Assessing the population level impact of HPV vaccination in Zimbabwe – a baseline urine survey

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Outline

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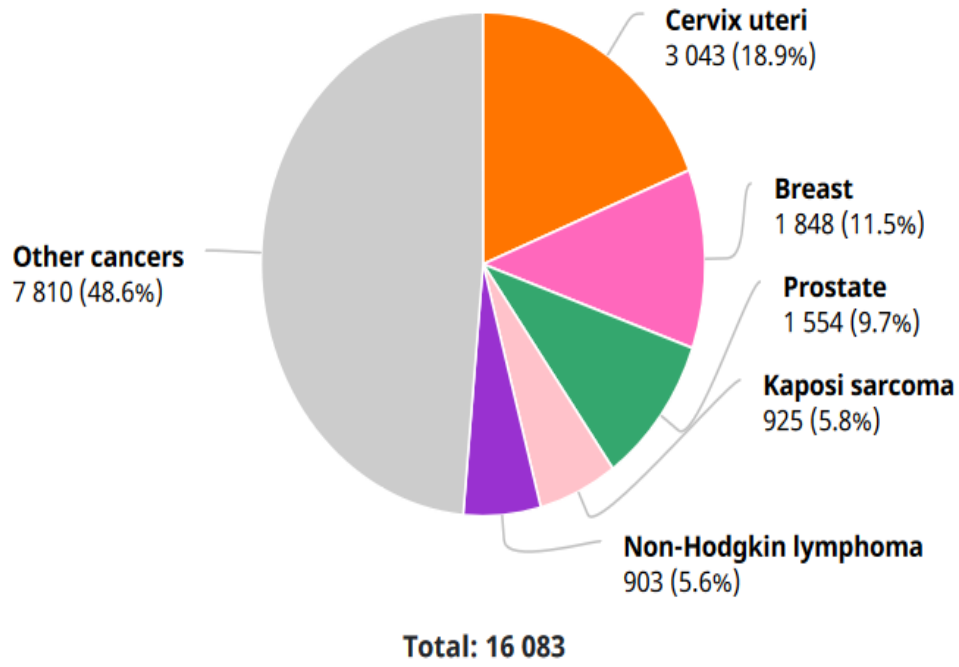
- Acknowledgements

Background

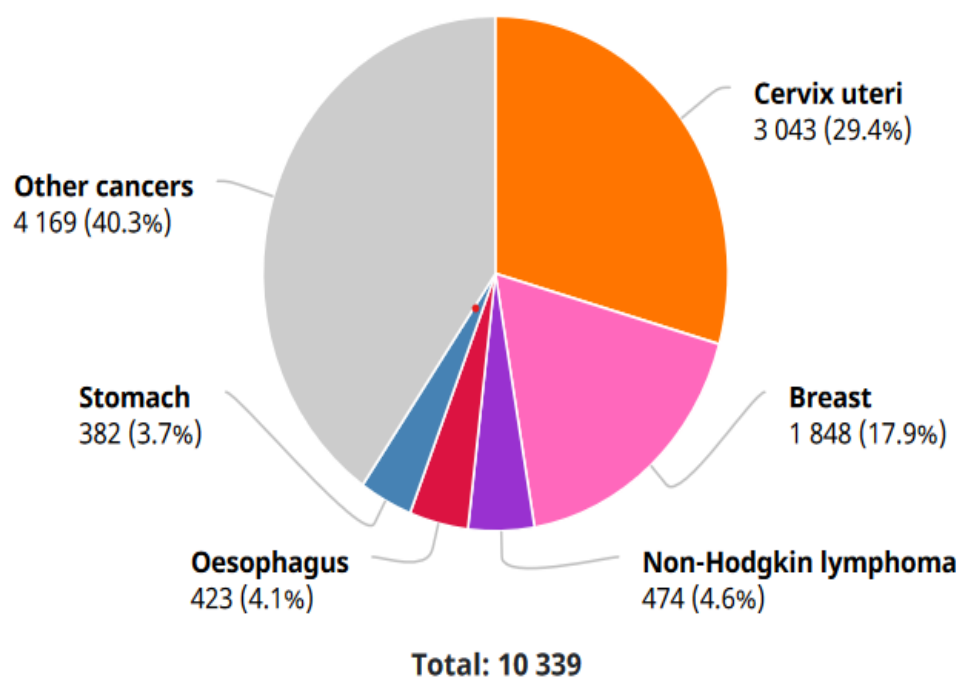
- In Zimbabwe:
  - Cervical cancer constitutes 33% of cancer deaths among females, and 29.4% of cancer burden among women (GLOBOCAN, 2021).
  - In 2020, it constituted 20% of all cancers among Zimbabweans of all races (ZNCR).
  - The age-standardised incidence rate is high at 61.7/100 000 women (GLOBOCAN, 2021).
- Prevention through vaccination and screening with high-performance HPV-DNA testing will become the cruxes of reducing the burden (*WHO Global Strategy for the Elimination of Cervical Cancer*).

