

Key Interventions and Populations to Target to Facilitate Engagement in HIV Care among Women Living with HIV: Findings from the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS)

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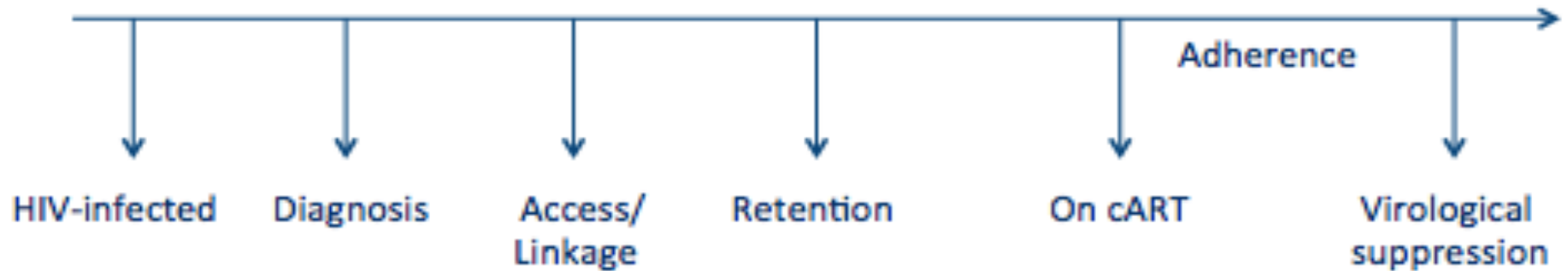
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Conflicts of Interest: Disclosure

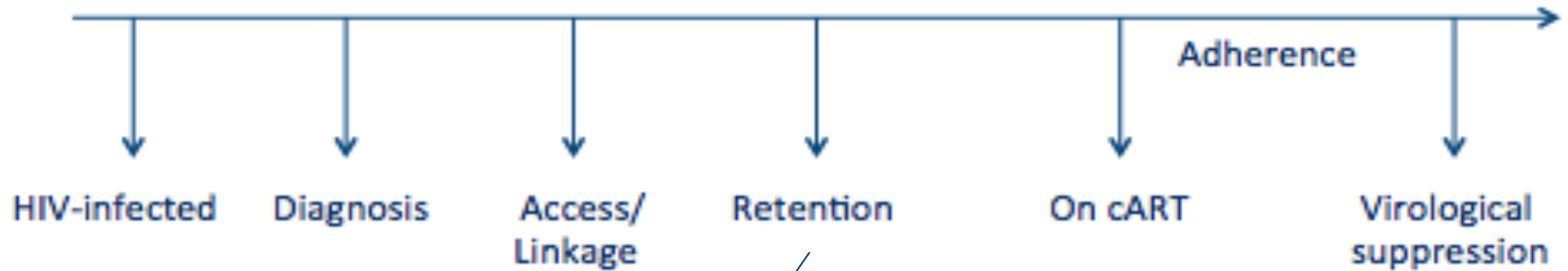
No conflicts of interest to declare.

Background: Cascade of HIV Care



**Linkage to HIV
care within 3
months of
diagnosis**

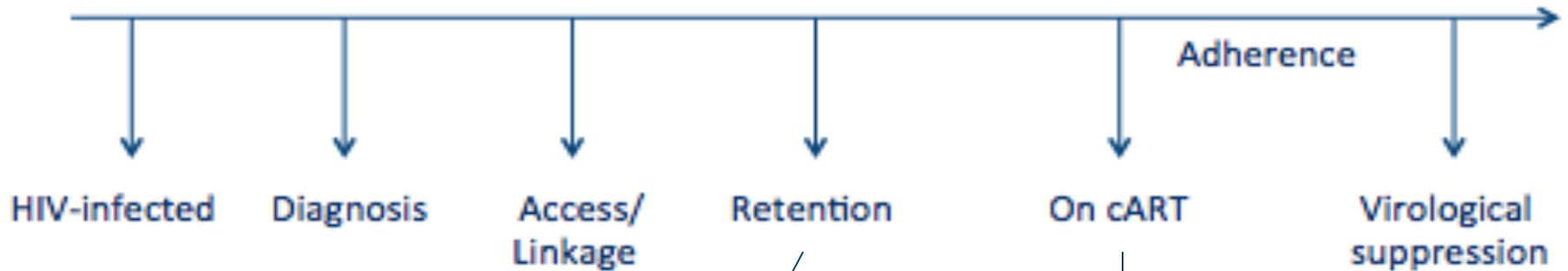
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Linkage to HIV care within 3 months of diagnosis

