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Large differences in breast cancer survival between Australia and England

a comparative study using cancer registry data

UICC Conference, Geneva, 28th August 2008
International differences in five-year survival compared to England and Wales (baseline)

- Australia
- Southern, Western and Northern Europe
- North America
- Eastern Europe

Absolute difference (%)

- Australia: Negative (%)
- Southern, Western and Northern Europe: Positive (%)
- North America: Negative (%)
- Eastern Europe: Negative (%)
Material

- Cancer registry data
  - Women aged 15-99 diagnosed with breast cancer
    - Patient demographics, tumour characteristics
    - Ecological deprivation scores (unemployment)
Methods

Relative survival

– Probabilities
– Excess hazard ratio
Survival from cancer in the absence of death from other causes

Methods

Survival (%) vs. Time since diagnosis (years)

- Expected survival
- Relative survival
- Observed survival
Results

New South Wales

1980-1983

1984-1987

1988-1991

1992-1995

1996-1999

2000-2002

West Midlands

2002: period analysis

16.0%

10.6%
Results

New South Wales

West Midlands

Five-year relative survival (%)

Category of deprivation

Affluent

2

3

4

Deprived

Affluent

2

3

4

Deprived
Results - patterns

- Survival higher in New South Wales and Australia
- Deprivation ‘gap’ wider in West Midlands
- Survival much lower among elderly in West Midlands than New South Wales
- Extent-specific differences greater in New South Wales
Results - explanations

- International & socio-economic differences not fully explained by extent of disease
- No effect of age or histology
- Not explained by deprivation
Up to one year after diagnosis

Model includes:
- deprivation X region
- age group X region
- extent of disease X region
- year of diagnosis
- histological group

Excess hazard ratio

<table>
<thead>
<tr>
<th>Year Period</th>
<th>Affluent</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Deprived</th>
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<td>1980-1987</td>
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Up to one year after diagnosis

Model includes:
- deprivation X region
- age group X region
- extent of disease X region
- year of diagnosis
- histological group

Excess hazard ratio

Age group

1980-1987
1988-1995
1996-2002
2\textsuperscript{nd}-5\textsuperscript{th} years after diagnosis

Model includes:
- deprivation X region
- age group X region
- extent of disease X region
- year of diagnosis
- histological group

Excess hazard ratio

Age group

1980-1987
1988-1995
1996-2002
Up to one year after diagnosis

Model includes:
- deprivation X region
- age group X region
- **extent of disease X region**
- year of diagnosis
- histological group

1980-1987

1988-1995

1996-2002

Excess hazard ratio

Extent of disease at diagnosis

Localised

Regional

Distant
Some causal explanations

- Delay in diagnosis – patient or system
- Treatment – type, delivery, compliance
- Nutritional status, co-morbidity
Conclusions

- Breast cancer survival differences exist
- Unlikely to be artefact
- May be treatment-related
- May also be partly related to delay (patient, healthcare system)