Title: Opportunities for developing Population-based Cancer Registries in Kenya

Author(s): Ms. Anne Korir, Dr. Robai Gakunga, Dr. Samuel Gathere, Dr. Sandy Dawsey, Dr. Rosemary Rochford, Dr. Nathan Buziba, Dr. Alfred Karagu, Dr. Veronicah Manduku.
Introduction/Background

- Cancer registries in sub Saharan Africa have increased due to efforts by the Africa Cancer Registry Network (AFCRN) [https://afcrn.org/](https://afcrn.org/).

- In Kenya Three **Population-based** cancer registries (PBCR) exists:
  - Nairobi Registry at KEMRI &
  - Eldoret cancer registry at Moi Teaching and Referral Hospital (MTRH)
  - Kisumu Cancer registry at CGHR covering Kisumu county

- **Hospital-based registries** exist in:
  - Eldoret registry at MTRH
  - Kenyatta National Hospital
  - Agakhan University hospital
  - Tenwek Mission hospital
  - MP-Shah hospital
  - Cancer Care Kenya
  - Nairobi hospital
Kenya Cancer Research and Control National Stakeholders meeting, Naivasha, Kenya (2014)

A forum organized by MOH and US NCI, Centre for Global Health in 2014
Cancer Registry Technical Working Group. The TWG had membership from Kenya (KEMRI, MoH, UoN, KNH) and internationally (Dr. Sandy Dawsey, Pr. Rosemary Rochford)
The cancer registry track resolved to:
  – Strengthen existing population-based cancer registries (Nairobi, Eldoret, Kisumu) to attain high quality data (support by NCI, USA)
  – Expand population-based registries (additional regions)
  – Link the registries at KEMRI to have a centralized population-based cancer registry programme
Methodology

- A proposal was developed and approved by scientific and Ethics committee
- Funding received from US NCI (2 years) and GOK (National Treasury)
- MoUs were signed with selected counties
- Trainings of registrars and installation of databases commenced
- We customized and installed the database while offering technical support to the registrars
- Data collection commenced in facilities in the counties and all facilities in Nairobi
Existing CR (Nairobi, Eldoret, Kisumu)

Initial stage of development (Embu, Nakuru)

Targeted (Meru, Mombasa, Nyeri, Kiambu, Bomet, Garissa, Machakos, Marsabit, Kakamenga, Kisii)
Methodology

- One week course was held in Nairobi targeting all the selected counties
- Onsite trainings of individual registrars at selected facilities was done
- Cleaning of data and analysis, generation of factsheets and reports ongoing
## Results/Findings

**Top 10 cancers (Male), Nairobi**

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate</td>
<td>824</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>335</td>
</tr>
<tr>
<td>Non-Hodgkins…</td>
<td>253</td>
</tr>
<tr>
<td>Stomach</td>
<td>242</td>
</tr>
<tr>
<td>Colon</td>
<td>221</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>203</td>
</tr>
<tr>
<td>Liver</td>
<td>177</td>
</tr>
<tr>
<td>Kaposi Sarcoma</td>
<td>147</td>
</tr>
<tr>
<td>Rectum</td>
<td>129</td>
</tr>
<tr>
<td>Bone</td>
<td>114</td>
</tr>
</tbody>
</table>
Results/Findings

Top 10 Cancers (Female), Nairobi

- **Breast**: 1634
- **Cervix Uteri**: 1095
- **Oesophagus**: 272
- **Ovary**: 233
- **Stomach**: 202
- **Colon**: 188
- **Non-Hodgkin Lymphoma**: 180
- **Rectum**: 122
- **Corpus Uteri**: 117
- **Liver**: 104

Number of cases

---

Top 10 cancer sites
Female

- **Breast**: 56.9
- **Cervix**: 37.8
- **Oesophagus**: 13.9
- **Colon, rectum, anus**: 13.7
- **Stomach**: 10.0
- **Ovary & adnexa**: 9.8
- **Lymphoma**: 9.3
- **Mouth & pharynx**: 8.9
- **Corpus & Uterus NOS**: 8.7
- **Liver**: 4.7

Age-standardized incidence rate per 100,000, 0-75+ years
Results/Findings

Age Profile of Cancer Cases, Nairobi county

Nairobi Cancer Registry (Nairobi County 2009-2013)

All cancers

Male

Female

Age Group | 0-14 | 15-29 | 30-49 | 50-69 | 70+
---|---|---|---|---|---
23.3% | 22.0% | 6.0% | 8.5% | 40.2% | 37.0% | 39.6%
Results/Findings

Nairobi Cancer Registry (Nairobi County 2009–2013)
Age Specific Rates (Top Cancer Sites) (Males)

Nairobi Cancer Registry (Nairobi County 2009–2013)
Age Specific Rates (Top Cancer Sites) (Females)

Age group

Age-specific rates

Colon  Oesophagus  Stomach
Non–Hodgkin lymphoma  Prostate

Age group

Age-specific rates

Breast  Oesophagus  Stomach
Cervix uteri  Ovary
Lung cancer by year, Nairobi Cancer registry
Resources

Childhood cancers

- Nairobi and Eldoret cancer registry data published in ICCC3
Top 10 Cancers in Meru County (2015-2016)

