Human Papillomavirus and Related Diseases Report

KENYA

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Executive summary

Human papillomavirus (HPV) infection is now a well-established cause of cervical cancer and there is growing evidence of HPV being a relevant factor in other anogenital cancers (anus, vulva, vagina and penis) and head and neck cancers. HPV types 16 and 18 are responsible for about 70% of all cervical cancer cases worldwide. HPV vaccines that prevent against HPV 16 and 18 infection are now available and have the potential to reduce the incidence of cervical and other anogenital cancers.

This report provides key information for Kenya on cervical cancer, other anogenital cancers and head and neck cancers, HPV-related statistics, factors contributing to cervical cancer, cervical cancer screening practices, and HPV vaccine introduction. The report is intended to strengthen the guidance for health policy implementation of primary and secondary cervical cancer prevention strategies in the country.
# Table 1: Key Statistics

<table>
<thead>
<tr>
<th>Population</th>
<th>16.8 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women at risk for cervical cancer (Female population aged &gt;=15 yrs)</td>
<td></td>
</tr>
</tbody>
</table>

## Burden of cervical cancer and other HPV-related cancers

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of cervical cancer cases</td>
<td>5236</td>
<td></td>
</tr>
<tr>
<td>Annual number of cervical cancer deaths</td>
<td>3211</td>
<td></td>
</tr>
<tr>
<td>Crude incidence rates per 100,000 population:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>-</td>
<td>19.4</td>
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<tr>
<td>Anal cancer</td>
<td>0.22</td>
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</tr>
<tr>
<td>Vulva cancer</td>
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<td>0.58</td>
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<tr>
<td>Vaginal cancer</td>
<td>-</td>
<td>0.24</td>
</tr>
<tr>
<td>Penile cancer</td>
<td>0.18</td>
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</tr>
<tr>
<td>Oropharyngeal cancer</td>
<td>0.18</td>
<td>0.07</td>
</tr>
<tr>
<td>Oral cavity cancer</td>
<td>1.46</td>
<td>1.36</td>
</tr>
<tr>
<td>Laryngeal cancer</td>
<td>1.26</td>
<td>0.27</td>
</tr>
</tbody>
</table>

## Burden of cervical HPV infection

| Prevalence (%) of HPV 16 and/or HPV 18 among women with: | Normal cytology | 9.1 |
|---------------------------------------------------------|-----------------|
| Low-grade cervical lesions (LSIL/CIN-1)                 | 21.4            |
| High-grade cervical lesions (HSIL/CIN-2/CIN-3/CIS)      | 45.0            |
| Cervical cancer                                         | 63.1            |

## Other factors contributing to cervical cancer

| Smoking prevalence (%) [95% UI], women | 1 [0.70-1.40]|
| Total fertility rate (live births per women) | 3.8 |
| Oral contraceptive use (%) | 4.92 |
| HIV prevalence (%) [95% UI], women (15-49 years) | 6.1 [5-7.2] |

## Sexual behaviour

| Percentage of 15-year-old who have had sexual intercourse (men/women) | 19.6/10.7 |
| Range of median age at first sexual intercourse (men/women) | 16.7-17.6/16.7-18.2 |

## Cervical screening practices and recommendations

| Existence of official national recommendations | Yes |
| Starting year of current recommendations | 2018 |
| Active invitation to screening | No |
| Screening ages (years), primary screening test used, and screening interval or frequency of screenings | 25-49 (VIA, 5 years); 25-30 (cytology, 5 years); 30-49 (HPV test, 5 years) |

## HPV vaccine in females

| HPV vaccination programme | Introduced |
| Year of introduction | 2019 |
| Year of estimation of HPV vaccination coverage | 2021 |
| HPV coverage – first dose (%) | 29 |
| HPV coverage – last dose (%) | 44 |

* Please see the specific sections for more information.
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1 Introduction

Information Centre aims to compile and centralise updated data and statistics on human papillomavirus (HPV) and related cancers. This report aims to summarise the data available to fully evaluate the burden of disease in Kenya and to facilitate stakeholders and relevant bodies of decision makers to formulate recommendations on the prevention of cervical cancer and other HPV-related cancers. Data include relevant cancer statistic estimates, epidemiological determinants of cervical cancer such as demographics, socioeconomic factors, risk factors, burden of HPV infection in women and men, cervical screening and immunization practices. The report is structured into the following sections:

Section 2, Demographic and socioeconomic factors. This section summarises the socio-demographic profile of Kenya. For analytical purposes, Kenya is classified in the geographical region of Eastern Africa.
Africa (Figure 1, lighter blue), which is composed of the following countries: Comoros, Djibouti, Eritrea, Ethiopia, Madagascar, Mozambique, Mauritius, Malawi, Mayotte, Réunion, Rwanda, Somalia, South Sudan, Seychelles, United Republic of Tanzania, Uganda, Zambia, and Zimbabwe. Throughout the report, Kenya estimates will be complemented with corresponding regional estimates.

**Section 3, Burden of HPV related cancers.** This section describes the current burden of invasive cervical cancer and other HPV-related cancers in Kenya with estimates of prevalence, incidence, and mortality rates. Information in other HPV-related cancers includes other anogenital cancers (anus, vulva, vagina, and penis) and head and neck cancers (oral cavity, oropharyngeal, and larynx).

**Section 4, HPV related statistics.** This section reports on prevalence of HPV and HPV type-specific distribution in Kenya, in women with normal cytology, precancerous lesions and invasive cervical cancer. In addition, the burden of HPV in other anogenital cancers (anus, vulva, vagina, and penis), head and neck cancers (oral cavity, oropharynx, and larynx) and men are presented.

**Section 5, Factors contributing to cervical cancer.** This section describes factors that can modify the natural history of HPV and cervical carcinogenesis such as smoking, parity, oral contraceptive use, and co-infection with HIV.

**Section 6, Sexual and reproductive health behaviour indicators.** This section presents sexual and reproductive behaviour indicators that may be used as proxy measures of risk for HPV infection and anogenital cancers, such as age at first sexual intercourse, average number of sexual partners, and anal intercourse among others.

**Section 7, HPV preventive strategies.** This section presents preventive strategies that include basic characteristics and performance of cervical cancer screening status, status of HPV vaccine licensure introduction, and recommendations in national immunisation programmes.

**Section 8, Protective factors for cervical cancer.** This section presents male circumcision and the use of condoms.
2 Demographic and socioeconomic factors

Figure 2: Population pyramid of Kenya for 2022

![Population pyramid of Kenya for 2022](image)

Data accessed on 30 Jul 2022
Please refer to original source for methods of estimation.
Year of estimate: 2022
Data Sources:

Figure 3: Population trends in four selected age groups in Kenya

![Population trends in four selected age groups in Kenya](image)

Data accessed on 30 Jul 2022
Please refer to original source for methods of estimation.
Year of estimate: 2022
Data Sources:
3 Burden of HPV related cancers

HPV is the cause of almost all cervical cancer cases and is responsible for an important fraction of other anogenital and head and neck cancer. Here, we present the most recent estimations on the burden of HPV-associated cancer.

3.1 HPV related cancers incidence

Figure 4: Comparison of HPV related cancers incidence to other cancers in men and women of all ages in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>5.10</td>
<td>5.96</td>
</tr>
<tr>
<td>Cervix uteri*</td>
<td>4.62</td>
<td>4.75</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>2.98</td>
<td>3.64</td>
</tr>
<tr>
<td>Colon and rectum cancer*</td>
<td>3.51</td>
<td>3.18</td>
</tr>
<tr>
<td>Ovary</td>
<td>2.95</td>
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</tr>
<tr>
<td>Stomach</td>
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<td>2.72</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>-</td>
<td>1.26</td>
</tr>
<tr>
<td>Leukaemia</td>
<td>1.85</td>
<td>1.74</td>
</tr>
<tr>
<td>Corpus uteri</td>
<td>1.40</td>
<td>1.59</td>
</tr>
<tr>
<td>Pancreas</td>
<td>1.08</td>
<td>1.54</td>
</tr>
<tr>
<td>Liver</td>
<td>1.17</td>
<td>1.38</td>
</tr>
<tr>
<td>Lung</td>
<td>1.46</td>
<td>1.36</td>
</tr>
<tr>
<td>Multiple myeloma</td>
<td>1.24</td>
<td>1.36</td>
</tr>
<tr>
<td>Brain, nervous system</td>
<td>1.64</td>
<td>1.28</td>
</tr>
<tr>
<td>Lip, oral cavity*</td>
<td>2.39</td>
<td>1.08</td>
</tr>
<tr>
<td>Thyroid</td>
<td>-</td>
<td>0.41</td>
</tr>
<tr>
<td>Kaposi sarcoma</td>
<td>-</td>
<td>0.99</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>-</td>
<td>0.78</td>
</tr>
<tr>
<td>Gallbladder</td>
<td>-</td>
<td>0.99</td>
</tr>
<tr>
<td>Kidney</td>
<td>-</td>
<td>0.71</td>
</tr>
<tr>
<td>Bladder</td>
<td>-</td>
<td>1.13</td>
</tr>
<tr>
<td>Hodgkin lymphoma</td>
<td>-</td>
<td>0.64</td>
</tr>
<tr>
<td>Melanoma of skin</td>
<td>-</td>
<td>0.43</td>
</tr>
<tr>
<td>Vulva*</td>
<td>-</td>
<td>0.58</td>
</tr>
<tr>
<td>Anus*</td>
<td>-</td>
<td>0.22</td>
</tr>
<tr>
<td>Salivary glands</td>
<td>-</td>
<td>0.54</td>
</tr>
<tr>
<td>Hypopharynx</td>
<td>-</td>
<td>0.21</td>
</tr>
<tr>
<td>Larynx*</td>
<td>-</td>
<td>0.33</td>
</tr>
<tr>
<td>Vagina*</td>
<td>-</td>
<td>0.25</td>
</tr>
<tr>
<td>Oropharynx*</td>
<td>-</td>
<td>0.30</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>-</td>
<td>1.26</td>
</tr>
<tr>
<td>Penis*</td>
<td>-</td>
<td>0.24</td>
</tr>
<tr>
<td>Prostate</td>
<td>-</td>
<td>0.18</td>
</tr>
<tr>
<td>Testis</td>
<td>-</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>30.0</td>
<td>3.51</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods
Non-melanoma skin cancer is not included
Rates per 100,000 men per year.
Rates per 100,000 women per year.
Data Source:

ICO/IARC HPV Information Centre
Figure 5: Comparison of HPV related cancers incidence to other cancers among men and women 15-44 years of age in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Non-melanoma skin cancer is not included
Rates per 100,000 men per year.
Rates per 100,000 women per year.
Data Sources
3.2 HPV related cancers mortality

Figure 6: Comparison of HPV related cancers mortality to other cancers in men and women of all ages in Kenya (estimates for 2020)

_data accessed on 27 Jan 2021_


Non-melanoma skin cancer is not included

Rates per 100,000 men per year.

Rates per 100,000 women per year.

Data Sources


ICO/IARC HPV Information Centre
Figure 7: Comparison of HPV related cancers mortality to other cancers among men and women 15-44 years of age in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods
Non-melanoma skin cancer is not included
Rates per 100,000 men per year.
Rates per 100,000 women per year.
Data Sources:
3.3 Cervical cancer


This section describes the current burden of invasive cervical cancer in Kenya and in comparison to geographic region, including estimates of the annual number of new cases, deaths, incidence, and mortality rates.

3.3.1 Cervical cancer incidence in Kenya

Key Stats.

About 5,236 new cervical cancer cases are diagnosed annually in Kenya (estimations for 2020).

Cervical cancer ranks* as the 2nd leading cause of female cancer in Kenya.

Cervical cancer is the 2nd most common female cancer in women aged 15 to 44 years in Kenya.

* Ranking of cervical cancer incidence to other cancers among all women according to highest incidence rates (ranking 1st) excluding non-melanoma skin cancer. Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using age-standardized rate (ASR) may differ.

Table 2: Cervical cancer incidence in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of new cancer cases</td>
<td>5,236</td>
<td>54,560</td>
<td>604,127</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases</td>
<td>[4,592-5,971]</td>
<td>[48,277-61,661]</td>
<td>[582,031-627,062]</td>
</tr>
<tr>
<td>Crude incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>19.4</td>
<td>24.3</td>
<td>15.6</td>
</tr>
<tr>
<td>Age-standardized incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>31.3</td>
<td>40.1</td>
<td>13.3</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.60</td>
<td>4.46</td>
<td>1.39</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

<sup>a</sup> Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 women per year.

Data Sources:


ICO/IARC HPV Information Centre
Table 3: Cervical cancer incidence in Kenya by cancer registry

<table>
<thead>
<tr>
<th>Cancer registry</th>
<th>Period</th>
<th>N cases&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Crude rate&lt;sup&gt;b&lt;/sup&gt;</th>
<th>ASR&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>2008-2012</td>
<td>1055</td>
<td>13.8</td>
<td>40.2</td>
</tr>
</tbody>
</table>

Data accessed on 5 Oct 2018


ASR: Age-standardized rate. Standardized rates have been estimated using the direct method and the World population as the reference.

<sup>a</sup> Accumulated number of cases during the period in the population covered by the corresponding registry.

<sup>b</sup> Rates per 100,000 women per year.

Data Sources:

Figure 8: Age-specific incidence rates of cervical cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-methods
Rates per 100,000 women per year.

Data Sources:

Figure 9: Annual number of new cases of cervical cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-methods

Data Sources:

• For age-standardised incidence rates of cervical cancer of Kenya (estimates for 2020) please refer to Figure 73

• For annual number of new cases of cervical cancer by age group in Kenya (estimates for 2020) please refer to Figure 74

• For comparison of age-specific cervical cancer incidence rates in Kenya, within the region, and the rest of world please refer to Figure 75
3.3.2 Cervical cancer incidence by histology in Kenya

Table 4: Age-standardised incidence rates of cervical cancer in Kenya by histological type and cancer registry

<table>
<thead>
<tr>
<th>Cancer registry</th>
<th>Period</th>
<th>Squamo</th>
<th>Adeno</th>
<th>Other</th>
<th>Unspec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>2008-2012</td>
<td>25.1</td>
<td>2.6</td>
<td>0.3</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Data accessed on 5 Oct 2018

Standardized rates have been estimated using the direct method and the World population as the reference.