Burden of cervical cancer in Zimbabwe (ZNCR)

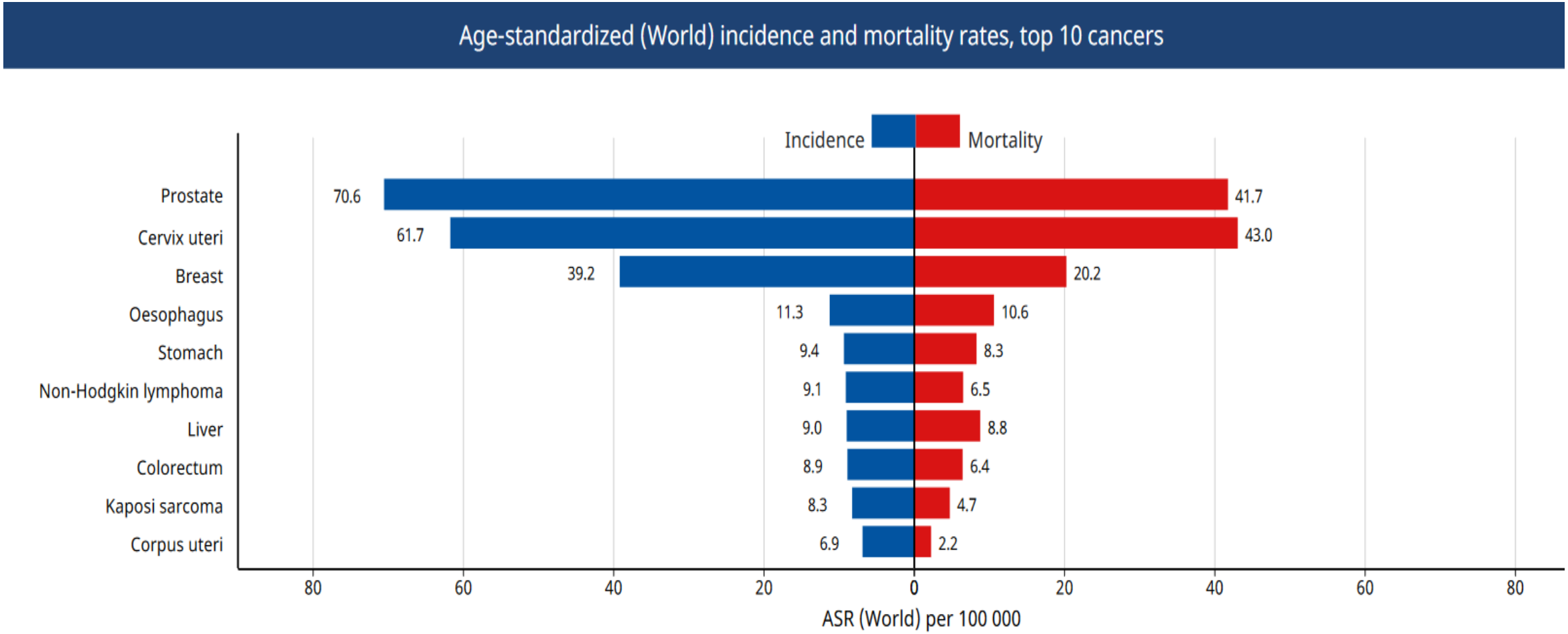
Number of new cases in 2020, both sexes, all ages



