Epidemiology of High Risk Human Papillomavirus in Cameroon

Dr Tebeu Pierre Marie
University of Yaounde I, Cameroon
e.mail:pmtebeu@yahoo.fr
Tel: 00(237) 77 67 55 33
Yaounde: City Capital of Cameroon
Knowledge on cervical cancer and its screening among 171 women

Knowledge on Cervical Cancer

Tebeu et al. Int J Gynecol Cancer 2008
Ever Screened for Cervical Cancer Among the Awared women

- Yes: 91.7%
- No: 8.3%

Tebeu et al. Int J Gynecol Cancer 2008
Importance of the Problem

Prevalence

• 1.4 million cervical cancer worldwide
• 7 million precancerous conditions

Incidence

• 493,000 new cases each year
• 83% new cases in developing countries
• 30/100,000 in developing countries compare with 10/100,000 in developed countries
• Incidence increases at ages 35-40 and reaches a maximum in 50-60
Importance of the Problem

Specific Mortality

• 274,000 women die annually, 85% of death in developing countries.

• Mortality rate is 11.2 per 100,000 women in developing countries, almost 3 times higher than developed countries.
Female Cancers in Cameroon 2004-2011

(%) of the 2901 cases

Breast: 30.0
Cervix: 22.4
NHL: 9.3
Kaposi: 3.9
Ovary: 3.8

Figure 2
Cervical Cancer Incidence by Country, 2002

Rate (new cases per 100,000 women)

NOTE: Figures are adjusted to account for age differences between populations. An age-standardized rate (ASR) helps compare several populations that differ with respect to age structure, because age has such a powerful influence on the risk of cancer.

Economic cost

Direct cost:
High cost specially for curative and palliative care.
(screening, diagnosis and treatment)

Indirect cost:
Absence of the mother from home and work
Multiple visits (need for child care, transportation, time away from work)
Social cost

- The suffering of the family when the mother is sick

- Mothers death compromises the health of the family and especially the health of the children.
Age distribution of Cervical Cancer 2004-2007

Enow-Orock GE et al. Yaounde Cancer Registry, 2008
CIN and Invasive Cancer in Cameroon: age at diagnosis

Tebeu et al., geographical Distribution of Cervical Premalignant Lesions in Cameroon J Histol Cytol, 2013
Cervical cancer in Maroua Cameroon: Duration of symptoms at diagnosis

N=26

- 1-6 months: 27.0%
- 7-12 months: 18.0%
- 13-180 months: 54.0%

# Cervical cancer in Maroua Cameroon: Stage at diagnosis

<table>
<thead>
<tr>
<th>Stage</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>0.0%</td>
</tr>
<tr>
<td>Stage II</td>
<td>8.0%</td>
</tr>
<tr>
<td>Stage III-IV</td>
<td>92.0%</td>
</tr>
</tbody>
</table>

N=26

*Tebeu PM et al. Gynecological malignancies in Maroua, Cameroon. Int J Gynaecol Obstet. 2009*
Natural History of cervical cancer

Cervical cancer results from the uncontrolled growth of severely abnormal cells in the cervix.

The primary cause of squamous cervical cancer is persistent or chronic infection with one or more of the so-called high-risk or oncogenic types of human papillomavirus. (WHO, 2006)
Etiology for Cervical Cancer

- HPV responsible for 99.7% of Cervical Cancer
- High oncogenic types HPV 16, 18, 45, 56 and 58. (16, 18 in 70% Cervical Cancer)
- Low oncogenic HPV 31, 33, 35, 51 and 52
- Non oncogenic HPV 6, 11, 40, 42, 43, 44.
Epidemiological model of disease

CIN: Cervical intraepithelial neoplasia. CIS: Carcinoma in situ
Epidemiological model of disease
(practical example)

Co-factors for infection:
• Young age of sexual initiation
• High numbers of sexual partners
• Having partners with multiple partners

Co-factors for progression:
• Viral type, high viral load
• Multiple oncogenic type infection
• Immunodeficiency (HIV)
• Multiparity,
• Tobacco smoking,
• Co-infection with STI,
• Long use of oral contraceptive

CIN: Cervical intraepithelial neoplasia. CIS: Carcinoma in situ
Possible Interventions

Non-infected Resistant (cervix normal)

Non-infected Non-disease Normal cervix

Infected No disease (Normal cervix)

Infected Mild dysplasia (CIN1)

Infected Moderate/Severe dysplasia (CIN 2/3)

CIS

Promotion

Screening and treatment:
* Acetic Acid-Visual Inspection
* Cryotherapy and Loop electrosurgical excision procedure (LEEP)

