Condoms, PrEP, and the use of ART to prevent the sexual transmission of HIV: Overview of the science and recommendations for service providers

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Overview

1. Internal and external condoms

2. Oral pre-exposure prophylaxis (PrEP)

3. The use of antiretroviral treatment (ART) and an undetectable viral load
Internal and external condoms
What are internal and external condoms?

- Condoms are barriers that prevent vulnerable parts of the body from coming into contact with HIV.

- Materials used to make most condoms (latex, nitrile, polyurethane, polyisoprene) are impermeable to HIV.

- Types of condoms
  - External and internal.

- Cornerstone of past and current HIV prevention efforts.
How well do condoms work for preventing HIV?

- Biological rationale for 100% effectiveness if condom does not break, slip, or leak
  - Failure rates of condoms range from 0.4-3.4% (breakage), 0.6-1.1% (slippage), and 0.4-6.5% (leakage)
  - Incorrect use of condoms is common
  - Correct use of condoms can reduce rates of breakage, slippage, and leakage
How well do condoms work for preventing HIV?

- Several observational studies have evaluated effectiveness of consistent external condom use
  - Heterosexual serodiscordant couples
    - Three early meta-analyses estimated 69-94%
    - Latest meta-analysis estimated 80%
  - Gay men and other MSM
    - Similar level of effectiveness (70%)

- Observational studies of condoms have limitations
  - Inconsistent use, incorrect use, lack of randomization

- Internal condoms have not been evaluated for their effectiveness against HIV infection
Summary - internal and external condoms

- Condoms can reduce the risk of HIV transmission by 90% or more when used consistently and correctly.

- For many people, effectiveness against HIV infection is lower than 90%.

- Service providers can play an important role in improving uptake and consistent and correct use.
Recommendations for service providers

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

   • Finding an external condom with the right fit and feel
   • Using a new condom for every act
   • Applying sufficient and appropriate lubrication
   • Using condom for entire act of sex
   • Putting the condom on and taking it off correctly
Recommendations for service providers

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

- Offer condoms to clients
- Explore – and help clients overcome – barriers to consistent and correct use
Summary - internal and external condoms

- Condoms can reduce the risk of HIV transmission by 90% or more when used consistently and correctly.

- For many people, effectiveness against HIV infection is lower than 90%.

- Service providers can play an important role in improving uptake and consistent and correct use.

- Advantages and disadvantages of condoms.
Oral pre-exposure prophylaxis (PrEP)
What is oral PrEP?

• Ongoing **daily use of Truvada** by HIV-negative individuals, starting before an exposure and continuing after

• **Regular visits with a service provider** to test for HIV/STIs, monitor side-effects and toxicity, and provide risk-reduction and adherence support

• CDC and WHO recommend offer of PrEP to people at **“high-risk” of HIV infection**

• **Approved** by the FDA in the United States
How well does daily oral PrEP work?

• **Several RCTs** have found that the daily use of Truvada works for multiple populations;
  - heterosexual men and women
  - gay men and other men who have sex with men
  - people who use injection drugs

• The overall reduction in HIV risk provided by PrEP in these studies ranged from **0 to 75%**
  - Varying levels of adherence responsible for wide range
  - Adherence so low in two studies of heterosexual women that PrEP provided no protection
How well does daily oral PrEP work?

- Additional analyses suggest that the **consistent use of PrEP** can reduce the risk of HIV infection by **90% or more**

- No evidence showing PrEP works less well for one sex compared to the other when used consistently
How well does daily oral PrEP work?

• Evidence from ‘open label’ studies support high effectiveness

  • iPrEX open-label extension
    • No HIV infections among gay men and other MSM taking 4 or more pills a week (reduced HIV risk by at least 86%)

  • PROUD study
    • Overall HIV risk-reduction of 86% among gay men and other MSM

• Partners PrEP
  • “PrEP as a bridge to ART” estimated to reduce HIV transmission risk among serodiscordant heterosexual couples by 96%
Does intermittent oral PrEP work?

• iPERGAY study
  • RCT among gay men and other MSM in France and Montreal
  • Evaluated an event driven, “on demand” Truvada strategy

**PrEP strategy reduced risk of HIV infection by 86%**
(Men took an average of 4 pills per week)

• Supports evidence from other studies suggesting occasional missed pill may not have large impact for gay men
How safe is PrEP?

