



# Prevalence and trends of livebirth and therapeutic abortion among a community-based cohort of women living with HIV in Canada

---

**Angela Kaida, Rebecca Gormley, Kate Salters, Allison Carter, Kath Webster, Marvelous Muchenje, Deborah Money, Lu Wang, Julia Zhu, Neora Pick, Alexandra de Pokomandy, Mona Loufy, on behalf of the CHIWOS Research Team**

1. Simon Fraser University, Vancouver, BC; 2. BC Centre for Excellence in HIV/AIDS, Vancouver, BC; 3. Kirby Institute, Sydney, NSW, Australia; 4. Women's Health in Women's Hands, Toronto, ON; 5. University of British Columbia, Department of Obstetrics and Gynecology, Faculty of Medicine, Vancouver, BC; 6. Oak Tree Clinic, British Columbia Women's Hospital and Health Centre, Vancouver, BC; 7. Chronic Viral Illness Service, McGill University Health Centre, Montreal, QC; 8. McGill University, Department of Family Medicine, Montreal, QC; 9. Women's College Research Institute, Toronto, ON.



**CAHR 2019, Saskatoon, SK May 11<sup>th</sup>, 2019**





**No conflicts of interest to disclose**

# Acknowledgement of territories

---

*As we gather here today, we acknowledge we are on Treaty 6 Territory and the Homeland of the Métis. I would like to pay my respect to the First Nations and Métis ancestors of this place and reaffirm our relationship with one another.*

# Acknowledgements

## We would like to thank...

- All the women living with HIV who participate in CHIWOS;
- The national team of Peer Research Associates, Co-investigators and Collaborators;
- The Steering Committee, Community Advisory Boards, and Aboriginal Advisory Board;
- The BC Centre for Excellence in HIV/AIDS for data support and analysis;
- Our affiliated studies: CANOC, REACH, OSC;
- And all our partnering organizations who support study recruitment and operations.
- **Our funders: CIHR Institute of Gender and Health, the CIHR Canadian HIV Trials Network (CTN 262), the OHTN, and the Academic Health Science Centres Alternative Funding Plans Innovation Fund;**

### Thank you to the following organizations who have partnered with CHIWOS to provide interview space:

**B.C.:** AIDS Vancouver Island, BC Centre for Excellence in HIV/AIDS, Cool Aid Community Health Centre, Downtown Community Health Clinic, Lookout Housing and Health Society (Positive Haven), Living Positive Resource Centre, Oak Tree Clinic, Positive Living British Columbia, Positive Living Fraser Valley, Positive Women's Network (closed), Positive Living North, and Vancouver Island Persons with AIDS Society.

**ON:** 2-Spirited People of the 1st Nations; 519 Community Centre; ACCKWA; Africans in Partnership Against AIDS (APAA); AIDS Committee of Durham Region; AIDS Committee of Guelph and Wellington County; AIDS Committee of Simcoe County; AIDS Network Hamilton; Alliance for South Asian AIDS Prevention; Black Coalition for AIDS Prevention; Bruce House; Casey House; Centre Francophone; Elevate NOW; Fife House; Hemophilia Ontario; HIV/AIDS Regional Services (HARS); Maggie's; Toronto Sex Worker's Action Project; Peel HIV Network; Positive Living Niagara; Positive Pregnancy Program (P3); Prisoners with AIDS Support Action Network; Réseau Access Network; Toronto PWA Foundation; Women's Health in Women's Hands; Children's Hospital of Eastern Ontario; Kingston Hotel Dieu Hospital; Health Sciences North, Sudbury Regional Hospital, HAVEN Program; Lakeridge Health; Maple Leaf Medical Clinic; McMaster Family Practice; Ottawa General Hospital; Riverside Family Health Team; SIS Clinic, Hamilton Health Sciences; St. Joseph's Healthcare London; St. Michael's Hospital; Sunnybrook Health Sciences Centre; Toronto East General Hospital; Toronto General Hospital; William Osler Health System; Windsor Regional Hospital, HIV Care Program.