Management

Invasive cancer

Death

CIN: Cervical intraepithelial neoplasia. CIS: Carcinoma in situ
Cervical Cancer, HPV Project in Cameroon

Geneva University Hospital

Faculty of Medicine and Biomedical Sciences
Yaounde, Cameroon

National Committee for Fight Against Cancer, Cameroon
Objectives

**General:** Reduce morbidity and mortality due to Cervical Cancer in Cameroon

**Specific:**

1. Describe the epidemiology of HPV in women
2. Identify the best strategy for cervical cancer screening in Low resource setting like Cameroon
Identify high risk HPV can help as screening method for Cervical Cancer in Cameroon

Self sampling for HPV could be efficient as Health staff sampling

HPV self sampling could be more accepted than health staff sampling
Epidemiology of High Risk Human Papillomavirus in Cameroon
Prevalence of HR HPV in a multicentric study in Cameroon (1332 women)


HR HPV Positive among women aged 30-65
Proportion of Vaccine oncongenes 16 and 18 among HR HPV Carreer (324 HR HPV Carreers)

## Risk Factors to be HR HPV Careers

<table>
<thead>
<tr>
<th>Factor</th>
<th>OR</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 17 at First sexual intercourse</td>
<td>1.45</td>
<td>1.11-1.89</td>
<td>0.006</td>
</tr>
<tr>
<td>3-30 cumulative sex partners</td>
<td>1.91</td>
<td>1.41-2.59</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Ever induced for abortion</td>
<td>2.7</td>
<td>1.81-4.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>HIV positive</td>
<td>3.37</td>
<td>1.07-10.64</td>
<td>0.02</td>
</tr>
</tbody>
</table>
Lesons learned from from HR HPV positive

- High prevalence of HR HPV
- Low proportion of Oncogen types
- Risk factors well known
Self sampling vs health staff sampling for High Risk Human Pavillomavirus in Cameroon

Dr Tebeu Pierre Marie, CHU, FMSB, Yaoundé-Cameroun, email: pmtebeu@yahoo.fr
Methods (1)

- June 2009 to December 2010
- 463 inclusion
- Age 30 to 65 years
Methods (2)

- Self specimen before specimen by the clinician

- Test HPV by Abott Real Time High Risk HPV test

- Kappa test (K) used for determine the concordance between self and non-self sampling for HPV detection
Results (1): HPV Prevalence

<table>
<thead>
<tr>
<th>Specimen by</th>
<th>Tested HPV + (N)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self testing</td>
<td>376</td>
<td>46</td>
</tr>
<tr>
<td>Health staff testing</td>
<td>376</td>
<td>40</td>
</tr>
</tbody>
</table>
Résultats(2): Self vs Heath staff Concordance

<table>
<thead>
<tr>
<th>Self specimen</th>
<th>Specimen by clinician</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HPV +</td>
</tr>
<tr>
<td>HPV+</td>
<td>31</td>
</tr>
<tr>
<td>HPV -</td>
<td>9</td>
</tr>
</tbody>
</table>

Global Concordance KAPPA= 0.79
Concordance interpretation:
- Good (0.61 - 0.80)
- Very Good from 0.81
Lesons learned from self vs non self trial

Self-specimen are sensitive as specimen by clinician in detecting High Risk HPV
VIA as triage test after positive HPV
HPV Self-Sampling (Tiko, Yaounde) 30-65 years (n=540)

HPV Negative (N=109)

HPV Positive (N=109)

VIA test N=218

4 quadrant Biopsies * (N=292)

VIA result

Biopsy result
VIA as triage test after HPV

<table>
<thead>
<tr>
<th>Biopsy characteristics</th>
<th>HPV+ N=106</th>
<th>HPV- N=102</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VIA+</td>
<td>VIA-</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Biopsy result (n=208)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative (n=188)</td>
<td>9</td>
<td>79</td>
</tr>
<tr>
<td>Positive (n=20)</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Type of histological lesions (n=20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIN 1 (n=9)</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>CIN 2 (n=5)</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>CIN 3 (n=4)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cancer (n=2)</td>
<td>0</td>
<td>2</td>
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Lessons learned from VIA as triage test after HR HPV positive

VIA does not appear as enough sensitive to be used alone as triage test after HR HPV positive
Perspective
**Research**

1. Best triage test after Human Papilloma Virus positive
2. More appropriate vaccine for Cameroon

**Training**

1. Medical and paramedical staff on VIA/VILI
2. Module on Cervical Cancer Prevention at the FMBS

**Care delivery**

1. Counseling
2. Screening VIA/ VILI
3. Treatment of CIN
Cervical cancer Project in Cameroon