Adeno: adenocarcinoma; Other: Other carcinoma; Squamous: Squamous cell carcinoma; Unspec: Unspecified carcinoma;

Data Sources:

Data accessed on 28 Aug 2018

Data Sources

Figure 10: Time trends in cervical cancer incidence in Kenya (cancer registry data)

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>No data available</td>
</tr>
<tr>
<td>2005</td>
<td>No data available</td>
</tr>
<tr>
<td>2010</td>
<td>No data available</td>
</tr>
</tbody>
</table>
3.3.3 Cervical cancer mortality in Kenya

Key Stats.

About **3,211 cervical cancer deaths occur annually in Kenya** are diagnosed annually (estimations for 2020).

Cervical cancer **ranks** as the **1st leading cause of cancer deaths** of female cancer deaths in Kenya.

Cervical cancer is the **2nd leading cause of cancer deaths in women aged 15 to 44 years in Kenya**.

---

* Ranking of cervical cancer incidence to other cancers among all women according to highest incidence rates (ranking 1st) excluding non-melanoma skin cancer. Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using age-standardized rate (ASR) may differ.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of deaths</td>
<td>3,211</td>
<td>36,497</td>
<td>341,831</td>
</tr>
<tr>
<td>Uncertainty intervals of mortality cancer cases [95% UI]</td>
<td>[2,747-3,753]</td>
<td>[31,706-42,012]</td>
<td>[324,231-360,386]</td>
</tr>
<tr>
<td>Crude mortality rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>11.9</td>
<td>16.3</td>
<td>8.84</td>
</tr>
<tr>
<td>Age-standardized mortality rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>20.6</td>
<td>28.6</td>
<td>7.25</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.50</td>
<td>3.36</td>
<td>0.82</td>
</tr>
</tbody>
</table>

---

* Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 women per year.

---

**Data accessed on 27 Jan 2021**

Figure 11: Age-specific mortality rates of cervical cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources:

Figure 12: Annual number of deaths of cervical cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources:

- For age-standardised mortality rates of cervical cancer of Kenya (estimates for 2020) please refer to Figure 105
- For annual number of deaths of cervical cancer by age group in Kenya (estimates for 2020) please refer to Figure 106
- For comparison of age-specific cervical cancer mortality rates in Kenya, within the region, and the rest of world please refer to Figure 107
3.3.4 Cervical cancer incidence and mortality comparison in Kenya

Figure 13: Comparison of age-specific cervical cancer incidence and mortality rates in Kenya (estimates for 2020)

Table 6: Premature deaths and disability from cervical cancer in Kenya, Africa and the rest of the world (estimates for 2019)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th></th>
<th></th>
<th>Africa</th>
<th></th>
<th></th>
<th>World</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Rate</td>
<td></td>
<td>Number</td>
<td>Rate</td>
<td></td>
<td>Number</td>
<td>Rate</td>
</tr>
<tr>
<td>DALYs (95% UI)</td>
<td>60,421 (40,670-98,744)</td>
<td>240 (162-392)</td>
<td></td>
<td>2,013,205 (1,554,998-2,473,422)</td>
<td>304 (234-373)</td>
<td></td>
<td>8,955,013 (7,547,733-9,978,462)</td>
<td>232 (196-259)</td>
</tr>
<tr>
<td>YLLs (95% UI)</td>
<td>59,302 (39,816-97,384)</td>
<td>236 (158-387)</td>
<td></td>
<td>1,973,860 (1,522,866-2,426,697)</td>
<td>298 (230-366)</td>
<td></td>
<td>8,712,962 (7,365,279-9,728,886)</td>
<td>226 (191-252)</td>
</tr>
<tr>
<td>YLDs (95% UI)</td>
<td>1,119 (668-1,924)</td>
<td>4 (3-8)</td>
<td></td>
<td>39,345 (26,276-55,832)</td>
<td>6 (4-8)</td>
<td></td>
<td>242,051 (171,644-326,024)</td>
<td>6 (4-8)</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021

Data Sources:

Table 6: Premature deaths and disability from cervical cancer in Kenya, Africa and the rest of the world (estimates for 2019)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
</tr>
<tr>
<td>DALYs (95% UI)</td>
<td>60,421 (40,670-98,744)</td>
<td>2,013,205 (1,554,998-2,473,422)</td>
<td>8,955,013 (7,547,733-9,978,462)</td>
</tr>
<tr>
<td>YLLs (95% UI)</td>
<td>59,302 (39,816-97,384)</td>
<td>1,973,860 (1,522,866-2,426,697)</td>
<td>8,712,962 (7,365,279-9,728,886)</td>
</tr>
<tr>
<td>YLDs (95% UI)</td>
<td>1,119 (668-1,924)</td>
<td>39,345 (26,276-55,832)</td>
<td>242,051 (171,644-326,024)</td>
</tr>
</tbody>
</table>

Data accessed on 29 Apr 2021
Rate per 100,000 women

Figure 14: Comparison of annual premature deaths and disability from cervical cancer in Kenya to other cancers among women (estimates for 2019)

Data accessed on 29 Apr 2021

YLLs: years of life lost
YLDs: years lived with disability

Data Source:
3.4 Anogenital cancers other than the cervix

Data on HPV role in anogenital cancers other than cervix are limited, but there is an increasing body of evidence strongly linking HPV DNA with cancers of anus, vulva, vagina, and penis. Although these cancers are much less frequent compared to cervical cancer, their association with HPV make them potentially preventable and subject to similar preventative strategies as those for cervical cancer. (Vaccine 2006, Vol. 24, Suppl 3; Vaccine 2008, Vol. 26, Suppl 10; Vaccine 2012, Vol. 30, Suppl 5; IARC Monographs 2007, Vol. 90).

3.4.1 Anal cancer

Anal cancer is rare in the general population with an average worldwide incidence of 1 per 100,000, but is reported to be increasing in more developed regions. Globally, there are an estimated 29,000 new cases in 2018 every year (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190). Women have higher incidences of anal cancer than men. Incidence is particularly high among populations of men who have sex with men (MSM), women with history of cervical or vulvar cancer, and immunosuppressed populations, including those who are HIV-infected and patients with a history of organ transplantation. These cancers are predominantly squamous cell carcinoma, adenocarcinomas, or basaloid and cloacogenic carcinomas.

3.4.1.1 Anal cancer incidence in Kenya

Table 7: Anal cancer incidence in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
<td>59</td>
<td>907</td>
<td>21,706</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
<td>[19-183]</td>
<td>[321-2,562]</td>
<td>[18,432-25,561]</td>
</tr>
<tr>
<td>Crude incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.22</td>
<td>0.41</td>
<td>0.55</td>
</tr>
<tr>
<td>Age-standardized incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.69</td>
<td>0.93</td>
<td>0.49</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.04</td>
<td>0.11</td>
<td>0.06</td>
</tr>
<tr>
<td>WOMEN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
<td>146</td>
<td>1,162</td>
<td>29,159</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
<td>[66-320]</td>
<td>[504-2,681]</td>
<td>[25,656-33,140]</td>
</tr>
<tr>
<td>Crude incidence rate&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.54</td>
<td>0.52</td>
<td>0.75</td>
</tr>
<tr>
<td>Age-standardized incidence rate&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.96</td>
<td>0.91</td>
<td>0.58</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.10</td>
<td>0.10</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

<sup>a</sup> Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 men per year.

<sup>c</sup> Rates per 100,000 women per year.

Data Sources

ICO/IARC HPV Information Centre
**Figure 15:** Age-specific incidence rates of anal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021


Data Sources:

**Figure 16:** Annual number of new cases of anal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021


Data Sources:

ICO/IARC HPV Information Centre
### 3.4.1.2 Anal cancer mortality in Kenya

#### Table 8: Anal cancer mortality in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
<td>40</td>
<td>657</td>
<td>9,416</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
<td>[10-153]</td>
<td>[202-2,140]</td>
<td>[7,282-12,175]</td>
</tr>
<tr>
<td>Crude incidence rate(^b)</td>
<td>0.15</td>
<td>0.30</td>
<td>0.24</td>
</tr>
<tr>
<td>Age-standardized incidence rate(^b)</td>
<td>0.53</td>
<td>0.70</td>
<td>0.21</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old(^a)</td>
<td>0.02</td>
<td>0.08</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>WOMEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
<td>101</td>
<td>846</td>
<td>9,877</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
<td>[40-257]</td>
<td>[323-2,214]</td>
<td>[7,795-12,516]</td>
</tr>
<tr>
<td>Crude incidence rate(^c)</td>
<td>0.37</td>
<td>0.38</td>
<td>0.26</td>
</tr>
<tr>
<td>Age-standardized incidence rate(^c)</td>
<td>0.71</td>
<td>0.68</td>
<td>0.19</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old(^a)</td>
<td>0.07</td>
<td>0.08</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


\(^a\) Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

\(^b\) Rates per 100,000 men per year.

\(^c\) Rates per 100,000 women per year.

Data Sources:

Figure 17: Age-specific mortality rates of anal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to: http://gco.iarc.fr/today/data-sources-methods

Data Sources:

Figure 18: Annual number of deaths of anal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to: http://gco.iarc.fr/today/data-sources-methods

Data Sources:
3.4.1.3 Anal cancer incidence and mortality comparison in Kenya

Figure 19: Comparison of age-specific anal cancer incidence and mortality rates among men in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

* Rates per 100,000 men per year.

Data Sources:

Figure 20: Comparison of age-specific anal cancer incidence and mortality rates among women in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

* Rates per 100,000 women per year.

Data Sources:
3.4.2 Vulva cancer

Cancer of the vulva is rare among women worldwide, with an estimated 44,000 new cases in 2018, representing 6% of all gynaecologic cancers (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190). Worldwide, about 60% of all vulvar cancer cases occur in more developed countries. Vulvar cancer has two distinct histological patterns with two different risk factor profiles: (1) basaloid/warty types (2) keratinising types. Basaloid/warty lesions are more common in young women, are very often associated with HPV DNA detection (75-100%), and have a similar risk factor profile as cervical cancer. Keratinising vulvar carcinomas represent the majority of the vulvar lesions (>60%), they occur more often in older women and are more rarely associated with HPV (IARC Monograph Vol 100B).

3.4.2.1 Vulva cancer incidence in Kenya

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of new cancer cases</td>
<td>157</td>
<td>2,025</td>
<td>45,240</td>
</tr>
<tr>
<td>Uncertainty intervals [95% UI]</td>
<td>[77-318]</td>
<td>[1,114-3,681]</td>
<td>[40,656-50,342]</td>
</tr>
<tr>
<td>Crude incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.58</td>
<td>0.90</td>
<td>1.17</td>
</tr>
<tr>
<td>Age-standardized incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.07</td>
<td>1.39</td>
<td>0.85</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.12</td>
<td>0.14</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


<sup>a</sup> Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 women per year.
Figure 21: Age-specific incidence rates of vulva cancer in Kenya (estimates for 2020)

Figure 22: Annual number of new cases of vulva cancer in Kenya (estimates for 2020)

Data Sources:
### 3.4.2.2 Vulva cancer mortality in Kenya

#### Table 10: Vulva cancer mortality in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of deaths</td>
<td>88</td>
<td>1,176</td>
<td>17,427</td>
</tr>
<tr>
<td>Uncertainty intervals [95% UI]</td>
<td>[38-204]</td>
<td>[592-2,337]</td>
<td>[14,497-20,950]</td>
</tr>
<tr>
<td>Crude mortality rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.33</td>
<td>0.52</td>
<td>0.45</td>
</tr>
<tr>
<td>Age-standardized mortality rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.68</td>
<td>0.89</td>
<td>0.30</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.08</td>
<td>0.09</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


<sup>a</sup> Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 women per year.

*Data Sources:*
Figure 23: Age-specific mortality rates of vulva cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.

Data Sources:

Figure 24: Annual number of deaths of vulva cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.

Data Sources:
3.4.2.3 Vulva cancer incidence and mortality comparison in Kenya

Figure 25: Comparison of age-specific vulva cancer incidence and mortality rates in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Rates per 100,000 women per year.
Data Sources:
3.4.3 Vaginal cancer

Cancer of the vagina is a rare cancer, with an estimated 18,000 new cases in 2018, representing 3% of all gynaecologic cancers (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190). Similar to cervical cancer, the majority of vaginal cancer cases (68%) occur in less developed countries. Most vaginal cancers are squamous cell carcinoma (90%) generally attributable to HPV, followed by clear cell adenocarcinomas and melanoma. Vaginal cancers are primarily reported in developed countries. Metastatic cervical cancer can be misclassified as cancer of the vagina. Invasive vaginal cancer is diagnosed primarily in old women (≥ 65 years) and the diagnosis is rare in women under 45 years whereas the peak incidence of carcinoma in situ is observed between ages 55 and 70 (Vaccine 2008, Vol. 26, Suppl 10).

3.4.3.1 Vaginal cancer incidence in Kenya

Table 11: Vaginal cancer incidence in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of new cancer cases</td>
<td>65</td>
<td>790</td>
<td>17,908</td>
</tr>
<tr>
<td>Uncertainty intervals [95% UI]</td>
<td>[19-218]</td>
<td>[299-2,085]</td>
<td>[14,678-21,848]</td>
</tr>
<tr>
<td>Crude incidence rate(^b)</td>
<td>0.24</td>
<td>0.35</td>
<td>0.46</td>
</tr>
<tr>
<td>Age-standardized incidence rate(^b)</td>
<td>0.41</td>
<td>0.59</td>
<td>0.36</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old(^a)</td>
<td>0.06</td>
<td>0.07</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


\(^a\) Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

\(^b\) Rates per 100,000 women per year.

Data Sources:
Figure 26: Age-specific incidence rates of vaginal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
* Rates per 100,000 women per year.

Data Sources:

Figure 27: Annual number of new cases of vaginal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources:
3.4.3.2 Vaginal cancer mortality in Kenya

Table 12: Vaginal cancer mortality in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of deaths</td>
<td>36</td>
<td>473</td>
<td>7,995</td>
</tr>
<tr>
<td>Uncertainty intervals [95% UI]</td>
<td>[9-152]</td>
<td>[155-1,444]</td>
<td>[5,983-10,684]</td>
</tr>
<tr>
<td>Crude mortality rate^b</td>
<td>0.13</td>
<td>0.21</td>
<td>0.21</td>
</tr>
<tr>
<td>Age-standardized mortality rate^b</td>
<td>0.26</td>
<td>0.38</td>
<td>0.16</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old^a</td>
<td>0.04</td>
<td>0.05</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to [http://gco.iarc.fr/today/data sources-methods](http://gco.iarc.fr/today/data-sources-methods)

^a Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

^b Rates per 100,000 women per year.