Number of new cases in 2020, females, all ages

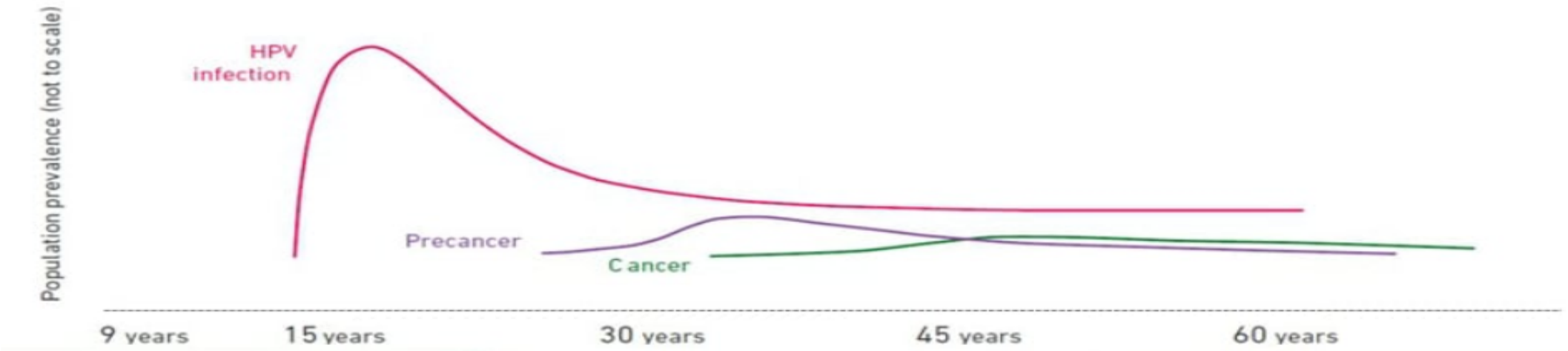


Burden of cervical cancer in Zimbabwe



Background

The life-course approach for cervical cancer prevention and control



Primary prevention	Secondary prevention	Tertiary prevention
Girls 9–14 years • HPV vaccination	**From 30 years of age for women from the general population and 25 years of age for women living with HIV**	**All women as needed**

The HPV vaccination programme in Zimbabwe

- National school-based vaccination programme with bivalent vaccine.
- Pilot in Marondera and Beitbridge in 2014-2015.
- Nationwide programme since 2018.
- 2 doses targeted at girls aged 10 to 14 years, 12 months apart.
- No longitudinal studies existed to monitor the impact of the vaccination programme on the prevalence of type-specific HPV genotypes in the country.

Rationale

- Knowledge of type-specific HPV prevalence is essential to:
  - Predict the future burden of cervical cancer,
  - To inform screening and cervical cancer control policies,
  - Project the expected impact of HPV vaccination.
- Assessment of impact of vaccination on cervical cancer is complicated by long interval from carcinogenic breakthrough infection to carcinogenesis:
  - However, most feasible outcome to measure as a proxy in the near term is type-specific HPV infection prevalence in sentinel populations of young sexually active women and adolescents.
- We aim to assess the current type-specific prevalence of HPV infection in Harare among women aged 19-23 years, measuring HPV-DNA prevalence in unvaccinated birth cohorts.

