Chronic/latent viral infection prevalence and estimated all-cause mortality risk among women living with HIV and HIV-negative women participating in the British Columbia CARMA-CHIWOS Collaboration (BCC3) study: preliminary findings

Tetiana Povshedna[1,2], Sofia LA Levy[1,2], Amber R Campbell[3,4], Shayda A Swann[3,5], Davi Pang[6], Elizabeth M King[3,6], Valerie Nicholson[7,8], Angela Kaida[3,7], Melanie CM Murray[3,4,9], Helene CF Cote[1,2,3], and the BCC3 (CIHR, CTN 335) study team

1.Department of Pathology and Laboratory Medicine, University of British Columbia, Vancouver, Canada; 2.Centre for Blood Research, University of British Columbia, Vancouver, BC, Canada; 3.Women's Health Research Institute, British Columbia Women's Hospital and Health Centre, Vancouver, British Columbia, Canada;4.Oak Tree Clinic, British Columbia Women's Hospital and Health Centre, Vancouver, British Columbia, Canada;5.Experimental Medicine, The University of British Columbia Faculty of Medicine, Vancouver, British Columbia, Canada;6.Department of Medicine, Faculty of Medicine, The University of British Columbia, Vancouver, British Columbia, Canada;7.Faculty of Health Sciences, Simon Fraser University, Burnaby, British Columbia, Canada;8.Epidemiology and Population Health, BC Centre for Excellence in HIV/AIDS, Vancouver, British Columbia, Canada; 9.Division of Infectious Diseases, The University of British Columbia Faculty of Medicine, Vancouver, British Columbia, Canada.

Background

- Women living with HIV (**WLWH**) have shorter life expectancy compared to HIV-negative women, which suggests accelerated/accentuated aging.
- Healthy aging is affected by chronic inflammation caused by HIV and other persistent viral infections, as well as socio-structural stressors that disproportionately affect **WLWH**.
- The BCC3 study is a prospective cohort that takes holistic approach to examine healthy aging and enrolls **WLWH** and HIV-negative women living in British Columbia, Canada.

Learn more about BCC3: https://hivhearme.ca/

@HIV_HEAR_me @hiv_hear_me

https://www.facebook.com/HIVHEARME

YouTube SCAN ME

Explore the BCC3 study via our videos!

Methods

In this preliminary analysis, prevalence of **9** chronic **viral infections** was assessed by **serology:**

- *HIV*
- *Epstein-Barr virus (EBV)*
- *hepatitis B and C viruses (HBV, HCV)*
- *herpes simplex viruses (HSV-1, HSV-2)*
- *human herpesvirus-8 (HHV-8)*
- *cytomegalovirus (CMV)*

or **self-report** (varicella-zoster virus (VZV))

The Veterans Aging Cohort Study (**VACS**) **index**, which estimates **5-year all-cause mortality risk** based on clinical and demographic parameters (age, CD4 count, HIV RNA, hemoglobin, platelets, aspartate aminotransferase, alanine aminotransferase, HCV status) was calculated for **WLWH** and **controls** based on the BCC3 survey data.

The groups were compared by Fisher's, Chi-Squared, and Mann-Whitney tests, as appropriate.

Results: demographic characteristics of study participants and prevalence of viral infections

Table 1. Demographic characteristics of the study participants

	WLWH (n=100)	Controls (n=100)	P-value
Age (years), median [IQR] (range)	51 [42-58] (20-73)	47 [27-56] (17-80)	**0.01**
African/Caribbean/Black / White / Indigenous / Asian / other, %	13 / 38 / 29 / 9 / 11	3 / 53 / 3 / 24 / 7	**<0.001**
Graduated high school, %	69	96	**<0.0001**
Currently employed, %	36	57	**0.003**
Individual annual income <$20.000, %	64	33	**<0.0001**
Have experienced homelessness, %	51	21	**<0.001**
Current smoking, %	45	21	**<0.001**
Current substance use, %	48	38	0.15
Current opioid use, %	27	11	**0.004**

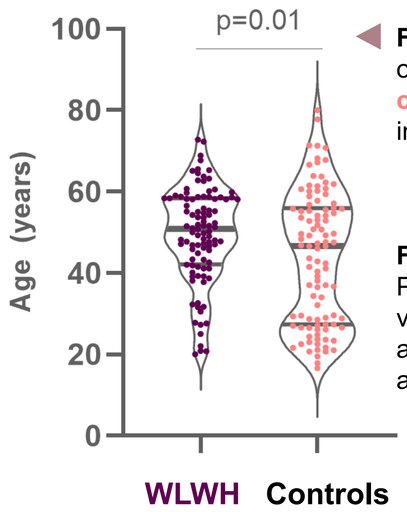
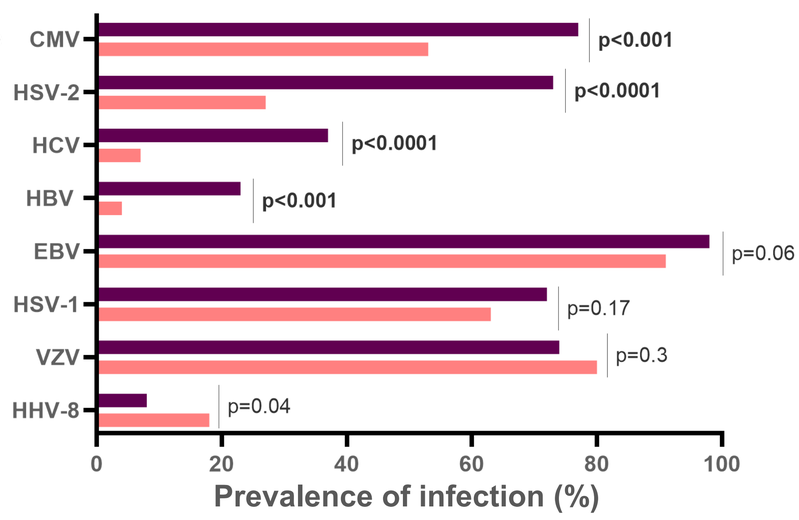