≥ 2 visits ≥ 90 days apart in each calendar year (IOM and HRSA)

Background: Cascade of HIV Care

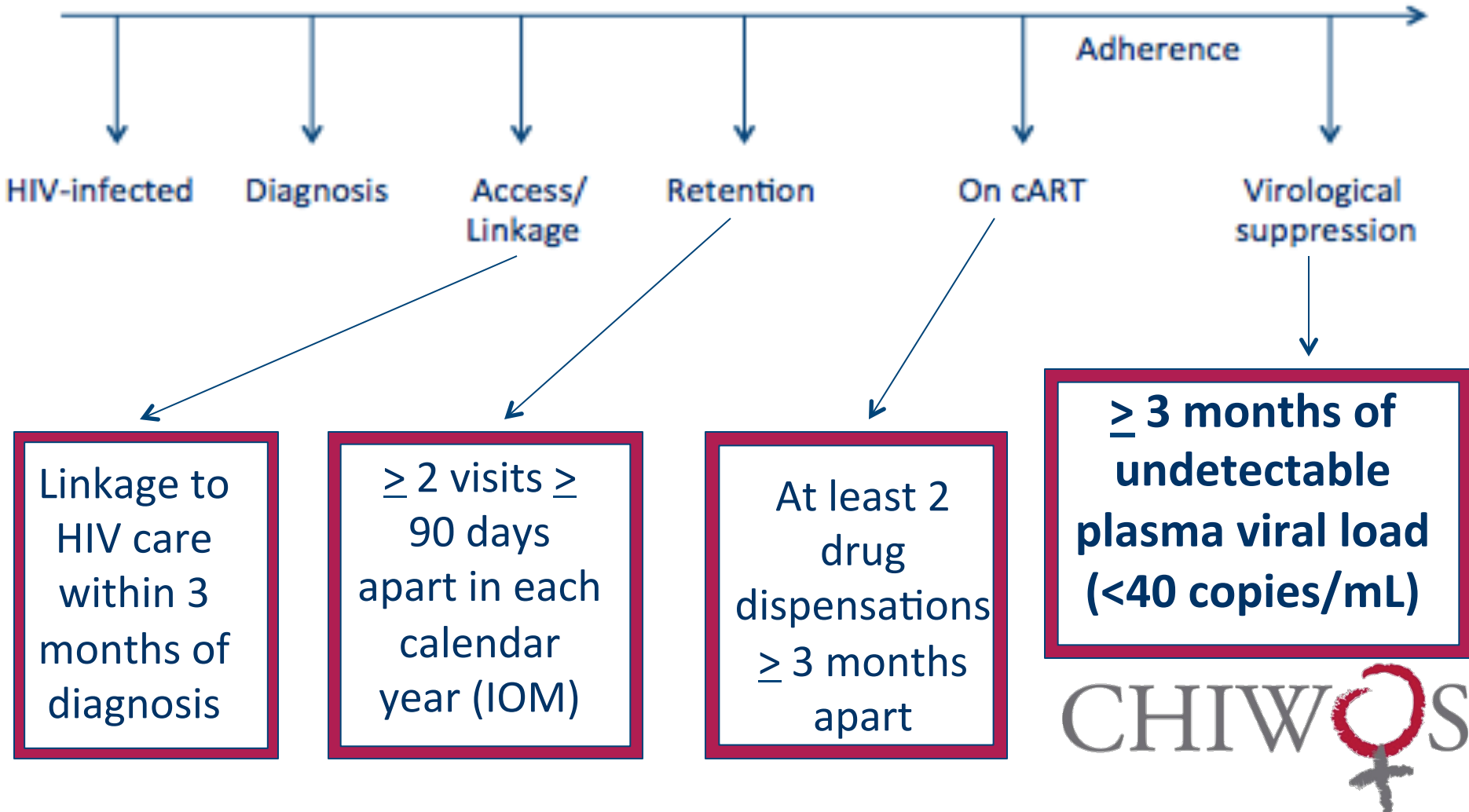


Linkage to HIV care within 3 months of diagnosis

≥ 2 visits ≥ 90 days apart in each calendar year (IOM)

