Economic Profiles of Cancer

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Cancer Survivorship:
Pathways to Health after Treatment
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Concepts of Economic Burden

- Prevalence Cost
- Incidence Cost
- Time Cost
Prevalence Cost

- Average cost of treatment for all individuals currently alive with cancer
- Comparable to measures of economic burden for other diseases
- Does not describe the pattern of economic burden over the course of disease
Incidence Cost

- Reflects changing pattern of cost with longitudinal course of disease
- Can be conceptualized in terms of episodes or phases of care
Time Cost

- Reflects the value of patient time spent in undergoing treatment instead of engaging in other valuable activities
- Not routinely measured by conventional healthcare accounting systems
Data Sources

- SEER- Medicare
- NCHS National Health Surveys

References:

Treatment Cost by Cancer Type: In 1996 Dollars

- Billions of Dollars

- Esophagus
- Pancreas
- Melanoma
- Leukemia
- Ovary
- Head/Neck
- Cervix
- Bladder
- Lymphoma
- Prostate
- Lung
- Colorectal
- Breast
- Other

Billions of Dollars
Individual Perspective
Treatment Cost and Survival: Breast Cancer

- 24 Month Survival
- 36 Month Survival
- 72 Month Survival
- 96 Month Survival
Defining phases of treatment

- The first leg of the U is the initial phase of treatment
- The second leg of the U is the terminal phase of treatment
- The floor of the U is the continuing phase of treatment
- Pre-diagnostic and pre-terminal phases
Phase-specific treatment costs: Colorectal Cancer

- **All Payments**
- **Cancer Related Payments**
- **Non-cancer Payments**

### Phase-specific Costs

- **Initial (1-6 Months)**: $15,000
- **Continuing (annual)**: $5,000
- **Terminal (last 12 months)**: $30,000
Cohort Perspective

- Useful for a health plan or payor organization
- Cost of the “average” cancer case since time from diagnosis
- Is a weighted average of all the U-shaped curves
Treatment cost following diagnosis, by stage, colorectal cancer
Medicare Cancer Treatment Expenditures: 1996

Billions of Dollars

- Cervix
- Esophagus
- Melanoma
- Pancreas
- Leukemia
- Ovary
- Head/Neck
- Lymphoma
- Bladder
- Breast
- Lung
- Colorectal
- Prostate
- Other

Part A
Part B

Division of Cancer Control & Population Sciences
National Perspective
National Cancer Treatment Expenditures: 1996

- Esophagus
- Pancreas
- Melanoma
- Leukemia
- Ovary
- Head/Neck
- Cervix
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- Prostate
- Lung
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- Breast
- Other

Bar chart showing initial, continuing, and terminal expenditures for different cancer types.

Billions of Dollars

0 2 4 6 8 10

National Cancer Institute
## Time cost for colorectal cancer: by services counts and hours

<table>
<thead>
<tr>
<th>Service</th>
<th>Average Service Counts</th>
<th>Time Estimates (in hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cases</td>
<td>Controls</td>
</tr>
<tr>
<td><strong>Initial Phase</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office visits</td>
<td>15.93</td>
<td>7.41</td>
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<tr>
<td>Emergency room visits</td>
<td>0.55</td>
<td>0.39</td>
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<tr>
<td>Chemotherapy</td>
<td>5.71</td>
<td>0.07</td>
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<tr>
<td>Radiation therapy</td>
<td>1.24</td>
<td>0.07</td>
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<tr>
<td>Hospitalization LOS</td>
<td>17.12</td>
<td>2.18</td>
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<tr>
<td>Out-patient surgery</td>
<td>0.71</td>
<td>0.26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>333.30</strong></td>
<td><strong>56.35</strong></td>
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<tr>
<td><strong>Continuing Phase</strong></td>
<td></td>
<td></td>
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<tr>
<td>Office visits</td>
<td>0.80</td>
<td>0.62</td>
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<tr>
<td>Emergency room visits</td>
<td>0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Radiation therapy</td>
<td>0.02</td>
<td>0.01</td>
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<tr>
<td>Hospitalization LOS</td>
<td>0.26</td>
<td>0.18</td>
</tr>
<tr>
<td>Out-patient surgery</td>
<td>0.04</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6.52</strong></td>
<td><strong>4.70</strong></td>
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<tr>
<td><strong>Terminal Phase</strong></td>
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<tr>
<td>Office visits</td>
<td>10.13</td>
<td>7.00</td>
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<tr>
<td>Emergency room visits</td>
<td>0.79</td>
<td>0.71</td>
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<tr>
<td>Chemotherapy</td>
<td>2.49</td>
<td>0.28</td>
</tr>
<tr>
<td>Radiation therapy</td>
<td>0.79</td>
<td>0.31</td>
</tr>
<tr>
<td>Hospitalization LOS</td>
<td>15.26</td>
<td>14.13</td>
</tr>
<tr>
<td>Out-patient surgery</td>
<td>0.15</td>
<td>0.11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>421.88</strong></td>
<td><strong>248.44</strong></td>
</tr>
</tbody>
</table>
## Time cost for colorectal cancer: Valued in wage units

<table>
<thead>
<tr>
<th>Phase of Care</th>
<th>Patient Time Costs</th>
<th>Direct Medical Costs*</th>
<th>Patient Time As % of Direct Medical Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cases</strong></td>
<td></td>
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<tr>
<td>Initial</td>
<td>$5,074</td>
<td>$27,658</td>
<td>18.3</td>
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<tr>
<td>Continuing (per month)</td>
<td>$99</td>
<td>$484</td>
<td>20.5</td>
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<tr>
<td>Terminal</td>
<td>$6,423</td>
<td>$30,815</td>
<td>20.8</td>
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<tr>
<td><strong>Controls</strong></td>
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<tr>
<td>Initial</td>
<td>$858</td>
<td>$3,915</td>
<td>21.9</td>
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<tr>
<td>Continuing (per month)</td>
<td>$71</td>
<td>$326</td>
<td>21.9</td>
</tr>
<tr>
<td>Terminal</td>
<td>$3,783</td>
<td>$23,238</td>
<td>16.3</td>
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<tr>
<td><strong>Net Costs</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Initial</td>
<td>$4,414</td>
<td>$23,743</td>
<td>18.6</td>
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<tr>
<td>Continuing (per month)</td>
<td>$64</td>
<td>$158</td>
<td>40.5</td>
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<tr>
<td>Terminal</td>
<td>$3,620</td>
<td>$7,577</td>
<td>47.8</td>
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</tbody>
</table>
What accounts for continuing care costs?

- Lifetime costs for long-term (> 5 years) colorectal cancer survivors = $19,516 than non-cancer patients
- Surveillance procedures can only account for a fraction of these costs
- What else explains these costs?

Limitations

- Cost estimates based on Medicare
  - Post-diagnostic experience may be different for younger patients
- Recent developments in detection, diagnosis and treatment may change the post-diagnostic experience
- Need for continuing development of updating of data resources