EPIDEMIOLOGY OF CERVICAL CANCER IN AFRICA

Prof. JM. DANGOU

WHO/AFRO, Brazzaville

I have no conflict of interest
In 2012, the burden of cancer in Africa rose to almost 0.8 million new cases. The figure is to be closer 1.4 million annually within the next two decades.
OUTLINE

1. Burden of cervical cancer in Africa
2. Risk factors and co-factors for cervical cancer
3. HPV-related statistics
4. Protective factors for cervical cancer
5. Cervical cancer prevention strategies
CERVICAL CANCER BURDEN IN AFRICA

- Cervical cancer is a preventable disease
- 99,038 new cervical cancer cases diagnosed annually in Africa
- Cervical cancer is the 2nd most common female cancer in women aged 14 - 44 years
- About 60,098 new cervical cancer deaths occur annually
- Cervical cancer is the 2nd most common female cancer deaths in women aged 14 - 44 years in Africa
- HPV, a sexually transmitted infection, is the cause of most cervical cancers
- Without urgent attention, deaths due to cervical cancer are projected to rise by almost 25% over the next 10 years.
Africa

Incidence:
- Colorectum: 10.5%
- Liver: 16.0%
- Prostate: 15.2%
- Cervix uteri: 25.3%
- Breast: 34.1%

847000 new cases
54.7%
Other: 46.3%

Mortality:
- Colorectum: 11.7%
- Prostate: 17.0%
- Liver: 22.3%
- Cervix uteri: 23.9%
- Breast: 25.1%

591000 deaths
57.5%
Other: 42.5%

Prevalence (5 years):
- Breast: 43.9%
- Cervix uteri: 25.6%
- Prostate: 15.6%
- Colorectum: 8.7%
- Kaposi sarcoma: 6.3%

1.8 million persons
19.2%
North Africa

**Incidence**
- Breast: 17.9%
- Liver: 8.9%
- Lung: 6.6%
- Colorectum: 5.9%
- Other: 37.9%
- Prostate: 3.4%
- Leukaemia: 4.0%
- Brain, nervous system: 4.0%
- Non-Hodgkin lymphoma: 5.1%

**Mortality**
- Liver: 13.0%
- Breast: 10.9%
- Lung: 9.0%
- Other: 38.5%
- Stomach: 3.5%
- Brain, nervous system: 4.1%
- Bladder: 4.8%
- Leukaemia: 5.1%

**Prevalence (5 years)**
- Breast: 29.8%
- Other: 35.0%
- Bladder: 8.0%
- Non-Hodgkin lymphoma: 5.2%
- Colorectum: 5.8%
- Lung: 9.0%
- Brain, nervous system: 4.1%
- Cervix uteri: 3.5%
- Thyroid: 6.2%
- Prostate: 4.3%

**Statistical Numbers**
- 221,000 new cases
- 143,000 deaths
- 464,000 persons
Sub-Saharan Africa

Incidence
- Breast 15.1%
- Cervix uteri 14.9%
- Stomach 2.9%
- Oesophagus 3.9%
- Non-Hodgkin lymphoma 4.1%
- Colorectum 4.5%
- Kaposi sarcoma 5.9%
- Other 34.2%

626000 New cases

Mortality
- Breast 10.6%
- Cervix uteri 12.8%
- Prostate 8.4%
- Oesophagus 4.7%
- Colorectum 5.0%
- Kaposi sarcoma 5.7%
- Other 12.8%

448000 New cases

Prevalence (5 years)
- Breast 22.6%
- Cervix uteri 18.1%
- Other 30.5%
- Prostate 10.3%
- Colorectum 4.4%
- Lip, oral cavity 2.4%
- Ovary 2.2%
- Non-Hodgkin lymphoma 2.4%
- Corpus uteri 2.5%
- Kaposi sarcoma 4.7%

1316000 Persons
Cervical cancer
Most frequent cancer, women

Cumulative risk, 0-74, women

Map of Africa showing the cumulative risk of cervical cancer for different countries.
Ten most frequent cancer in women age 15 – 44 years in Africa

Ten most frequent cancer deaths in women aged 15 – 44 years in Africa
Age specific incidence of cervical cancer
Africa and its regions

Age specific mortality of cervical cancer
Africa and its regions

Annual number of new cases by age groups and regions

Annual number of deaths by age groups and regions
IARC’s Globocan 2012 Projects Cervical Cancer Mortality Rates will Continue to Increase in LMIC

- ~1% of women in developing world will die of cervical cancer before they are 75

(Ferlay et al, Int J Cancer, 2015)
Age-standardized (World) incidence rates per 100 000 by calendar year, Harare blacks, Zimbabwe: common male and female cancers 1991–2010.
Estimated age-standardized rates (World) of incidence cases, females, cervical cancer, worldwide in 2012
Estimated age-standardized rates (World) of deaths, females, cervical cancer, worldwide in 2012

Graph production: Cancer Today
Data source: GLOBOCAN 2012
(http://gco.iarc.fr/today)
World Health Organization
© International Agency for Research on Cancer 2016

All rights reserved. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization / International Agency for Research on Cancer concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate borderlines for which there may not yet be full agreement.
COUNTRIES WITH THE HIGHEST BURDEN OF CERVICAL CANCER ARE MOSTLY IN AFRICA