Rationale

Figure 2. Analytic framework used to assess the impact of HPV vaccination in Zimbabwe

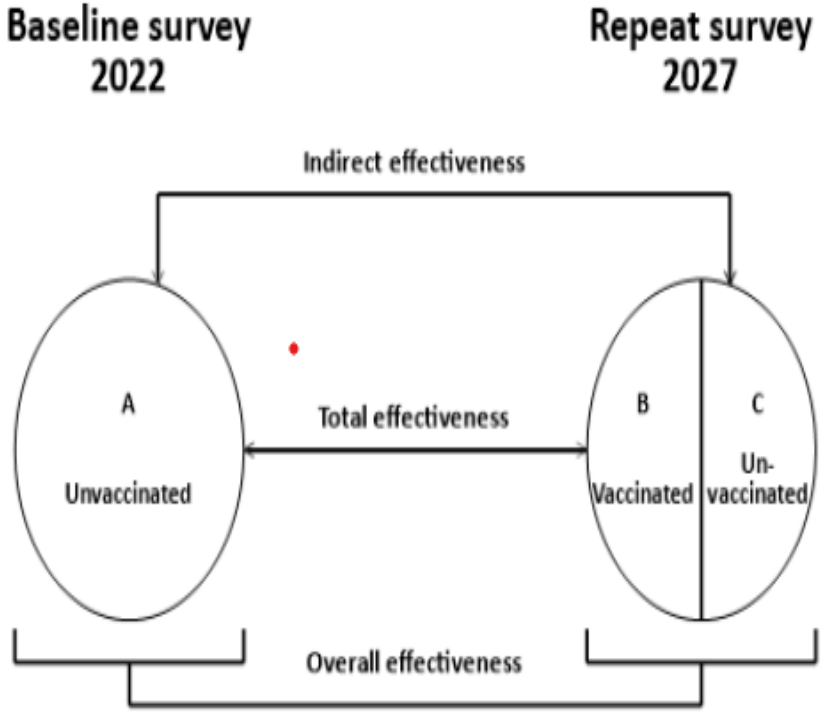
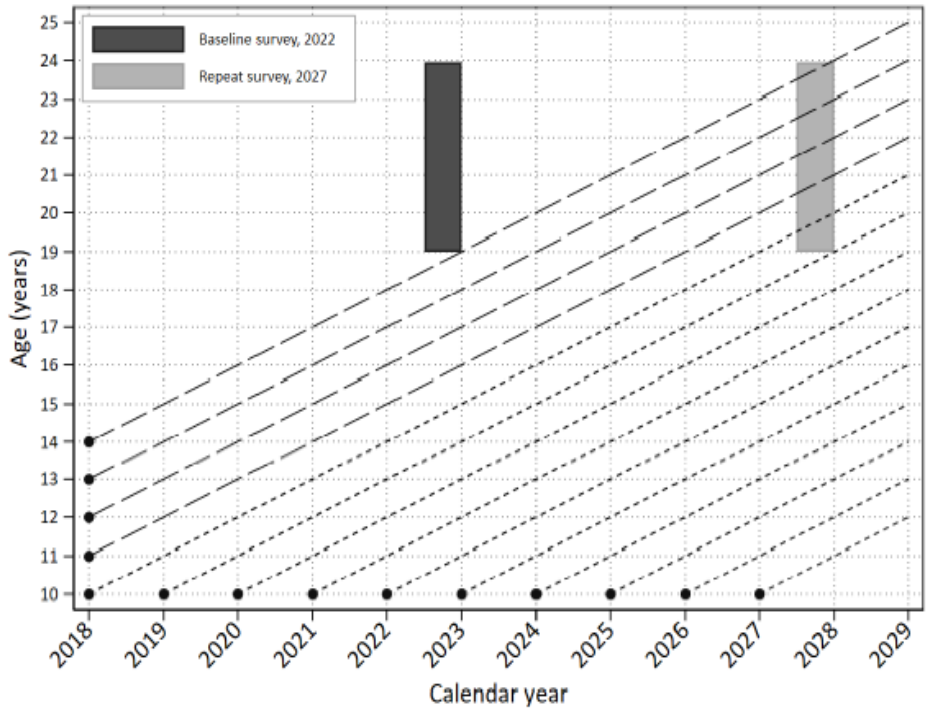


Figure 3. Timing of school-based HPV vaccination program and proposed urine-based surveys in Zimbabwe (dashed lines represent birth-cohort vaccinated with catch-up, dotted lines represent birth-cohort vaccinated through routine vaccination).