Figure 1. The age of **WLWH** and **controls** included in the analysis

Figure 2. Prevalence of viruses of interest among **WLWH** and **controls**



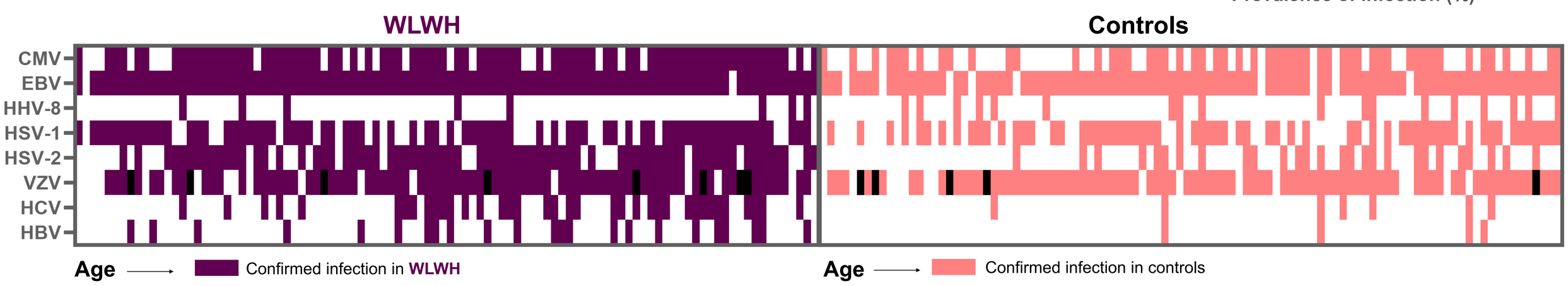


Figure 3. Prevalence of chronic viral infections among **WLWH** and controls. Participant age increases from left to right for both groups. Black boxes indicate "Don't know" response to the survey question about past VZV infection.

WLWH were **more likely** to harbor CMV, HSV-2, HCV, and HBV, **but not** EBV, HHV-8, HSV-1, or VZV compared to **controls**

Results: VACS index (5-year all-cause mortality risk)

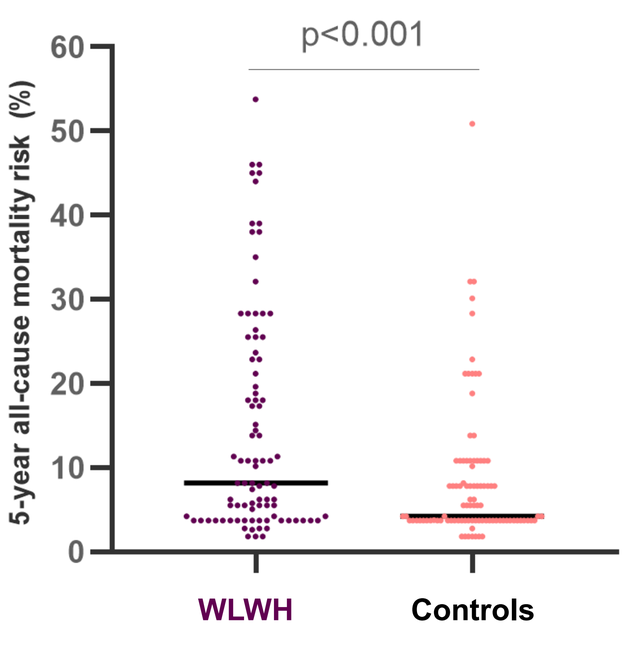


Figure 4. Calculated VACS score for **WLWH** (n=90) and **controls** (n=96)