**QC:** ACCM; L'ARCHE de l'Estrie; ASTT(e)Q; BLITS; BRAS-Outaouais; CACTUS; CASM; Centre des R.O.S.E.E.S.; Centre Sida Amitié; Corporation Félix Hubert d'Hérelle; COCQ-SIDA; GAP-VIES; M.A.I.N.S-Bas St-Laurent; Maison Plein Coeur; Maison Dominic; Maison du Parc; Maison Re-Né; MIELS-Québec; Le MIENS Chicoutimi; Portail VIH/sida du Québec; Sidaction Mauricie; SHPÈRE- santé sexuelle globale ; Stella, l'amie de Maimie; UHRESS-Notre-Dame du CHUM, CVIS-MUHC



# In memoriam – in April 2019



*In memory of Marisol Desbiens  
CHIWOS PRA, friend, and valued colleague*

*We honour and remember the **70 women** living with HIV who participated in  
CHIWOS from across Canada who have passed away.*



# Background



- Reproductive health needs and desires of women living with HIV are incompletely addressed, despite existing guidelines<sup>1,2,3</sup>
- In Canada, ~60% of all pregnancies after HIV diagnosis are reported as “unintended”<sup>4</sup> (compared to 27% in the general population)<sup>5</sup>
- Comprehensive sexual and reproductive healthcare is essential to support reproductive decision-making among women living with HIV.



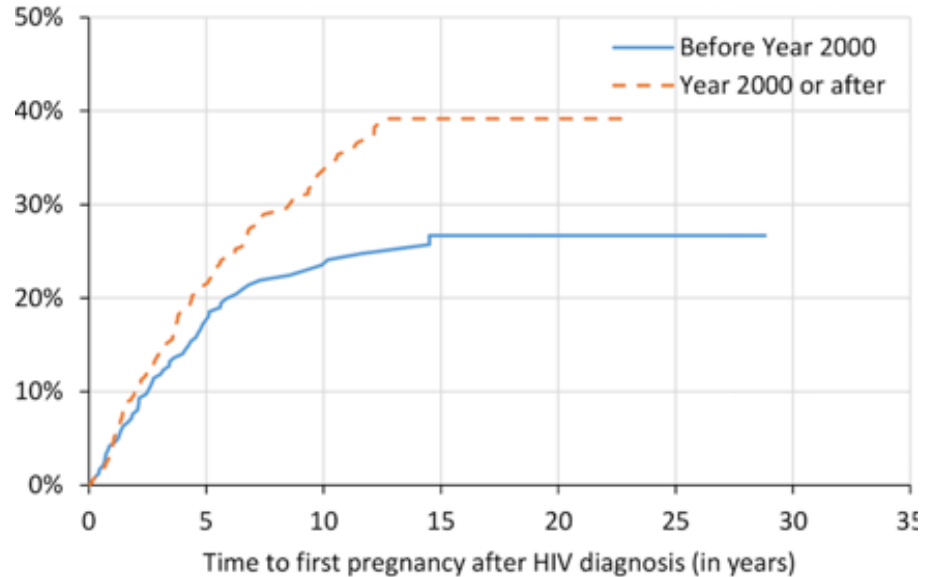
<sup>1</sup>Loutfy et al, 2018; <sup>2</sup>Skerritt et al, 2019; <sup>3</sup>WHO 2017; <sup>4</sup>Salters et al, 2017; <sup>5</sup>Oulman et al, 2015.

# Pregnancy incidence among women living with HIV has increased over time

Pregnancies/1000 WY by year, comparing women with and without HIV (WIHS)<sup>6</sup>



Time to first pregnancy by ART initiation year: < 2000 vs 2000-2015 (CHIWOS)<sup>4</sup>



Are we seeing changes in the incidence of particular pregnancy outcomes?

