

CATIE STATEMENT

on the use of condoms as a highly effective strategy to prevent the sexual transmission of HIV

The consistent and correct use of internal (sometimes referred to as female) or external (sometimes referred to as male) condoms are highly effective strategies to help prevent the sexual transmission of HIV. When this highly effective strategy is used consistently and correctly the risk for HIV transmission is very low.

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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 help prevent the sexual transmission of HIV:

- The consistent and correct use of condoms
- 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)

When any highly effective strategy is used consistently and correctly the risk for HIV transmission ranges from very low to negligible.

The following statement focuses on condoms. 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 with clients. Please consult the companion statements for more information on the other two highly effective strategies.

KEY MESSAGE

The consistent and correct use of internal (sometimes referred to as female) or external (sometimes referred to as male) condoms are highly effective strategies to help prevent the sexual transmission of HIV. When this highly effective strategy is used consistently and correctly the risk for HIV transmission is very low.

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

RECOMMENDATIONS FOR SERVICE PROVIDERS

Internal (sometimes referred to as female) condoms and external (sometimes referred to as male) condoms are an essential component of HIV prevention efforts and continue to have an important role to play in the prevention of HIV and sexually transmitted infections (STIs). 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 improve the uptake and use of condoms among your clients.

Improve awareness of condoms as a highly effective HIV prevention strategy, including the factors important for maximizing their effectiveness.

Any educational and counselling activities provided for HIV-negative and HIV-positive clients should include information on the HIV and sexually transmitted infection (STI) prevention benefits of condoms and on how to use them consistently and correctly.

Education and counselling activities should also include discussion of other prevention strategies such as, but not limited to, pre-exposure prophylaxis (PrEP) and the use of antiretroviral treatment (ART) to maintain an undetectable viral load. Encourage clients to choose the combination of strategies that will work most effectively for them.

Internal condoms can be promoted to your clients as an effective alternative to external condoms for both vaginal and anal sex.

It is important to remind clients of the correct use of condoms so they can prevent breakage, slippage and leakage during sex, and maximize condom effectiveness. The correct use of condoms means:

- finding an external condom with the right fit and feel
- storing condoms at room temperature and regularly replacing condoms that are kept in a wallet, purse or pocket
- checking the expiry date and making sure the packaging isn't damaged
- using a new condom for every act of vaginal or anal sex and considering using a condom for oral sex
- using a new condom with every sex partner or when sharing sex toys
- putting the condom on and taking it off correctly
- applying sufficient and appropriate lubrication – only water- or silicone-based lubricants should be used with latex condoms; saliva should not be used as lubrication

- using a condom for the entire act of sex (no delayed application or early removal)

The correct way to put on and take off an external condom is to:

- carefully open the packaging so the condom does not tear
- ensure the condom is put on the right way round
- pull back the foreskin of an uncircumcised penis
- squeeze the tip of the condom and roll it over the erect penis (to remove air and leave space for semen to collect) and ensure it is unrolled to the base of the penis
- immediately after sex, hold on to the condom while pulling the penis out of the vagina or anus
- carefully pull the condom from the penis only when there is no contact with the partner's body and take care that no semen spills out
- safely dispose of the condom

The correct way to put on and remove an internal condom is to:

- carefully open the packaging so the condom does not tear
- put lubricant on the outside of the closed end
- squeeze together the sides of the inner ring at the closed end of the condom and insert into the vagina or anus
- push the inner ring into the vagina or anus as far as it will go, with the outer ring lying outside the vagina or anus
- if the outer ring is pushed inside the vagina or anus, stop and put it back in the right place
- make sure the penis enters the condom and does not go between the condom and the wall of the vagina or rectum
- immediately after sex, slightly twist and pull the end of the condom to remove it, taking care not to spill any semen in the vagina or rectum
- safely dispose of the condom

Unlike most HIV prevention strategies, condoms can help to prevent STIs, such as gonorrhoea, chlamydia, herpes and syphilis, as well as unintended pregnancy. It is important to encourage condom use when there is an STI present or when there is a risk for STI transmission.

Facilitate and support uptake and use of condoms as a prevention strategy.

Condoms and lubricant should be made available (free, if possible) and offered to your clients during interactions

with them. Encourage clients to find a condom that has the right fit and feel for them and a lubricant that is compatible with the condom they have chosen. Explore barriers to the consistent and correct use of condoms and support clients to overcome them. Common barriers to consistent condom use may include difficulty negotiating their use, lack of availability at the time of sex, erectile dysfunction, reduced pleasure or intimacy, poor comfort, and latex allergies. Possible solutions to these barriers include planning ahead to ensure condoms are available, using lubricant, and finding a brand of external condom that works best for the person. The solution to latex allergies may be to use non-latex external condoms, or opt for an internal condom instead of an external condom. You may also want to encourage clients to seek medical advice for erectile dysfunction, especially if condoms interfere with their ability to get or maintain an erection during sex. Exploring barriers to condom use with clients (such as the relationship between condoms and intimacy or difficulties with condom negotiation) can facilitate a discussion about highly effective HIV prevention strategies other than condoms, such as the use of PrEP, for example.

