Breast Cancer Risk in Women Living With HIV in South Africa: The SAM Study

Maša Davidović[1], Tafadzwa Dhokotera[1], Lina Bartels[1], Katayoun Taghavi[1], Frédérique Chammartin[1], Victor Olago[2], Elvira Singh[2,3], Matthias Egger[1], Mazvita Sengayi[2,3], Julia Bohlius[1]

[1]University of Bern, Bern, Switzerland, [2]National Cancer Registry, National Health Laboratory Service, Johannesburg, South Africa, [3]School of Public Health, University of Witwatersrand, Johannesburg, South Africa

Abstract #0629

Background

- Approximately 18% of women in South Africa (SA) are living with HIV (1).
- Improved access to antiretroviral therapy has increased the survival of women living with HIV (WLHIV) and moved the distribution of cancer diagnosed in this population towards non-AIDS-defining cancers, including breast cancer (BC) (2).
- According to the National Cancer Register South Africa (NCR SA) Report (3), BC was the most common diagnosed cancer in women in SA in 2014, with a crude incidence rate of 29.75 per 100 000 person-years.

Objectives

- To estimate BC incidence rates in WLHIV in SA
- To estimate risk factors for developing BC in WLHIV in SA

Methods

- **Data source:** The South African HIV Cancer Match (SAM) Study
- A population based HIV cohort with cancer outcomes using HIV-related lab records from National Health Laboratory System and cancer records from NCR SA (Figure 1).
- Records were linked using privacy preserving probabilistic record linkages to de-duplicate and link records using (encrypted) names, birthdates/ age, gender, sub-district.

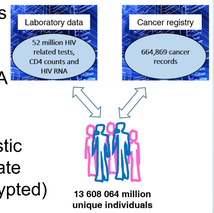


Figure 1: The SAM Study

Methods (continued)

- **Inclusion criteria for incidence analysis:**
  - WLHIV aged 16 years and older
  - Confirmed HIV status by two or more HIV-related tests
  - Cancer diagnosed between 2004 and 2014 in the SA public health sector laboratories
- **Observation time** was defined from first HIV-related lab record to end of follow-up or BC diagnosis.
- **Incident BC cases** were defined as cases diagnosed after the first HIV-related lab record.
- **Statistical analyses:**
- We used univariable and mulitivariable Cox proportional hazard models stratified by province of the first HIV test to identify following risk factors:
  - Age, first reported CD4 cell count, calendar period.

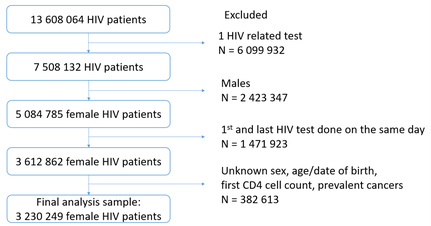


Figure 2: Flow Chart

Results

Between 2004 and 2014:

- 3 230 249 WLHIV included (Figure 2),
- 9 064 500 person-years of follow-up,
- 3 997 incident BC cases were diagnosed.
- Median age of WLHIV at
  - baseline: 32 years (interquartile range (IQR): 26-40),
  - BC diagnosis: 46 years (IQR: 39-53).
- Median CD4 cell count at baseline:
  - 308 cells/µL (IQR: 175-474).

Results (continued)

- **Overall BC incidence rate was 44.1 cases (95%CI 42.7-45.5) per 100 000 person-years.**
- There was no evidence for an association of CD4 cell counts or calendar periods with BC risk.
- Higher age increased the risk of developing BC risk (Table 1).

Table 1: Crude incidence rates of BC per 100 000 person-years and hazard ratios from multivariate Cox regression analysis, stratified by province of first HIV test

	No. of BC cases	Incidence rate (95% CI)	Hazard ratio (95% CI)	Chi² statistics
First CD4 count [cells/µL]				
<200	1 394	52.5 (49.8-55.3)	1	
201-350	1 062	41.3 (38.9-43.9)	0.93 (0.8-1.0)	p = 0.000
351-500	722	39.1 (36.3-42.0)	1 (0.9-1.1)	
>=501	739	37.8 (35.2-40.7)	1.01 (0.9-1.1)	
Age category [years]				
16-19	5	1.6 (0.7-3.9)	0.04 (0.0-0.1)	
20-29	332	10.1 (9.1-11.2)	0.26 (0.2-0.3)	
30-39	1 265	39.6 (37.5-41.9)	1	p = 0.000
40-49	1 364	93.6 (88.8-98.7)	2.5 (2.3-2.7)	
50-59	793	160 (150-170)	4.58 (4.2-5.0)	
60+	238	220 (200-250)	7.32 (6.3-8.4)	
Calendar period				
2004-2006	1 285	58.4 (55.3-61.6)	1	
2007-2010	1 981	41.6 (39.9-43.5)	1.08 (1.0-1.2)	p = 0.000
2011-2014	731	34.7 (32.3-37.3)	1.36 (1.2-1.5)	

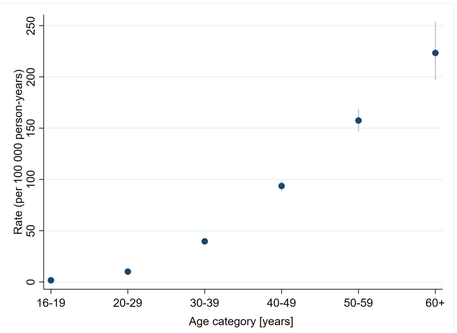


Figure 3: BC incidence rate (per 100 000 person-years) for different age categories (in years).

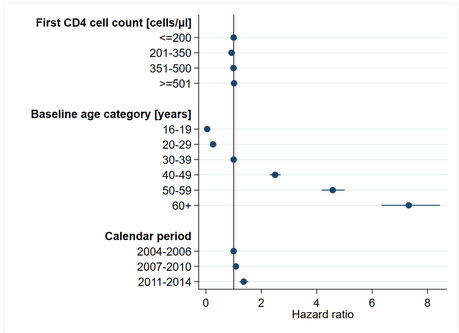


Figure 4: Hazard ratios from multivariate Cox regression analysis stratified by province for developing BC in WLHIV in SA

Conclusions

- BC incidence rate in WLHIV was high and similar to the reported incidence rate for the general population in SA.
- BC incidence in WLHIV increased with increasing age (Figure 3).
- We found no evidence for an association between HIV related immunosuppression and BC risk in WLHIV in RSA (Figure 4).
- Additional analyses of stage at diagnosis and BC mortality are needed to inform the public health response to BC in WLHIV in SA.

References

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Contact: Davidović Maša, MD, MSc, PhD Student, masa.davidovic@ispm.unibe.ch; www.iedea-sa.org

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