

# Counselling Discordant Couples on HIV sexual transmission risk

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## **This presentation will:**

- Review important items to consider when counseling on HIV transmission risk using cases & science

# Simple format – 1. 2. 3.

- Items to consider for counseling on unprotected intercourse between serodiscordant couples:
  1. Purpose: a. Reproduction versus b. Pleasure
    - i.e. number of exposures
  2. Heterosexual vs. same-sex male or female couple
    - i.e. anal vs. vaginal vs. oral vs. other exposure  
1:20      1:1,000      1:10,000
  3. HIV+ partner taking ART with fully suppressed Viral Load?
    - ART being used? For how long? VL suppressed? For how long?

# Complicated items - counseling

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- Single partner or both together?
- How long have the partners been together?
- Status of relationship?
- First language?
- Prior knowledge of the issues at hand? – studies to date, criminalization issues
- Knowledge of HIV?
- .... Other issues?

# Case #1\*

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- 38 year old HIV-positive man with 40 year old HIV-negative common-law wife
- Looking to get pregnant and have child
  - Wants to get pregnant in next 6 months
- Asking about options for conception to prevent horizontal HIV transmission

# Case #2

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- 48 year old HIV-positive man recently married to 49 year old HIV-negative man
- HIV-positive partner on ART, fully suppressed VL for 3 years
- In my office for a change of treatment, blood work; and asks by the way - want to know risk of HIV transmission if they have unprotected sex

# Case #1

- Serodiscordant couple looking to get pregnant and have child
  1. Purpose: Reproduction -> limited no. of exposures
  2. Type of exposure: vaginal
  3. HIV-positive partner is taking ART with fully suppressed VL for 3 years
  
- Review CHPPG, conception options
- HPTN 052 results
- My team's Systematic Review results
- New results on topic

Take approx.  
30-45 min.

# Canadian HIV Pregnancy Planning Guidelines

## SOGC CLINICAL PRACTICE GUIDELINE

No. 278, June 2012

# Canadian HIV Pregnancy Planning Guidelines

These guidelines have been written and reviewed by the Canadian HIV Pregnancy Planning Guideline Development Team in partnership with the Society of Obstetricians and Gynaecologists of Canada, the Canadian Fertility and Andrology Society and the Canadian HIV/AIDS Trials Network. They were reviewed by the Infectious Diseases Committee and the Reproductive Endocrinology and Infertility Committee of the Society of Obstetricians and Gynaecologists of Canada and by the Canadian HIV Pregnancy Planning Guideline Development Team Core Working Group,\* and endorsed by the Executive and Council of the SOGC.

### PRINCIPAL AUTHORS

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**Outcomes:** Intended outcomes are (1) reduction of risk of vertical transmission and horizontal transmission of HIV, (2) improvement of maternal and infant health outcomes in the presence of HIV, (3) reduction of the stigma associated with pregnancy and HIV, and (4) increased access to pregnancy planning and fertility services.

**Evidence:** PubMed and Medline were searched for articles published in English or French to December 20, 2010, using the following terms: "HIV" and "pregnancy" or "pregnancy planning" or "fertility" or "reproduction" or "infertility" or "parenthood" or "insemination" or "artificial insemination" or "sperm washing" or "IVF" or "ICSI" or "IUI." Other search terms included "HIV" and "horizontal transmission" or "sexual transmission" or "serodiscordant." The following conference databases were also searched: Conference on Retroviruses and Opportunistic Infections, International AIDS Conference, International AIDS Society, Interscience Conference on Antimicrobial Agents and Chemotherapy, the Canadian Association of HIV/AIDS Research, and the Ontario HIV Treatment Network Research Conference. Finally, a hand search of key journals and conferences was performed, and references of retrieved articles



# Items for counseling from CHPPG

Case Issues	CHPPG Guidance
1. Prevention of Vertical Transmission	<ul style="list-style-type: none"><li>▪ No risk of transmission since female partner is HIV negative</li><li>▪ If mother seroconverts in pregnancy → high risk of transmission</li></ul>
2. Healthy Pre-Conception	<ul style="list-style-type: none"><li>▪ Counsel on taking folic acid 3 months before pregnancy and during pregnancy</li></ul>
3. Fertility	<ul style="list-style-type: none"><li>▪ If the individual or couple has infertility guidelines indicate treatment as usual (general population guidelines)</li></ul>
4. Prevention of Horizontal Transmission	<ul style="list-style-type: none"><li>▪ Review all options &amp; continuum of risk</li><li>▪ Couple to make informed decision of best choice for them</li></ul>