# Objective

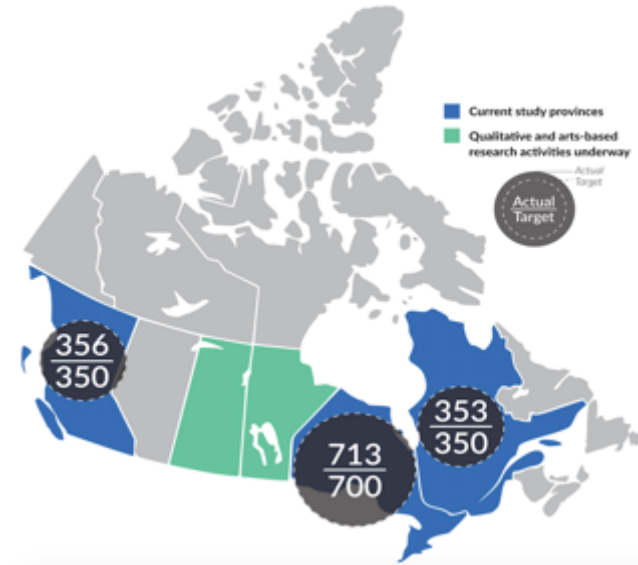
---

To inform a rights-based sexual and reproductive health care model, the objective of this study was to assess the incidence and trends of livebirth and pregnancy termination after an HIV diagnosis.



# Study Design: Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS)<sup>7</sup>

- **Survey** data from a multi-site, community-based, cohort study (BC, ON, QC)
- Enrolled 1,422 women (cis and trans inclusive) living with HIV and aged  $\geq 16$  years
- Peer Research Associate (PRA) administered survey
  - Wave 1, Baseline survey (2013-2015)
  - Wave 2, 18 month follow up (2015-2017)
  - Wave 3, 36 month follow up (2017-2018)



CHIWOS

# Methods

- We used self-reported retrospective longitudinal data on pregnancy history from baseline (Wave 1) and 18-month (Wave 2) follow-up visits among 1,422 women enrolled CHIWOS.
- Inclusion criteria:
  - Biological sex reported as female and considered at-risk of pregnancy after HIV diagnosis
- Exclusion criteria:
  - Biological sex at birth reported as male, intersex, undetermined, Don't Know or PNTA
  - Age  $\geq 45$  years at HIV diagnosis
  - Reported completing menopause before HIV diagnosis
  - Unknown HIV diagnosis year



# Measures

- **Primary outcomes:** Pregnancy, livebirth, & pregnancy termination (self-reported)
- Up to maximum of 12 lifetime reported pregnancies across Waves 1 and 2, inclusive of responses from:
  - Wave 1 (pregnancy history), up to eight pregnancies per woman; and
  - Wave 2 (pregnancies since Wave 1 interview), up to 4 pregnancies per woman

# Woman-years (WY) at risk

- For each participant, we summed months between:
  - **Start date:** Reported HIV diagnosis date or at 16 years of age, whichever date was later to avoid biasing time at-risk to perinatally infected women
  - **End date:** Women were censored at the earliest of:
    - Age 45
    - Date of self-reported menopause (spontaneous or surgical)
    - Date of last CHIWOS interview (Wave 1 or Wave 2)
- Months spent pregnant were excluded from woman-years of follow-up calculations
- Total cohort “Time at risk” was summed across all participants and expressed per 1,000 woman years of follow-up.