At least 2 drug dispensations ≥ 3 months apart

Background: Cascade of HIV Care

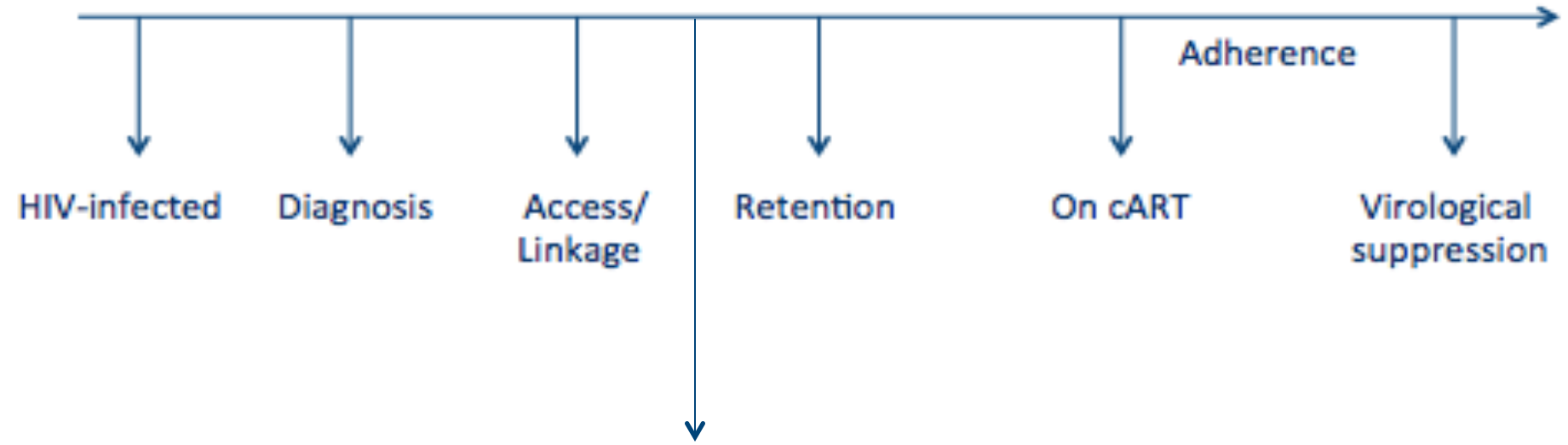


**INCOMPLETE ENGAGEMENT AT ANY STAGE →
Individual and societal repercussions**

CASCADE

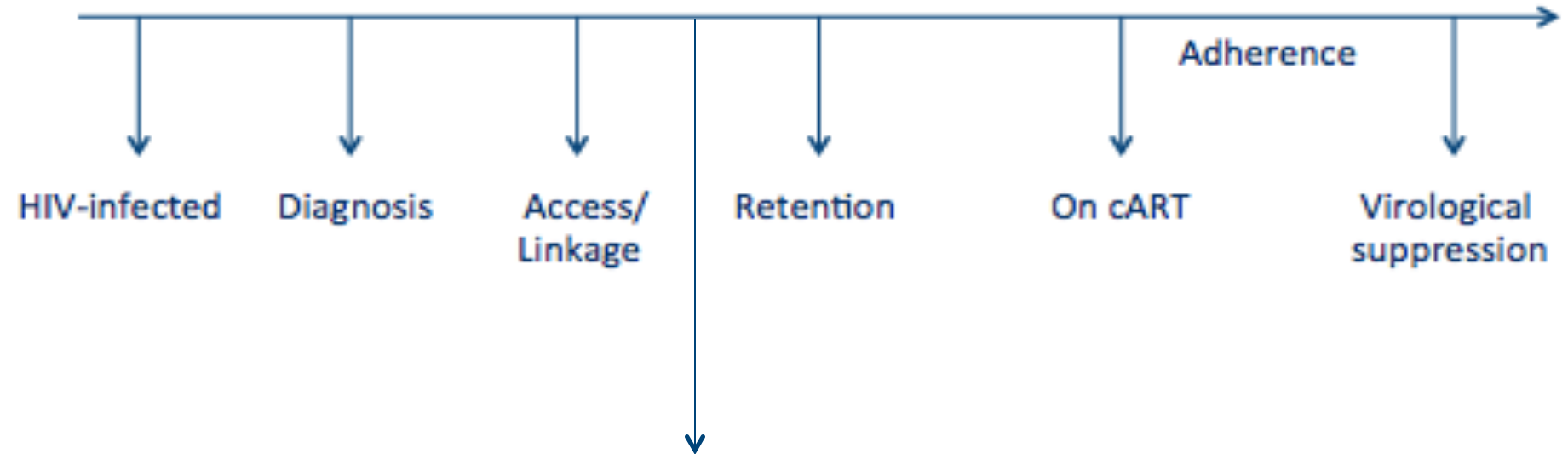
- **Monitoring tool to identify attrition**
- **Guide programs for at-risk groups**

