Cervical Cancer & HIV: Intersecting Epidemics

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March 19th 2020
Outline

• Epidemiology of cervical cancer

• Science of Cervical cancer in context of HIV infection

• Funding landscape
Cervical Cancer: A disease of health inequity

- 570,000 new cases yearly
- 85% cases in low-resource settings
- 311,000 deaths yearly
- 90% mortality in LMICs
- 1 death every two minutes
Cervical cancer – disparities in mortality from a preventable disease

(Map shows countries sized by number of cervical cancer deaths. Numbers represent age-standardized mortality rates.)

Cervical cancer mortality rates

<table>
<thead>
<tr>
<th>Region</th>
<th>Mortality per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Africa</td>
<td>40</td>
</tr>
<tr>
<td>Middle Africa</td>
<td>30</td>
</tr>
<tr>
<td>USA</td>
<td>20</td>
</tr>
<tr>
<td>Western Europe</td>
<td>10</td>
</tr>
</tbody>
</table>

United States: 2.4 per 100,000

Uganda: 44.4 per 100,000
Tanzania: 54 per 100,000
Malawi: 75.9 per 100,000
Swaziland: 53.1 per 100,000
HIV & Cervical Cancer: Epidemics of inequity

- 37 million HIV+ globally
- 52% women
- >90% in low-resource settings
- Reflect health gender, socioeconomic inequalities

The Development of Cervical Cancer

Normal Cervix → HPV-Infected → Precancer → Cancer

- Infection
- Clearance
- Progression
- Regression
- Invasion

Transient HPV Infection | Persistent HPV Infection

Typical timespan from HPV infection to cancer: 10-30 years

Figure 2.3 The development of cervical cancer. Cervical cancer develops according to the following steps: (1) infection with a cancer-causing HPV type; (2) HPV persistence instead of clearance, (3) development of precancer; (4) development of invasive cancer.
Cervical Cancer in the Context of HIV Infection

- 5-8x increased risk
- Younger age at diagnosis
- Aggressive clinical course

Image: IARC 2013

Vikrant Sahasrabuddhe, NCI, 2018
Significant gains made against HIV/AIDS

- 18.8 m HIV+ women at risk of cervical cancer
- Need urgent prevention efforts
Is being on ART protective against Cervical Cancer for HIV+ women?

- **South Africa:** Incidence did not change with length of ART
- 11x higher risk than women in Europe
- Lack of screening

Rohner IJC 2020
Are high CD4 counts protective against Cervical Cancer in HIV+ women?

- US data
- Risk of cervical cancer does not correlate with CD4 T-cell count
- Confounding factors

[Graphs showing incidence per 100,000 by CD4 count category for various conditions including Kaposi sarcoma, Overall NHL, Cervical cancer, AIDS NHL, CNS NHL, and Non-CNS AIDS NHL.]
What is survival following a Cervical Cancer diagnosis for HIV+ women?

**Uganda**

Kaplan-Meier survival estimates

- Logrank P = 0.045

**Botswana**

Survival (probability) vs. Time Since Enrollment (months)

- Group 1: HIV Infection
- Group 2: No HIV Infection

Wu E, Gynecol Oncol Rep 2020

Dryden-Peterson JCO 2016
Cervical Cancer prevention among HIV+ women: A moral imperative

“It makes no sense to save a woman’s life from HIV/AIDS, only to let her die from preventable or treatable cervical cancer”

President George W Bush

Emphasis on the Cascade: screening, treatment, follow-up
What is the funding landscape for integration of HIV & Cervical Cancer prevention services?
Global Fund

- $3.3 million in 15 countries in the 2017-2019 funding cycle

- Examples of interventions funded:
  - Training of doctors and nurses in integrated services
  - Integration of cervical cancer screening of WLHIV in ART clinics, FP clinics and referral hospitals
  - Strengthening linkages RMNCH and HIV

PEPFAR

- $15.3 million in 2018 (based on data procured from available country operating plans)

- All PEPFAR countries eligible
  - 2018 funding reported in Botswana, Eswatini, Lesotho, Namibia and Zambia

- Screening in all HIV-infected women, treatment of pre-cancerous lesions

- Procurement of associated supplies

- Does not fund screening in HIV-negative women or HPV vaccination.
Unitaid

**Clinton Health Access Initiative (CHAI)**
- India, Kenya, Malawi, Nigeria, Rwanda, South Africa, Zambia
- $33 million from 2019-2021
- Focus on screening and treatment with a *priority on development of lower cost screening tools*.

**Expertise France, Jhpiego, Union for International Cancer Control**
- Cote d’Ivoire, Burkina Faso, Guatemala and the Philippines
- $24.3 million from 2019-2022
- Introduction and promotion of the best available screen-and-treat tools to prevent cancer in women most at risk, especially those living with HIV

**Research funding**
National governments
Questions?