Methods

- Cross-sectional survey.
- 4 Clinical Research Sites in Harare, Zimbabwe
- Recruiting approximately 2500 women aged 19-23 years
- Collection of samples of urine:
  - Done at 4 CRSes and stored at 2-8 degrees Celsius.
  - Transported to central lab for storage at -20 degrees Celsius.
  - Shipped periodically to IARC on dry ice.
  - Testing in Netherlands.
- Administration of a web-based questionnaire via Red Cap.
- Ethical approvals from relevant IRBs, ECs, RCZ, IARC.
- Recruitment since November 2022; expected completion June 2023.

Recruitment metrics so far

ENROLLMENT Table by Clinical site and Age

	Age (in years)								
	<19	19	20	21	22	23	>23	Total [19-23]	Total outside [19-23]
Spillhaus Clinic	0	121	120	125	126	117	2	**609/635**	2
Milton Park Clinic	0	120	128	127	128	84	1	**587/635**	1
Seke South Clinic	0	127	127	127	127	127	1	**635/635**	1
Zengeza Clinic	0	80	112	107	113	81	0	**493/635**	0
Total samples	**0**	**448/508**	**487/508**	**486/508**	**494/508**	**409/508**	**4**	**2 324/2540**	**4**

ENROLLMENT Table by Clinical site and Age, stratified by HIV status (Negative/Positive/Unknown)

	Age (in years)								
	<19	19	20	21	22	23	>23	Total [19-23]	Total outside [19-23]
Spillhaus Clinic	0/ 0/ 0	108/ 6/ 7	103/ 7/ 10	105/ 1/ 19	106/ 5/ 15	102/ 3/ 12	1/ 1/ 0	524/ 22/ 63	1/ 1/ 0
Milton Park Clinic	0/ 0/ 0	105/ 4/ 11	107/ 3/ 18	109/ 3/ 13	103/ 12/ 15	73/ 9/ 2	1/ 0/ 0	497/ 31/ 59	1/ 0/ 0
Seke South Clinic	0/ 0/ 0	111/ 7/ 9	100/ 5/ 22	105/ 3/ 19	109/ 2/ 16	115/ 6/ 6	1/ 0/ 0	540/ 23/72	1/ 0/ 0
Zengeza Clinic	0/ 0/ 0	75/ 2/ 3	97/ 7/ 8	94/ 4/ 9	106/ 2/ 5	72/ 5/ 4	0/ 0/ 0	444/ 20/ 29	0/ 0/ 0
Total samples	0/ 0/ 0	399/ 19/ 30	407/ 22/ 58	413/ 11/ 62	424/ 21/ 49	362/ 23/ 24	3/ 1/ 0	2 005/ 96/ 223	3/ 1/ 0

Our experience so far

- Self-collection of urine specimens for HPV assays is socially and culturally acceptable among young Zimbabwean women.
- Our community is willing to take part in studies related to cervical cancer prevention in the country.
- Nurses and other clinical research site staff also find urine-based surveys easy and acceptable compared to other studies they have worked on.
- Possibility of participants coming back or going to a different site – need for biometric enrolment system.
- Possibility of selection bias as some participants self-refer and refer their peers with similar socio-behavioural characteristics?
- Sustainability – need to develop capacity for local testing. Working with international partners for validation of urine assay by August 2023.

Pictures


University of Zimbabwe
Clinical Trials Research Centre
(UZ-CTRC)
UZ-CTRC
SEKE SOUTH
CLINICAL RESEARCH SITE

Pictures

Acknowledgements