

Pre-exposure prophylaxis (PrEP)

Summary

Pre-exposure prophylaxis, or PrEP, is a way for an HIV-negative person who is at risk of HIV infection to reduce their risk of becoming infected with HIV. It involves taking anti-HIV drugs on a regular basis. PrEP has not been approved by Health Canada; however, one type of PrEP (daily oral Truvada pills) has been approved in the United States. This form of PrEP may be available in Canada from doctors who are willing to prescribe it “off-label.” The use of daily Truvada as PrEP is highly effective if taken every day and is less effective if pills are not taken daily. PrEP may be less effective if sexually transmitted infections are present.

What is PrEP?

PrEP involves an HIV-negative individual taking anti-HIV drugs in an effort to reduce their risk of becoming infected with HIV. A person at risk of infection needs to take anti-HIV drugs on a regular basis—starting before being exposed to HIV and continuing afterwards. A person using PrEP needs to take the drugs as directed by their healthcare provider. They also need to commit to regular doctor’s appointments, so that any side effects can be monitored and they can be tested for HIV and other sexually transmitted infections (STIs). PrEP use should also be combined with ongoing adherence and risk-reduction counselling.

There are several types of PrEP being investigated. PrEP drugs may be available in a variety of formats, including pills (oral PrEP), a vaginal/rectal gel (topical PrEP), or injections.

The drugs may need to be taken every day, or before and after sex, or intermittently (once or twice a week).

Does PrEP work?

Only one form of PrEP has been approved for HIV prevention in the United States (although not in Canada). The approved form of PrEP is the use of a daily pill containing the anti-HIV drugs tenofovir and emtricitabine (known by the brand name Truvada). It has been approved for gay men and other men who have sex with men (MSM) and heterosexual men and women who are at risk of sexual transmission of HIV.

The U.S. Centers for Disease Control and Prevention (CDC) has developed guidelines for the prescription of daily Truvada as PrEP to MSM, heterosexual men and women, and

people who use injection drugs who are at “substantial” risk of HIV infection. Research suggests this type of PrEP can reduce the risk of HIV infection by over 90% if taken every day. Adherence is crucial for oral PrEP to work and PrEP may be less effective if STIs, such as gonorrhea or chlamydia, are present.

Many other forms of PrEP are in different stages of research. There are studies looking at the safety and effectiveness of a particular type of PrEP (such as pills or gels) in a specific population (such as gay and bisexual men, people who use injection drugs, or heterosexual men and women). Some types of PrEP have been found to be effective at reducing the risk of HIV transmission for specific populations. The research findings for each form of PrEP are summarized below.

Pills (oral PrEP)

In some research studies, HIV-negative people have been asked to take an anti-HIV pill every day to see if it will provide some protection against HIV infection. This type of PrEP is similar to the birth control pills women take daily to prevent pregnancy or the medications people travelling to certain tropical countries take daily to prevent malaria. These studies suggest that certain forms of daily oral PrEP can reduce the sexual transmission of HIV for HIV-negative men and women, including gay and bisexual men, and heterosexual men and women. Oral PrEP has also been found to reduce the risk of HIV transmission for people who use injection drugs.

In one study, HIV-negative gay and bisexual men who were asked to take an anti-HIV pill (Truvada) every day reduced their overall risk of HIV infection by 44%. Men who said they took the pill more consistently reduced their risk by as much as 73%. Additional analysis suggests the level of protection may be even higher (over 90%) among those who took Truvada every day, as determined by drug levels in the blood. In other studies, the same PrEP strategy (daily Truvada) provided similar

levels of protection for heterosexual men and women. An anti-HIV pill containing tenofovir alone was also found to be effective for heterosexual men and women and people who use injection drugs.

Surprisingly, two studies found that an anti-HIV pill (Truvada) taken every day *did not* work for women. However, women in these studies were not taking PrEP consistently.

One research study has evaluated the intermittent, “on demand” use of Truvada pills. This study asked MSM to take an initial dose of two Truvada pills (at the same time) two to 24 hours before sex, another pill 24 hours after the initial dose, and another pill 24 hours after the second dose. This strategy reduced the risk of HIV infection by 86%. However, it is important to note that gay men in the study reported having frequent sex and taking an average of four pills a week. This strategy is not currently recommended by any regulatory bodies and may not work for men who have sex less often, as frequent dosing may be important to maintain high levels of drug in the body.

Vaginal gels (topical PrEP)

Other research studies are looking at gels that contain anti-HIV drugs. One study found that HIV-negative women who applied an anti-HIV gel (containing tenofovir) into the vagina before and after sex reduced their risk of infection by 39%. Women who applied the gel more consistently reduced their risk of infection by as much as 54%. Surprisingly, another study found daily use of the same gel did not work for women. However, women in this study were not using the gel consistently. This gel has not been approved by any regulatory agencies and is not available in Canada.

More studies are needed to determine if a vaginal gel works and to determine whether the gel would work if used rectally.

Long-lasting injections and intravaginal rings

Small research studies are investigating long-lasting forms of PrEP, such as injections and intravaginal rings, which would only need to be used monthly. It will be several years before large studies are conducted to determine whether these forms of PrEP work.

Is PrEP a “morning-after” pill for people accidentally exposed to HIV?

No. With PrEP, a person will need to recognize that they are at risk of infection and begin taking anti-HIV drugs on a regular basis *before* an exposure occurs.