Encourage a comprehensive plan for sexual health.

Discuss how condoms fit into a comprehensive plan for sexual health, including regular STI testing and other safer sex strategies.

When used consistently and correctly, condoms are a highly effective strategy to help prevent the sexual transmission of HIV.

There are circumstances in which condoms can fail to prevent HIV transmission. Condoms can fail to prevent HIV infection if they break, slip or leak, which can happen even if they are used correctly. Condoms also need to be used consistently in order to maximize effectiveness. It is important that clients understand this and the options available to them so they can make an informed decision about using condoms as part of a comprehensive sexual health plan to further minimize the risk for HIV and other STI transmission over the long term.

If a condom is not used or breaks, then post-exposure prophylaxis (PEP) is a possible option for clients to help prevent HIV from that exposure. For clients who rely on non-condom HIV prevention strategies (such as PrEP or the use of ART as prevention), encourage condom use during periods of heightened HIV transmission risk, such as when PrEP medications are missed. Using condoms as part of a combination HIV prevention strategy can also help prevent STIs, which other highly effective strategies do not.

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 and condom use. 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 HIV or STIs from outside partners, such as the consistent and correct use of condoms when having sex outside the relationship.

Incorporate information about condoms into all prevention programming to increase its impact.

In-person counselling is one way to convey information about condoms 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 offense 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

Condoms for the prevention of HIV and STI transmission – Fact sheet

Condoms: Tried, tested and true? – *Prevention in Focus*

Condoms, PrEP, and the use of antiretroviral treatment to prevent HIV – webinar

Couples HIV testing and counselling – *Prevention in Focus*

Other resources

Condoms Unwrapped – AIDS Committee of Toronto (ACT)

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

The latex condom has been well studied in laboratory tests and it has been determined that latex is impermeable to HIV, meaning that HIV cannot pass through latex condoms.¹⁻⁴ Laboratory testing shows that polyurethane condoms are also impermeable to HIV.⁵ Evidence from safety and effectiveness data used for licensing condoms shows equivalent protection with nitrile and polyisoprene condoms.⁶⁻⁸ Condoms made of lambskin are not impermeable to HIV and should not be used as an HIV prevention strategy.⁴

Condoms are impermeable to HIV, but can fail to prevent exposure to HIV if they break, slip or leak during use. A break, slip or leak during condom use is known as condom failure and can happen even when used correctly. These factors can reduce the ability of condoms to prevent HIV transmission.

Breakage refers to a condom tearing during sex. In studies enrolling mostly heterosexual couples, breakage rates for external condoms ranged between 0.4% and 3.4%.⁹⁻¹² The breakage rate for internal condoms in one study was 0.1%.¹²

Slippage occurs when an external condom does not remain on the penis during sex or when an internal condom does not remain in the vagina or rectum during sex. Slippage rates for external condoms range from 0.63% to 1.1%.^{9–12} The slippage rate for internal condoms in one study was 5.6%.¹²

Leakage occurs when seminal fluid seeps out of the condom during or after sex. Leakage rates for external condoms range from 0.4% to 6.5%.¹³

Correct use of condoms means they are used with sufficient (and appropriate) lubricant, as this can decrease friction that can cause condom failure.^{14,15} Water- and silicone-based lubricants are safe to use with all condoms. Oil-based lubricants should not be used as they can compromise the integrity of latex and polyisoprene condoms and increase the risk of condom breakage.

In studies of condom breakage, slippage and leakage, it was not possible to know how many participants were actually using condoms correctly. However, research suggests that rates of condom failure decrease with more frequent condom use^{11,12,16} and the number of previous failure experiences.¹² This evidence all points to the conclusion that over time people learn to use condoms correctly and this reduces failure rates. However, failure is never reduced to zero, even for experienced condom users who use condoms consistently and correctly.

Condoms have not been evaluated for reducing HIV transmission risk in randomized-controlled trials, which are generally considered to produce the highest quality evidence. However, observational studies of external condoms have been conducted among serodiscordant couples (in which one partner is HIV positive and the other is HIV negative). Subsequent analyses (meta-analyses) of these studies attempted to combine their results to calculate a single estimate of condom effectiveness. The earlier analyses estimated the effectiveness of consistent condom use to be somewhere between 69% and 94%.^{17–19} In the most recent analysis, the rate of HIV transmission was 80% lower among heterosexual couples who reported *always* using external condoms compared to those who *never* used condoms.²⁰ A similar result (70% effectiveness) has been observed in observational studies of gay men and other men who have sex with men.²¹ No studies have evaluated the effectiveness of internal condoms in preventing HIV transmission during vaginal or anal sex.

