not as effective at reducing the risk of HIV transmission.<sup>13</sup> In fact, in two studies, ART was less than 10% effective.<sup>14,15</sup> This is likely because many participants in these studies were not adherent to their medications.

While all of this evidence strongly supports the ability of ART to prevent HIV transmissions, this is contingent on the achievement and maintenance of an undetectable viral load. Achieving an undetectable viral load can take time – up to six months or more. HPTN 052 conducted an analysis to determine how long it takes to achieve an undetectable viral load. In HIV-positive participants on ART the cumulative percentage of participants who achieved an undetectable viral load by three, six, nine and 12 months were 76%, 87%, 90%, and 91%.<sup>1</sup> Maintenance of an undetectable viral load over time is also critical; however, treatment can fail to maintain the viral load at undetectable levels due to low treatment adherence, drug resistance, or drug toxicity. When treatment fails, a person won't know their viral load is detectable until their next viral load test. This time period between viral load tests may provide an opportunity for the transmission of HIV. A change in therapy or adherence support may be required to

suppress the viral load if treatment failure does occur. The best options for moving forward should be discussed with a doctor.

Several studies show that STIs can increase the risk of HIV transmission, but these studies did not measure the viral load of the HIV-positive partner.<sup>16</sup> Evidence from the PARTNER study suggests that STIs may not impact transmission in the context of an undetectable viral load – having an STI was not associated with HIV transmission in this study. However, regular STI testing and treatment should be part of any comprehensive sexual health plan.

Based on studies that looked at people who were on ART and had an undetectable viral load, we conclude that the consistent and correct use of ART to maintain an undetectable viral load is a highly effective strategy to prevent the sexual transmission of HIV.

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## DISCLAIMER

Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about HIV- and hepatitis C-related illness and the treatments in question.

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