Data Sources:
**Figure 28: Age-specific mortality rates of vaginal cancer in Kenya (estimates for 2020)**

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Age-specific rates of vaginal cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td></td>
</tr>
<tr>
<td>20-24</td>
<td></td>
</tr>
<tr>
<td>25-29</td>
<td></td>
</tr>
<tr>
<td>30-34</td>
<td></td>
</tr>
<tr>
<td>35-39</td>
<td></td>
</tr>
<tr>
<td>40-44</td>
<td></td>
</tr>
<tr>
<td>45-49</td>
<td></td>
</tr>
<tr>
<td>50-54</td>
<td></td>
</tr>
<tr>
<td>55-59</td>
<td></td>
</tr>
<tr>
<td>60-64</td>
<td></td>
</tr>
<tr>
<td>65-69</td>
<td></td>
</tr>
<tr>
<td>70-74</td>
<td></td>
</tr>
<tr>
<td>75-79</td>
<td></td>
</tr>
<tr>
<td>80-84</td>
<td></td>
</tr>
<tr>
<td>85+</td>
<td></td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


* Rates per 100,000 women per year.

Data Sources:


**Figure 29: Annual number of deaths of vaginal cancer in Kenya (estimates for 2020)**

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Annual number of deaths of vaginal cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>0</td>
</tr>
<tr>
<td>20-24</td>
<td>0</td>
</tr>
<tr>
<td>25-29</td>
<td>1</td>
</tr>
<tr>
<td>30-34</td>
<td>3</td>
</tr>
<tr>
<td>35-39</td>
<td>4</td>
</tr>
<tr>
<td>40-44</td>
<td>2</td>
</tr>
<tr>
<td>45-49</td>
<td>2</td>
</tr>
<tr>
<td>50-54</td>
<td>7</td>
</tr>
<tr>
<td>55-59</td>
<td>11</td>
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<tr>
<td>60-64</td>
<td>6</td>
</tr>
<tr>
<td>65-69</td>
<td>5</td>
</tr>
<tr>
<td>70-74</td>
<td>0</td>
</tr>
<tr>
<td>75-79</td>
<td>0</td>
</tr>
<tr>
<td>80-84</td>
<td>0</td>
</tr>
<tr>
<td>85+</td>
<td>0</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


Data Sources:

3.4.3.3 Vaginal cancer incidence and mortality comparison in Kenya

Figure 30: Comparison of age-specific vaginal cancer incidence and mortality rates in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data sources-methods
Rates per 100,000 women per year.
Data Sources:
3.4.4 Penile cancer

The annual burden of penile cancer has been estimated to be 34,000 cases in 2018 worldwide with incidence rates strongly correlating with those of cervical cancer (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190). Penile cancer is rare and most commonly affects men aged 50-70 years. Incidence rates are higher in less developed countries than in more developed countries, accounting for up to 10% of male cancers in some parts of Africa, South America and Asia. Precursor cancerous penile lesions (PeIN) are rare.

Cancers of the penis are primarily of squamous cell carcinomas (SCC) (95%) and the most common penile SCC histologic sub-types are keratinising (49%), mixed warty-basaloid (17%), verrucous (8%) warty (6%), and basaloid (4%). HPV is most commonly detected in basaloid and warty tumours but is less common in keratinising and verrucous tumours. Approximately 60-100% of PeIN lesions are HPV DNA positive.

3.4.4.1 Penile cancer incidence in Kenya

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of new cancer cases</td>
<td>47</td>
<td>1,271</td>
<td>36,068</td>
</tr>
<tr>
<td>Uncertainty intervals [95% UI]</td>
<td>[13-165]</td>
<td>[565-2,860]</td>
<td>[30,963-42,015]</td>
</tr>
<tr>
<td>Crude incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.18</td>
<td>0.58</td>
<td>0.92</td>
</tr>
<tr>
<td>Age-standardized incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.45</td>
<td>1.18</td>
<td>0.80</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.05</td>
<td>0.12</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


<sup>a</sup> Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 men per year.

Data Sources:
Figure 31: Age-specific incidence rates of penile cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
* Rates per 100,000 men per year.
Data Sources:

Figure 32: Annual number of new cases of penile cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Data Sources:
### 3.4.4.2 Penile cancer mortality in Kenya

Table 14: Penile cancer mortality in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual number of deaths</td>
<td>21</td>
<td>606</td>
<td>13,211</td>
</tr>
<tr>
<td>Uncertainty intervals [95% UI]</td>
<td>[5-93]</td>
<td>[241-1,524]</td>
<td>[10,687-16,332]</td>
</tr>
<tr>
<td>Crude mortality rate(^b)</td>
<td>0.08</td>
<td>0.27</td>
<td>0.34</td>
</tr>
<tr>
<td>Age-standardized mortality rate(^b)</td>
<td>0.19</td>
<td>0.58</td>
<td>0.29</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old(^a)</td>
<td>0.02</td>
<td>0.06</td>
<td>0.03</td>
</tr>
</tbody>
</table>

**Data accessed on 27 Jan 2021**


\(^a\) Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

\(^b\) Rates per 100,000 men per year.

**Data Sources**

Figure 33: Age-specific mortality rates of penile cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
* Rates per 100,000 men per year.

Data Sources:

Figure 34: Annual number of deaths of penile cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources:
3.4.4.3 Penile cancer incidence and mortality comparison in Kenya

Figure 35: Comparison of age-specific penile cancer incidence and mortality rates in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data sources-methods
Rates per 100,000 men per year.
Data Sources:
3.5 Head and neck cancers

The majority of head and neck cancers are associated with high tobacco and alcohol consumption. However, increasing trends in the incidence at specific sites suggest that other aetiological factors are involved, and infection by certain high-risk types of HPV (i.e. HPV16) have been reported to be associated with head and neck cancers, in particular with oropharyngeal cancer. Current evidence suggests that HPV16 is associated with tonsil cancer (including Waldeyer ring cancer), base of tongue cancer and other oropharyngeal cancer sites. Associations with other head and neck cancer sites such as oral cancer are neither strong nor consistent when compared to molecular-epidemiological data on HPV and oropharyngeal cancer. Association with laryngeal cancer is still unclear (IARC Monograph Vol 100B)

3.5.1 Oropharyngeal cancer

3.5.1.1 Oropharyngeal cancer incidence in Kenya

<table>
<thead>
<tr>
<th>Table 15: Oropharyngeal cancer incidence in Kenya (estimates for 2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator</strong></td>
</tr>
<tr>
<td><strong>MEN</strong></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
</tr>
<tr>
<td>Crude incidence rate sa b</td>
</tr>
<tr>
<td>Age-standardized incidence rate sa b</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old a</td>
</tr>
<tr>
<td><strong>WOMEN</strong></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
</tr>
<tr>
<td>Crude incidence rate sa c</td>
</tr>
<tr>
<td>Age-standardized incidence rate sa c</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old a</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

* Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer observed in the period in the absence of competing causes.

b Rates per 100,000 men per year.

c Rates per 100,000 women per year.

Data Sources:
Figure 36: Age-specific incidence rates of oropharyngeal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources:

Figure 37: Annual number of new cases of oropharyngeal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources:
3.5.1.2 Oropharyngeal cancer mortality in Kenya

Table 16: Oropharyngeal cancer mortality in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of deaths</td>
<td>31</td>
<td>493</td>
<td>39,590</td>
</tr>
<tr>
<td>Uncertainty intervals of mortality cancer cases [95% UI]</td>
<td>[7-135]</td>
<td>[241-1,008]</td>
<td>[35,255-44,458]</td>
</tr>
<tr>
<td>Crude mortality rate sa^b</td>
<td>0.12</td>
<td>0.22</td>
<td>1.01</td>
</tr>
<tr>
<td>Age-standardized mortality rate sa^b</td>
<td>0.32</td>
<td>0.49</td>
<td>0.89</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old^b</td>
<td>0.03</td>
<td>0.06</td>
<td>0.11</td>
</tr>
<tr>
<td><strong>WOMEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of deaths</td>
<td>12</td>
<td>93</td>
<td>8,553</td>
</tr>
<tr>
<td>Uncertainty intervals of mortality cancer cases [95% UI]</td>
<td>[1-127]</td>
<td>[40-214]</td>
<td>[6,684-10,945]</td>
</tr>
<tr>
<td>Crude mortality rate sa^c</td>
<td>0.04</td>
<td>0.04</td>
<td>0.22</td>
</tr>
<tr>
<td>Age-standardized mortality rate sa^c</td>
<td>0.08</td>
<td>0.07</td>
<td>0.17</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old^c</td>
<td>0.00</td>
<td>0.01</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


^a Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

^b Rates per 100,000 men per year.

^c Rates per 100,000 women per year.

Data Sources

Figure 38: Age-specific mortality rates of oropharyngeal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
* Rates per 100,000 men per year.
* Rates per 100,000 women per year.

Data Sources

Figure 39: Annual number of deaths of oropharyngeal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources
3.5.1.3 Oropharyngeal cancer incidence and mortality comparison in Kenya

Figure 40: Comparison of age-specific oropharyngeal cancer incidence and mortality rates among men in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods
* Rates per 100,000 men per year.
Data Sources:

Figure 41: Comparison of age-specific oropharyngeal cancer incidence and mortality rates among women in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods
* Rates per 100,000 women per year.
Data Sources:
3.5.2 Oral cavity cancer

3.5.2.1 Oral cavity cancer incidence in Kenya

Table 17: Oral cavity cancer incidence in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
<td>390</td>
<td>2,690</td>
<td>264,211</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
<td>[252-604]</td>
<td>[1,570-4,610]</td>
<td>[251,153-277,948]</td>
</tr>
<tr>
<td>Crude incidence rate sa&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.46</td>
<td>1.22</td>
<td>6.72</td>
</tr>
<tr>
<td>Age-standardized incidence rate sa&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.89</td>
<td>2.36</td>
<td>5.96</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.30</td>
<td>0.28</td>
<td>0.68</td>
</tr>
<tr>
<td><strong>WOMEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
<td>369</td>
<td>1,963</td>
<td>113,502</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
<td>[222-612]</td>
<td>[1,063-3,624]</td>
<td>[105,599-121,997]</td>
</tr>
<tr>
<td>Crude incidence rate sa&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.36</td>
<td>0.87</td>
<td>2.94</td>
</tr>
<tr>
<td>Age-standardized incidence rate sa&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.67</td>
<td>1.53</td>
<td>2.28</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.33</td>
<td>0.18</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


<sup>a</sup> Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 men per year.

<sup>c</sup> Rates per 100,000 women per year.

Data Sources:
Figure 42: Age-specific incidence rates of oral cavity cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to <http://gco.iarc.fr/today/data-sources-methods>

Rates per 100,000 men per year.
Rates per 100,000 women per year.

Data Sources:

Figure 43: Annual number of new cases of oral cavity cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to <http://gco.iarc.fr/today/data-sources-methods>

Data Sources:
### Table 18: Oral cavity cancer mortality in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of deaths</td>
<td>222</td>
<td>1,716</td>
<td>125,022</td>
</tr>
<tr>
<td>Uncertainty intervals of mortality cancer cases [95% UI]</td>
<td>[132-373]</td>
<td>[929-3,171]</td>
<td>[116,573-134,084]</td>
</tr>
<tr>
<td>Crude mortality rate sa&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>0.83</td>
<td>0.78</td>
<td>3.18</td>
</tr>
<tr>
<td>Age-standardized mortality rate sa&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>1.88</td>
<td>1.61</td>
<td>2.82</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.19</td>
<td>0.20</td>
<td>0.32</td>
</tr>
<tr>
<td><strong>WOMEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of deaths</td>
<td>213</td>
<td>1,264</td>
<td>52,735</td>
</tr>
<tr>
<td>Uncertainty intervals of mortality cancer cases [95% UI]</td>
<td>[117-389]</td>
<td>[624-2,560]</td>
<td>[47,690-58,313]</td>
</tr>
<tr>
<td>Crude mortality rate sa&lt;sup&gt;ac&lt;/sup&gt;</td>
<td>0.79</td>
<td>0.56</td>
<td>1.36</td>
</tr>
<tr>
<td>Age-standardized mortality rate sa&lt;sup&gt;ac&lt;/sup&gt;</td>
<td>1.62</td>
<td>1.03</td>
<td>1.04</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.19</td>
<td>0.12</td>
<td>0.12</td>
</tr>
</tbody>
</table>

**Data accessed on 27 Jan 2021**


<sup>a</sup> Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 men per year.

<sup>c</sup> Rates per 100,000 women per year.

**Data Sources**

Figure 44: Age-specific mortality rates of oral cavity cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Rates per 100,000 men per year.
Rates per 100,000 women per year.
Data Sources:

Figure 45: Annual number of deaths of oral cavity cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Data Sources:
3.5.2.3 Oral cavity cancer incidence and mortality comparison in Kenya

Figure 46: Comparison of age-specific oral cavity cancer incidence and mortality rates among men in Kenya (estimates for 2020)

![Graph of oral cavity cancer incidence and mortality rates among men in Kenya (estimates for 2020)](image)

Data accessed on 27 Jan 2021

Data Sources:

Figure 47: Comparison of age-specific oral cavity cancer incidence and mortality rates among women in Kenya (estimates for 2020)

![Graph of oral cavity cancer incidence and mortality rates among women in Kenya (estimates for 2020)](image)

Data accessed on 27 Jan 2021

Data Sources:
### 3.5.3 Laryngeal cancer

#### 3.5.3.1 Laryngeal cancer incidence in Kenya

Table 19: Laryngeal cancer incidence in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
<td>336</td>
<td>1,860</td>
<td>160,265</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
<td>[206-547]</td>
<td>[1,013-3,415]</td>
<td>[150,633-170,513]</td>
</tr>
<tr>
<td>Crude incidence rate sa&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.26</td>
<td>0.84</td>
<td>4.08</td>
</tr>
<tr>
<td>Age-standardized incidence rate sa&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.06</td>
<td>1.89</td>
<td>3.59</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.39</td>
<td>0.23</td>
<td>0.45</td>
</tr>
<tr>
<td><strong>WOMEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of new cancer cases</td>
<td>72</td>
<td>413</td>
<td>24,350</td>
</tr>
<tr>
<td>Uncertainty intervals of new cancer cases [95% UI]</td>
<td>[22-232]</td>
<td>[99-1,724]</td>
<td>[20,845-28,444]</td>
</tr>
<tr>
<td>Crude incidence rate sa&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.27</td>
<td>0.18</td>
<td>0.63</td>
</tr>
<tr>
<td>Age-standardized incidence rate sa&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.54</td>
<td>0.31</td>
<td>0.49</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.08</td>
<td>0.04</td>
<td>0.06</td>
</tr>
</tbody>
</table>

**Data accessed on 27 Jan 2021**


<sup>a</sup> Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

<sup>b</sup> Rates per 100,000 men per year.