# 1) HIV+ man and HIV- woman

Review all different options for insemination & continuum of risk including:

- Unprotected intercourse (on ART, full viral suppression)
- **Unprotected intercourse with timed ovulation (on ART, full viral suppression)**
- **Sperm washing with IUI (in fertility clinic)**
- Other: IVF, ICSI, sperm donor, adoption

**Sperm washing with IUI:** typically recommended by HCP due to lowest chance of horizontal transmission; All options after full understanding of risk

**Question: should we change the recommendations?**

## Randomized Control Trial

- Compare early (immediate) versus delayed (CD4 < 250) ART for HIV-1 positive patients having 350-550 CD4 and in stable sexual relationship with uninfected partner
  - Outcome: transmission to uninfected partner (linked)
- 893 couples in Early Therapy Arm; 882 couples in Delayed Therapy Arm
- 28 HIV-transmissions were linked: 27 in Delayed Arm; 1 in Early Arm (occurred at 3 months post-ARVs) (0.1 per 100 person-years) [HR 0.04 (CI 0.01-0.27); p<0.001] = 96% reduction of HIV transmission with ART (Note: 98% condom use reported in both arms)

# Objective of our Systematic Review

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- To systematically review observational studies and randomized controlled trials evaluating rates of sexual HIV transmission between heterosexual serodiscordant couples when the HIV-positive partner has full suppression on cART

## Our Systematic Review of Cohort Studies (5) + Controlled Trial (1)

Author (Date)	Study Location	# of Participants	HIV Transmission while on CART
Melo (2008)	Brazil	93	0
Del Romero (2010)	Spain	648	0
Reynolds (2011)	Uganda	250	0
Donnell (2010)	Botswana, Kenya, Rwanda, S. Africa, Tanzania, Uganda, Zambia	3381 analyzed out of 3408 total	1
Apondi (2011)	Uganda	62	1
Cohen (2011)	Botswana, Kenya, Malawi, S. Africa, Zimbabwe, Brazil, India, Thailand, USA	1763 analyzed out of 1775	2

# 4 Unconfirmed VL Transmissions

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## **Donnell et al. (2010)**

- 1 case of transmission out of 3381: HIV + woman with steadily declining CD4 counts transmitted the virus to HIV- male partner (confirmed through genetic testing)
- HIV + F was put on antiretroviral therapy 18 days before the 9 month mark of the study
- M tested negative at 9 month mark; however at the 12-month visit, he tested positive for HIV-1

## **Apondi et al. (2010)**

- 1 case of transmission out of 62, HIV + woman transmitted to HIV negative male partner (confirmed through genetic testing)
- Seroconversion occurred in the first year but VL not reported at 12 months in this study, only at 36 months