- PrEP *increased risk* of side effects including diarrhea, nausea, headache, fatigue and dizziness

- Some participants experienced *small decreases* in kidney, liver and bone health

- Drug resistance was *generally rare*

- *Limited evidence* of risk compensation
Summary - oral PrEP

- Daily oral PrEP is currently available in Canada

- The daily use of Truvada as PrEP can reduce the risk of HIV transmission by 90% or more when used consistently and correctly

- For many people, effectiveness of PrEP against HIV infection may be lower than 90%

- Service providers can play an important role in improving uptake and consistent and correct use
Recommendations for service providers

1. Improve awareness of PrEP as a highly effective HIV prevention strategy, including the factors important for maximizing its effectiveness.

Emphasize that PrEP:

- should only be used by people who are HIV negative
- should only be accessed through a healthcare provider
- requires the daily use of a pill called Truvada
- requires that people should be screened for the hepatitis B virus before taking Truvada
- requires regular clinic visits with a healthcare provider every three months
Recommendations for service providers

2. Facilitate and support appropriate uptake and use of PrEP as a prevention strategy.

- Support clients to decide whether PrEP is right for them
- Be aware of – and develop partnerships with – local healthcare providers, clinics, health centres and demonstration/pilot projects that are willing to prescribe PrEP
- Support clients in talking to a healthcare provider and determining whether insurance can cover the cost
- Support consistent and correct use
Use of ART and an undetectable viral load as prevention
What is the use of ART as prevention?

• In addition to improving the health of people living with HIV, it is now clear that ART also has important HIV prevention benefits.

• The amount of virus (viral load) in the bodily fluids is the most important predictor of whether an exposure to HIV leads to infection.

• Successful ART can reduce the viral load in the bodily fluids to undetectable levels and this can dramatically reduce the risk of HIV transmission.
How well does the use of ART as prevention work?

- **Nine observational studies** have evaluated the prevention benefits of ART among heterosexual serodiscordant couples
  - Overall risk-reduction ranged from 0 to 92%
  - Meta-analysis estimate of 42%

- The **HPTN 052 RCT** conclusively demonstrated that ART has prevention benefits
  - Early initiation of ART reduced the risk of HIV transmission among heterosexual serodiscordant couples by 96%
How well does the use of ART as prevention work?

- **PARTNER study** interim analysis demonstrated that ART also has prevention benefits for MSM
  - Enrolled heterosexual and same-sex male serodiscordant couples
  - No HIV infections despite over 44,000 condomless anal and vaginal sex acts when viral load undetectable

- **Opposites Attract study** interim analysis also found no HIV infections among gay men in serodiscordant relationships
  - Over 5,000 condomless anal sex acts when viral load undetectable
How well does the use of ART as prevention work?

- Impact of STIs and viral load blips remains unclear

- All participants in the HPTN 052, PARTNER, and Opposites Attract studies were in stable relationships and engaged in regular care

- In the above studies, no HIV transmissions occurred between the couples when the viral load was undetectable
  - However, HIV infections did occur from sex outside of the main relationship
Summary - ART as prevention

- ART has prevention benefits

- ART and an undetectable viral load can reduce the risk of HIV transmission by 90% or more when used consistently and correctly

- For many people, the prevention benefits of ART may be lower than 90%

- Service providers can play an important role in improving uptake and consistent and correct use
Recommendations for service providers

1. Improve awareness of ART and an undetectable viral load as a highly effective HIV prevention strategy, including the factors important for maximizing its effectiveness.

Maximizing prevention benefit requires:

- an HIV-positive individual to have had an undetectable blood viral load (defined as less than 40 or 50 copies per ml of blood) for at least six months
- both sexual partners to have no untreated sexually transmitted infections (STIs).
Recommendations for service providers

2. Facilitate and support appropriate uptake and use of ART as a prevention strategy.

• Support client decisions related to ART initiation
• Link clients to HIV care, if needed
• Support clients on ART with consistent and correct use
• Encourage and support clients to communicate openly with their sex partners (viral load and STI test results, outside sex partners, disclosure of HIV status)
Additional recommendations for service providers related to condoms, PrEP, and use of ART as prevention
Recommendations for service providers

3. Encourage combination prevention methods.

4. Address underlying risk of HIV transmission.

5. Offer comprehensive couples-based counselling.

6. Incorporating information into all prevention programming will increase its impact.

7. Be prepared to discuss the legal issues around HIV disclosure.
Thank you!