<sup>c</sup> Rates per 100,000 women per year.
Figure 48: Age-specific incidence rates of laryngeal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources

Figure 49: Annual number of new cases of laryngeal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources
### 3.5.3.2 Laryngeal cancer incidence and mortality comparison in Kenya

#### Table 20: Laryngeal cancer mortality in Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kenya</th>
<th>Eastern Africa</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of deaths</td>
<td>221</td>
<td>1,279</td>
<td>85,351</td>
</tr>
<tr>
<td>Uncertainty intervals of mortality cancer cases [95% UI]</td>
<td>[124-395]</td>
<td>[640-2,556]</td>
<td>[78,895-92,335]</td>
</tr>
<tr>
<td>Crude mortality rate (sa^b)</td>
<td>0.83</td>
<td>0.58</td>
<td>2.17</td>
</tr>
<tr>
<td>Age-standardized mortality rate (sa^b)</td>
<td>2.11</td>
<td>1.36</td>
<td>1.89</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old(a)</td>
<td>0.26</td>
<td>0.16</td>
<td>0.23</td>
</tr>
<tr>
<td><strong>WOMEN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual number of deaths</td>
<td>46</td>
<td>283</td>
<td>14,489</td>
</tr>
<tr>
<td>Uncertainty intervals of mortality cancer cases [95% UI]</td>
<td>[12-184]</td>
<td>[112-713]</td>
<td>[11,902-17,639]</td>
</tr>
<tr>
<td>Crude mortality rate (sa^c)</td>
<td>0.17</td>
<td>0.13</td>
<td>0.37</td>
</tr>
<tr>
<td>Age-standardized mortality rate (sa^c)</td>
<td>0.35</td>
<td>0.22</td>
<td>0.28</td>
</tr>
<tr>
<td>Cumulative risk (%) at 75 years old(a)</td>
<td>0.05</td>
<td>0.03</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


\(a\) Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

\(b\) Rates per 100,000 men per year.

\(c\) Rates per 100,000 women per year.

Data Sources:
Figure 50: Age-specific mortality rates of laryngeal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources:

Figure 51: Annual number of deaths of laryngeal cancer in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources:
3.5.3.3 Laryngeal cancer incidence and mortality comparison in Kenya

Figure 52: Comparison of age-specific laryngeal cancer incidence and mortality rates among men in Kenya (estimates for 2020)

Figure 53: Comparison of age-specific laryngeal cancer incidence and mortality rates among women in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

Ratios per 100,000 men per year.

Data Sources:

Ratios per 100,000 women per year.

Data Sources:
4 HPV related statistics

HPV infection is commonly found in the anogenital tract of men and women with and without clinical lesions. The aetiological role of HPV infection among women with cervical cancer is well-established, and there is growing evidence of its central role in other anogenital sites. HPV is also responsible for other diseases such as recurrent juvenile respiratory papillomatosis and genital warts, both mainly caused by HPV types 6 and 11 (Lacey CJ, Vaccine 2006; 24(S3):35). For this section, the methodologies used to compile the information on HPV burden are derived from systematic reviews and meta-analyses of the literature. Due to the limitations of HPV DNA detection methods and study designs used, these data should be interpreted with caution and used only as a guide to assess the burden of HPV infection within the population. (Vaccine 2006, Vol. 24, Suppl 3; Vaccine 2008, Vol. 26, Suppl 10; Vaccine 2012, Vol. 30, Suppl 5; IARC Monographs 2007, Vol. 90).

4.1 HPV burden in women with normal cervical cytology, cervical precancerous lesions or invasive cervical cancer

The statistics shown in this section focus on HPV infection in the cervix uteri. HPV cervical infection results in cervical morphological lesions ranging from normalcy (cytologically normal women) to different stages of precancerous lesions (CIN-1, CIN-2, CIN-3/CIS) and invasive cervical cancer. HPV infection is measured by HPV DNA detection in cervical cells (fresh tissue, paraffin embedded or exfoliated cells). The prevalence of HPV increases with lesion severity. HPV causes virtually 100% of cervical cancer cases, and an underestimation of HPV prevalence in cervical cancer is most likely due to the limitations of study methodologies. Worldwide, HPV16 and 18 (the two vaccine-preventable types) contribute to over 70% of all cervical cancer cases, between 41% and 67% of high-grade cervical lesions and 16-32% of low-grade cervical lesions. After HPV16/18, the six most common HPV types are the same in all world regions, namely 31, 33, 35, 45, 52 and 58; these account for an additional 20% of cervical cancers worldwide (Clifford G, Vaccine 2006; 24(S3):26).

Methods: Prevalence and type distribution of human papillomavirus in cervical carcinoma, low-grade cervical lesions, high-grade cervical lesions and normal cytology: systematic review and meta-analysis

A systematic review of the literature was conducted regarding the worldwide HPV-prevalence and type distribution for cervical carcinoma, low-grade cervical lesions, high-grade cervical lesions and normal cytology from 1990 to 'data as of' indicated in each section. The search terms for the review were 'HPV' AND cerv* using Pubmed. There were no limits in publication language. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR or HC2, a minimum of 20 cases for cervical carcinoma, 20 cases for low-grade cervical lesions, 20 cases for highgrade cervical lesions and 100 cases for normal cytology and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive extracted for each study were pooled to estimate the prevalence of HPV DNA and the HPV type distribution globally and by geographical region. Binomial 95% confidence intervals were calculated for each HPV prevalence. For more details refer to the methods document.
4.1.1 HPV prevalence in women with normal cervical cytology

Figure 54: Crude age-specific HPV prevalence (%) and 95% confidence interval in women with normal cervical cytology in Kenya

Data updated on 30 Jun 2015 (data as of 30 Jun 2014)

Data Sources:
De Vuyst H, Sex Transm Dis 2003; 30: 137
Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453

Figure 55: HPV prevalence among women with normal cervical cytology in Kenya, by study

Data updated on 30 Jun 2015 (data as of 30 Jun 2014)

Data Sources:
De Vuyst H, Sex Transm Dis 2003; 30: 137
Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453
4.1.2 HPV type distribution among women with normal cervical cytology, precancerous cervical lesions and cervical cancer

Table 21: Prevalence of HPV16 and HPV18 by cytology in Kenya

<table>
<thead>
<tr>
<th>Cytology</th>
<th>No. tested</th>
<th>HPV 16/18 Prevalence % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal cytology</td>
<td>823</td>
<td>9.1 (7.3-11.3)</td>
</tr>
<tr>
<td>Low-grade lesions</td>
<td>42</td>
<td>21.4 (11.7-35.9)</td>
</tr>
<tr>
<td>High-grade lesions</td>
<td>20</td>
<td>45.0 (25.8-65.8)</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>233</td>
<td>63.1 (56.7-69.0)</td>
</tr>
</tbody>
</table>

Data updated on 19 May 2017 (data as of 30 Jun 2015 / 30 Nov 2014)

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells)

Data Sources:
4 Based on meta-analysis performed by IARC’s Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Clifford GM, Cancer Epidemiol Biomarkers Prev 2005;14:1157

Figure 56: HPV 16 prevalence among women with normal cervical cytology in Kenya, by study

Data updated on 30 Jun 2015 (data as of 30 Jun 2014)

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells)

Data Sources:
Figure 57: HPV 16 prevalence among women with low-grade cervical lesions in Kenya, by study

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>% (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Vuyst 2003</td>
<td>30</td>
<td>13.3 (5.3−29.7)</td>
</tr>
<tr>
<td>De Vuyst 2010</td>
<td>12</td>
<td>8.3 (1.5−35.4)</td>
</tr>
</tbody>
</table>

Data updated on 27 Jan 2017 (data as of 30 Jun 2015)

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells)

Data Sources:

Based on meta-analysis performed by IARC’s Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Clifford GM, Cancer Epidemiol Biomarkers Prev 2005;14:1157

Figure 58: HPV 16 prevalence among women with high-grade cervical lesions in Kenya, by study

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>% (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Vuyst 2003</td>
<td>20</td>
<td>45.0 (25.8−65.8)</td>
</tr>
</tbody>
</table>

Data updated on 27 Jan 2017 (data as of 30 Jun 2015)

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells)

Data Sources:

Figure 59: HPV 16 prevalence among women with invasive cervical cancer in Kenya, by study

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>% (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Vuyst 2008</td>
<td>153</td>
<td>43.8 (36.2−51.7)</td>
</tr>
<tr>
<td>De Vuyst 2012</td>
<td>80</td>
<td>56.3 (45.3−66.6)</td>
</tr>
</tbody>
</table>

Data updated on 19 May 2017 (data as of 30 Jun 2015)

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells)

Data Sources:


ICO/IARC HPV Information Centre
Figure 60: Comparison of the ten most frequent HPV oncogenic types in Kenya among women with and without cervical lesions

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

Data Sources:
5 Based on meta-analysis performed by IARC’s Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2849 2) Clifford GM, Cancer Epidemiol Biomarkers Prev 2005;14:1157


Figure 61: Comparison of the ten most frequent HPV oncogenic types in Kenya among women with invasive cervical cancer by histology

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

* No data available. No more types than shown were tested or were positive

Data Sources


Table 22: Type-specific HPV prevalence in women with normal cervical cytology, precancerous cervical lesions and invasive cervical cancer in Kenya

<table>
<thead>
<tr>
<th>HPV Type</th>
<th>Normal cytology 1,2</th>
<th>Low-grade lesions 3,4</th>
<th>High-grade lesions 5,6</th>
<th>Cervical cancer 7,8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. tested</td>
<td>HPV Prev % (95% CI)</td>
<td>No. tested</td>
<td>HPV Prev % (95% CI)</td>
</tr>
<tr>
<td>Low-risk HPV types</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>823</td>
<td>2.8 (1.9-4.2)</td>
<td>42</td>
<td>4.8 (1.3-15.8)</td>
</tr>
<tr>
<td>11</td>
<td>823</td>
<td>1.9 (1.2-3.1)</td>
<td>42</td>
<td>2.4 (0.4-12.3)</td>
</tr>
<tr>
<td>32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40</td>
<td>823</td>
<td>0.1 (0.0-0.7)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>42</td>
<td>823</td>
<td>0.6 (0.3-1.4)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>43</td>
<td>823</td>
<td>0.0 (0.0-0.5)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>44</td>
<td>823</td>
<td>1.1 (0.6-2.1)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>54</td>
<td>823</td>
<td>1.1 (0.6-2.1)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>55</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>57</td>
<td>454</td>
<td>0.0 (0.0-0.8)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>61</td>
<td>454</td>
<td>3.5 (2.2-5.6)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>62</td>
<td>454</td>
<td>2.0 (1.0-3.7)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>64</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>71</td>
<td>454</td>
<td>0.0 (0.0-0.8)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>72</td>
<td>454</td>
<td>0.2 (0.0-1.2)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>74</td>
<td>823</td>
<td>1.1 (0.6-2.1)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>81</td>
<td>454</td>
<td>2.6 (1.5-4.6)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>83</td>
<td>454</td>
<td>2.0 (1.0-3.7)</td>
<td>-</td>
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</tr>
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<td>1.8 (0.9-3.4)</td>
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<td>-</td>
</tr>
<tr>
<td>86</td>
<td>-</td>
<td>-</td>
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<tr>
<td>89</td>
<td>454</td>
<td>0.0 (0.0-0.8)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>90</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>91</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

**Low-risk HPV types**

<table>
<thead>
<tr>
<th>Type</th>
<th>HPV</th>
<th>No. tested</th>
<th>HPV Prev % (95% CI)</th>
<th>No. tested</th>
<th>HPV Prev % (95% CI)</th>
<th>No. tested</th>
<th>HPV Prev % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>823</td>
<td>2.8 (1.9-4.2)</td>
<td>42</td>
<td>4.8 (1.3-15.8)</td>
<td>20</td>
<td>0.0 (0.0-16.1)</td>
<td>233</td>
</tr>
<tr>
<td>11</td>
<td>823</td>
<td>1.9 (1.2-3.1)</td>
<td>42</td>
<td>2.4 (0.4-12.3)</td>
<td>20</td>
<td>0.0 (0.0-16.1)</td>
<td>233</td>
</tr>
</tbody>
</table>

**Data updated on 30 Jun 2015 (data as of 30 Jun 2015 / 30 Nov 2014)**

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells)

Data Sources

8 Data updated on 30 Jun 2015 (data as of 30 Jun 2015 / 30 Nov 2014)

ICO/IARC HPV Information Centre
Based on meta-analysis performed by IARC’s Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015.