## **Cohen study et al. (2012)**

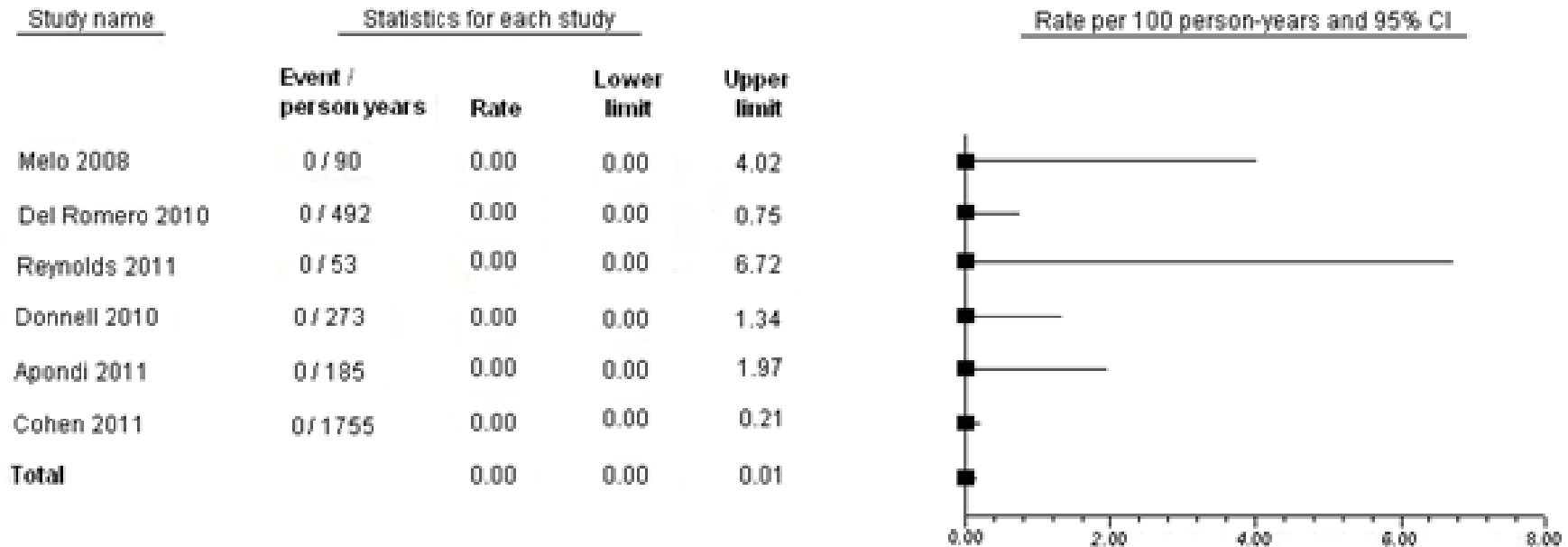
- Mastro et al.(2011) HIV-1 transmission case occurred within 3 months of partner starting ART
- Eshleman et al. (2011) 1 case of transmission on ART in delayed therapy group; 4 weeks after the start of ART

## **CONCLUSION**

**4 transmissions all occurred within 6-12 months of starting ART; VL likely not suppressed.**

**These transmissions should be removed via sensitivity analysis**

**Figure 2b. Forest plot of HIV transmission rates per 100 person-years, excluding unconfirmed viral loads**



The transmission rate excluding the 4 transmissions when VL was not confirmed = 0 per 100-person years (95% CI: 0-0.1) – interested in higher 95% CI

1 in 10,000 lifetime risk of HIV transmission for each year of a relationship

# PrEP as an option ...

## PrEP to prevent horizontal transmission in serodiscordant couples in which the man is HIV+ and the woman is HIV-

- No recommendation in CHPPG
- American Statement:
  - “PrEP use may be one of several options to help protect the HIV-negative partner in discordant couples during attempts to conceive” (CDC, 2012)

One clinical study on topic: Vernazza *et al.* AIDS 2011, 25:2005–2008

## In 2011, Vernazza *et al.* (Swiss group)

- HIV-positive males with female partners had VL < 50c/ml on ART and no report of STIs in either partner interested in conception
- PrEP involved 1 dose of tenofovir at LH peak and the morning afterward
- 46/53 couples agreed to use PrEP with unprotected timed intercourse
- Reported 244 documented unprotected events of vaginal intercourse in 53 couples who aimed to conceive
- 75% successful pregnancy rate (after an average of 6 cycles) (out of 53)
- None of the female partners had acquired HIV





Institute of Health Policy, Management & Evaluation  
UNIVERSITY OF TORONTO

# An economic evaluation of conception strategies for heterosexual serodiscordant couples with HIV-positive male partners

Michelle Letchumanan, MSc (PhD Student)  
Drs. Mona Loutfy and Peter Coyte (Co-supervisors)