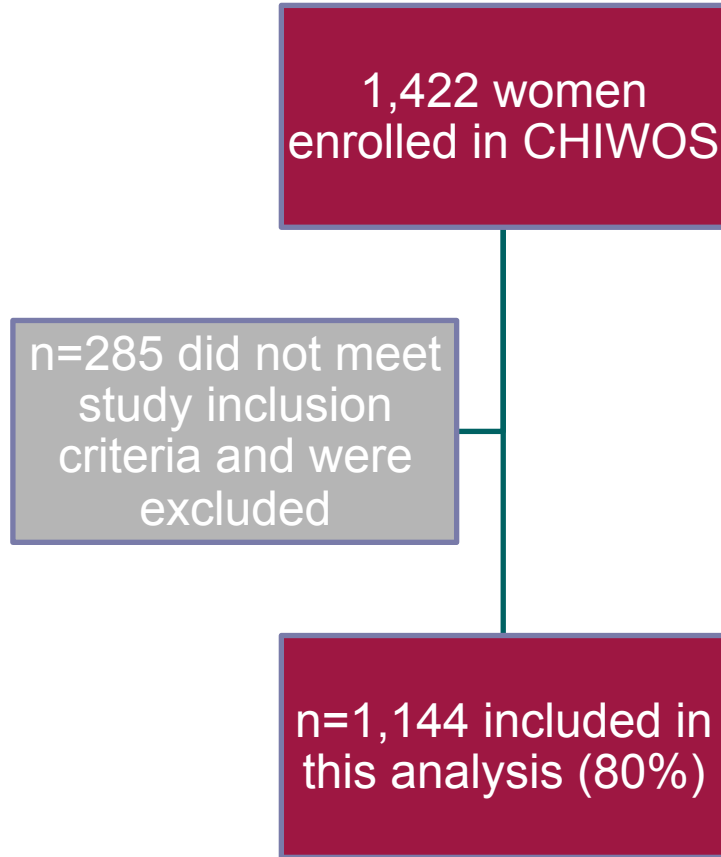
# Statistical Analysis

- Incidence rates (per 1,000 woman-years and 95% CI) for pregnancy, livebirth, and pregnancy termination overall and stratified by cART era:
  - $\leq 1999$ , 2000-2005, 2006-2010,  $\geq 2011$  (up to January 2017, last date of Wave 2 interviews).
- Pregnancy and pregnancy outcome rates were age-adjusted (using direct standardization) using the 2011 Canadian female standard population (aged 15-44 years)
- Age standardized rate ratios for pregnancy overall, livebirth, pregnancy termination (comparing rates in  $\geq 2011$  to  $\leq 1999$ )

**Table 1.** Baseline characteristics of women living with HIV enrolled in CHIWOS (n=1,422)

<b>Characteristic</b>	<b>Median [IQR] or n (%)</b>
Median Age	42.5 [35, 50]
Trans gender identity	63 (4.4%)
Ethnicity	
Indigenous	318 (22.4%)
African / Caribbean / Black	418 (29.4%)
White	584 (41.1%)
Other ethnicities	102 (7.2%)
Personal yearly income <\$20,000	998 (70.2%)
Drug use (current or previous)	642 (45.1%)
Median Age at HIV diagnosis	31 [25, 37]
Received HIV medical care in past year	1330 (93.5%)
Currently on ART	1175 (82.6%)
Undetectable viral load (<50 copies/mL)	1097 (77.1%)

# Results



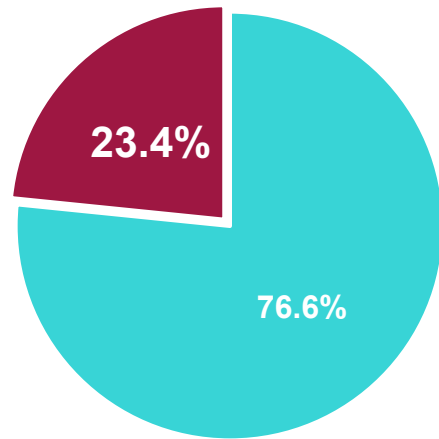
# Results: Pregnancy after HIV diagnosis

- 30% (n=342/1,144) reported at least 1 pregnancy after HIV diagnosis
- Total of 622 pregnancy events from 342 participants over 11,092 woman-years of follow-up
  - n = 554 pregnancies reported in Wave 1
  - n = 68 pregnancies reported in Wave 2



