Value of Money in Cancer - IMRT as a case study

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Key messages

- It is important to consider Value for Money when planning and coordinating cancer care
- Assessing value for money is not difficult, but needs to be relevant to the context
- Let’s try to provide value for money every step along the cancer journey
Cancer care shows 'culture of excess'

The cost of cancer care in wealthy countries is becoming unsustainable, according to a new report.

Monday's online issue of Lancet Oncology includes a report by 37 experts from developed countries on managing cancer costs in the U.S., UK and Australia.

"In developed countries, cancer treatment is becoming a culture of excess," the authors said. "We overdiagnose, overtreat, and overpromise. This extends from use of complex technology, surgery, and drugs to events related to the acceptance of treatment side-effects."
Value for money

- We want to buy as much health as possible
- But, we have limited resources
- Economics:
  - How much does something cost?
  - What do we get for what we pay?
  - Cost-effectiveness analysis
Intensity-Modulated Radiation Therapy (IMRT)

- Introducing IMRT across Ontario
- Which disease sites?
- Is IMRT good value for money?
- Can we afford it?

Picture: Radiation Medical Group
Toxicity – IMRT vs. conventional RT

Localized prostate cancer

<table>
<thead>
<tr>
<th></th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute gastrointestinal</td>
<td>16% vs. 33%</td>
<td>0 vs. 13%</td>
<td>2 months</td>
</tr>
<tr>
<td>Late gastrointestinal</td>
<td>5% vs. 13%</td>
<td>0 vs. 0</td>
<td>36 months</td>
</tr>
</tbody>
</table>

Head and neck cancers

<table>
<thead>
<tr>
<th></th>
<th>Event rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade ≥2 Xerostomia</td>
<td>12% vs. 67%</td>
</tr>
</tbody>
</table>
Localized prostate cancer

- Clinically localized disease
- Biochemical failure
- Metastasis
- Dead
## IMRT vs. 3D-CRT in prostate cancer

<table>
<thead>
<tr>
<th></th>
<th>IMRT</th>
<th>CRT</th>
<th>Incremental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation treatment cost</td>
<td>$14,520</td>
<td>$13,501</td>
<td>$1,019</td>
</tr>
<tr>
<td>Radiotherapy toxicity cost</td>
<td>$106</td>
<td>$508</td>
<td>$(402)</td>
</tr>
<tr>
<td>Total cost (discounted at 5%)</td>
<td>$60,138</td>
<td>$59,518</td>
<td>$621</td>
</tr>
<tr>
<td>Life-years gained (discounted at 5%)</td>
<td>8.257</td>
<td>8.257</td>
<td>0.000</td>
</tr>
<tr>
<td>QALYs gained (discounted at 5%)</td>
<td>6.085</td>
<td>6.062</td>
<td>0.023</td>
</tr>
<tr>
<td>Incremental cost per QALY gained</td>
<td></td>
<td></td>
<td>$26,768</td>
</tr>
</tbody>
</table>
IMRT vs. 2D-RT in head and neck cancers

- Compared with 2D-RT, IMRT improves clinical outcome
  - Need to treat <2 patients to reduce one case of xerostomia
  - 0.5 QALY gain per patient
- IMRT is less expensive than CRT
  - saves $1100 per patient
  - IMRT takes longer to plan but less time to deliver
Discussion

- Results are specific to the research questions
  - Not generalizable to other indications
  - Specific to the comparator
  - Radiotherapy costs vary across disease sites and countries
Value for money in Cancer

Data: The Center for Evaluation of Value and Risk in Health, CEA Registry
Cancer journey

- Prevention
- Screening
- Diagnosis
- Treatment
- Recovery and palliative care
Value for money in Cancer

- Prevention: 13%
- Screening: 14%
- Diagnosis: 10%
- Treatment: 60%
- Recovery and palliative: 3%

313 studies (2004-2010)

Data: The Center for Evaluation of Value and Risk in Health, CEA Registry
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Thank you.

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