4th International Workshop on HIV & Women  
13 January 2014, Washington DC, USA

# Objective & Methods

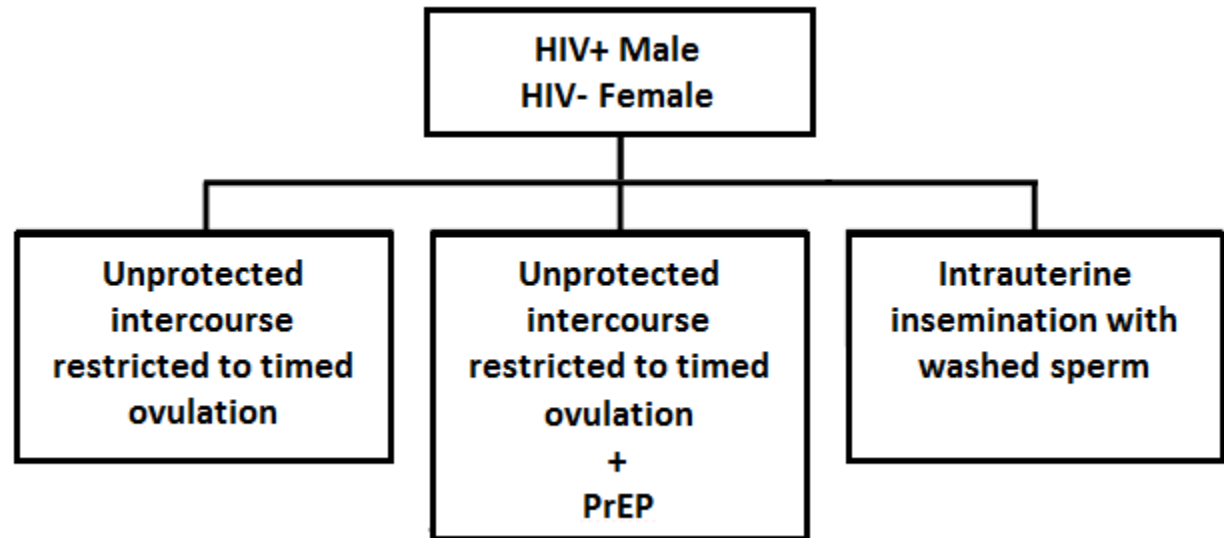
**Objective: determine which of 1) unprotected intercourse with timed ovulation (UITO), 2) UITO with PrEP (U-P) or 3) Sperm washing with IUI is most cost effective**

## Base Case Analysis

▶ **Hypothetical cohort**

- HIV-negative female partner is 30 years old and fertile
- HIV-positive male partner is fertile, cART for  $\geq 6$  months with viral load  $\leq 50$  copies/ml

▶ **The decision**



# Results

**Table 1. Base Case Analysis**

	<b>Costs, \$CND</b>	<b>QALYs</b>	<b>Incremental Costs, \$CND</b>	<b>Incremental QALYs</b>	<b>\$ per QALY gained</b>
UIRTO	1,319.00	15.56	-	-	Undominated
U-PrEP	1,757.00	15.41	438.00	-0.15	Dominated
IUIWS	16,229.00	15.24	14,910.00	-0.32	Dominated

# Case #2

- 48 year old HIV-positive man recently married to 49 year old HIV-negative man
  1. Purpose: Pleasure -> potential high no. of exposures
  2. Type of exposure: anal and oral
  3. HIV-positive partner is taking ART with fully suppressed VL for 3 years
- Review risk items, HPTN 052, PARTNERS study & our Systematic Review results
- International guidelines on the topic
- Other available data for Gay men

Take approx.  
30 min.