However, these observational studies and meta-analyses don't tell us how effective condoms are when used consistently and correctly. There are three key factors that

limit our ability to know how effective condoms are when used consistently and correctly:

- The available studies did not measure whether condoms were used correctly. We know that incorrect use can lead to condom failure. If enough people did not use condoms correctly every time in these studies, this will result in a lower estimate of condom effectiveness than if condoms had been used correctly.
- The available studies also relied on self-reported condom use to determine if participants were consistent condom users. We know that participant self-reports in studies are an unreliable way of measuring certain types of behaviours, particularly those that are considered socially undesirable such as sex without a condom. If enough people over-reported consistent condom use this will result in a lower estimate of condom effectiveness than if condoms had actually been used consistently.
- Finally, all of these studies were observational, which means that people were not randomized to use condoms or not. Without randomization, the two groups (those that used condoms consistently and those that did not) may be different on some very important factors, other than condom use, that might better account for the low level of effectiveness found in these studies.

Based on the studies that assessed the mechanical properties of condoms (permeability, breakage, slippage and leakage) we conclude that condoms are a highly effective strategy to help prevent the sexual transmission of HIV when used consistently and correctly. However, observational studies suggest that a high level of effectiveness may be difficult to achieve for some people.

REFERENCES

1. Conant M, Hardy D, Sernatinger J, et al. Condoms prevent transmission of AIDS-associated retrovirus. *Journal of the American Medical Association*. 1986;255(13):1706.
2. Judson F, Ehret J, Bodin G, et al. In vitro evaluations of condoms with and without nonoxynol 9 as physical and chemical barriers against Chlamydia trachomatis, herpes simplex virus type 2, and human immunodeficiency virus. *Sexually Transmitted Diseases*. 1989;16(2):51–56.
3. Reitmeijer C, Krebs J, Feorino P, Judson F. Condoms as physical and chemical barriers against human immunodeficiency virus. *Journal of the American Medical Association*. 1988;259(12):1851–1853.

4. Van de Perre P, Jacobs D, Sprecher-Goldberger S. The latex condom, an efficient barrier against sexual transmission of AIDS-related viruses. *AIDS*. 1990;4(1):49–52.
5. Drew W, Blair M, Miner R, Conant M. Evaluation of the virus permeability of a new condom for women. *Sexually Transmitted Diseases*. 1990;17(2):110–112.
6. U.S. Food and Drug Administration. *Summary of safety and effectiveness data: FC2 female condom*. Available from: http://www.accessdata.fda.gov/cdrh_docs/pdf8/P080002b.pdf
7. SSL Americas. *Durex synthetic polyisoprene male condom Pre-market Notification 510(k) Summary*. Available from: http://www.accessdata.fda.gov/cdrh_docs/pdf7/K072169.pdf
8. Ansell Healthcare Products LLC. *Lifestyles lubricated polyisoprene latex male condom Pre-market Notification 510(k) Summary*. Available from: http://www.accessdata.fda.gov/cdrh_docs/pdf7/K070800.pdf
9. Walsh T, Frezieres R, Peacock K, et al. Effectiveness of the male latex condom: combined results for three popular condom brands used as controls in randomized clinical trials. *Contraception*. 2004;70(5):407–413.
10. Rosenberg M, Waugh M. Latex condom breakage and slippage in a controlled clinical trial. *Contraception*. 1997;56(1):17–21.
11. Messiah A, Dart T, Spencer B, Warszawski J. Condom breakage and slippage during heterosexual intercourse: a French national survey. French National Survey on Sexual Behavior Group (ACSF). *American Journal of Public Health*. 1997;87(3):421–424.
12. Valappil T, Kelaghan J, Macaluso M, et al. Female condom and male condom failure among women at high risk of sexually transmitted diseases. *Sexually Transmitted Diseases*. 2005;32(1):35–43.
13. Sanders SA, Yarber WL, Kaufman EL, et al. Condom use errors and problems: a global view. *Sexual Health*. 2012;9(1):81.
14. Gabbay M, Gibbs A. Does additional lubrication reduce condom failure? *Contraception*. 1996;53(3):155–8.
15. Smith AM, Jolley D, Hocking J, et al. Does additional lubrication affect condom slippage and breakage? *International Journal of STD & AIDS*. 1998;9(6):330–335.
16. Stone E, Heagerty P, Vittinghoff E, et al. Correlates of condom failure in a sexually active cohort of men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes*. 1999;20(5):495–501.
17. Weller SC. A meta-analysis of condom effectiveness in reducing sexually transmitted HIV. *Social Science & Medicine*. 1993;36(12):1635–1644.
18. Davis K, Weller SC. The effectiveness of condoms in reducing heterosexual transmission of HIV. *Family Planning Perspectives*. 1999;31(6):272–279.
19. Pinkerton S, Abramson P. Effectiveness of condoms in preventing HIV transmission. *Social Science & Medicine*. 1997;44(9):1303–1312.
20. Weller SC, Davis-Beaty K. Condom effectiveness in reducing heterosexual HIV transmission. *Cochrane Database of Systematic Reviews*. 2002. Available from: <http://doi.wiley.com/10.1002/14651858.CD003255>.
21. Smith DK, Herbst JH, Zhang X, Rose CE. Condom Effectiveness for HIV Prevention by Consistency of Use among Men Who Have Sex with Men (MSM) in the U.S. *Journal of Acquired Immune Deficiency Syndromes*. 2015;68(3):337–344.



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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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