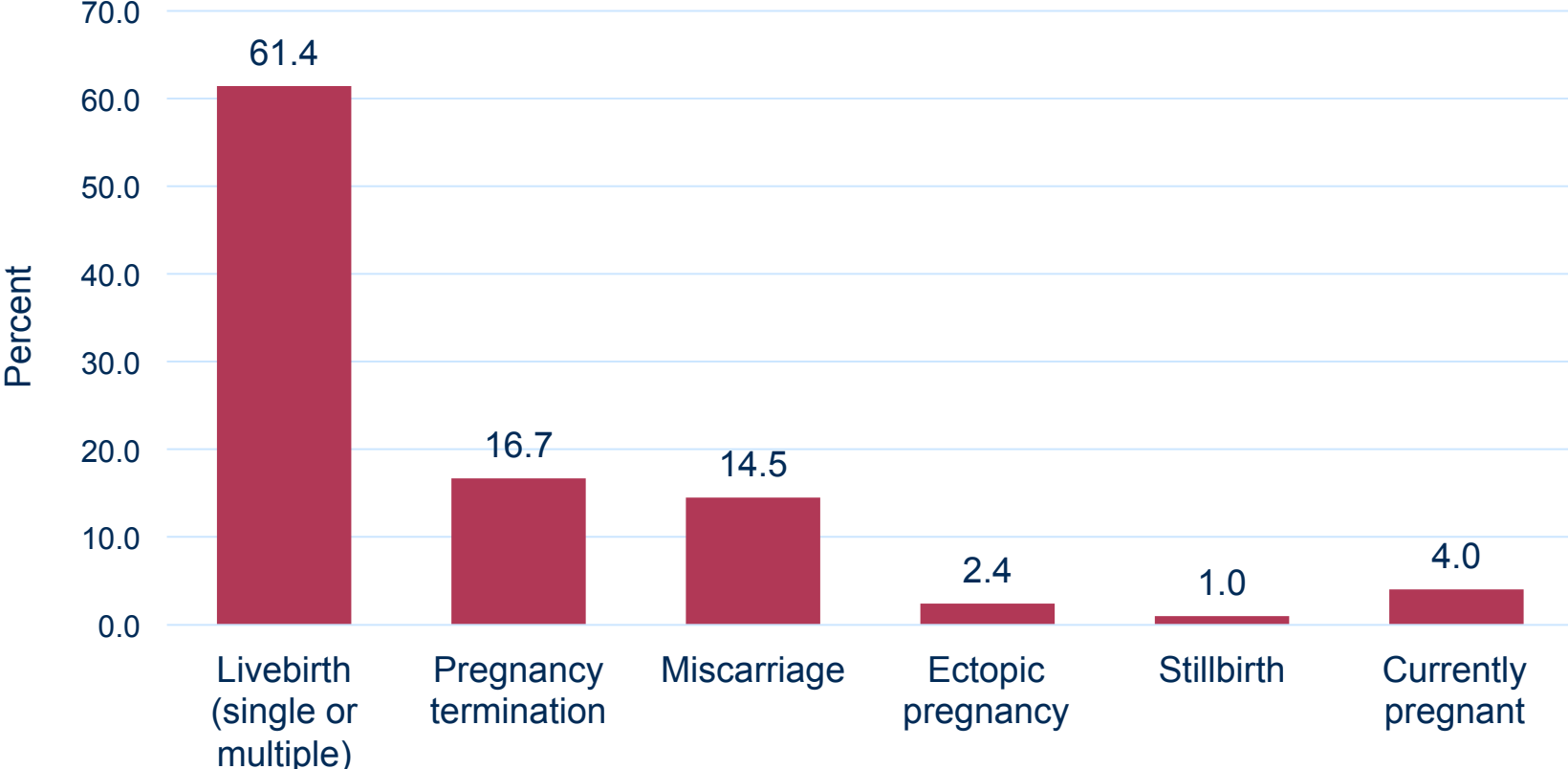
# Results: Pregnancy outcomes

23.4% of women living with HIV reported  $\geq 1$  pregnancy termination  
(n=80/342)