Background: Engagement in Care



ENGAGEMENT IN HIV CARE =
 ≥ 1 HIV care visit during the previous year

Background: Engagement in Care



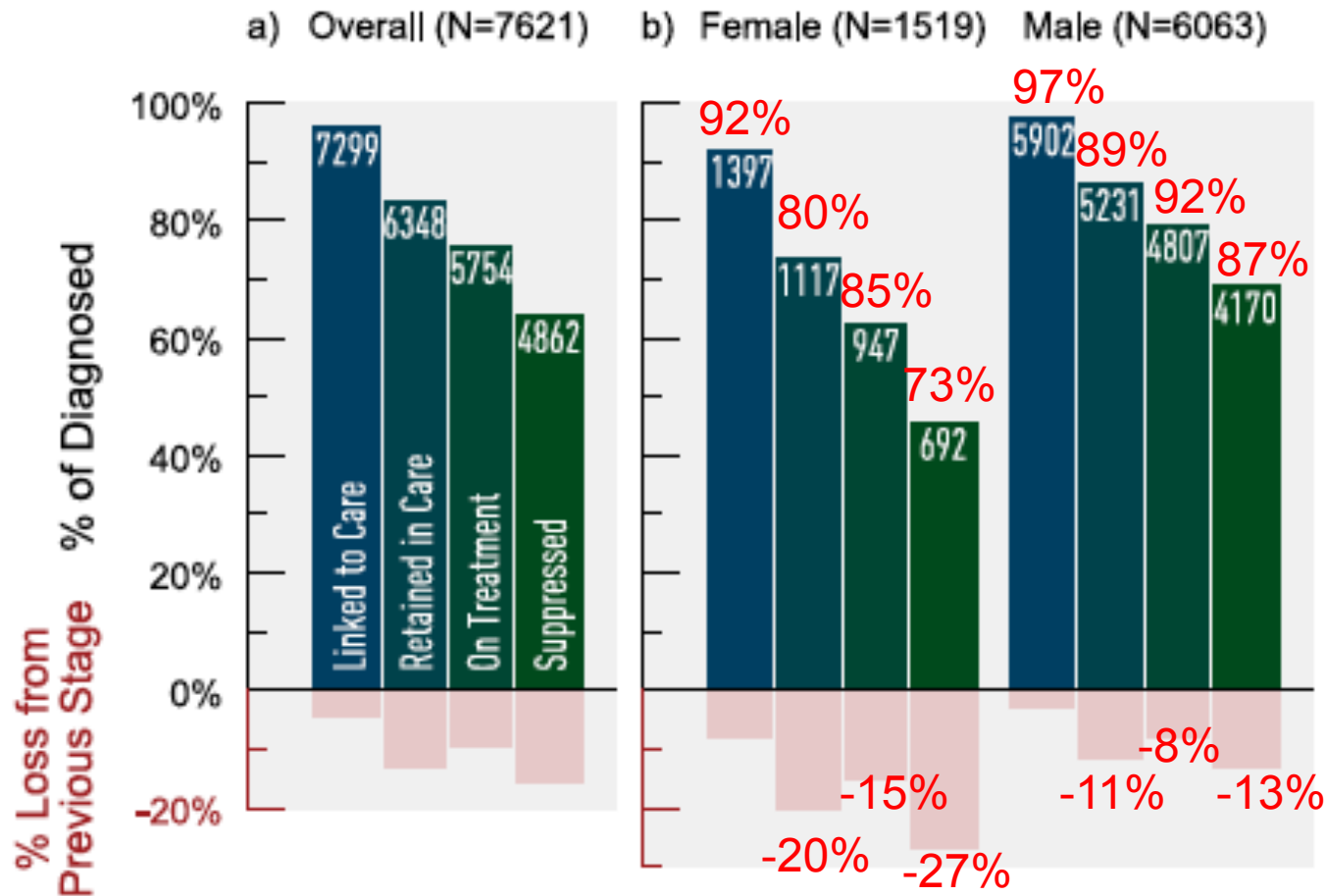
ENGAGEMENT IN HIV CARE =
 ≥ 1 HIV care visit during the previous year

**$\approx 50\%$ of HIV+ individuals are
NOT engaged in regular HIV care**

Background: Women and the Cascade

- Women account for 50% of HIV infections worldwide
- Africa:
 - Systematic review and meta-analysis showed male sex associated with *decreased access* (pooled proportion 35% (95% CI 33-37%) in pooled estimate prevalence of 40%) and *increased mortality* [HR 1.37 (95% CI 1.28-1.47)]²
 - Systematic review showed male sex associated with *decreased retention*³
- United States:
 - National HIV Surveillance Data⁴:
 - Retention: F > M (49% vs. 43%)
 - On HAART: M > F (90% vs. 86%)
 - Virologic suppression: M > F (80% vs. 73%)
- Canada:
 - Growing body of evidence of clear gender disparities along the cascade of care [BC data only]
 - *Decreased access and adherence* among females^{5,6}
 - *Increased attrition* throughout the cascade among female sex⁷