Reference publications:
1) Guan P, Int J Cancer 2012;131:2349
2) Li N, Int J Cancer 2011;128:927
3) Smith JS, Int J Cancer 2007;121:621
4) Clifford GM, Br J Cancer 2003;88:63
Table 23: Type-specific HPV prevalence among invasive cervical cancer cases in Kenya by histology

<table>
<thead>
<tr>
<th>HPV Type</th>
<th>No. tested</th>
<th>Any Histology HPV Prev % (95% CI)</th>
<th>Squamous cell carcinoma HPV Prev % (95% CI)</th>
<th>Adenocarcinoma HPV Prev % (95% CI)</th>
<th>Unspecified HPV Prev % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIGH-RISK HPV TYPES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>233</td>
<td>48.1 (41.7-54.5)</td>
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<td>31</td>
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<td>2.6 (1.2-5.5)</td>
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</tr>
<tr>
<td>52</td>
<td>233</td>
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<td>4.7 (2.7-8.3)</td>
<td>-</td>
</tr>
<tr>
<td>56</td>
<td>233</td>
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</tr>
<tr>
<td>58</td>
<td>233</td>
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<td>59</td>
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<tr>
<td><strong>PROBABLE/POSSIBLE CARCINOGENS</strong></td>
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</tr>
<tr>
<td>30</td>
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<td>34</td>
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<td>0.0 (0.0-4.6)</td>
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<td>66</td>
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<td>0.4 (0.1-2.4)</td>
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<td>0.4 (0.1-2.4)</td>
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<tr>
<td>67</td>
<td>80</td>
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<td>1.3 (0.2-6.7)</td>
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</tr>
<tr>
<td>68</td>
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<td>2.6 (1.2-5.5)</td>
<td>-</td>
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<td>73</td>
<td>80</td>
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<tr>
<td><strong>LOW RISK HPV TYPES</strong></td>
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<td>6</td>
<td>233</td>
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</tr>
<tr>
<td>11</td>
<td>233</td>
<td>0.9 (0.2-3.1)</td>
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<td>32</td>
<td>80</td>
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<td>42</td>
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<td>44</td>
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<td>0.4 (0.1-2.4)</td>
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<td>54</td>
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<td>0.9 (0.2-3.1)</td>
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<td>57</td>
<td>80</td>
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<tr>
<td>72</td>
<td>80</td>
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<td>-</td>
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</tr>
<tr>
<td>74</td>
<td>153</td>
<td>0.7 (0.1-3.6)</td>
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<tr>
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<td>86</td>
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<tr>
<td>91</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

Data updated on 19 May 2017 (data as of 30 Jun 2015)

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells)

*Number of women tested

© 2017 ICO/IARC HPV Information Centre
4.1.3 HPV type distribution among HIV+ women with normal cervical cytology

Table 24: Studies on HPV prevalence among HIV+ women with normal cytology in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested(a)</th>
<th>HPV Prevalence</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>%</td>
<td>(95% CI)(b)</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Data updated on 31 Dec 2011 (data as of 31 Dec 2011)

DBH: Dot Blot Hybridization; EIA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; PCR: Polymerase Chain Reaction; TS: Type Specific

\(a\) Number of women tested
\(b\) 95% Confidence Interval

Data Sources:
Systematic review and meta-analysis were performed by the ICO HPV Information Centre up to December 2011. Selected studies had to include at least 20 HIV positive women who had both normal cervical cytology and HPV test results (PCR or HC2).
4.1.4 Terminology

**Cytologically normal women**
No abnormal cells are observed on the surface of their cervix upon cytology.

**Cervical Intraepithelial Neoplasia (CIN) / Squamous Intraepithelial Lesions (SIL)**
SIL and CIN are two commonly used terms to describe precancerous lesions or the abnormal growth of squamous cells observed in the cervix. SIL is an abnormal result derived from cervical cytological screening or Pap smear testing. CIN is a histological diagnosis made upon analysis of cervical tissue obtained by biopsy or surgical excision. The condition is graded as CIN 1, 2 or 3, according to the thickness of the abnormal epithelium (1/3, 2/3 or the entire thickness).

**Low-grade cervical lesions (LSIL/CIN-1)**
Low-grade cervical lesions are defined by early changes in size, shape, and number of abnormal cells formed on the surface of the cervix and may be referred to as mild dysplasia, LSIL, or CIN-1.

**High-grade cervical lesions (HSIL/ CIN-2 / CIN-3 / CIS)**
High-grade cervical lesions are defined by a large number of precancerous cells on the surface of the cervix that are distinctly different from normal cells. They have the potential to become cancerous cells and invade deeper tissues of the cervix. These lesions may be referred to as moderate or severe dysplasia, HSIL, CIN-2, CIN-3 or cervical carcinoma in situ (CIS).

**Carcinoma in situ (CIS)**
Preinvasive malignancy limited to the epithelium without invasion of the basement membrane. CIN 3 encompasses the squamous carcinoma in situ.

**Invasive cervical cancer (ICC) / Cervical cancer**
If the high-grade precancerous cells invade the basement membrane is called ICC. ICC stages range from stage I (cancer is in the cervix or uterus only) to stage IV (the cancer has spread to distant organs, such as the liver).

**Invasive squamous cell carcinoma**
Invasive carcinoma composed of cells resembling those of squamous epithelium.

**Adenocarcinoma**
Invasive tumour with glandular and squamous elements intermingled.
4.2 HPV burden in anogenital cancers other than cervix

Methods: Prevalence and type distribution of human papillomavirus in carcinoma of the vulva, vagina, anus and penis: systematic review and meta-analysis

A systematic review of the literature was conducted on the worldwide HPV-prevalence and type distribution for anogenital carcinomas other than cervix from January 1986 to 'data as of' indicated in each section. The search terms for the review were 'HPV' AND (anus OR anal) OR (penile) OR vagin* OR vulv* using Pubmed. There were no limits in publication language. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR, a minimum of 10 cases by lesion and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive cases were extracted for each study to estimate the prevalence of HPV DNA and the HPV type distribution. Binomial 95% confidence intervals were calculated for each HPV prevalence.
4.2.1 Anal cancer and precancerous anal lesions

Anal cancer is similar to cervical cancer with respect to overall HPV DNA positivity, with approximately 100% of anal squamous cell carcinoma cases associated with HPV infection worldwide (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190). HPV16 is the most common type detected, representing 73% of all HPV-positive tumours. HPV18 is the second most common type detected and is found in approximately 5% of cases. HPV DNA is also detected in the majority of precancerous anal lesions (AIN) (91.5% in AIN1 and 93.9% in AIN2/3) (De Vuyst H et al. Int J Cancer 2009; 124: 1626-36). In this section, the burden of HPV among cases of anal cancers and precancerous anal lesions in Kenya are presented.

Table 25: Studies on HPV prevalence among anal cancer cases in Kenya (male and female)

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

DBH: Dot Blot Hybridization; EIA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; ISH: In Situ Hybridization; LBA: Line-Blot Assay; LiPA: Line Probe Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RLBH: Reverse Line Blot Hybridization; RT-PCR: Real Time Polymerase Chain Reaction; SBH: Southern Blot Hybridization; SPF: Short Primer Fragment; TS: Type Specific;

95% Confidence Interval

Data Sources:

Table 26: Studies on HPV prevalence among cases of AIN2/3 in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

AIN 2/3: Anal intraepithelial neoplasia of grade 2/3

95% Confidence Interval

Data Sources:
Figure 62: Comparison of the ten most frequent HPV types in anal cancer cases in Africa and the World

Data updated on 9 Feb 2017 (data as of 30 Jun 2014)

a Includes cases from Mali, Nigeria and Senegal
b Includes cases from Europe (Bosnia-Herzegovina, Czech Republic, France, Germany, Poland, Portugal, Slovenia, Spain and United Kingdom); America (Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay and United States); Africa (Mali, Nigeria and Senegal); Asia (Bangladesh, India and South Korea)

Data Sources:
Data from Alemany L, Int J Cancer 2015; 136: 98. This study has gathered the largest international series of anal cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

Figure 63: Comparison of the ten most frequent HPV types in AIN 2/3 cases in Africa and the World

Data updated on 7 Feb 2017 (data as of 30 Jun 2014)

AIN 2/3: Anal intraepithelial neoplasia of grade 2/3

Data Sources:
Data from Alemany L, Int J Cancer 2015; 136: 98. This study has gathered the largest international series of anal cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.
4.2.2 Vulvar cancer and precancerous vulvar lesions

HPV attribution for vulvar cancer is 48% among age 15-54 years, 28% among age 55-64 years, and 15% among age 65+ worldwide (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190). Vulvar cancer has two distinct histological patterns with two different risk factor profiles: (1) basaloid/warty types (2) keratinising types. Basaloid/warty lesions are more common in young women, are frequently found adjacent to VIN, are very often associated with HPV DNA detection (86%), and have a similar risk factor profile as cervical cancer. Keratinising vulvar carcinomas represent the majority of the vulvar lesions (>60%). These lesions develop from non HPV-related chronic vulvar dermatoses, especially lichen sclerosus and/or squamous hyperplasia, their immediate cancer precursor lesion is differentiated VIN, they occur more often in older women, and are rarely associated with HPV (6%) or with any of the other risk factors typical of cervical cancer. HPV prevalence is frequently detected among cases of high-grade VIN (VIN2/3) (85.3%). HPV 16 is the most common type detected followed by HPV 33 (De Vuyst H et al. Int J Cancer 2009; 124: 1262-36). In this section, the HPV burden among cases of vulvar cancer cases and precancerous vulvar lesions in Kenya are presented.

Table 27: Studies on HPV prevalence among vulvar cancer cases in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence (%)</th>
<th>(95% CI)(^a)</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data available</td>
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<td>-</td>
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</tr>
</tbody>
</table>

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

Data Sources:

Table 28: Studies on HPV prevalence among VIN 2/3 cases in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence (%)</th>
<th>(95% CI)(^a)</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-</td>
</tr>
</tbody>
</table>

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

Data Sources:

ICO/IARC HPV Information Centre
Figure 64: Comparison of the ten most frequent HPV types in cases of vulvar cancer in Africa and the World

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

* Includes cases from Mali, Mozambique, Nigeria, and Senegal.

* Includes cases from America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay, United States of America and Venezuela); Africa (Mali, Mozambique, Nigeria, and Senegal); Oceania (Australia and New Zealand); Europe (Austria, Belarus, Bosnia-Herzegovina, Czech Republic, France, Germany, Greece, Italy, Poland, Portugal, Spain and United Kingdom); and in Asia (Bangladesh, India, Israel, South Korea, Kuwait, Lebanon, Philippines, Taiwan and Turkey)

Data Sources:
Data from de Sanjosé S, Eur J Cancer 2013; 49: 3450. This study has gathered the largest international series of vulva cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

Figure 65: Comparison of the ten most frequent HPV types in VIN 2/3 cases in Africa and the World

Data updated on 30 Jun 2014 (data as of 30 Jun 2014)

VIN 2/3: Vulvar intraepithelial neoplasia of grade 2/3

* Includes cases from America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay and Venezuela); Oceania (Australia and New Zealand); Europe (Austria, Belarus, Bosnia-Herzegovina, Czech Republic, France, Germany, Greece, Italy, Poland, Portugal, Spain and United Kingdom); and in Asia (Bangladesh, India, Israel, South Korea, Kuwait, Lebanon, Philippines, Taiwan and Turkey)

Data Sources:
Data from de Sanjosé S, Eur J Cancer 2013; 49: 3450. This study has gathered the largest international series of vulva cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.
4.2.3 Vaginal cancer and precancerous vaginal lesions

Vaginal and cervical cancers share similar risk factors and it is generally accepted that both carcinomas share the same aetiology of HPV infection although there is limited evidence available. Women with vaginal cancer are more likely to have a history of other ano-genital cancers, particularly of the cervix, and these two carcinomas are frequently diagnosed simultaneously. HPV DNA is detected among 78% of invasive vaginal carcinomas and 91% of high-grade vaginal neoplasias (VaIN2/3). HPV16 is the most common type in high-grade vaginal neoplasias and it is detected in at least 78% of HPV-positive carcinomas (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190; De Vuyst H et al. Int J Cancer 2009; 124:1626-36). In this section, the HPV burden among cases of vaginal cancer cases and precancerous vaginal lesions in Kenya are presented.

Table 29: Studies on HPV prevalence among vaginal cancer cases in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence % (95% CI)</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

Table 30: Studies on HPV prevalence among VaIN 2/3 cases in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence % (95% CI)</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)
Figure 66: Comparison of the ten most frequent HPV types in cases of vaginal cancer in Africa and the World

Data updated on 30 Jun 2015 (data as of 30 Jun 2015)

- Includes cases from Mozambique, Nigeria.

Data Sources:
Data from Alemany L, Eur J Cancer 2014; 50: 2846. This study has gathered the largest international series of vaginal cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

Figure 67: Comparison of the ten most frequent HPV types in VaIN 2/3 cases in Africa and the World

Data updated on 30 Jun 2014 (data as of 30 Jun 2014)

- Includes cases from Europe (Austria, Belarus, Czech Republic, France, Germany, Greece, Poland, Spain and United Kingdom); America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Paraguay, Uruguay, United states of America and Venezuela); Africa (Mozambique, Nigeria); Asia (Bangladesh, India, Israel, South Korea, Kuwait, Philippines, Taiwan and Turkey); and Oceania (Australia)

Data Sources:
Data from Alemany L, Eur J Cancer 2014; 50: 2846. This study has gathered the largest international series of vaginal cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.
4.2.4 Penile cancer and precancerous penile lesions

HPV DNA is detectable in approximately 51% of all penile cancers (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190). Among HPV-related penile tumours, HPV16 is the most common type detected, followed by HPV18 and HPV types 6/11 (Miralles C et al. J Clin Pathol 2009;62:870-8). Over 95% of invasive penile cancers are SCC and the most common penile SCC histologic sub-types are keratinising (49%), mixed warty-basaloid (17%), verrucous (8%), warty (6%), and basaloid (4%). HPV is commonly detected in basaloid and warty tumours but is less common in keratinising and verrucous tumours. In this section, the HPV burden among cases of penile cancer cases and precancerous penile lesions in Kenya are presented.

Table 31: Studies on HPV prevalence among penile cancer cases in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>% (95% CI)</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 3 Mar 2015 (data as of 30 Jun 2014)

DBH: Dot Blot Hybridization; EIA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; ISH: In Situ Hybridization; LBA: Line-Blot Assay; LiPA: Line Probe Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RLBH: Reverse Line Blot Hybridization; RT-PCR: Real Time Polymerase Chain Reaction; SBH: Southern Blot Hybridization; SPF: Short Primer Fragment; TS: Type Specific; a 95% Confidence Interval

Data Sources:

Table 32: Studies on HPV prevalence among PeIN 2/3 cases in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>% (95% CI)</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 10 Feb 2015 (data as of 30 Jun 2014)

PeIN 2/3: Penile intraepithelial neoplasia of grade 2/3
DBH: Dot Blot Hybridization; EIA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; ISH: In Situ Hybridization; LBA: Line-Blot Assay; LiPA: Line Probe Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RLBH: Reverse Line Blot Hybridization; RT-PCR: Real Time Polymerase Chain Reaction; SBH: Southern Blot Hybridization; SPF: Short Primer Fragment; TS: Type Specific; a 95% Confidence Interval

Data Sources:
Figure 68: Comparison of the ten most frequent HPV types in cases of penile cancer in Africa and the World

Data updated on 9 Feb 2017 (data as of 30 Jun 2015)

a Includes cases from Mozambique, Nigeria, Senegal
b Includes cases from Australia, Bangladesh, India, South Korea, Lebanon, Philippines, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Venezuela and United States, Mozambique, Nigeria, Senegal, Czech Republic, France, Greece, Poland, Portugal, Spain and United Kingdom.

Data Sources

Figure 69: Comparison of the ten most frequent HPV types in PeIN 2/3 cases in Africa and the World

Data updated on 9 Feb 2017 (data as of 30 Jun 2015)

PeIN 2/3: Penile intraepithelial neoplasia of grade 2/3
a Includes cases from Australia, Bangladesh, India, South Korea, Lebanon, Philippines, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Venezuela, Mozambique, Nigeria, Senegal, Czech Republic, France, Greece, Poland, Portugal, Spain and United Kingdom.