For people who may have been accidentally exposed to HIV (at work or through unprotected sex, for example), there is another prevention method called *post-exposure prophylaxis* (PEP). With PEP, an HIV-negative person needs to start taking a combination of anti-HIV drugs as soon as possible (within 72 hours) *after* a potential exposure to HIV and must continue taking the drugs every day for four full weeks.

It is easy to confuse PEP and PrEP because they both involve the use of anti-HIV drugs by HIV-negative people to prevent HIV infection. PEP is only meant to reduce the risk of HIV infection from a single exposure to HIV while PrEP can reduce the risk of HIV infection from multiple, ongoing exposures to HIV.

Is PrEP intended to replace condoms and other ways of preventing HIV?

Guidelines generally recommend that PrEP be used in combination with condoms. This is because PrEP is not 100% effective against HIV infection. Using other prevention methods, such as condoms and new needles, in combination with PrEP will help to reduce the overall risk of infection with HIV, particularly if PrEP is not being used consistently and correctly. While guidelines recommend PrEP be used in combination with condoms, PrEP can still be effective at reducing the risk of HIV infection when condoms are not used.

Condoms are also recommended because PrEP does not protect against other STIs, such as gonorrhea, chlamydia or syphilis, or other infections that are transmitted by sharing injection drug use equipment, such as hepatitis C. This means that it will still be possible for a person using PrEP to become infected with hepatitis C and other STIs. Further, STIs may increase the risk of HIV infection while taking PrEP. Guidelines recommend that PrEP be combined with regular STI testing and (if necessary) treatment to reduce the potential impact of these infections on health and further HIV/STI transmission.

What are the advantages of PrEP?

PrEP provides an additional prevention method that can be used in combination with other prevention strategies to help protect a person from HIV infection.

Although PrEP is not intended to replace other methods for HIV prevention, it can provide an alternative form of prevention for those who do not use condoms or new needles regularly. For example, PrEP may provide another method of protection for those who are unable to negotiate condom use with their partner(s), people in serodiscordant relationships (where one partner is HIV negative and the other is HIV positive) who wish to conceive a child, people who inject drugs but are not able to obtain new needles, or other people who have difficulty using condoms consistently for whatever reason.

What are some of the safety concerns associated with PrEP?

Drug resistance

A person could develop drug resistance if they are HIV positive (and don't know it) when starting PrEP or they become HIV positive while taking PrEP. Once a person's HIV becomes resistant to the PrEP drugs, those same anti-HIV drugs may not work for treating their HIV.

A person who uses PrEP needs to follow the medication schedule that their doctor recommends. If the schedule is not followed—if a person misses too many doses or experiments with another schedule—then the risk of becoming infected and developing drug resistance can increase.

A person using PrEP also needs to get tested for HIV on a regular basis. If a person using PrEP becomes infected with HIV, their use of PrEP will need to be discontinued as soon as possible, to reduce the risk of drug resistance developing. It is also important to ensure that a person is HIV negative before they start PrEP. Research shows the risk of developing drug resistance is very high if a person is already HIV positive when starting PrEP.

Side effects

Anti-HIV drugs cause side effects, which may negatively affect a person's quality of life and ability to adhere to their medication schedule. Although the drugs selected for PrEP studies are generally better tolerated than other drugs used to treat HIV, they are still capable of causing mild to severe side effects. Some of the possible side effects include nausea, vomiting, diarrhea, headache and dizziness. PrEP may also cause decreases in kidney function and bone density. However, research suggests that side effects while using daily Truvada as PrEP are generally mild and uncommon, although the long-term effects of using PrEP are less well known.

Now that studies have found that PrEP can reduce the risk of HIV infection, *where and when* will people be able to get it?

The anti-HIV drugs used for PrEP must be prescribed by a doctor, who can provide them in a safe and informed way. However, it is difficult to predict if and when PrEP will be widely available from doctors. Currently, no forms of PrEP have been approved by Health Canada.

Although anti-HIV drugs have not been approved for the *prevention* of HIV (as PrEP), they have been approved for the *treatment* of HIV. Once a drug has been approved, it can be prescribed by doctors for other purposes. This practice is called “off-label” use of prescription drugs. Some forms of PrEP, such as oral Truvada pills, can be prescribed by doctors in this way. In other words, oral PrEP is currently available from doctors in Canada who are willing to prescribe Truvada pills “off-label” for use as prevention.

Because of the high cost of anti-HIV drugs (Truvada as PrEP costs approximately \$800 a month), advocacy may be needed to get PrEP covered by provincial and territorial drug programs and ensure that people who need PrEP can access it. Currently, some private and public health insurance plans cover the cost of the drugs.

Obtaining anti-HIV drugs from other sources—from a friend, people at parties, or over the internet—may be dangerous. Anti-HIV drugs obtained from these sources may be fake, of poor quality or contain a different medication than expected.

Not all anti-HIV drugs and medication schedules may be appropriate for PrEP. Currently, only two anti-HIV drugs (there are more than 25 available) are known to be effective as PrEP and only if they are taken every day. Obtaining PrEP from a doctor will help ensure that a person is prescribed the right medications at a safe dose and provided with accurate information on how to use them safely and effectively. Incorrect use of anti-HIV drugs can cause serious, even life-threatening, reactions in some people. These drugs can also interact with other prescription drugs, recreational drugs and other substances. These interactions can be harmful, even when there are no symptoms. In rare cases, when not taken correctly, anti-HIV drugs have caused fatal overdoses.

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