# New data ... hot THIS YEAR – CROI 2014

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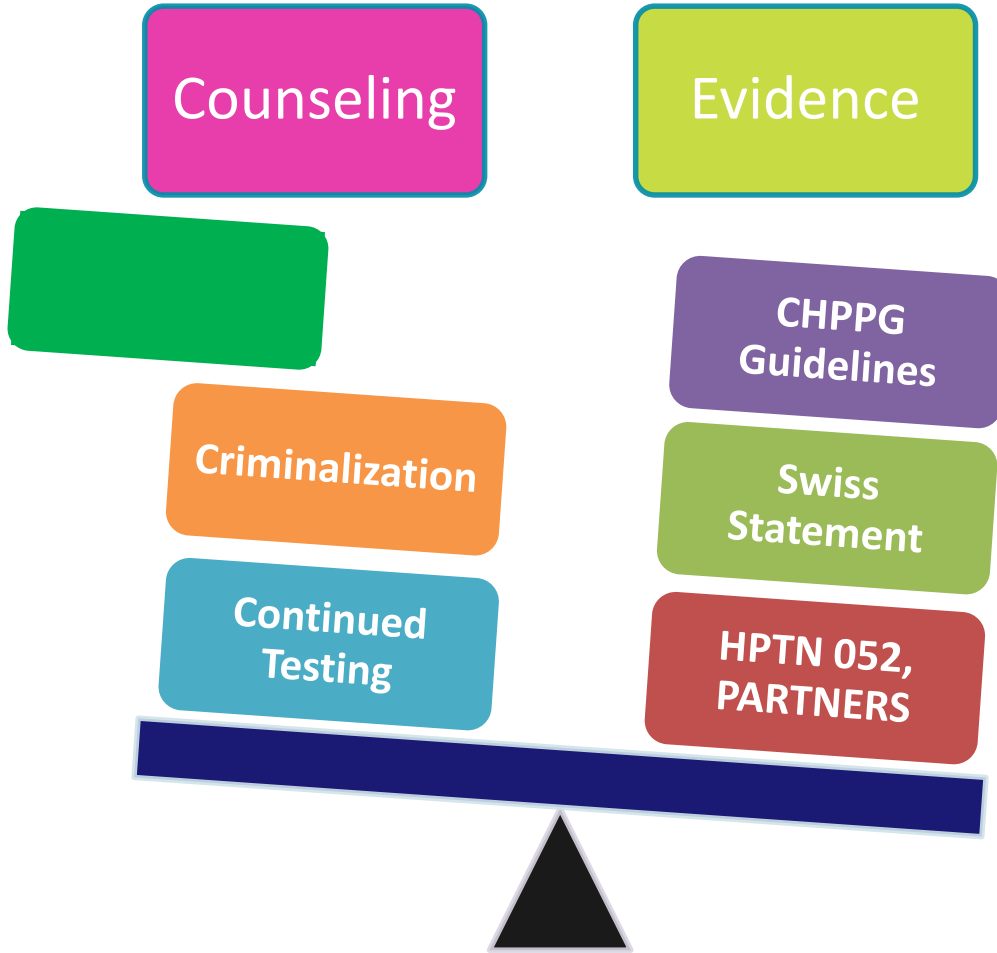
- **PARTNERS STUDY**

- Enrolled 1110 serodiscordant couples, 40% same-sex gay male
- Inclusion criteria: sex without condoms some of the time, no PreP or PEP, HIV+ partner on ART + VL < 200/mL
- Now has 2 years of follow up; aimed to finish in 2017
- 767 couples took part in 2-year analysis; a total of 894 couple-years of follow-up (240M+F-, 245F+M-, 282 MSM)

- **Results:**

- MAIN NEWS: no transmissions within couples from a partner with an undetectable viral load (estimated 16,400 of sexual encounters in gay men and 14,000 in heterosexual couples)
- Note: no transmissions does not mean ZERO RISK
- They looked at the 95% CIs – upper risk 0.05% per act for receptive anal intercourse

# For all cases



## Recommendations:

1. Review issues related to criminalization
2. Counsel on HIV testing of the HIV-negative partner every 6 months and if there are symptoms of viral illness (in case of acute seroconversion)

# Acknowledgements

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**CHPPG Development Team:**

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# Thank you!

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# Extra slides in case

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## Canadian consensus statement on HIV and its transmission in the context of criminal law

Mona Loutfy MD FRCPC MPH<sup>1</sup>, Mark Tyndall MD FRCPC ScD<sup>2</sup>, Jean-Guy Baril MD<sup>3</sup>, Julio SG Montaner MD FRCPC<sup>4</sup>,  
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M Loutfy, M Tyndall, J-G Baril, JSG Montaner, R Kaul, C Hankins. Canadian consensus statement on HIV and its transmission in the context of criminal law. *Can J Infect Dis Med Microbiol* 2014; In Press.

**INTRODUCTION:** A poor appreciation of the science related to HIV contributes to an overly broad use of the criminal law against individuals living with HIV in cases of HIV nondisclosure.

**METHOD:** To promote an evidence-informed application of the law in Canada, a team of six Canadian medical experts on HIV and transmission led the development of a consensus statement on HIV sexual transmission, HIV transmission associated with biting and spitting, and the natural history of HIV infection. The statement is based on a literature review of the most recent and relevant scientific evidence (current as of December 2013) regarding HIV and its transmission. It has been endorsed by >70 additional Canadian HIV experts and the Association of Medical Microbiology and Infectious Disease Canada.

