LINKED DATA REVEAL HOW PERSONS DYING OF BREAST CANCER DIFFER FROM THOSE DYING OF ALL CANCERS AND NON-CANCER DISEASES

Grace Johnston¹,², Lynn Lethbridge¹, Robin Urquhart¹,³, Maureen MacIntyre²,

1. Dalhousie University, 2. Cancer Care Nova Scotia, 3. Capital Health Halifax, Nova Scotia, Canada

June 25, 2014
North American Association of Central Cancer Registries
Ottawa, Canada
Background

Breast Cancer:

✧ Persons diagnosed with breast cancer are younger and have longer survival than for many other cancers
✧ “Survivor” language and perspective can undermine attention on planning for palliative support among those with metastatic cancer and life-threatening non-cancer diseases

Surveillance:

✧ Surveillance for breast cancer screening and treatment has improved
✧ Less attention to surveillance for persons dying of breast cancer
Study Purpose

Examine characteristics of persons in Nova Scotia (NS) dying of breast cancer compared to:

- *all cancer* decedents, and
- those dying of *non-cancer diseases*
Methods

- Study population:
  All NS deaths: 1995-2009, n = 121,458
- Up to 13 causes of death
- Three Palliative Care Programs (PCPs) cover 65% of NS population
Study Data Development

Nova Scotia Vital Statistics
Death Certificate Data (1995-2009);
Data used: Demographics, All causes of death, place of death

Registry data from 3 NS Disease Programs:
cancer, diabetes, cardiovascular
Data Used: registered or not

Probabilistic record linkage

PCP Enrollment Data
Data Used: enrolled in PCP or not, time from PCP enrollment to death

Study Dataset
## Population Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Cause of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Breast Cancer</strong></td>
</tr>
<tr>
<td></td>
<td><em>n=3,398</em></td>
</tr>
<tr>
<td>% of all deaths</td>
<td>2.8%</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>72.0</td>
</tr>
<tr>
<td>% female</td>
<td>98.8%</td>
</tr>
<tr>
<td>Average # of causes of death</td>
<td><strong>2.7</strong></td>
</tr>
</tbody>
</table>
Age Distributions

Age groups (years)

- Breast cancer
  - 20-59: 23.1%
  - 60-89: 65.7%
  - 90+: 11.2%

- Cancer
  - 20-59: 16.7%
  - 60-89: 76.5%
  - 90+: 6.5%

- Non-cancer
  - 20-59: 12.8%
  - 60-89: 67.0%
  - 90+: 18.3%
Percent in Nursing Homes Over Time

- All Deaths
- Any Cancer
- Any Cancer-females
- Breast Cancer

70% of persons at end of life wish to die at home, if palliative support is adequate*

However, in NS, 60.7% of the breast cancer decedents died in hospital, and 17% in a nursing home

Location of Death over time for Breast Cancer Decedents

- hospital
- nursing home
- other
### Palliative Care Program Enrollment

<table>
<thead>
<tr>
<th>Palliative Care Program Enrollment</th>
<th>Cause of death</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Breast Cancer</td>
</tr>
<tr>
<td>% yes</td>
<td>65.8%</td>
</tr>
<tr>
<td>Among yes, % enrolled within two weeks of death</td>
<td>21.4%</td>
</tr>
</tbody>
</table>
Non-Cancer Causes of Death

<table>
<thead>
<tr>
<th>Non-Cancer Causes of Death</th>
<th>Study Subjects by Cause of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Breast Cancer</td>
</tr>
<tr>
<td>Sudden Death</td>
<td>0.7%</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>12.0%</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>3.7%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>6.6%</td>
</tr>
<tr>
<td>Renal</td>
<td>3.5%</td>
</tr>
<tr>
<td>Dementia</td>
<td><strong>6.9%</strong></td>
</tr>
</tbody>
</table>
Nova Scotia Disease Registries

<table>
<thead>
<tr>
<th>Registry</th>
<th>Date Commenced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>1964</td>
</tr>
<tr>
<td>Diabetes¹</td>
<td>1992</td>
</tr>
<tr>
<td>Cardiovascular²</td>
<td>1995</td>
</tr>
<tr>
<td>Renal³</td>
<td>2010</td>
</tr>
</tbody>
</table>


Important to know all prevalent comorbid diseases. **Example:** For persons at end of life who have diabetes, to avoid hypoglycemia, blood sugar levels should not be over-managed.

Conclusion

Collaboration across disease programs is advised to enable comprehensive advance care planning for persons with breast cancer who are approaching the end of their life as a result of either cancer or non-cancer diseases, especially for nursing homes residents.
Questions?