High Levels of Heterogeneity in the HIV Cascade of Care Across Different Population Subgroups in British Columbia, Canada

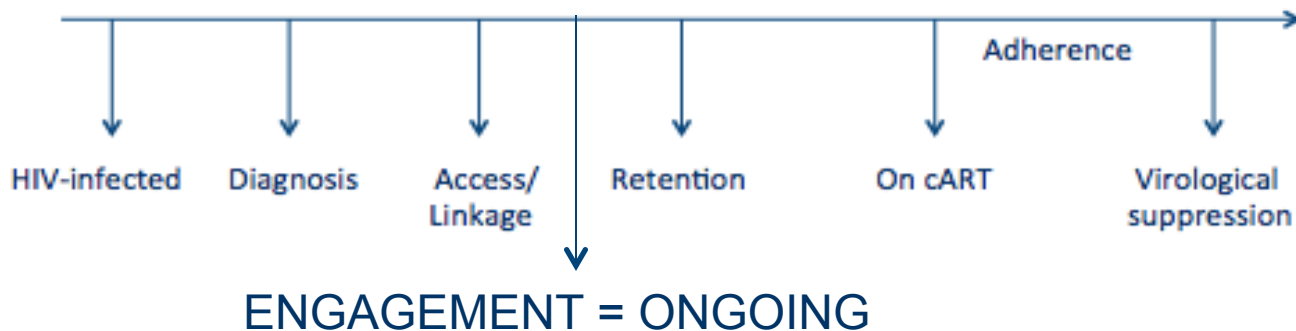


Lourenco L et al. PLoS One, 2014




Objectives of this Study

1. To determine the *proportion* of women living with HIV in our cohort who are not engaged in ongoing HIV care and;
2. To identify the socio-demographic, psychosocial and clinical characteristics of women who do not receive ongoing care.



Methods: Sampling and Recruitment

- **CHIWOS** = Canadian HIV Women's Sexual and Reproductive Health Cohort Study
- Design: Longitudinal cohort study
- Non-random purposive sampling
- Participants completed a PRA (Peer Research Associate)-administered survey at baseline and then q 18 months
 - A **PRA** is a woman living with HIV trained to be a Research Assistant based on Community-based Research practices



Section 1: Demographics and Social Determinants of Health
Section 2: Medical and HIV Disease Information
Section 3: Health Care and Support Service Utilization
Section 4: Emotional Wellbeing, Resiliency, and Health Related Quality of Life
Section 5: Women's Reproductive Health
Section 6: Stigma and Discrimination
Section 7: Substance Use
Section 8: Violence and Abuse
Section 9: Women's Sexual Health
Section 10: Resilience

What province is this interview taking place?

