

# Early Onset Menopause Among Women Living with HIV in Canada

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and Women

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# Conflicts of Interest

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- No conflicts to disclose

# Background

- Natural menopause typically occurs between the ages of **50-52 years** in Canada and the USA
  - Early menopause (EM): 40-45 years
  - Premature ovarian failure (POF): <40 years

Brambilla. J Clin Epi 1989; 42(11)  
World Health Organization, 1996

- Implications of EM/POF:
  - Changes in mood and sexual function
  - Reduced quality of life
  - Early development of other comorbidities:
    - Cardiovascular disease
    - Osteoporosis
  - Increased mortality

# Background

- Several observational studies have suggested that women with HIV:
  - Have a **younger age of menopause** than the general population
  - Are **more likely to experience** early menopause (<45 years) and POF (<40 years)
- Earlier menopause associated with:
  - Ethnicity (African-American)
  - Lower CD4 Count
  - Injection Drug Use (IDU), Hepatitis C, Smoking

# Objective

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- To assess the **age of menopause**, and the **prevalence and predictors of early menopause** in a cohort of HIV-positive Canadian women

# Methodology – Study Population

- The **Canadian HIV Women's Sexual and Reproductive Health Study (CHIWOS)** is a community-based, prospective cohort study of women with HIV  $\geq 16$  years in BC, ON and QC, Canada
  - Enrollment: October 2013 – June 2015
  - Extensive baseline questionnaire with questions related to menopause and menstruation
  - At the time of analysis, 1105 women had completed this questionnaire

# Methodology – Study Population

- Cross-sectional analysis of **post-menopausal women**
  - Identified based on hierarchical responses to 4 questions:
    - *When did you start your most recent menstrual period?*
    - *How would you describe your menstrual status as it relates to menopause?*
    - *When did you complete menopause?*
    - *Which of the following reasons describes why you have not had a period for >12 months?*
- **Exclusion:**
  - Never previously had a period
  - Pregnant
  - Taking hormonal contraception
  - No reported age of menopause

# Methodology – Statistical Analysis

- **Primary Outcome:**

- Median age of menopause (with IQR)
- Sensitivity analysis: exclusion of women with surgical menopause

- **Secondary Outcomes:**

- 1) **Early Menopause and POF:**

- Prevalence of menopause 40 to <45 years (early menopause)
- Prevalence of menopause <40 years (POF)
- Sensitivity analysis: exclusion of women with surgical menopause

- 2) **Correlates of menopause <45 years:**

- **Univariate analyses** (chi-square, Fishers' exact, Wilcoxon Rank Sum)
- **MV analysis** (logistic regression, backward selection)