■ No ■ Pregnancy termination

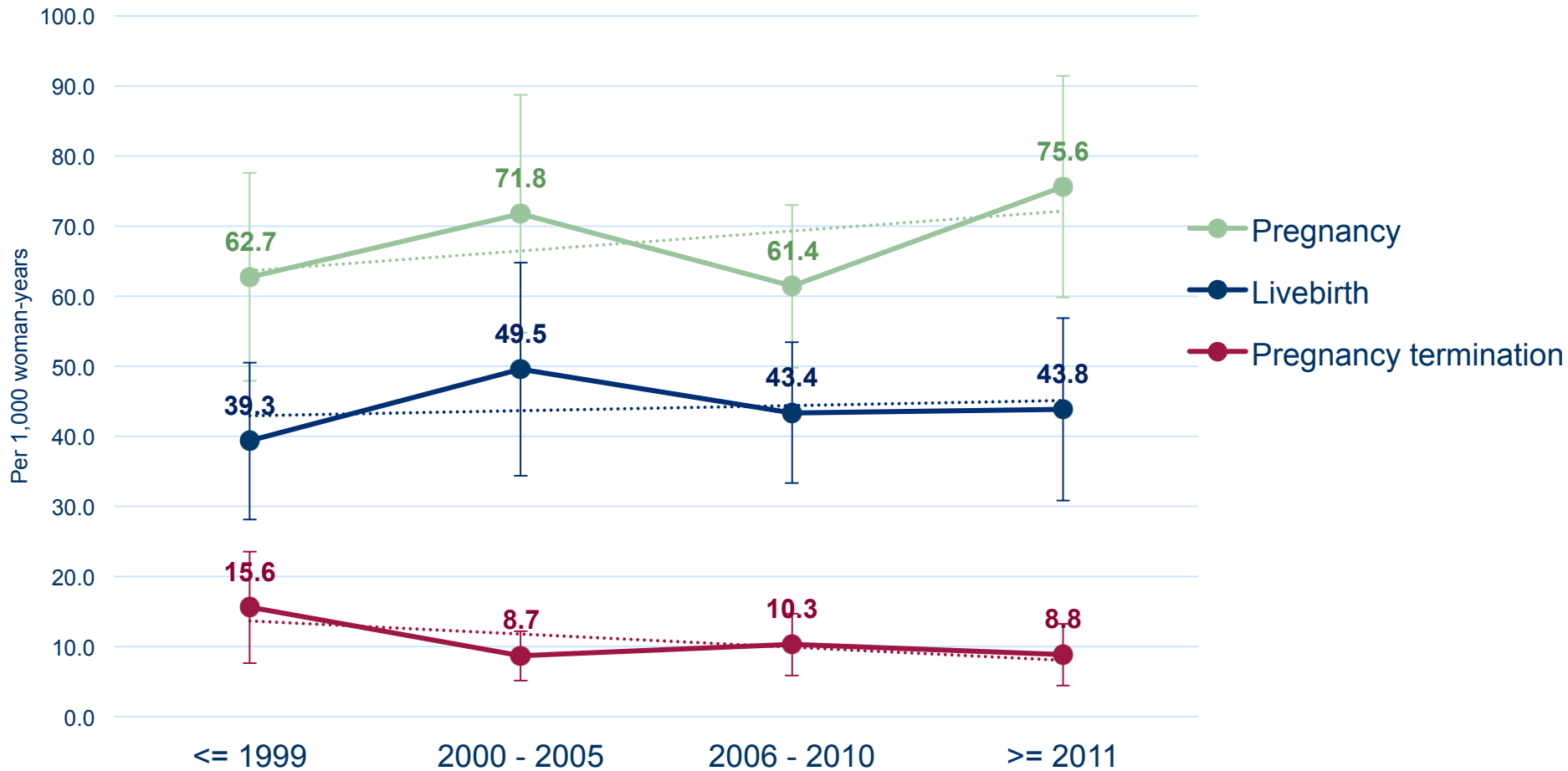
# Figure 1. Pregnancy outcomes (n=622 pregnancy events)