Data Sources
4.3 HPV burden in men

The information to date regarding anogenital HPV infection is primarily derived from cross-sectional studies of selected populations such as general population, university students, military recruits, and studies that examined husbands of control women, as well as from prospective studies. Special subgroups include mainly studies that examined STD (sexually transmitted diseases) clinic attendees, MSM (men who have sex with men), HIV positive men, and partners of women with HPV lesions, CIN (cervical intraepithelial neoplasia), cervical cancer or cervical carcinoma in situ. Globally, prevalence of external genital HPV infection in men is higher than cervical HPV infection in women, but persistence is less likely. As with genital HPV prevalence, high numbers of sexual partners increase the acquisition of oncogenic HPV infections (Vaccine 2012, Vol. 30, Suppl 5). In this section, the HPV burden among men in Kenya is presented.

Methods

HPV burden in men was based on published systematic reviews and meta-analyses (Dunne EF, J Infect Dis 2006; 194: 1044, Smith JS, J Adolesc Health 2011; 48: 540, Olesen TB, Sex Transm Infect 2014; 90: 455, and Hebnes JB, J Sex Med 2014; 11: 2630) up to October 31, 2015. The search terms for the review were human papillomavirus, men, polymerase chain reaction (PCR), hybrid capture (HC), and viral DNA. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR or HC (ISH if data are not available for the country), and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive cases were extracted for each study to estimate the anogenital prevalence of HPV DNA. Binomial 95% confidence intervals were calculated for each anogenital HPV prevalence.

Table 33: Studies on HPV prevalence among men in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>Anatomic sites samples</th>
<th>HPV detection method</th>
<th>Population</th>
<th>Age (years)</th>
<th>No. Tested</th>
<th>HPV Prevalence % (95% CI)a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ng’ayo 2008</td>
<td>Glans, corona sulcus, shaft of the penis, scrotum and the perianal region</td>
<td>PCR-PGMY09/MY11 and HMB01</td>
<td>Men working in the fishing industry</td>
<td>18-63</td>
<td>250</td>
<td>57.6 (51.2-63.8)</td>
</tr>
<tr>
<td>Smith 2010</td>
<td>Shaft, glans, coronal sulcus, and inner and external foreskin tissue</td>
<td>PCR-GP5+/6+</td>
<td>Men screened to participate in an RCT of male circumcision</td>
<td>17-28</td>
<td>2705</td>
<td>51.1 (49.2-53.0)</td>
</tr>
</tbody>
</table>

Data updated on 31 Oct 2015 (data as of 31 Oct 2015)

Table 34: Studies on HPV prevalence among men from special subgroups in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>Anatomic sites samples</th>
<th>HPV detection method</th>
<th>Population</th>
<th>Age (years)</th>
<th>No. Tested</th>
<th>HPV Prevalence % (95% CI)a</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 31 Oct 2015 (data as of 31 Oct 2015)

ICO/IARC HPV Information Centre
4.4 HPV burden in the head and neck

The last evaluation of the International Agency for Research in Cancer (IARC) on the carcinogenicity of HPV in humans concluded that (a) there is enough evidence for the carcinogenicity of HPV type 16 in the oral cavity, oropharynx (including tonsil cancer, base of tongue cancer and other oropharyngeal cancer sites), and (b) limited evidence for laryngeal cancer (IARC Monograph Vol 100B). There is increasing evidence that HPV-related oropharyngeal cancers constitute an epidemiological, molecular and clinical distinct form as compared to non HPV-related ones. Some studies indicate that the most likely explanation for the origin of this distinct form of head and neck cancers associated with HPV is a sexually acquired oral HPV infection that is not cleared, persists and evolves into a neoplastic lesion. Around 30% of oropharyngeal cancers (which mainly comprises the tonsils and base of tongue sites) are caused by HPV with HPV16 being the most frequent type (de Martel C et al. Int J Cancer 2017;141(4):664-670). Attributable fraction varies greatly worldwide, being highest in more developed countries (60% in Republic of Korea, 51% in North America, 50% in Eastern Europe, 46% in Japan, 42% in North-Western Europe, 41% in Australia/New Zealand, 24% in South Europe, 23% in China, 22% in India, and 13% in elsewhere) (de Martel C et al. Lancet Glob Health 2020;8(2):e180-e190). In this section, the HPV burden in the head and neck in Kenya is presented.

4.4.1 Burden of oral HPV infection in healthy population

<table>
<thead>
<tr>
<th>Study</th>
<th>Specimen collection method / anatomic site</th>
<th>HPV detection method</th>
<th>Population</th>
<th>% males</th>
<th>Age (years)</th>
<th>No. tested</th>
<th>HPV prevalence % (95% CI)</th>
<th>High-Risk HPV prevalence % (95% CI)</th>
<th>5 most frequent HPV's, HPV type (n)$^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 35: Studies on oral HPV prevalence among healthy in Kenya

Data updated on 19 Oct 2021 (data as of 19 May 2015)

(95% CI): 95% Confidence Interval

$^a$ TS: type-specific; RT-PCR: real-time PCR; qPCR: quantitative PCR

$^b$ NS: not specified

$^c$ number of cases tested for HPV DNA

$^d$ number of cases positive for the specific HPV type

Data Sources: Systematic review and meta-analysis was performed by ICO HPV Information Centre until May 19, 2015. Reference publication: Mena M et al. J Infect Dis 2019;219(10):1574-1585.
### 4.4.2 HPV burden in head and neck cancers

#### Table 36: Studies on HPV prevalence among cases of oral cavity cancer in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence % (95% CI)a</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEN</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>WOMEN</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>BOTH OR UNSPECIFIED</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 9 May 2016 (data as of 31 Dec 2015)

DBH: Dot Blot Hybridization; EIA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; ISH: In-Situ Hybridization; LBA: Line-Blot Assay; LiPA: Line Probe Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RLBH: Reverse Line Blot Hybridization; RT-PCR: Real Time Polymerase Chain Reaction; SBH: Southern Blot Hybridization; SPF: Short Primer Fragment; TS: Type Specific

Only for European countries

a 95% Confidence Interval

Data Sources:


#### Table 37: Studies on HPV prevalence among cases of oropharyngeal cancer in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence % (95% CI)a</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEN</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>WOMEN</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>BOTH OR UNSPECIFIED</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 9 May 2016 (data as of 31 Dec 2015)

DBH: Dot Blot Hybridization; EIA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; ISH: In-Situ Hybridization; LBA: Line-Blot Assay; LiPA: Line Probe Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RLBH: Reverse Line Blot Hybridization; RT-PCR: Real Time Polymerase Chain Reaction; SBH: Southern Blot Hybridization; SPF: Short Primer Fragment; TS: Type Specific

Only for European countries

a 95% Confidence Interval

Data Sources:


#### Table 38: Studies on HPV prevalence among cases of hypopharyngeal or laryngeal cancer in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>HPV detection method and targeted HPV types</th>
<th>No. Tested</th>
<th>HPV Prevalence % (95% CI)a</th>
<th>Prevalence of 5 most frequent HPVs, HPV type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEN</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>WOMEN</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>BOTH OR UNSPECIFIED</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data updated on 9 May 2016 (data as of 31 Dec 2015)

DBH: Dot Blot Hybridization; EIA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; ISH: In-Situ Hybridization; LBA: Line-Blot Assay; LiPA: Line Probe Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RLBH: Reverse Line Blot Hybridization; RT-PCR: Real Time Polymerase Chain Reaction; SBH: Southern Blot Hybridization; SPF: Short Primer Fragment; TS: Type Specific

Only for European countries

a 95% Confidence Interval

Data Sources:

5 Factors contributing to cervical cancer

HPV is a necessary cause of cervical cancer, but it is not a sufficient cause. Other cofactors are necessary for progression from cervical HPV infection to cancer. Tobacco smoking, high parity, long-term hormonal contraceptive use, and co-infection with HIV have been identified as established cofactors. Co-infection with Chlamydia trachomatis and herpes simplex virus type-2, immunosuppression, and certain dietary deficiencies are other probable cofactors. Genetic and immunological host factors and viral factors other than type, such as variants of type, viral load and viral integration, are likely to be important but have not been clearly identified. (Muñoz N, Vaccine 2006; 24(S3): 1-10). In this section, the prevalence of smoking, parity (fertility), oral contraceptive use, and HIV in Kenya are presented.

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking of any tobacco adjusted prevalence (%) [95% UI] Current(^a)</td>
<td>19.2 [14.4-24.5]</td>
<td>1 [0.7-1.4]</td>
<td>10.1 [7.5-12.9]</td>
</tr>
<tr>
<td>Smoking of any tobacco adjusted prevalence (%) [95% UI] Daily(^b)</td>
<td>15 [10.8-19.1]</td>
<td>0.6 [0.3-0.8]</td>
<td>7.8 [5.5-9.9]</td>
</tr>
<tr>
<td>Cigarette smoking adjusted prevalence (%) [95% UI] Current(^c)</td>
<td>19.2 [14.4-24.5]</td>
<td>1 [0.7-1.4]</td>
<td>10.1 [7.5-12.9]</td>
</tr>
<tr>
<td>Cigarette smoking adjusted prevalence (%) [95% UI] Daily(^d)</td>
<td>15 [10.8-19.1]</td>
<td>0.6 [0.3-0.8]</td>
<td>7.8 [5.5-9.9]</td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total fertility rate per woman</td>
<td>-</td>
<td>3.8</td>
<td>-</td>
</tr>
<tr>
<td>Age-specific fertility rate (per 1000 women)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19 yrs</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>20-24 yrs</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>25-29 yrs</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>30-34 yrs</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>35-39 yrs</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40-44 yrs</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>45-49 yrs</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hormonal contraception</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral contraceptive use (%) among women who are married or in union</td>
<td>-</td>
<td>4.92</td>
<td>-</td>
</tr>
<tr>
<td>Injectable contraception use (%) among women who are married or in union</td>
<td>-</td>
<td>27.0</td>
<td>-</td>
</tr>
<tr>
<td>Implant contraceptive use (%) among women who are married or in union</td>
<td>-</td>
<td>20.7</td>
<td>-</td>
</tr>
<tr>
<td>HIV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated percent of adults aged 15-49 who are living with HIV [95% UI]</td>
<td>3.4 [2.8-4.1]</td>
<td>6.1 [5.7-7.2]</td>
<td>4.7 [4.5-7]</td>
</tr>
<tr>
<td>Estimated percent of young adults aged 15-24 who are living with HIV [95% UI]</td>
<td>1.5 [1.1-2.1]</td>
<td>2.5 [1.5-3.7]</td>
<td>- [—]</td>
</tr>
<tr>
<td>HIV prevalence (%) among sex workers</td>
<td>-</td>
<td>29.299999</td>
<td>29.299999</td>
</tr>
<tr>
<td>HIV prevalence (%) among men who have sex with men</td>
<td>18.200001</td>
<td>-</td>
<td>18.200001</td>
</tr>
<tr>
<td>Estimated number of people living with HIV [95% UI]</td>
<td>-</td>
<td>-</td>
<td>1600000 [1300000-1900000]</td>
</tr>
<tr>
<td>Estimated number of adults (15+ yrs) living with HIV [95% UI]</td>
<td>530000 [450000-640000]</td>
<td>910000 [770000-1100000]</td>
<td>1400000 [1200000-1700000]</td>
</tr>
<tr>
<td>Estimated number of AIDS-related deaths [95% UI]</td>
<td>-</td>
<td>-</td>
<td>250000 [180000-380000]</td>
</tr>
</tbody>
</table>

Data accessed on 12 Nov 2019

\(^a\) "Current" means smoking at the time of the survey, including both daily and non-daily or occasional smoking. "Tobacco smoking" means smoking any form of tobacco, including cigarettes, cigars, pipes, or any other smoked tobacco products and excluding smokeless products.

\(^b\) "Daily" means smoking every day at the time of the survey. "Tobacco smoking" means smoking any form of tobacco, including cigarettes, cigars, pipes, or any other smoked tobacco products and excluding smokeless products.

\(^c\) "Current" means smoking at the time of the survey, including both daily and non-daily or occasional smoking.

\(^d\) "Daily" means smoking every day at the time of the survey.
6 Sexual and reproductive health behaviour indicators

Sexual intercourse is the primary route of transmission of genital HPV infection. Information about sexual and reproductive health behaviours is essential to the design of effective preventive strategies against anogenital cancers. In this section, we describe sexual and reproductive health indicators that may be used as proxy measures of risk for HPV infection and anogenital cancers. Several studies have reported that earlier sexual debut is a risk factor for HPV infection, although the reason for this relationship is still unclear. In this section, information on sexual and reproductive health behaviour in Kenya are presented.

Table 40: Percentage of 15-year-olds who have had sexual intercourse in Kenya

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of 15-year-old subjects who report sexual intercourse</td>
<td>19.6</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Data accessed on 16 Mar 2017
Please refer to original source for methods of estimation
Percentage of all 15- to 19-year-olds who report having had sex before the age of 15 years.
Year of estimation: 2014

Data Sources:

Table 41: Median age at first sex in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>Year/period</th>
<th>Birth cohort N</th>
<th>N</th>
<th>MALE Median age at first sex</th>
<th>N</th>
<th>FEMALE Median age at first sex</th>
<th>N</th>
<th>TOTAL Median age at first sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya DHS 1993</td>
<td>1993</td>
<td>-</td>
<td>-</td>
<td>16.7</td>
<td>-</td>
<td>16.9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kenya DHS 1998</td>
<td>1998</td>
<td>-</td>
<td>-</td>
<td>16.8</td>
<td>-</td>
<td>16.7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kenya DHS 2003</td>
<td>2003</td>
<td>-</td>
<td>-</td>
<td>17.1</td>
<td>-</td>
<td>17.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kenya DHS 2008-09</td>
<td>2008</td>
<td>-</td>
<td>-</td>
<td>17.6</td>
<td>-</td>
<td>18.2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kenya DHS 2014</td>
<td>2014</td>
<td>-</td>
<td>-</td>
<td>17.4</td>
<td>-</td>
<td>18</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data accessed on 16 Mar 2017
Please refer to original source for methods of estimation
Median age at first sexual intercourse for women aged 20-49; Median age at first sexual intercourse for men aged 20-49(54,59).