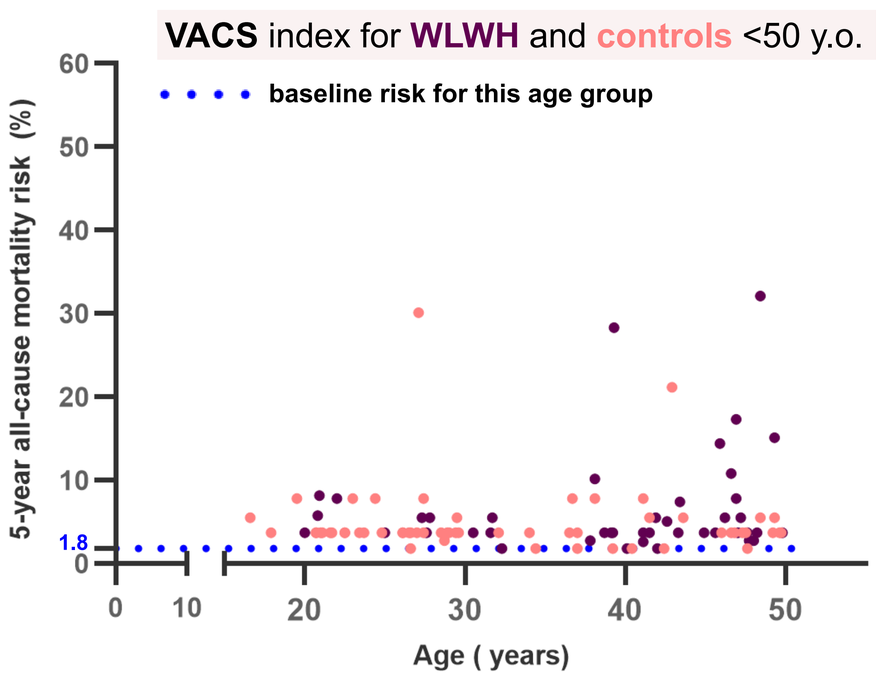


Figure 5. Calculated VACS index for **WLWH** and **controls** younger than 50 y.o. Blue line – baseline risk for this age.

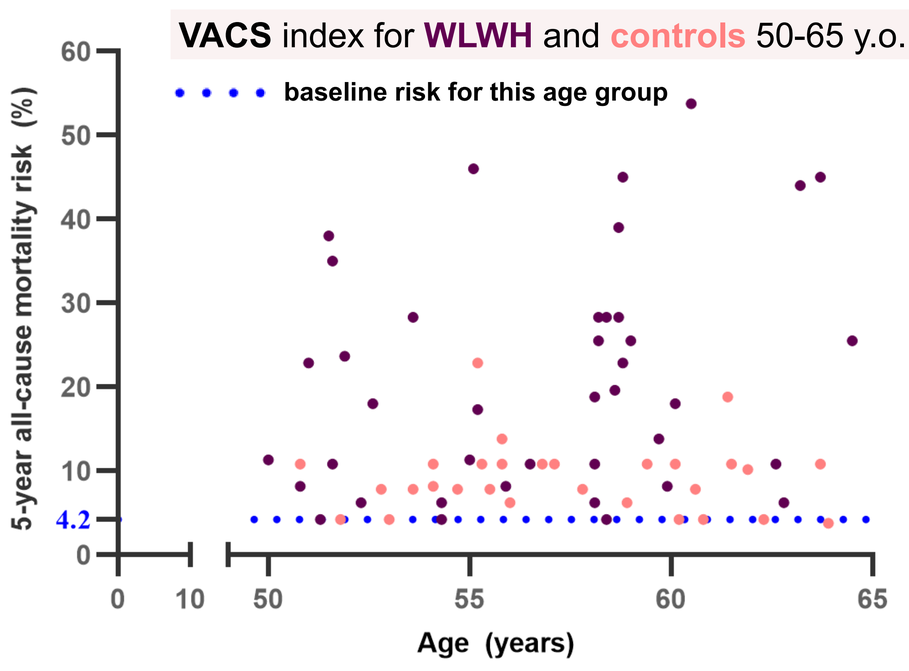


Figure 6. Calculated VACS index for **WLWH** and **controls** aged 50-65 y.o. Blue line – baseline risk for this age.

- After excluding participants with missing data, **WLWH** have **higher** median 5-year all-cause mortality risk compared to **controls** (Figure 4): **8.2%** [3.7 – 23.1] vs **4.2%** [3.7 – 10.7]
- Both **WLWH** and **controls** in our analysis have higher VACS index compared to baseline (Figures 5,6).
- Differences between **WLWH** and **controls** seem to be most pronounced after the age of 40 (Figures 5,6)

Conclusions

WLWH were **more likely** to have CMV HSV-2 HBV HCV **but not** EBV VZV HSV-1 HHV-8

While **WLWH** showed almost **twice the risk** of mortality within 5 years compared to **controls**, both groups showed elevated risk compared to baseline. These observations may be mediated through **biological variables**, age, and/or **socio-structural factors**. This type of analysis can shed light on the factors that affect aging in **WLWH**, to ultimately inform action(s) to improve quality of life and close the health gap between **WLWH** and HIV-negative women.

We would like to thank the **BCC3** study team, participants, investigators, and staff.
The funding for this project was provided by **CIHR**, **CTN**, and **CBR**.
Contact: **taniapov@student.ubc.ca**

AIDS 2022 29 July – 2 August
Created with BioRender.com