British Columbia
 Ontario
 Quebec

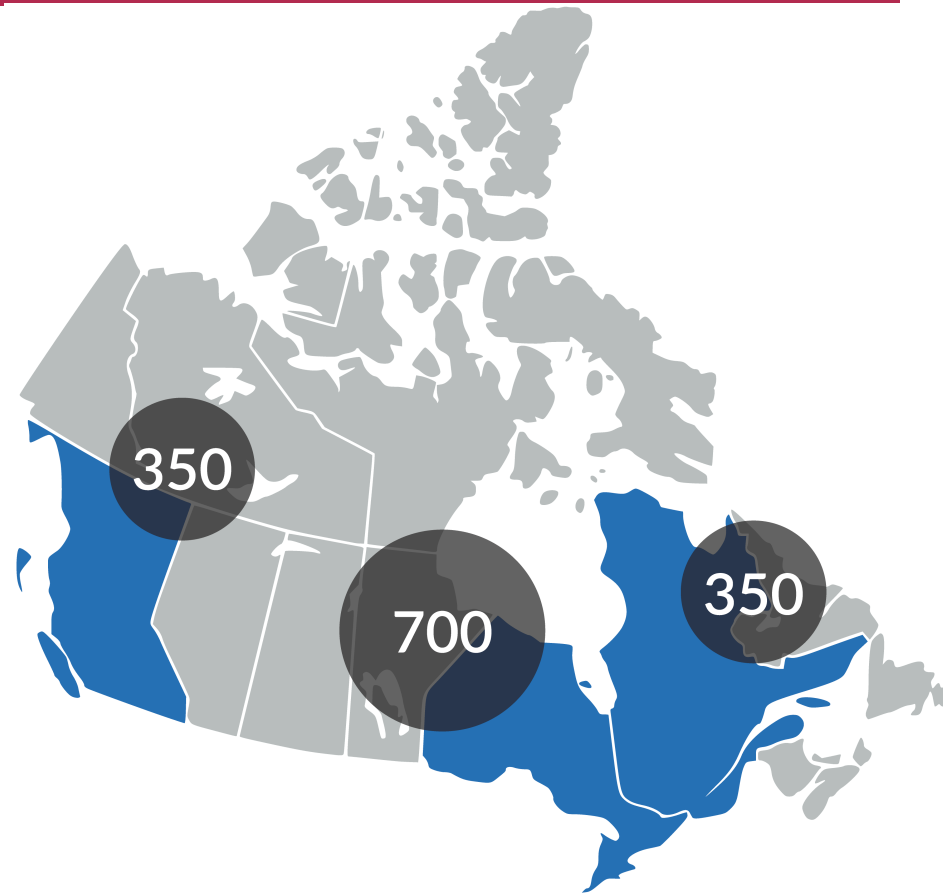
Methods: Study Population and Design

Inclusion criteria:

- Self-identified women (transgender inclusive)
- Living with HIV (self-report)
- ≥ 16 years
- Living in BC, ON and QC*

Longitudinal cohort study:

- Baseline visit
- q18 month follow-up visits
- Participants enrolled between August 27, 2013 - May 1, 2015
- Goal: 1,400 HIV+ women



CHIWO^S

*where 82% of HIV+ women live

Methods: Outcome of Interest

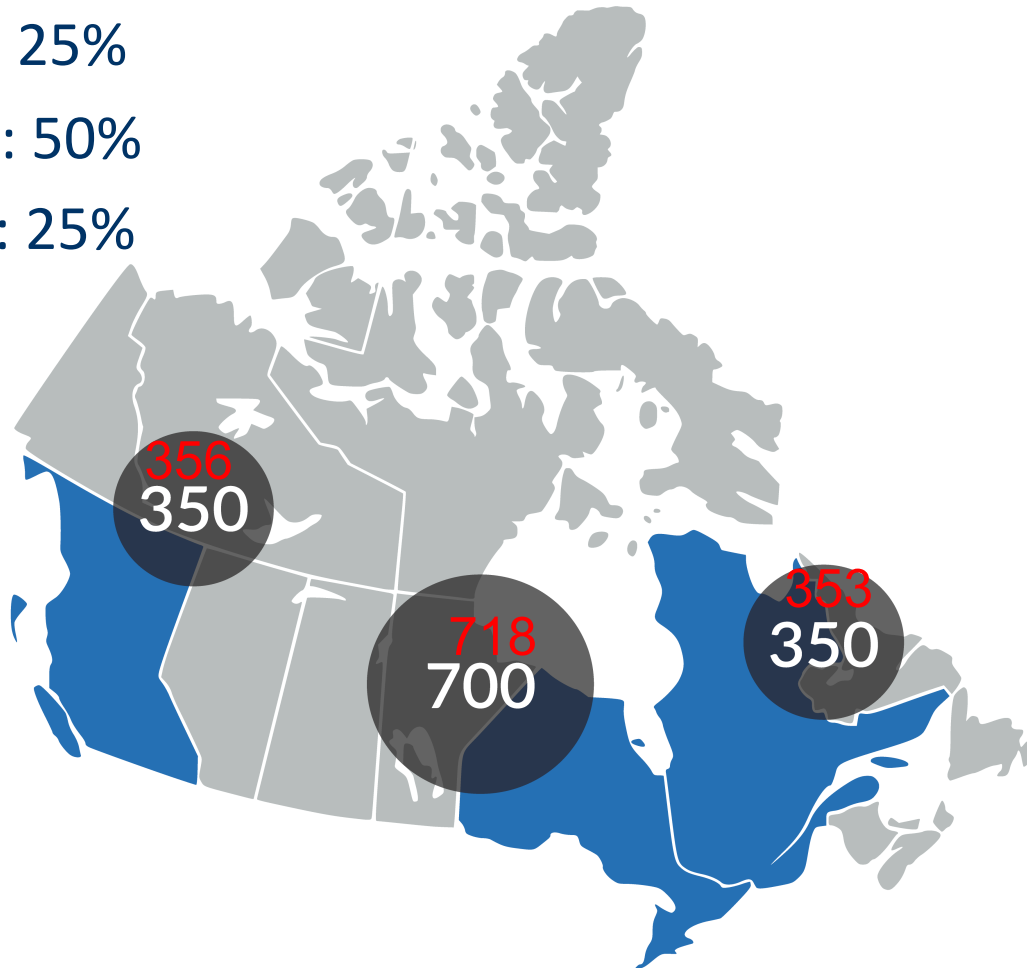
- **Primary outcome:** Engagement in HIV Care (≥ 1 HIV care visit during the previous year)
- **Correlates:**
 - **Socio-demographic:**
 - Gender identity
 - Sexual orientation
 - Ethnicity
 - Education level
 - Income
 - Housing stability
 - Food security
 - Incarceration
 - **Psycho-social:**
 - Recreational drug use (RDU)
 - Depression
 - HIV stigma
 - Discrimination: sexism/racism