Data Sources:
### Table 42: Marriage patterns in Kenya

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age at first marriage(^1)</td>
<td>26.9</td>
<td>22.5</td>
</tr>
<tr>
<td>Age-specific % of ever married(^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19 years</td>
<td>0.7</td>
<td>13.2</td>
</tr>
<tr>
<td>20-24 years</td>
<td>20.5</td>
<td>61.2</td>
</tr>
<tr>
<td>25-29 years</td>
<td>63.1</td>
<td>86</td>
</tr>
<tr>
<td>30-34 years</td>
<td>87.5</td>
<td>92</td>
</tr>
<tr>
<td>35-39 years</td>
<td>95.2</td>
<td>93.3</td>
</tr>
<tr>
<td>40-44 years</td>
<td>96.8</td>
<td>95</td>
</tr>
<tr>
<td>45-49 years</td>
<td>97.2</td>
<td>95.3</td>
</tr>
<tr>
<td>50-54 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>55-59 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>60-64 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>65-69 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>70-74 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>≥75</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Data accessed on 20 Feb 2020

Please refer to original source for methods of estimation.

2. DHS_STATcompiler

### Table 43: Average number of sexual partners in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>Period of estimate</th>
<th>Year/Period</th>
<th>Birth cohort</th>
<th>Male Mean(N)</th>
<th>Female Mean(N)</th>
<th>Total Mean(N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-(-)</td>
<td>-(-)</td>
<td>-(-)</td>
</tr>
</tbody>
</table>

Data accessed on 8 Aug 2013

Please refer to original source for methods of estimation.
Table 44: Lifetime prevalence of anal intercourse among women in Kenya

<table>
<thead>
<tr>
<th>Study</th>
<th>Year/Period</th>
<th>Birth cohort</th>
<th>N surveyed</th>
<th>FEMALE N sexual active</th>
<th>% among sexually active</th>
</tr>
</thead>
</table>

Data accessed on 8 Aug 2013
Please refer to original source for methods of estimation
7 HPV preventive strategies

It is established that well-organised cervical screening programmes or widespread good quality cytology can reduce cervical cancer incidence and mortality. The introduction of HPV vaccination could also effectively reduce the burden of cervical cancer in the coming decades. This section presents indicators on basic characteristics and performance of cervical cancer screening, status of HPV vaccine licensure and introduction in Kenya.

7.1 Cervical cancer screening practices

Screening strategies differ between countries. Some countries have population-based programmes, where in each round of screening women in the target population are individually identified and invited to attend screening. This type of programme can be implemented nationwide or only in specific regions of the country. In opportunistic screening, invitations depend on the individual’s decision or on encounters with health-care providers. The most frequent method for cervical cancer screening is cytology, and there are alternative methods such as HPV DNA tests and visual inspection with acetic acid (VIA). VIA is an alternative to cytology-based screening in low-resource settings (the ‘see and treat’ approach). HPV DNA testing is being introduced into some countries as an adjunct to cytology screening (‘co-testing’) or as the primary screening test to be followed by a secondary, more specific test, such as cytology.

Table 45: Main characteristics of cervical cancer screening in Kenya

<table>
<thead>
<tr>
<th>Region</th>
<th>Existence of official national recommendations</th>
<th>Starting year of current recommendations</th>
<th>Active invitation to screening</th>
<th>Screening ages (years), primary screening test used, and screening interval or frequency of screenings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>Yes</td>
<td>2018</td>
<td>No</td>
<td>25-49 (VIA, 5 years); 25-30 (cytology, 5 years); 30–49 (HPV test, 5 years)</td>
</tr>
</tbody>
</table>

Data accessed on 31 Aug 2022

Data Sources:
Figure 70: Estimated coverage* of cervical cancer screening in Kenya

Data accessed on 31 Aug 2022

* Estimated coverage and 95% confidence interval in 2019

Data Sources:

ICO/IARC HPV Information Centre
7.2 HPV vaccination

Table 46: National HPV Immunization programme in Kenya

<table>
<thead>
<tr>
<th>HPV vaccination programme</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of introduction</td>
<td>2019</td>
<td>-</td>
</tr>
<tr>
<td>Year of estimation of HPV vaccination coverage</td>
<td>2021</td>
<td>-</td>
</tr>
<tr>
<td>HPV coverage – first dose (%)</td>
<td>29</td>
<td>-</td>
</tr>
<tr>
<td>HPV coverage – last dose (%)</td>
<td>44</td>
<td>-</td>
</tr>
</tbody>
</table>

Data accessed on 24 Oct 2022

Data Sources:

Figure 71: HPV vaccination coverage in females by year in Kenya

Data Sources:
Figure 72: HPV vaccination coverage in males by year in Kenya

No data available
8 Protective factors for cervical cancer

Male circumcision and the use of condoms have shown a significant protective effect against HPV transmission.

Table 47: Prevalence of male circumcision in Kenya

<table>
<thead>
<tr>
<th>Reference</th>
<th>Prevalence % (95% CI)</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lavreys 1999</td>
<td>87.3 (84.7-89.6)</td>
<td>N=746: HIV negative truck drivers</td>
</tr>
<tr>
<td>Ng’ayo 2008</td>
<td>7.2 (4.3-11.1)</td>
<td>N=250: Men who worked in the fishing industry, the majority of the fishermen belong to an ethnic group that does not culturally practice circumcision</td>
</tr>
<tr>
<td>Williams 2006</td>
<td>84</td>
<td>Data from Demographic and Health Surveys (DHS) and other publications.</td>
</tr>
<tr>
<td>Drain 2006</td>
<td>&gt;80</td>
<td>Data from Demographic and Health Surveys (DHS) and other publications to categorize the country-wide prevalence of male circumcision as &lt;20%, 20-80%, or &gt;80%.</td>
</tr>
<tr>
<td>Auvert 2001</td>
<td>90.2 (84.6-94.3)</td>
<td>N=164: General population</td>
</tr>
<tr>
<td>WHO 2007</td>
<td>&gt;80</td>
<td>Data from Demographic and Health Surveys (DHS) and other publications to categorize the country-wide prevalence of male circumcision as &lt;20%, 20-80%, or &gt;80%.</td>
</tr>
<tr>
<td>2008 DHS</td>
<td>85.9</td>
<td>Data from 2008 Demographic and Health Surveys (DHS)</td>
</tr>
</tbody>
</table>

Data accessed on 31 Aug 2015

Data Sources:

Table 48: Prevalence of condom use in Kenya

| Indicator      | Age range | Year of estimate | Prevalence %
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Condom use</td>
<td>15-49</td>
<td>2017</td>
<td>1.2200939851341</td>
</tr>
</tbody>
</table>

Data accessed on 18 Nov 2019

Data Sources:
2017 PMA-RC
9 Annex

9.1 Incidence

9.1.1 Cervical cancer incidence in Kenya across Eastern Africa

Figure 73: Age-standardised incidence rates of cervical cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

Rates per 100,000 women per year.
* Rates are not available

Data Sources:
Figure 74: Annual number of new cases of cervical cancer by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

0 cases for Kenya and 87 cases for Eastern Africa in the 15-19 age group. 0 cases for Kenya and 148 cases for Eastern Africa in the 85+ age group.

Data Sources:
Figure 75: Comparison of age-specific cervical cancer incidence rates in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
9 Rates per 100,000 women per year.

Data Source:
9.1.2 Anal cancer incidence in Kenya across Eastern Africa

Figure 76: Age-standardised incidence rates of anal cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

* Rates are not available

Data Sources
Figure 77: Annual number of new cases of anal cancer among men by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

* 5 cases for Kenya and 5 cases for Eastern Africa in the 15-19 age group.

Data Sources:

ICO/IARC HPV Information Centre
Figure 78: Annual number of new cases of anal cancer among women by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

* 0 cases for Kenya and 0 cases for Eastern Africa in the 15-19 age group. 2 cases for Kenya and 7 cases for Eastern Africa in the 20-24 age group.

Data Sources:
Figure 79: Comparison of age-specific anal cancer incidence rates among men by age in Kenya, within the region, and the rest of world.

**Data accessed on 27 Jan 2021**


Rates per 100,000 men per year.

**Data Sources**

Figure 80: Comparison of age-specific anal cancer incidence rates among women by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

Rates per 100,000 women per year.

Data Sources
9.1.3 Vulva cancer incidence in Kenya across Eastern Africa

Figure 81: Age-standardised incidence rates of vulva cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.
* Rates are not available

Data Sources
Figure 82: Annual number of new cases of vulva cancer by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021


* 0 cases for Kenya and 3 cases for Eastern Africa in the 15-19 age group.

Data Sources:
Figure 83: Comparison of age-specific vulva cancer incidence rates in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Rates per 100,000 women per year.

Data Sources
9.1.4 Vaginal cancer incidence in Kenya across Eastern Africa

Figure 84: Age-standardised incidence rates of vaginal cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.

* Rates are not available

Data Sources:
Figure 85: Annual number of new cases of cervical cancer by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

0 cases for Kenya and 1 cases for Eastern Africa in the 20-24 age group.

Data Sources:
Figure 86: Comparison of age-specific vaginal cancer incidence rates in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
* Rates per 100,000 women per year.

Data Sources
9.1.5 Penile cancer incidence in Kenya across Eastern Africa

Figure 87: Age-standardised incidence rates of penile cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

* Rates per 100,000 men per year.
* Rates are not available

Data Sources
Figure 88: Annual number of new cases of penile cancer by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

Data Sources:

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

* 0 cases for Kenya and 0 cases for Eastern Africa in the 15-19 age group.
Figure 89: Comparison of age-specific penile cancer incidence rates in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021

Data Sources
9.1.6 Oropharyngeal cancer incidence in Kenya across Eastern Africa

Figure 90: Age-standardised incidence rates of oropharyngeal cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 men per year.
Rates per 100,000 women per year.
Rates are not available.

Data Sources:

ICO/IARC HPV Information Centre
Figure 91: Annual number of new cases of oropharyngeal cancer among men by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
* 1 cases for Kenya and 3 cases for Eastern Africa in the 85+ age group.

Data Sources:
Figure 92: Annual number of new cases of oropharyngeal cancer among women by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021


Data Sources:
Figure 93: Comparison of age-specific oropharyngeal cancer incidence rates among men by age in Kenya, within the region, and the rest of world.

Data accessed on 27 Jan 2021
* Rates per 100,000 men per year.

Data Sources:
Figure 94: Comparison of age-specific oropharyngeal cancer incidence rates among women by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021

* Rates per 100,000 women per year.

Data Sources:
9.1.7 Oral cavity cancer incidence in Kenya across Eastern Africa

Figure 95: Age-standardised incidence rates of oral cavity cancer of Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Country</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>2.89</td>
<td>2.67</td>
</tr>
<tr>
<td>Mauritius</td>
<td>3.77</td>
<td>2.33</td>
</tr>
<tr>
<td>Somalia</td>
<td>2.03</td>
<td>2.06</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>1.73</td>
<td>1.84</td>
</tr>
<tr>
<td>Djibouti</td>
<td>1.75</td>
<td>1.83</td>
</tr>
<tr>
<td>Eritrea</td>
<td>2.04</td>
<td>1.77</td>
</tr>
<tr>
<td>South Sudan</td>
<td>2.09</td>
<td>1.64</td>
</tr>
<tr>
<td>Malawi</td>
<td>2.03</td>
<td>1.49</td>
</tr>
<tr>
<td>Uganda</td>
<td>3.02</td>
<td>1.28</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>2.00</td>
<td>1.19</td>
</tr>
<tr>
<td>Madagascar</td>
<td>4.23</td>
<td>1.12</td>
</tr>
<tr>
<td>Mozambique</td>
<td>2.18</td>
<td>1.03</td>
</tr>
<tr>
<td>Zambia</td>
<td>1.97</td>
<td>1.01</td>
</tr>
<tr>
<td>Burundi</td>
<td>2.38</td>
<td>0.96</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2.40</td>
<td>0.92</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1.88</td>
<td>0.76</td>
</tr>
<tr>
<td>Comoros</td>
<td>2.06</td>
<td>*</td>
</tr>
<tr>
<td>Seychelles</td>
<td>2.1</td>
<td>*</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
*a* Rates per 100,000 men per year.
*b* Rates per 100,000 women per year.
* Rates are not available.

Data Sources
Figure 96: Annual number of new cases of oral cavity cancer among men by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

For 5 cases for Kenya and 14 cases for Eastern Africa in the 85+ age group.

Data Sources:

ICO/IARC HPV Information Centre
Figure 97: Annual number of new cases of oral cavity cancer among women by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources
Figure 98: Comparison of age-specific oral cavity cancer incidence rates among men by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods
Rates per 100,000 men per year.
Data Sources
Figure 99: Comparison of age-specific oral cavity cancer incidence rates among women by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021

Rates per 100,000 women per year.

Data Sources
9.1.8 Laryngeal cancer incidence in Kenya across Eastern Africa

Figure 100: Age-standardised incidence rates of laryngeal cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 men per year.
Rates per 100,000 women per year.
* Rates are not available

Data Sources:
Figure 101: Annual number of new cases of laryngeal cancer among men by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021


Data Sources:
Figure 102: Annual number of new cases of laryngeal cancer among women by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources
Figure 103: Comparison of age-specific laryngeal cancer incidence rates among men by age in Kenya, within the region, and the rest of world.

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 men per year.

Data Sources:
Figure 104: Comparison of age-specific laryngeal cancer incidence rates among women by age in Kenya, within the region, and the rest of world.

Data accessed on 27 Jan 2021


Rates per 100,000 women per year.

Data Sources:
9.2 Mortality

9.2.1 Cervical cancer mortality in Kenya across Eastern Africa

Figure 105: Age-standardised mortality rates of cervical cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.

* Rates are not available.

Data Sources:

Figure 106: Annual number of deaths of cervical cancer by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods
* 2 cases for Kenya and 64 cases for Eastern Africa in the 15-19 age group. 0 cases for Kenya and 136 cases for Eastern Africa in the 85+ age group.

Data Sources:
Figure 107: Comparison of age-specific cervical cancer mortality rates in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Rates per 100,000 women per year.

9.2.2 Anal cancer mortality in Kenya across Eastern Africa

Figure 108: Age-standardised mortality rates of anal cancer of Kenya (estimates for 2020)

[Diagram showing age-standardised mortality rates for anal cancer in various countries across Eastern Africa, with specific rates for males and females for each country.]

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

*Rates per 100,000 men per year.

* Rates per 100,000 women per year.

* Rates are not available

Data Sources:

Figure 109: Annual number of deaths of anal cancer among men by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021


* 2 cases for Kenya and 2 cases for Eastern Africa in the 15-19 age group.