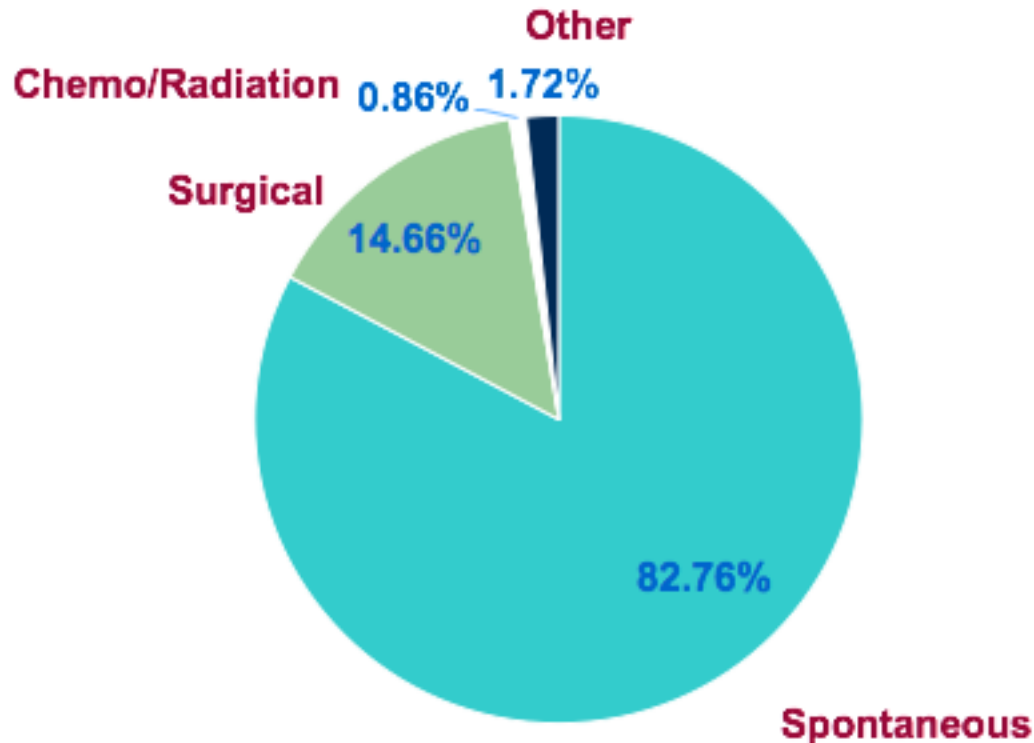


# Baseline Characteristics

Variable	Study Population (n=232)	
	Median or Frequency	IQR or Proportion
Age (years)	55	51-59
Duration of HIV (years)	15.3	9.7-19.8
Ethnicity		
Caucasian	123	53.0%
ACB	52	22.4%
Indigenous	44	19.0%
HIV Risk		
Heterosexual	142	61.2%
Needles	55	23.7%
Transfusion	19	8.2%
Perinatal	2	0.9%
Injection Drug Use (ever)	91	39.2%
Current Antiretroviral Therapy	220	94.8%
CD4 Count (current)		
<200 cells/mm <sup>3</sup>	16	6.9%
200-500 cells/mm <sup>3</sup>	70	30.2%
>500 cells/mm <sup>3</sup>	123	53.0%
Undetectable Viral Load	202	87.1%

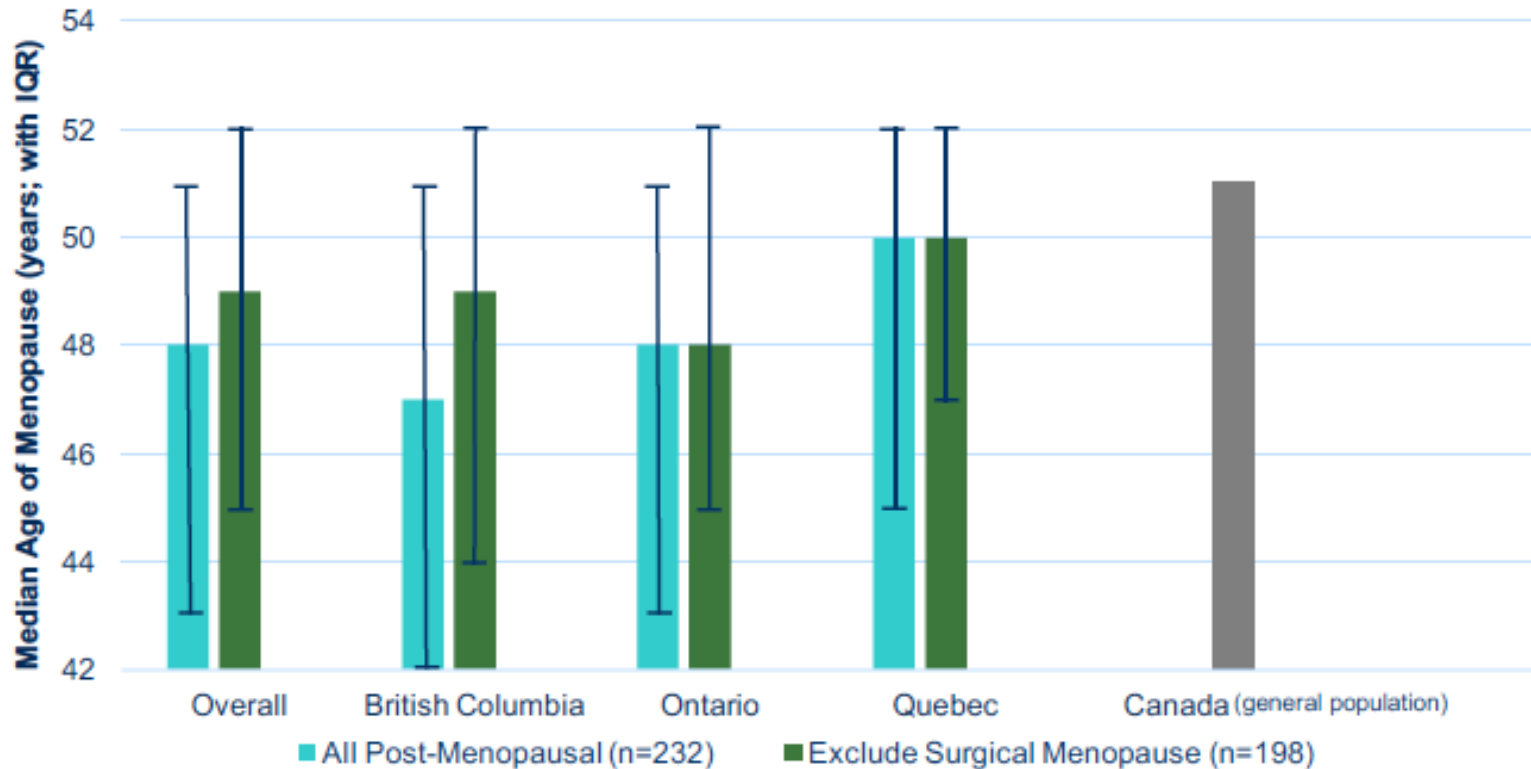
# Causes of Menopause

- 34/232 women (14.7%) reported surgery as the cause of menopause



# Age of Menopause

- Median age of menopause: **48 years (IQR: 43-51)**
  - **Excluding surgical menopause: 49 years (IQR: 45-52)**