Methods: Analyses

- **Statistical Analysis**
 - Summary statistics of socio-demographic, psychosocial and clinical characteristics
 - Medians and IQRs for continuous variables
 - Frequencies and proportions for categorical variables
 - Total
 - By province (BC, ON, QC); and
 - Chi-square, Fisher's Exact or Wilcoxon's rank sum test for comparisons between provinces
 - Multivariate logistic regression was used to identify correlates of ongoing HIV care

Results

- 1,427 participants included in this analysis
 - BC: 25%
 - ON: 50%
 - QC: 25%



Results: Participant Characteristics

	Overall	BC (n=356)	ON (n=718)	QC (n=353)	P-value
Age (median)	43 (36-51)	44 (37-52)	41 (35-49)	47 (39-53)	<0.001
Gender Identity					
Woman	96%	96%	95%	95%	0.801
Trans	4%	3%	4%	4%	
Sexual Orientation					
Heterosexual	87%	83%	87%	93%	<0.001
LGBTBQ	12%	17%	13%	7%	
Ethnicity					
Caucasian	41%	40%	39%	46%	<0.001
ACB	29%	8%	32%	46%	
Indigenous	22%	45%	21%	2%	
Other	7%	8%	8%	5%	
Education: ≥ High School	84%	74%	88%	85%	<0.001
Income (Personal gross < \$20,000)	63%	73%	59%	62%	<0.001
Food Security in 12 months	30%	30%	29%	33%	<0.001
History of Incarceration (ever)	30%	52%	24%	20%	<0.001
History of Recreational Drug Use					

Results: Clinical Characteristics

	Overall	BC (n=356)	ON (n=718)	QC (n=353)	P-value
HCV	32%	56%	21%	29%	<0.001
HBV	9%	13%	5%	10%	<0.001
Depression (CES-D \geq 16)	21%	28%	18%	21%	0.002
Median years living with HIV [IQR]	11 [6-17]	12 [7-18]	10 [5-15]	13 [8-18]	<0.001
Currently on ART	85%	91%	78%	92%	<0.001
Undetectable viral load (self-report)	77%	80%	70%	87%	<0.001

Results: Engagement in HIV Care

- Of the 1,427 participants in CHIWOS, 1,337 (93.6%) were engaged in ongoing HIV care
 - 6.4% were NOT engaged in care
- By province:

	Overall		BC		ON		QC	
	N	(%)	N	(%)	N	(%)	N	(%)
Engaged in Care	1,337	93.6	350	98.0	646	90.0	341	97.0
Lost to Follow-up	90	6.4	6	2.0	72	10.0	12	3.0

- 93.6% vs. 40-50% (all-comers from U.S. cohort-based studies)^{8,9}

Results: Retention in HIV Care

- Of the 1,429 participants in CHIWOS, 1,196 (85.6%) were retained in HIV care
 - 14.4% were NOT retained in care
 - vs. 49% (female U.S National Surveillance)⁴
 - vs. 80% (female BC population)⁷
 - vs. 83% (ACB and Latina/Hispanic female US population)¹⁰
 - vs. 81.4% (all-comers from Shadong Province, China)¹¹

Results: Adjusted Logistic Regression

	Adjusted OR (95% CI)	p-value
Gender identity Trans	0.26 (0.11-0.59)	0.001
Ethnicity Indigenous	0.41 (0.2-0.86)	0.091
History of Incarceration Ever Last Year	0.5 (0.25-0.99) 0.28 (0.1-0.77)	0.032
History of Recreational Drug Use (RDU) Current Previous	0.97 (0.55-1.71) 3.32 (1.55-7.11)	<0.001
Food Situation Score Food insecure (score 2-6)	0.81 (0.71-0.93)	0.003
Personal Gross Salary \$20,000-40,000 \$>40,000	0.47 (0.25-0.88) 1.98 (0.45-8.79)	0.027
Depression CES-D \geq 16	2.7 (1.28-5.68)	0.009
Housing Unstable	0.6 (0.33-1.07)	0.082
Everyday Discrimination Scale (EDD) Racism	0.98 (0.95-1)	0.089

