The impact of cancer survival studies on health policy

North American Association of Central Cancer Registries
Louisville KY, 21 June 2011

NCI prevention budget falls

Cancer burden set to rise

Cases | Deaths | Survivors
--- | --- | ---
2008 | 12 | 8 | 28
2030 | 20 | 13 | 62

O'Callaghan T, Nature 2011; 471: S2-S4
Cancer survival – applications
• Local clinical uses
• Geographic differences and trends
• Socio-economic – individual and areal
• Impact of treatment guidelines
• Surveillance of equity – avoidable deaths
• National cancer plans – effectiveness
• International differences and trends

Is cancer survival important?
“Survival does not ring any cause-worthy bells.”
Response of one US research foundation approached to fund CONCORD study

“This research proposal is not clinically relevant.”
Response of a breast cancer research charity approached to fund CONCORD study

Clinical research and public health
Clinical trials  highest achievable survival
Public health  average survival achieved
Translational research to reduce the difference

Observed and expected survival
Survival from cancer
in the absence of
death from other
causes
Survival
(%)
Time since diagnosis (years)
0 5 10 15
Observed
expected
relative
observed
Relative survival and population “cure”

Modelled relative survival curve

“cured” proportion

Excess hazard rate

(a)

Survival index for Primary Care Trusts

Specific for each of 152 Primary Care Trusts

Local measure of outcome (effectiveness); and National metric for surveillance and strategy

- One-year relative survival index
- All cancers - age, sex, case-mix adjustment
- Patients diagnosed in each PCT, each year
- 11 consecutive years 1996-2006

Woods et al., work in progress, with permission

Quaresma et al., work in progress, with permission
Cancer survival in Kentucky: impact of health insurance

- US health-care reform - [still] controversial
- Cancer survival associated with type (or lack) of health insurance in 1995-1998
  (McDavid et al., 2003)
- Does survival still differ by insurance status?
- Does insurance status help explain Black-White survival differences?
- Does socio-economic status contribute?

<table>
<thead>
<tr>
<th>Health Insurance Type</th>
<th>One-year Survival (%)</th>
<th>Three-year Survival (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Insurance</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td>MEDICARE+supplement</td>
<td>89</td>
<td>89</td>
</tr>
<tr>
<td>MEDICARE</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>Other Federally funded</td>
<td>82.7</td>
<td>84</td>
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<tr>
<td>MEDICAID</td>
<td>94</td>
<td>80</td>
</tr>
<tr>
<td>Insured NOS</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Not insured</td>
<td>84</td>
<td>89</td>
</tr>
<tr>
<td>Unknown</td>
<td>80</td>
<td>94</td>
</tr>
</tbody>
</table>

Allemani et al., work in progress, with permission
National policy concerns

Is survival equitable?
Is survival as high as other countries?
Is national cancer plan effective?

If not:
- Why not?
- How many premature deaths?
- What policy is required?
- Can we see any improvements?

NHS Cancer Plan 2000 - England

35% real-terms rise in funding 2000-03
Prevention, screening, treatment
More specialist staff, better training
Earlier diagnosis
Multi-disciplinary teams
Reduction of inequalities

Colon cancer: one-year survival trends
England and Wales, men 1996-2006

Breast cancer: one-year survival trends
England and Wales, women, 1996-2006

Rachet et al., 2009
Avoidable cancer deaths: Britain vs. Europe

How many cancer-related deaths within five years of diagnosis would be expected *not* to occur, if survival in Britain were the same as in other European countries?

Has this avoidable premature mortality changed over time?

Deaths: total, excess and avoidable

Avoidable deaths can inform prioritisation of health care resources

Projected societal cost of cancer at current and European best survival rates
NHS Cancer Plan 2011 - England

Strategy informed by evidence:

- English survival continues to lag behind best-performing countries in Partnership …
- If England were to achieve European average survival, 5,000 lives would be saved every year
- A range of actions to respond to this challenge


International Cancer Benchmarking Partnership

- Breast, colorectum, lung, ovary
- Diagnosed 1995-2007, followed up to 2007
- 2.4 million patients
- Australia – New South Wales, Victoria
- Canada – Alberta, Br Columbia, Manitoba, Ontario
- Denmark
- Norway
- Sweden
- UK – England, Northern Ireland, Wales

ICBP - overview of results

- Survival rose for all 4 cancers, all countries
- High in Australia, Canada, Sweden
- Intermediate in Norway
- Low in Denmark, UK

- Data quality or artefact unlikely
- Direct relevance to health policy

Coleman et al., 2011
What could explain survival differences?

- Longer delays, more advanced disease
- Co-morbidity
- Availability and uptake of screening
- Access to treatment
- Quality of treatment
- Organisation of treatment services
- Human and financial resources

after Richards, 2009

ICBP Modules 2 to 5 – next steps

- Public attitudes, awareness, beliefs - survey
- Primary care performance
- Duration of symptoms
- High-resolution studies
- Measure progress in avoidable deaths?
- Survival trends to evaluate cancer plans
- Remediable causes of survival deficits
- Direct input to health policy

“Levels of ambition” in cancer strategy

- Progress measured by trends in survival
- Time lag between diagnosis and survival, so –
- Proxy measures to monitor progress
  - Stage at diagnosis
  - Emergency presentation rate
  - Major treatment rate

Improving Outcomes: A Strategy for Cancer, Department of Health, 2011

Cancer survival in five continents (first CONCORD study)

31 countries (16 with 100% coverage)
101 population-based cancer registries
300 million population base
Breast (F), colon, rectum, prostate
1.9 million cancer patients (aged 15-99)
Diagnosed 1990-94
Followed up to 31 December 1999

Lancet Oncology 2008; 9: 730-756
Five-year relative survival (%) - breast cancer, women (15-99 years)

Five-year relative survival (%) - breast cancer, women (15-99 years): USA, by race

Five-year relative survival (%), breast (F) USA, 1990-99, by race and program area

Cancer survival in five continents: a worldwide population-based study (CONCORD)

12,000+ downloads from The Lancet Oncology website
100+ citations TLO editor (personal comm.) September 2010
CONCORD-2 – provisional time-line

- Ethical and statutory approval – April 2011
- Peer review – November 2011
- Funding decision – December 2011
- Data submission – by June 2012
- Quality control – by September 2012
- Analyses completed – December 2012

WHO EURO support for CONCORD-2

- Fills huge gap in knowledge of cancer survival world-wide
- Enables comparison between low-income countries with innovative programmes
- Evidence base for health care effectiveness
- High-quality evidence for surveillance of public health threats
- Coherent with WHO strategic objectives

Dr Jose M Martin-Moreno, WHO Regional Office for Europe, 16 May 2011

Global surveillance of cancer

“I believe that the fight against cancer, rather than focussing on specific, spectacular news, should aim at viewing the overall global comprehensive picture.

“We should monitor trends if we want to improve that reality.”

Dr Tabaré Vázquez, oncologist
President of Uruguay (2005-10)

World Cancer Leaders' Summit, Shenzhen, China, 19 August 2010