**RESULTS:** Scientific and medical evidence clearly indicate that HIV is difficult to transmit during sex. For the purpose of informing the justice system, the per-act possibility of HIV transmission through sex, biting or spitting is described along a continuum from low possibility, to negligible possibility, to no possibility of transmission. This possibility takes into account the impact of factors such as the type of sexual acts, condom use, antiretroviral therapy and viral load. Dramatic advances in HIV therapy have transformed HIV infection into a chronic manageable condition.

**DISCUSSION:** HIV physicians and scientists have a professional and ethical responsibility to assist those in the criminal justice system to

## Un document consensuel canadien sur le VIH et sa transmission dans le contexte de la justice criminelle

**INTRODUCTION :** En raison d'une mauvaise appréciation des données scientifiques liées au VIH, la justice criminelle est beaucoup trop mise à contribution contre les personnes qui vivent avec le VIH et ne divulguent pas leur maladie.

**MÉTHODOLOGIE :** Afin de promouvoir une application de la loi canadienne fondée sur des données probantes, une équipe de six experts médicaux canadiens du VIH et de sa transmission ont dirigé l'élaboration d'un document consensuel sur la transmission sexuelle du VIH, sa transmission par les morsures ou les crachats et son évolution naturelle. Le document de principes repose sur une analyse bibliographique des données scientifiques les plus récentes et les plus pertinentes (en décembre 2013) au sujet du VIH et de sa transmission. Il est évalué par plus de 70 autres experts du VIH au Canada et par l'Association pour la microbiologie médicale et l'infectiologie Canada.

**RÉSULTATS :** Les données scientifiques et médicales établissent clairement que le VIH est difficile à transmettre pendant les relations sexuelles. Pour guider le système judiciaire, la possibilité réelle de transmission lors d'une relation sexuelle, d'une morsure ou d'un crachat est décrite dans un continuum de faible possibilité, de possibilité négligeable et d'aucune possibilité de transmission. Ce continuum tient compte des effets de facteurs comme le type d'acte sexuel, l'utilisation de condoms, la thérapie antirétrovirale et la charge virale. Les progrès considérables des traitements du VIH ont

# Important caveats

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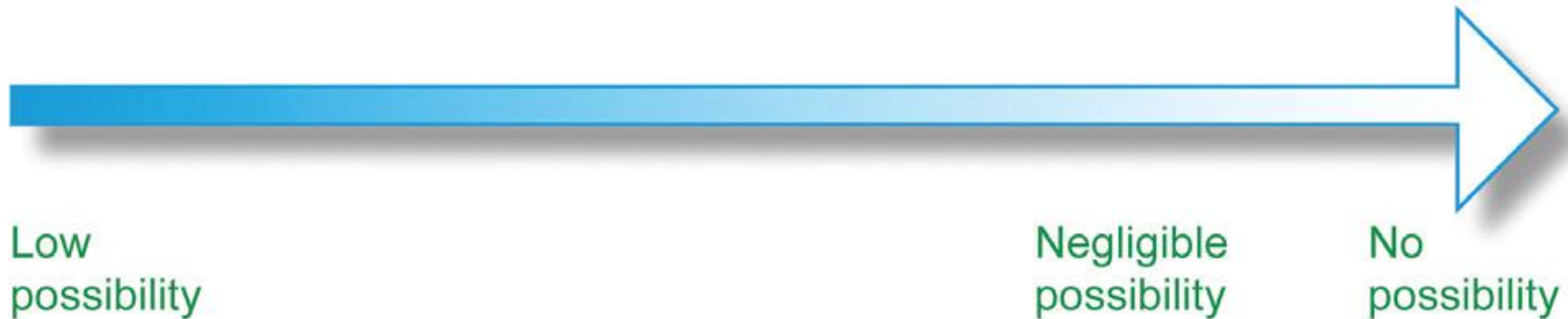
## The statement

- does not extend to HIV transmission at a population level in relation to HIV prevention efforts;
- is not intended to be used in the public health setting;
- is not intended for the purpose of clinical counselling.