# Crude incidence rates (per 1,000 woman-years)

- Pregnancy = 56.1 (95% CI: 50.3-62.6)
- Livebirth = 34.4 (95% CI: 30.5-38.9)
- Pregnancy termination = 9.38 (95% CI: 7.46-11.8)

Figure 2: Age-standardized rate of pregnancy, livebirth, and pregnancy termination (per 1,000 woman-years) after HIV diagnosis by cART era (n=622 pregnancy events)



# Results: Age-standardized rate ratios

Age standardized rate ratios for  $\geq 2011$  vs  $\leq 1999$  was:

- Pregnancy: 1.21 (95%CI: 1.20-1.21;  $p < 0.001$ )
- Livebirth: 1.11 (95% CI: 1.11-1.12;  $p < 0.001$ )
- Pregnancy termination: 0.57 (95% CI: 0.56-0.57;  $p < 0.001$ )

# Discussion

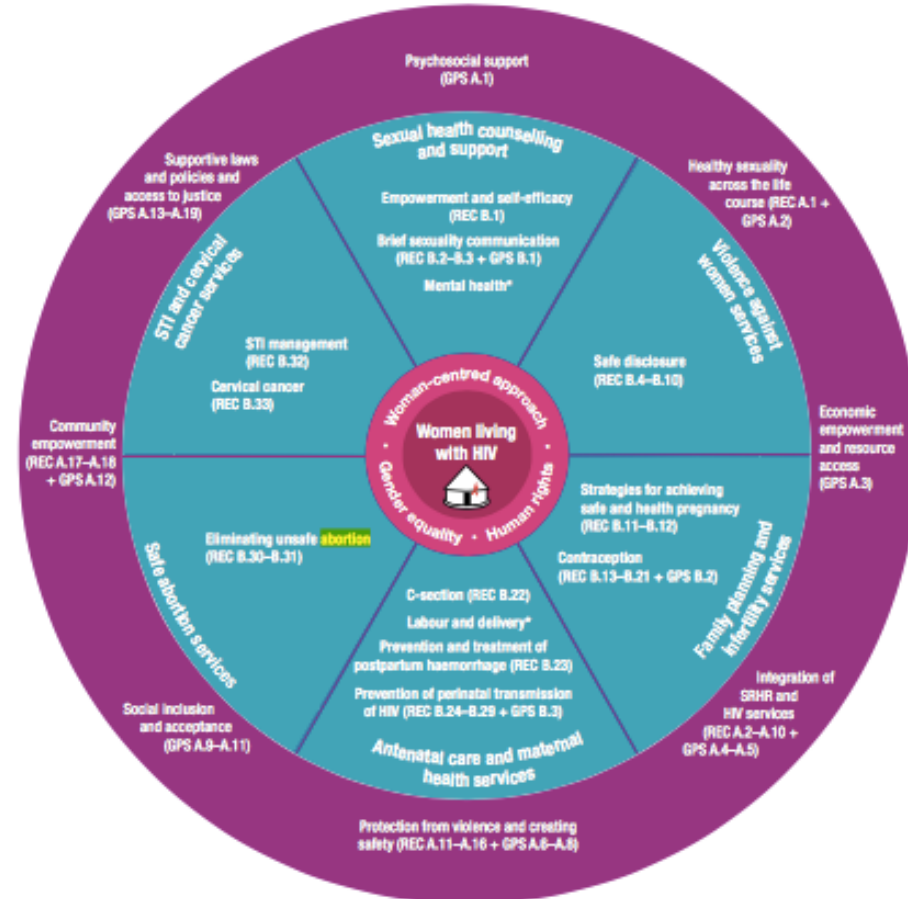


- Pregnancy and livebirth incidence among women living with HIV has increased over time, while pregnancy termination has decreased marginally.
- Trend findings are similar to those observed in the WIHS Cohort in the USA<sup>6</sup>
- The overall pregnancy termination rate of women living with HIV is comparable to the estimated rate in the general Canadian female population<sup>8</sup>
- Key limitations:
  - Self-report of pregnancy and pregnancy outcomes, which may have yielded under-estimates of early pregnancy events and pregnancy termination due to stigma and recall bias.
  - Unknown whether decisions regarding pregnancy termination were voluntary or coerced