20 COUNTRIES WITH HIGHEST RATES IN THE WORLD

20 COUNTRIES WITH HIGHEST RATES IN AFRICA

GLOBOCAN 2012 (IARC) (15/3/2014)
RISK FACTORS AND CO-FACTORS FOR CERVICAL CANCER

- **HPV infection**: necessary cause of cervical cancer (not sufficient)

- Co-factors (necessary for progression from HPV infection to cervical cancer)
  - Sexual and reproductive health behaviours: earlier sexual debut
  - Tobacco smoking
  - High parity
  - Long-term hormonal contraceptive use
  - Co-infection with HIV
  - Co-infection with Chlamydia trachomatis and HSV type-2
  - Immunosuppression
  - Certain dietary deficiencies probable co-factors.
HPV RELATED STATISTICS

Prevalence of HPV among women with normal cervical cytology in Africa

Crude age-specific HPV prevalence (%) and 95% CI in women with normal cervical cytology in Africa and its regions
HPV RELATED STATISTICS

HPV types grouped by their specific prevalence

<table>
<thead>
<tr>
<th>Ranking</th>
<th>HPV type</th>
<th>Number of cases</th>
<th>HPV prevalence</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>16</td>
<td>540</td>
<td>27.2</td>
<td>23.6-31.1</td>
</tr>
<tr>
<td>2nd</td>
<td>52</td>
<td>516</td>
<td>12.6</td>
<td>10.0-15.7</td>
</tr>
<tr>
<td>3rd</td>
<td>18</td>
<td>540</td>
<td>11.3</td>
<td>8.9-14.2</td>
</tr>
<tr>
<td>4th</td>
<td>35</td>
<td>523</td>
<td>10.7</td>
<td>8.3-13.6</td>
</tr>
<tr>
<td>5th</td>
<td>58</td>
<td>527</td>
<td>8.5</td>
<td>6.4-11.2</td>
</tr>
<tr>
<td>6th</td>
<td>33</td>
<td>518</td>
<td>7.3</td>
<td>5.4-9.9</td>
</tr>
<tr>
<td>7th</td>
<td>31</td>
<td>523</td>
<td>6.9</td>
<td>5.0-9.4</td>
</tr>
<tr>
<td>8th</td>
<td>66</td>
<td>412</td>
<td>6.1</td>
<td>4.1-8.8</td>
</tr>
<tr>
<td>9th</td>
<td>51</td>
<td>491</td>
<td>5.3</td>
<td>3.6-7.6</td>
</tr>
<tr>
<td>10th</td>
<td>45</td>
<td>523</td>
<td>4.4</td>
<td>2.9-6.5</td>
</tr>
</tbody>
</table>

Meta-analysis performed by IARC’s Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre updated data until June 2015

Bruni L et al. HPV in Women with Normal Cytology, JID 2010:202
Comparison of the ten most frequent HPV oncogenic types among women with cervical lesions

<table>
<thead>
<tr>
<th>Region</th>
<th>Low-grade lesions</th>
<th>High-grade lesions</th>
<th>Cervical Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HPV-type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-grade</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HPV-type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-grade</td>
<td>HPV-type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-grade</td>
<td>HPV-type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-grade</td>
<td>HPV-type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical</td>
<td>HPV-type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical</td>
<td>HPV-type</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comparison of the ten most frequent HPV oncogenic types among women with cervical lesions

Northen Africa

Southern Africa

Western Africa
PROTECTIVE FACTORS FOR CERVICAL CANCER

Prevalence of male circumcision in Africa

Prevalence of condom use in Africa

Data accessed on 31 Aug 2015.

Data accessed on 21 Jul 2015.
CERVICAL CANCER PREVENTION STRATEGIES

- Well-organized cervical screening programmes or widespread good quality cytology
- HPV vaccination
Snapshot of the situation

- **HPV vaccine introduction**
  - 70% of high income countries
  - 20% of middle income countries
  - 6% of low income countries

- **Screening**
  - 12% of countries have screening participation rate >70%
  - African region 40% of countries have coverage less than 10%

- **Invasive cancers**
  - Pathology services generally available in public sector
    - 98% of high-income countries compared to 35% in low-income countries
  - Treatment services available
    - 90% of high-income countries compared 30% of low-income countries.
    - 25% of countries reported having no public radiotherapy centres
    - Five year probability of surviving from cervical cancer – 13% in Uganda, compared to 79% in South Korea

- **Palliative care through primary care**
  - 66% of high income countries
  - 19% of low income countries
Challenges

HPV vaccination
- High cost in middle income countries
- Social and logistical challenges
- Misconceptions
- Low prioritization

Screening and treatment
- Lack of national plan and coordination
- Systems for monitoring coverage and referral
- Limitations in test and treatment
- Implementation research
Cervical cancer prevention and control is not universally available in Africa

Comprehensive Cervical Cancer Prevention & Control

INTEGRATION

PRIMARY PREVENTION
Girls 9-13 years
- HPV vaccination
Girls and boys, as appropriate
- Health information and warnings about tobacco use*
- Sexuality education tailored to age & culture
- Condom promotion/provision for those engaged in sexual activity
- Male circumcision

SECONDARY PREVENTION
Women >30 years of age
Screening and treatment as needed
- “Screen and treat” with low cost technology VIA followed by cryotherapy
- HPV testing for high risk HPV types (e.g. types 16, 18 and others)

TERTIARY PREVENTION
All women as needed
Treatment of invasive cancer at any age
- Ablative surgery
- Radiotherapy
- Chemotherapy

* Tobacco use is an additional risk factor for cervical cancer.
THANK YOU