# Possibility of Sexual Transmission of HIV

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Decreasing possibility of  
sexual transmission of HIV



The actual per-act possibility of sexual HIV transmission lies along a continuum from low possibility to negligible possibility to no possibility of transmission

Scientific evidence indicates that HIV is difficult to transmit sexually

# Possibility of HIV Transmission

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The statement assesses the possibility of HIV transmission (per-act) along three categories:

## 1) Low possibility:

- The basic conditions of viral transmission are present.
- The majority of HIV transmission worldwide is linked to these activities.
- Although these activities are considered the main modes of HIV transmission, the per-act possibility of transmission remains low.

## 2) Negligible possibility:

- The basic conditions of viral transmission are potentially present.
- Isolated reports of transmission have been linked to some of these activities although they have been difficult to confirm.
- The efficiency of transmission appears to be negligible and transmission is highly unlikely, if not impossible in most circumstances.

## 3) No possibility:

- The basic conditions of viral transmission are not present.
- No occurrence of transmission has been reported.
- The virus is not transmitted by these activities.

# HIV Transmission Associated with Specific Types of Intercourse

Type of Intercourse	Possibility of HIV Transmission
Vaginal-penile intercourse	▪ Where <b>neither</b> a condom <b>nor</b> effective antiretroviral therapy is present, vaginal-penile intercourse poses a <b><u>low</u></b> possibility of transmitting HIV.
	▪ Where a condom is used <b>or</b> where the HIV-positive person is on effective antiretroviral therapy, vaginal-penile intercourse poses a <b><u>negligible</u></b> possibility of transmitting HIV.

- **The estimate of the per-act probability of HIV transmission with unprotected penile-vaginal intercourse without antiretroviral therapy = 1 instance per 1,000 sexual acts.**
- **Estimates based on the most recent scientific studies range between 4 and 8 instances of transmission per 10,000 sexual acts.**

# HIV Transmission Associated with Specific Types of Intercourse

Type of Intercourse	Possibility of HIV Transmission
Anal-penile intercourse	▪ Where neither a condom nor effective antiretroviral therapy is present, anal-penile intercourse poses a <b>low</b> possibility of transmitting HIV.
	▪ Where a condom is used, anal-penile intercourse poses a <b>negligible</b> possibility of transmitting HIV regardless of the HIV-positive person being on effective antiretroviral therapy.
	▪ Where the HIV-positive person is on effective antiretroviral therapy, anal-penile intercourse <b>likely</b> poses a <b>negligible</b> possibility of transmitting HIV even in the absence of condom use.

- **The estimate of the per-act probability of HIV transmission associated with unprotected anal-penile intercourse without antiretroviral therapy is often cited as 1 instance per 100 sexual acts *where the HIV-positive person is the insertive partner*, and 1 instance per 1,000 sexual acts *where the HIV-positive person is the receptive partner*.**
- **The possibility of HIV transmission during anal intercourse also decreases where ejaculation occurs outside of the body.**

# HIV Transmission Associated with Specific Types of Intercourse

Type of Intercourse	Possibility of HIV Transmission
Oral Sex*	▪ Oral sex performed by an HIV-positive person on an HIV-negative person poses <b>no</b> possibility of transmitting HIV.
	▪ Where neither a condom nor effective antiretroviral therapy is present, oral sex performed on a HIV-positive person poses a <b>negligible</b> possibility of transmitting HIV.
	▪ Where a condom is used or the HIV-positive person is on effective antiretroviral therapy, oral sex performed on a HIV-positive person poses a <b>negligible</b> possibility of transmitting HIV.

- **Fellatio without ejaculation in the mouth of the performing HIV-negative person would pose a lower possibility of transmission than fellatio with ejaculation.**
- **Cunnilingus performed on an HIV-positive woman has never been definitely associated with transmission of HIV.**

\*Oral sex includes oral-penile sex (fellatio) and oral-vaginal sex (cunnilingus).



# Summary

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- The statement represents the consensus expert opinion, as leading Canadian HIV physicians and medical researchers, regarding the possibility of HIV transmission in various circumstances, and the health consequences of HIV infection.

**As experts, we have a professional and ethical responsibility to assist those in the criminal justice system to understand and interpret current medical and scientific evidence regarding HIV. With this consensus statement, we hope to mitigate miscarriages of justice that may result where such evidence is not correctly understood or interpreted.**