# Early Menopause and POF

- **68/232 (29.3%)** women reported menopause <45 years
  - **Excluding surgical menopause: 43/198 (21.7%)**

Age of Menopause	Study Population (n=232) Frequency (%)	Exclude Surgical Menopause (n=198) Frequency (%)
<40 years	30 (12.9%)	14 (7.6%)
40 to <45 years	38 (16.4%)	29 (14.6%)
45 to <50 years	62 (26.7%)	58 (29.3%)
≥ 50 years	102 (44.0%)	96 (48.5%)

- In the general population:
  - **5% of women have menopause <45 years; 1% <40 years**

# Correlates of Early Menopause

Variable	Univariate Analysis		Multivariate Analysis	
	Odds Ratio (OR)	95% Confidence Interval (CI)	Adjusted OR	95% CI
<b>Age at Interview</b>	<b>0.89</b>	<b>0.83-0.95</b>	<b>0.86</b>	<b>0.80-0.92</b>
<b>Duration HIV</b>	<b>1.04</b>	<b>0.99-1.09</b>	1.04	0.99-1.09
Born Outside Canada	0.50	0.26-0.98	Not selected*	
<b>Education High School or Higher</b>	<b>0.42</b>	<b>0.21-0.81</b>	0.52	0.23-1.15
Never Smoked	2.33	1.18-4.55	Not selected*	
<b>Ever IDU</b>	<b>2.26</b>	<b>1.27-4.04</b>	1.27	0.62-2.58
Ever Hepatitis C	2.23	1.25-3.97	Not selected*	
Cause of Menopause Spontaneous (ref) <b>Surgery</b>	<b>8.57</b>	<b>3.80-19.33</b>	<b>7.63</b>	<b>3.03-19.24</b>

# Limitations

- Lack of HIV-negative control
  - Comparison to general population rates only
- Sample size
  - Only 68 women had menopause < 45 years
- Self-Reported Menopause
  - Some studies suggest HIV-positive women have high rates amenorrhea without menopause
- 203 of 435 post-menopausal women did not report age of menopause and were excluded from analysis

Variable	Study Population (n=232)		Excluded PM Women (n=203)		p-value
	Median or Frequency	IQR or Proportion	Median or Frequency	IQR or Proportion	
<b>Age (years)</b>	<b>55</b>	<b>51-59</b>	<b>50</b>	<b>45-54</b>	<b>&lt;0.001</b>
Duration HIV (years)	15.3	9.7-19.8	14.2	8.1-19.8	0.231
<b>Province</b>					<b>&lt;0.001</b>
<b>Ontario</b>	<b>71</b>	<b>30.6%</b>	<b>98</b>	<b>48.3%</b>	
<b>BC</b>	<b>75</b>	<b>32.3%</b>	<b>62</b>	<b>30.5%</b>	
<b>Quebec</b>	<b>86</b>	<b>37.1%</b>	<b>43</b>	<b>21.2%</b>	
Ethnicity					0.127
Caucasian	123	53.0%	100	49.3%	
ACB	52	22.4%	36	17.7%	
Indigenous	44	19.0%	45	22.2%	
HIV Risk					0.324
Heterosexual	142	61.2%	107	52.7%	
Needles	55	23.7%	65	32.0%	
Transfusion	19	8.2%	13	6.4%	
Perinatal	2	0.9%	1	0.5%	
<b>Injection Drug Use</b>	<b>91</b>	<b>39.2%</b>	<b>100</b>	<b>49.3%</b>	<b>0.042</b>
Antiretroviral Therapy	220	94.8%	180	88.7%	0.068
CD4 Count (cells/mm <sup>3</sup> )					0.866
<200 cells/mm <sup>3</sup>	16	6.9%	15	7.4%	
200-500	70	30.2%	54	26.6%	
>500	123	53.0%	94	46.3%	
Undetectable VL	202	87.1%	159	78.3%	0.111

# Conclusions

- The median age of spontaneous menopause in this cohort of Canadian women was **49 years** (48 years overall)
- For women who went through spontaneous menopause:
  - **22.2% had menopause <45 years**
  - **7.6% had menopause <40 years**
  - **Lower than the rate of EM/POF in general population (1-5%)**
- Older age, birth outside Canada, and higher education protective, while smoking, IDU, hepatitis C were risk factors for EM in univariate analyses
  - Only age remained significant in MV analysis



# Acknowledgements

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- All CHIWOS Participants and PRAs
- The Canadian HIV Trials Network

# Questions

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