Data Sources:
Figure 110: Annual number of deaths of anal cancer among women by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

Data Sources
Figure 111: Comparison of age-specific anal cancer mortality rates among men by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods
§ Rates per 100,000 men per year.

Data Sources:
Figure 112: Comparison of age-specific anal cancer mortality rates among women by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

Rates per 100,000 women per year.

Data Sources

9.2.3 Vulva cancer mortality in Kenya across Eastern Africa

Figure 113: Age-standardised mortality rates of vulva cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Rates per 100,000 women per year.
* Rates are not available

Data Sources
Figure 114: Annual number of deaths of vulva cancer by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to https://gco.iarc.fr/today/data-source-methods

0 cases for Kenya and 2 cases for Eastern Africa in the 15-19 age group.

Data Sources:
Figure 115: Comparison of age-specific vulva cancer mortality rates in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.

Data Sources
9.2.4 Vaginal cancer mortality in Kenya across Eastern Africa

Figure 116: Age-standardised mortality rates of vaginal cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.

* Rates are not available

Data Sources:

ICO/IARC HPV Information Centre
Figure 117: Annual number of deaths of cervical cancer by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021


Data Sources:

Figure 118: Comparison of age-specific vaginal cancer mortality rates in Kenya, within the region, and the rest of world

Data sources:

Rates per 100,000 women per year.

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
9.2.5 Penile cancer mortality in Kenya across Eastern Africa

Figure 119: Age-standardised mortality rates of penile cancer of Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Country</th>
<th>Rate per 100,000 men per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>2.36</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1.72</td>
</tr>
<tr>
<td>Burundi</td>
<td>1.67</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>1.67</td>
</tr>
<tr>
<td>Zambia</td>
<td>1.35</td>
</tr>
<tr>
<td>Malawi</td>
<td>1.23</td>
</tr>
<tr>
<td>Mozambique</td>
<td>1.02</td>
</tr>
<tr>
<td>South Sudan</td>
<td>0.51</td>
</tr>
<tr>
<td>Tanzania</td>
<td>0.48</td>
</tr>
<tr>
<td>Kenya</td>
<td>0.19</td>
</tr>
<tr>
<td>Madagascar</td>
<td>0.12</td>
</tr>
<tr>
<td>Somalia</td>
<td>0.09</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>0.05</td>
</tr>
<tr>
<td>Mauritius</td>
<td>*</td>
</tr>
<tr>
<td>Comoros</td>
<td>*</td>
</tr>
<tr>
<td>Eritrea</td>
<td>*</td>
</tr>
<tr>
<td>Djibouti</td>
<td>*</td>
</tr>
<tr>
<td>Seychelles</td>
<td>*</td>
</tr>
</tbody>
</table>

Data accessed on 27 Jan 2021


* Rates per 100,000 men per year.
* Rates are not available

Data Sources:
Figure 120: Annual number of new deaths of penile cancer by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

Data Sources:
Figure 121: Comparison of age-specific penile cancer mortality rates in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

Rates per 100,000 men per year.

Data Sources
9.2.6 Oropharyngeal cancer mortality in Kenya across Eastern Africa

Figure 122: Age-standardised mortality rates of oropharyngeal cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

* Rates are not available

Data Sources
Figure 123: Annual number of deaths of oropharyngeal cancer among men by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

0 cases for Kenya and 5 cases for Eastern Africa in the 15-19 age group. 0 cases for Kenya and 5 cases for Eastern Africa in the 20-24 age group. 0 cases for Kenya and 5 cases for Eastern Africa in the 30-34 age group. 0 cases for Kenya and 4 cases for Eastern Africa in the 35-39 age group. 1 cases for Kenya and 3 cases for Eastern Africa in the 85+ age group.

Data Sources:
Figure 124: Annual number of deaths of oropharyngeal cancer among women by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021


0 cases for Kenya and 1 cases for Eastern Africa in the 15-19 age group. 0 cases for Kenya and 0 cases for Eastern Africa in the 20-24 age group. 0 cases for Kenya and 0 cases for Eastern Africa in the 50-54 age group.

Data Sources:
Figure 125: Comparison of age-specific oropharyngeal cancer mortality rates among men by age in Kenya, within the region, and the rest of world

Data accessed on: 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

 Rates per 100,000 men per year.

Data Sources:
Figure 126: Comparison of age-specific oropharyngeal cancer mortality rates among women by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.

Data Sources:
9.2.7 Oral cavity cancer mortality in Kenya across Eastern Africa

Figure 127: Age-standardised mortality rates of oral cavity cancer of Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to: http://gco.iarc.fr/today/data-sources-methods

- Rates per 100,000 men per year.
- Rates per 100,000 women per year.
- Rates are not available.

Data Sources:
Figure 128: Annual number of deaths of oral cavity cancer among men by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021

For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources
Figure 129: Annual number of deaths of oral cavity cancer among women by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources
Figure 130: Comparison of age-specific oral cavity cancer mortality rates among men by age in Kenya, within the region, and the rest of world.

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
* Rates per 100,000 men per year.

Data Sources
Figure 131: Comparison of age-specific oral cavity cancer mortality rates among women by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Rates per 100,000 women per year.

Data Sources
### 9.2.8 Laryngeal cancer mortality in Kenya across Eastern Africa

Figure 132: Age-standardised mortality rates of laryngeal cancer of Kenya (estimates for 2020)

<table>
<thead>
<tr>
<th>Country</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rwanda</td>
<td>1.72</td>
<td>0.39</td>
</tr>
<tr>
<td>Kenya</td>
<td>2.11</td>
<td>0.35</td>
</tr>
<tr>
<td>Burundi</td>
<td>1.85</td>
<td>0.31</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1.32</td>
<td>0.31</td>
</tr>
<tr>
<td>Zambia</td>
<td>1.54</td>
<td>0.28</td>
</tr>
<tr>
<td>Uganda</td>
<td>1.98</td>
<td>0.25</td>
</tr>
<tr>
<td>South Sudan</td>
<td>1.56</td>
<td>0.23</td>
</tr>
<tr>
<td>Somalia</td>
<td>1.50</td>
<td>0.22</td>
</tr>
<tr>
<td>Madagascar</td>
<td>0.96</td>
<td>0.21</td>
</tr>
<tr>
<td>Malawi</td>
<td>1.03</td>
<td>0.20</td>
</tr>
<tr>
<td>Mauritius</td>
<td>2.13</td>
<td>0.17</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>1.04</td>
<td>0.15</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>2.48</td>
<td>0.13</td>
</tr>
<tr>
<td>Mozambique</td>
<td>0.63</td>
<td>0.12</td>
</tr>
<tr>
<td>Eritrea</td>
<td>1.17</td>
<td>0.06</td>
</tr>
<tr>
<td>Comoros</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Djibouti</td>
<td>1.15</td>
<td>*</td>
</tr>
<tr>
<td>Seychelles</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

**Data accessed on 27 Jan 2021**


- Rates per 100,000 men per year.
- Rates per 100,000 women per year.
- Rates are not available.

**Data Sources**

Figure 133: Annual number of deaths of laryngeal cancer among men by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-source-methods

For example:
0 cases for Kenya and 12 cases for Eastern Africa in the 15-19 age group. 0 cases for Kenya and 2 cases for Eastern Africa in the 20-24 age group. 2 cases for Kenya and 12 cases for Eastern Africa in the 25-29 age group. 1 case for Kenya and 10 cases for Eastern Africa in the 35-39 age group.

Data Sources:
Figure 134: Annual number of deaths of laryngeal cancer among women by age group in Kenya (estimates for 2020)

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods

Data Sources
Figure 135: Comparison of age-specific laryngeal cancer mortality rates among men by age in Kenya, within the region, and the rest of world.


Data Sources:
Figure 136: Comparison of age-specific laryngeal cancer mortality rates among women by age in Kenya, within the region, and the rest of world

Data accessed on 27 Jan 2021
For more detailed methods of estimation please refer to http://gco.iarc.fr/today/data-sources-methods
Rates per 100,000 women per year.

Data Sources
## 10 Glossary

Table 49: Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>Incidence is the number of new cases arising in a given period in a specified population. This information is collected routinely by cancer registries. It can be expressed as an absolute number of cases per year or as a rate per 100,000 persons per year (see Crude rate and ASR below). The rate provides an approximation of the average risk of developing a cancer.</td>
</tr>
<tr>
<td>Mortality</td>
<td>Mortality is the number of deaths occurring in a given period in a specified population. It can be expressed as an absolute number of deaths per year or as a rate per 100,000 persons per year.</td>
</tr>
<tr>
<td>Prevalence</td>
<td>The prevalence of a particular cancer can be defined as the number of persons in a defined population who have been diagnosed with that type of cancer, and who are still alive at the end of a given year, the survivors. Complete prevalence represents the number of persons alive at certain point in time who previously had a diagnosis of the disease, regardless of how long ago the diagnosis was, or if the patient is still under treatment or is considered cured. Partial prevalence, which limits the number of patients to those diagnosed during a fixed time in the past, is a particularly useful measure of cancer burden. Prevalence of cancers based on cases diagnosed within one, three and five are presented as they are likely to be of relevance to the different stages of cancer therapy, namely, initial treatment (one year), clinical follow-up (three years) and cure (five years). Patients who are still alive five years after diagnosis are usually considered cured since the death rates of such patients are similar to those in the general population. There are exceptions, particularly breast cancer. Prevalence is presented for the adult population only (ages 15 and over), and is available both as numbers and as proportions per 100,000 persons.</td>
</tr>
<tr>
<td>Crude rate</td>
<td>Data on incidence or mortality are often presented as rates. For a specific tumour and population, a crude rate is calculated simply by dividing the number of new cancers or cancer deaths observed during a given time period by the corresponding number of person years in the population at risk. For cancer, the result is usually expressed as an annual rate per 100,000 persons at risk.</td>
</tr>
<tr>
<td>ASR (age-standardised rate)</td>
<td>An age-standardised rate (ASR) is a summary measure of the rate that a population would have if it had a standard age structure. Standardization is necessary when comparing several populations that differ with respect to age because age has a powerful influence on the risk of cancer. The ASR is a weighted mean of the age-specific rates; the weights are taken from population distribution of the standard population. The most frequently used standard population is the World Standard Population. The calculated incidence or mortality rate is then called age-standardised incidence or mortality rate (world). It is also expressed per 100,000. The world standard population used in GLOBOCAN is as proposed by Segi [1] and modified by Doll and al. [2]. The age-standardised rate is calculated using 10 age-groups. The result may be slightly different from that computed using the same data categorised using the traditional 5 year age bands.</td>
</tr>
</tbody>
</table>

Continued on next page
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative risk</td>
<td>Cumulative incidence/mortality is the probability or risk of individuals getting/dying from the disease during a specified period. For cancer, it is expressed as the number of new born children (out of 100, or 1000) who would be expected to develop/die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.</td>
</tr>
<tr>
<td>Cytologically normal women</td>
<td>No abnormal cells are observed on the surface of their cervix upon cytology.</td>
</tr>
<tr>
<td>Cytologically normal women</td>
<td>No abnormal cells are observed on the surface of their cervix upon cytology.</td>
</tr>
<tr>
<td>Cervical Intraepithelial Neoplasia (CIN) / Squamous Intraepithelial Lesions (SIL)</td>
<td>SIL and CIN are two commonly used terms to describe precancerous lesions or the abnormal growth of squamous cells observed in the cervix. SIL is an abnormal result derived from cervical cytological screening or Pap smear testing. CIN is a histological diagnosis made upon analysis of cervical tissue obtained by biopsy or surgical excision. The condition is graded as CIN 1, 2 or 3, according to the thickness of the abnormal epithelium (1/3, 2/3 or the entire thickness).</td>
</tr>
<tr>
<td>Low-grade cervical lesions (LSIL/CIN-1)</td>
<td>Low-grade cervical lesions are defined by early changes in size, shape, and number of abnormal cells formed on the surface of the cervix and may be referred to as mild dysplasia, LSIL, or CIN-1.</td>
</tr>
<tr>
<td>High-grade cervical lesions (HSIL / CIN-2 / CIN-3 / CIS)</td>
<td>High-grade cervical lesions are defined by a large number of precancerous cells on the surface of the cervix that are distinctly different from normal cells. They have the potential to become cancerous cells and invade deeper tissues of the cervix. These lesions may be referred to as moderate or severe dysplasia, HSIL, CIN-2, CIN-3 or cervical carcinoma in situ (CIS).</td>
</tr>
<tr>
<td>Carcinoma in situ (CIS)</td>
<td>Preinvasive malignancy limited to the epithelium without invasion of the basement membrane. CIN 3 encompasses the squamous carcinoma in situ.</td>
</tr>
<tr>
<td>Invasive cervical cancer (ICC) / Cervical cancer</td>
<td>If the high-grade precancerous cells invade the basement membrane is called ICC. ICC stages range from stage I (cancer is in the cervix or uterus only) to stage IV (the cancer has spread to distant organs, such as the liver).</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>Invasive tumour with glandular and squamous elements intermingled.</td>
</tr>
</tbody>
</table>
Acknowledgments

This report has been developed by the Unit of Infections and Cancer, Cancer Epidemiology Research Program, at the Institut Català d’Oncologia (ICO, Catalan Institute of Oncology). This report was supported by a grant from the Instituto de Salud Carlos III (Spanish Government) through the projects PI18/01137, PI21/00982, PI22/00219 and CIBERESP CB06/02/0073, and the Secretariat for Universities and Research of the Department of Business and knowledge of the Government of Catalonia grants to support the activities of research groups (SGR 2017–2021) (Grant number 2017SGR1718 and 2021SGR01029). The report has also received funding from the European Union’s Horizon 2020 research and innovation program under grant agreement No. 847845. We thank the CERCA Program / Generalitat de Catalunya for institutional support. The HPV Information Centre is being developed by the ICO. The Centre was originally launched by ICO with the collaboration of WHO’s Immunisation, Vaccines and Biologicals (IVB) department and support from the Bill and Melinda Gates Foundation.

Cancer Epidemiology Research Program, Catalan Institute of Oncology (ICO), Institut d’Investigació Biomèdica de Bellvitge (IDIBELL), in alphabetic order
International Agency for Research on Cancer (IARC)

Note to the reader

Anyone who is aware of relevant published data that may not have been included in the present report is encouraged to contact the HPV Information Centre for potential contributions. Although efforts have been made by the HPV Information Centre to prepare and include as accurately as possible the data presented, mistakes may occur. Readers are requested to communicate any errors to the HPV Information Centre, so that corrections can be made in future volumes.

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