Developing Cancer Prevalence Estimates for Cancer Control Planning

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PREVENTION
DETECTION
TREATMENT
SURVIVORSHIP
PALLIATION
Cancer Prevalence

- Number of persons alive on a given date who were previously diagnosed with cancer
- Can be complete (ever diagnosed) or limited duration (in the last 5 years, 10 years, etc)
- Different tumor inclusion criteria can be used
- Important measure of the burden of cancer
Determinants of Cancer Prevalence

- Incidence
- Survival
- Competing causes of mortality (life expectancy)
- Age and sex distribution of the population
- For all sites combined, the distribution of cancer types
Measuring Prevalence Directly

- For complete prevalence count, need incidence data of a maximum lifetime’s duration
- Need complete follow-up for cases during the interval of interest
- Few NPCR-funded registries have resources for active follow-up
- SEER uses estimates for $\geq 26$ years duration
SEER publishes cancer prevalence estimates (counts and percents) for the US in SEER Cancer Statistics Review.

- 3.8 million (38%) of these diagnosed in the previous five years, or 1.33% of the total US population.
- Simplest estimate would be to apply those prevalence percents to your population.
Concerns

- Cancer rates in Minnesota lower for many sites
- Higher life expectancy in Minnesota
- Lower proportion of minorities
- Higher cancer survival rates? We don’t know.
Cancer Prevalence Database

- [✓] Precalculated prevalence percents by site, race, sex, and age group
- [✓] For up to 27 years duration, depending on SEER Region
- [✓] Complete prevalence counts only for US (no percents)
- [✓] Data files can be output and downloaded

Photo by Andy Kraushar, 1997
### Example: 5-Year Prevalence Counts, Females, Melanoma of the Skin, Minnesota, 1/1/2002

<table>
<thead>
<tr>
<th>Age</th>
<th>Prev %</th>
<th>Mn Pop</th>
<th>Unadj Prev</th>
<th>Mn/SEER IRR</th>
<th>Adj Prev</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>32,145</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>1-4</td>
<td>0</td>
<td>126,916</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5-9</td>
<td>0.0006</td>
<td>166,265</td>
<td>2.0</td>
<td>0.333</td>
<td>0.7</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>80-84</td>
<td>0.1458</td>
<td>58,071</td>
<td>169.4</td>
<td>0.6872</td>
<td>116.4</td>
</tr>
<tr>
<td>85+</td>
<td>0.1175</td>
<td>64,387</td>
<td>151.4</td>
<td>0.9442</td>
<td>142.9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2.5 mil</td>
<td>3,771</td>
<td></td>
<td>3,174</td>
</tr>
</tbody>
</table>

**Prev %** = 5-yr prevalence percent among SEER 9 Region white females  
**Mn Pop** = Minnesota population 1/1/2002  
**Mn/SEER IRR** = Incidence rate ratio, 1998-2002, Mn/SEER
Comparison of Methods to Estimate Number of Women in Minnesota Diagnosed with Melanoma in the Previous 5 Years and Still Alive

<table>
<thead>
<tr>
<th>Method</th>
<th>Prevalence Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEER Overall Crude prevalence percent applied to total MN population</td>
<td>1,945</td>
</tr>
<tr>
<td>SEER Overall Age-adjusted prevalence percent applied to total MN population</td>
<td>1,839</td>
</tr>
<tr>
<td>SEER Age-specific prevalence percents, unadjusted</td>
<td>3,771</td>
</tr>
<tr>
<td>SEER Age-specific prevalence percents, adjusted for differences in incidence</td>
<td>3,174</td>
</tr>
</tbody>
</table>
## 25-Year Cancer Prevalence Estimates, Minnesota, 1/1/2000, before and after adjusted for incidence

<table>
<thead>
<tr>
<th>Site</th>
<th>Unadjusted Prevalence</th>
<th>Adjusted Prevalence</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Sites</td>
<td>153,016</td>
<td>143,110</td>
<td>-6.5%</td>
</tr>
<tr>
<td>Female Breast</td>
<td>34,464</td>
<td>33,459</td>
<td>-3.0%</td>
</tr>
<tr>
<td>Prostate</td>
<td>27,044</td>
<td>28,161</td>
<td>+ 4.1%</td>
</tr>
<tr>
<td>Colorectal</td>
<td>16,501</td>
<td>15,948</td>
<td>-3.4%</td>
</tr>
<tr>
<td>Lung</td>
<td>5,521</td>
<td>4,505</td>
<td>-18.4%</td>
</tr>
<tr>
<td>Melanoma</td>
<td>9,792</td>
<td>7,522</td>
<td>-23.2%</td>
</tr>
</tbody>
</table>
Conclusions

✓ Applying SEER prevalence percents without adjusting for age underestimated prevalence.
✓ Applying age-specific SEER prevalence percents without adjusting for differences in incidence overestimated prevalence.
✓ Estimating Minnesota cancer prevalence provided helpful information for the cancer plan.
✓ It also created good will with stakeholders and educated them on a limitation of registry data.
Thank You


☑ Cancer Plan Minnesota 2005-2010 available at www.cancerplanmn.org