# Implications

- Increasing rates of pregnancy incidence and livebirth may be due to wider access to cART and the accompanying benefits on survival, health, and sexual and perinatal HIV prevention.
- Marginal decreases in pregnancy termination rates suggest an on-going need for improved contraceptive services and options for women living with HIV.<sup>9</sup>
- Investigate different experiences and predictors of pregnancy outcomes among women living with HIV
- Address gaps in access to comprehensive sexual and reproductive health care to improve reproductive health outcomes and rights of women living with HIV

Figure 2.1: Framework of WHO recommendations and good practice statements to advance the sexual and reproductive health and rights of women living with HIV



<sup>9</sup>Kaida et al, 2017

# References

- <sup>1</sup>Loutfy et al. No. 354-Canadian HIV Pregnancy Planning Guidelines. *J Obstet Gynaecol Can.* 2018;40(1):94-114.
- <sup>2</sup>Skerritt et al. Determinants of discussing reproductive goals with healthcare providers among women living with HIV in Canada. *Canadian Society of Epidemiology and Biostatistics Biennial National Conference.* Ottawa, Canada. May 13-15, 2019.
- <sup>3</sup>WHO. Consolidated Guideline on Sexual and Reproductive Health and Rights of Women Living with HIV. 2017;
- <sup>4</sup>Salters et al. Pregnancy incidence and intention after HIV diagnosis among women living with HIV in Canada. *PLoS ONE* 2017; 12(7):e0180524.
- <sup>5</sup>Oulman et al. Prevalence and predictors of unintended pregnancy among women: an analysis of the Canadian Maternity Experiences Survey. *BMC pregnancy and childbirth.* 2015;15(1):1.
- <sup>6</sup>Haddad et al, 2017; Trends of and factors associated with live-birth and abortion rates among HIV-positive and HIV-negative women. *Am J Obstet Gynecol* 2017;216:71.e1-16.
- <sup>7</sup>Loutfy et al. Cohort Profile: The Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS). *PLoS ONE* 2017; 12(9): e0184708.
- <sup>8</sup>ARC 2018. Available at: <http://www.arcc-cdac.ca/backgrounders/statistics-abortion-in-canada.pdf>
- <sup>9</sup>Kaida A et al. Contraceptive choice and use of dual protection among women living with HIV in Canada: priorities for integrated care. *Perspect Sex Reprod Health* 2017; 49(4):223-236.





# Thank you!

## •For more information about CHIWOS, please contact:

### •Rebecca Gormley (BC)

•604-558-6686 or 1-855-506-8615 (toll-free), [rgormley@cfenet.ubc.ca](mailto:rgormley@cfenet.ubc.ca)

### •Nicole Akan (SK)

•306-584-4464, [nicole.akan@usask.ca](mailto:nicole.akan@usask.ca)

### •Adina Lakser (MB)

•204-789-3245, [Adina.Lakser@umanitoba.ca](mailto:Adina.Lakser@umanitoba.ca)

### •Mina Kazemi (ON)

•416-351-3800 x 2784, [mina.kazemi@wchospital.ca](mailto:mina.kazemi@wchospital.ca)

### •Karène Proulx-Boucher (QC)

•514-934-1934 x 32146, [chivos.quebec@gmail.com](mailto:chivos.quebec@gmail.com)



# Access to HIV prevention, care, and antiretroviral treatment services

---



Increased life expectancy among people living with HIV



Decreased morbidity



Decreased risk of perinatal transmission



Eliminates HIV transmission risk to sexual partners (U=U)



Figure 2: Crude rate of pregnancy, livebirth, and pregnancy termination incidence (per 1,000 woman-years) after HIV diagnosis by cART era (n=622 pregnancy events over 11091.96 woman-years of follow-up)