Male

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate</td>
<td>208</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>159</td>
</tr>
<tr>
<td>Stomach</td>
<td>110</td>
</tr>
<tr>
<td>Mouth &amp; pharynx</td>
<td>69</td>
</tr>
<tr>
<td>Liver</td>
<td>41</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>41</td>
</tr>
<tr>
<td>Colon, rectum, anus</td>
<td>35</td>
</tr>
<tr>
<td>Pancreas</td>
<td>21</td>
</tr>
<tr>
<td>Larynx</td>
<td>14</td>
</tr>
<tr>
<td>Leukaemia</td>
<td>12</td>
</tr>
<tr>
<td>Lung, trachea, bronchus</td>
<td>12</td>
</tr>
</tbody>
</table>

Female

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>184</td>
</tr>
<tr>
<td>Cervix</td>
<td>151</td>
</tr>
<tr>
<td>Stomach</td>
<td>79</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>77</td>
</tr>
<tr>
<td>Colon, rectum, anus</td>
<td>37</td>
</tr>
<tr>
<td>Mouth &amp; pharynx</td>
<td>26</td>
</tr>
<tr>
<td>Leukaemia</td>
<td>23</td>
</tr>
<tr>
<td>Corpus &amp; Uterus NOS</td>
<td>19</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>19</td>
</tr>
<tr>
<td>Pancreas</td>
<td>16</td>
</tr>
</tbody>
</table>
Leading cancers, Bomet County (2015-2016)

**Male**

Top 10 Male Cancers (Bomet County 2015-2016)

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oesophagus</td>
<td>121</td>
</tr>
<tr>
<td>Prostate</td>
<td>64</td>
</tr>
<tr>
<td>Stomach</td>
<td>43</td>
</tr>
<tr>
<td>Mouth &amp; pharynx</td>
<td>19</td>
</tr>
<tr>
<td>colon, rectum, anus</td>
<td>18</td>
</tr>
<tr>
<td>Liver</td>
<td>16</td>
</tr>
<tr>
<td>Pancreas</td>
<td>9</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>8</td>
</tr>
<tr>
<td>Leukemia</td>
<td>7</td>
</tr>
<tr>
<td>Brain &amp; nervous system</td>
<td>5</td>
</tr>
</tbody>
</table>

**Female**

Top 10 Female Cancers (Bomet County 2015-2016)

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oesophagus</td>
<td>91</td>
</tr>
<tr>
<td>Cervix</td>
<td>30</td>
</tr>
<tr>
<td>Breast</td>
<td>24</td>
</tr>
<tr>
<td>Colon, rectum, anus</td>
<td>18</td>
</tr>
<tr>
<td>Stomach</td>
<td>16</td>
</tr>
<tr>
<td>pancreas</td>
<td>13</td>
</tr>
<tr>
<td>ovary &amp; adnexa</td>
<td>7</td>
</tr>
<tr>
<td>Liver Thyroid</td>
<td>6</td>
</tr>
<tr>
<td>Kidney &amp; urinary</td>
<td>6</td>
</tr>
<tr>
<td>Brain &amp; nervous system</td>
<td>6</td>
</tr>
</tbody>
</table>
Cancer Incidence in Mombasa County

Top 10 Cancer Sites:

1. Breast (Female: 36.2, Male: 15.9)
2. Cervix (Female: 29.6, Male: 5.3)
3. Prostate (Male: 8.0)
4. Oesophagus (Male: 5.6, Female: 5.4)
5. Mouth & pharynx (Male: 4.3, Female: 4.9)
6. Lymphoma (Male: 4.4, Female: 3.4)
7. Colon, rectum, anus (Male: 3.7, Female: 2.4)
8. Lung, trachea, bronchus (Male: 4.3, Female: 1.7)
9. Liver (Male: 5.3)
10. Ovary & adnexa (Female: 5.3)
Age profile of cancer cases in Mombasa county

All cancers but C44

Male
- 18.2%
- 8.8%
- 6.6%
- 43.6%

Female
- 11.1%
- 2.3%
- 6.3%
- 38.9%
- 41.4%

Age Group: 0-14 (Green), 15-29 (Pink), 30-49 (Blue), 50-69 (Orange), 70+ (Teal)
Conclusions/Recommendations

- Rising cases of esophageal cancer
- Africa Esophageal Cancer Consortium (AfrECC) undertaking etiology studies. In Kenya Tenwek and Eldoret
- More research on risk factors (miraa, hot tea, mursik, alcohol consumption, aflatoxins)
Conclusions/Recommendations

- Breast and cervical cancer are the most common malignancies among women. They make up over 40% of women cancers.
- Need for intervention programmes to address the high burden of disease in communities.
  - HPV vaccination of girls and boys.
  - Screening at least once in two years.
  - Education and awareness to reduce stigma, address cultural barriers.
  - Access to care including palliative care.
- Prostate and oesophageal cancers leading malignancy among men.
- Need for further research in African setting.
- Declining rates of KS is an indication of effective control of main risk factor, HIV.
Conclusions/Recommendations

• Need to invest in population-based registries that cover a representative population of the country
• Capacity building is key to ensure data generated is of high quality
• Adopting new technological methods in generating data: Point of Care systems; EMRs
• Improve death registries (Civil Registration of births and deaths) systems
Thank you...