THE ECONOMIC IMPACT OF COLORECTAL CANCER: WHAT ARE THE COSTS AND WHERE DO THEY FALL?

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Where do the costs of cancer fall?

A wide spectrum of costs across society

Health Services + Employer + Patients and their family = Societal costs

Costs
•Diagnosis
•Treatment
•Follow up

Costs
•Productivity losses
•Absenteeism
•Premature mortality

Costs
•Out-of-pocket
•Time
•Travel

National Cancer Registry Ireland
Project Sources

- Key informant focus groups
- In-depth patient interviews
- Postal survey of survivors (n=495, rr=39%)
- Postal survey of carers (n=154, rr=68%)
- Patient medical records
- National Cancer Registry data (NCRI)

Economic cost data sources

Health service costs

- Biopsy
- Colonoscopy
- Rigid sigmoidoscopy
- Full blood count
- Colon/rectal resection
- GI bypass
- Stoma
- Radiotherapy
- Folfox
- Cetuximab
- CT scan
- CT colonography
- MRI
- PET scan
- CEA test
- Lung resection
- Liver resection
- Capecitabine
- Outpatient visits
## Costs of managing colorectal cancer

![Diagram showing the stages of colorectal cancer management with associated costs.]

### Health Service Costs: Costs of managing colorectal cancer (€2008)

<table>
<thead>
<tr>
<th>Site</th>
<th>Stage I</th>
<th>Stage II</th>
<th>Stage III</th>
<th>Stage IV</th>
<th>Overall cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colon cancer</td>
<td>23,462 (22,818-24,459)</td>
<td>35,059 (25,904-51,227)</td>
<td>48,186 (36,469-67,970)</td>
<td>31,744 (26,966-39,872)</td>
<td>37,417 (29,871-50,618)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment phase</th>
<th>Overall cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>1,634 (1,634)</td>
</tr>
<tr>
<td>Treatment</td>
<td>35,918 (33,656)</td>
</tr>
<tr>
<td>Follow up</td>
<td>2,055 (1,311)</td>
</tr>
</tbody>
</table>
Employer costs

Colorectal cancer productivity loss

Absenteism/disability
- Temporary work absences: 90% of cases, 26 weeks off
- Ongoing reduced working hours: 18% of cases, 20 hours
- Permanent workforce departure: 37% of cases

Premature mortality
- Life years lost

Sample size = 159
Median age = 55
### Colorectal cancer per person productivity costs (€2008)

Valuation method: Human Capital Approach

<table>
<thead>
<tr>
<th>Type</th>
<th>Temporary Disability cost</th>
<th>Reduced hours costs</th>
<th>Permanent departure costs</th>
<th>Mortality costs</th>
<th>Total costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal cancer (CRC)</td>
<td>14,255 (10,379–18,132)</td>
<td>24,353 (13,436-35,271)</td>
<td>77,414 (54,758-100,042)</td>
<td>89,824 (71,151-108,497)</td>
<td>205,847</td>
</tr>
<tr>
<td>CRC male</td>
<td>16,917</td>
<td>28,054</td>
<td>82,229</td>
<td>96,124</td>
<td>223,324</td>
</tr>
<tr>
<td>CRC female</td>
<td>10,085</td>
<td>18,408</td>
<td>69,678</td>
<td>79,618</td>
<td>177,789</td>
</tr>
<tr>
<td>Colorectal cancer to 70</td>
<td>13,552</td>
<td>35,299</td>
<td>122,090</td>
<td>133,051</td>
<td>303,992</td>
</tr>
</tbody>
</table>

Key cost drivers: Age, Wages & gender, Pension age, Length of illness

### Patient initial treatment-related time and travel costs

National Cancer Registry Ireland
Colorectal cancer time and travel costs

Mean time & travel costs: €11,050

<table>
<thead>
<tr>
<th>Mean cost incurred by site</th>
<th>Mean cost incurred by stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colon</td>
<td>$10,561</td>
</tr>
<tr>
<td>Rectum</td>
<td>$11,960</td>
</tr>
<tr>
<td>Stage I</td>
<td>$6,719</td>
</tr>
<tr>
<td>Stage II</td>
<td>$8,257</td>
</tr>
<tr>
<td>Stage III</td>
<td>$11,677</td>
</tr>
<tr>
<td>Stage IV</td>
<td>$10,380</td>
</tr>
</tbody>
</table>

**Important findings:**

Vast majority of costs are time costs (96%)

Significant variables – Stage and site

Patient initial treatment-related out-of-pocket costs

National Cancer Registry Ireland
**Types of out-of-pocket costs**

**Treatment-related OOP costs**
- GP visits
- Parking
- Inpatient hospital stay
- Meals

**Additional health-related and medical costs**
- Tests (x-rays, scans)
- Consultant visits
- Other medical therapies (e.g. counselling)
- Alternative therapies (e.g. reflexology)
- Convalescent or respite care
- Prescription medicines
- Over-the-counter medicines
- Dietary supplements
- Childcare
- Home-help
- Nursing care
- Clothing
- House modifications
- Stoma bags and pouches

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**Colorectal cancer: Out-of-pocket costs**

**Key out-of-pocket cost findings**
- 90% of respondents reported some cancer-related out-of-pocket costs
- 10% reported out-of-pocket costs in excess of €3,200
- Average surgery-related costs: €325
- Average chemotherapy-related costs: €325
- Average radiotherapy-related costs: €79

**Per person out-of-pocket costs by site**

- Colorectal: €1,727
- Colon: €1,637
- Rectal: €1,937
Informal care costs

Colorectal cancer: Informal care costs

Hospital-based diagnosis and treatment costs

Mean costs: €5,085

Domestic-based diagnosis and treatment costs

Mean costs: €8,795

First year informal care costs: €29,207

Of which time costs account for 87%

Significant variables

Stage
Site
Work status

70%
16%
14%
Summary

Health Services  +  Employer  +  Patients and their family  =  Societal costs

Cost
Per person: €39,607

Cost
Per person: €205,847

Cost
Per person time and travel: €11,050
Per person out-of-pocket: €1,727
Per person informal care: €29,207

Cost???

Conclusion

• Cancer imposes a considerable economic burden across society.

• Costs differ depending on the chosen perspective – health service, employers, patients and their family, society etc.

• By providing a sampling frame, cancer registries can facilitate the conduct of population-based studies of the economic impact of cancer from different perspectives.
Acknowledgments

Collaborators
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Anthony Staines, Dublin City University

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