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Results: Barriers to Engagement in Care

Barrier	N (44)	%
“Did not want to think about being HIV-positive”	13	30
“Did not want to believe HIV test results”	2	5
“Felt good/Did not need to go”	23	52
“No clinic where I live”	4	9
“No culturally-sensitive clinic where I live”	3	7
Transportation	2	5
Cost	2	5
Personal or family responsibilities	1	2
Work responsibilities	1	2
“Negative experiences from HC providers”	3	7
Drinking or using drugs	7	16
“Feel judged for alcohol or drug use”	1	2
“Everyone will know I am positive”	2	5
Confidentiality concerns	2	5
Discrimination from MDs, nurses or staff	1	2
Other	10	23

Study Limitations

- Sampling bias
 - Participants were primarily recruited from ASOs (AIDS Service Organizations) and HIV clinics
- Generalizability
- Outcome measure: Engagement vs. Retention
 - Is the definition of ≥ 1 HIV care visit during the previous year too lenient to draw any conclusions?

Conclusions

1. The small proportion (6.3%) of CHIWOS women who do not receive ongoing HIV care is a likely underestimation from the general population of women living with HIV given our recruitment bias from ASOs and HIV clinics.
2. The identification of correlates associated with the lack of ongoing HIV care is **extremely valuable** in order to improve engagement in care.

WHAT: Type of interventions/services (i.e., income and food security)

WHO: High-risk women (i.e., trans women, Aboriginal women, women with a history of drug use and incarceration)



Going Forward...

- Similar analysis at each stage during the cascade of care will be performed to determine:
 - Where do(es) the highest rate(s) of attrition occur?
 - What subgroups of women are affected at each stage?
 - What interventions are required at each stage to minimize attrition?
- Goal: Review the delivery of female-centred HIV services to ensure maximum adherence along the continuum of care

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- And all our partnering organizations who support study recruitment and operations.

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In **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; 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.

In **QC**: ACCM; L'ARCHE de l'Estrie; ASTT(e)Q; BLITS; BRAS-Outaouais; CACTUS; CASM; Centre Sida Amitié; Corporation Félix Hubert d'Hérelle; COCQ_SIDA; Fondation d'Aide Directe-SIDA Montréal; GAP-VIES; GEIPI; 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; Sida-Vie Laval; Stella, l'amie de Maimie.



References

1. Gardner EM et al. **The spectrum of engagement in HIV care and its relevance to test-and-treat strategies for prevention of HIV infection.** *Clin Infect Dis.* 2011;52(6):793-800.
2. Druyts E et al. **Male sex and the risk of mortality among individuals enrolled in antiretroviral therapy programs in Africa: a systematic review and meta-analysis.** *AIDS.* 2013;27(3):417-25.
3. Fox MP and Rosen S. **Patient retention in antiretroviral therapy programs up to three years on treatment in sub-Saharan Africa, 2007-2009: systematic review.** *Trop Med Int Health.* [2010;15 Suppl 1:1-15.](#)
4. Hall HI et al. **Differences in Human Immunodeficiency Virus Care and Treatment Among Subpopulations in the United States.** *JAMA Internal Medicine.* **2013;173: 1337–1344.**
5. Tapp C et al. **Female gender predicts lower access and adherence to antiretroviral therapy in a setting of free healthcare.** *BMC infectious diseases.* 2011;11:86.
6. Puskas CM et al. **Women and vulnerability to HAART non-adherence: a literature review of treatment adherence by gender from 2000 to 2011.** *Current HIV/AIDS reports.* 2011;8:277–287.
7. Lourenco L et al. **High levels of heterogeneity in the HIV cascade of care across different population subgroups in British Columbia, Canada.** *PLoS One.* 2014 Dec 26;9(12).
8. Olatosi BA et al. **Patterns of engagement in care by HIV-infected adults: South Carolina, 2004-2006.** *AIDS.* 2009;23(6):725-30.
9. Perkins D et al. **Assessing HIV care and unmet need: eight data bases and a bit of perseverance.** *AIDS Care.* 2008;20:318–26.
10. Blank AE et al. **Factors associated with retention and viral suppression among a cohort of HIV+ women of color.** *AIDS Patient Care STDS.* 2015;29 Suppl 1:S27-35.
11. Zhang N et al. **The spectrum of engagement in HIV care: how is it in Shandong Province, China?** *Clin Infect Dis.* 2015;60(8):1292.

Thank you!

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