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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

North America

Southern, Western and Northern Europe

Eastern Europe
Material

• Cancer registry data
  – Women aged 15-99 diagnosed with breast cancer
    • Patient demographics, tumour characteristics
    • Ecological deprivation scores (unemployment)
• Life tables: 1991, 2001
Methods

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

Methods

- Expected survival
- Relative survival
- Observed survival
Results

New South Wales
- 1980-1983
- 1984-1987
- 1992-1995
- 1996-1999
- 2000-2002

West Midlands
- 1980-1983
- 1984-1987
- 1992-1995
- 1996-1999
- 2000-2002

Age-standardized relative survival (%)

Years since diagnosis

2002: period analysis

16.0% increase

10.6% increase
Results

Five-year relative survival (%)

Category of deprivation

New South Wales

West Midlands
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

Unemployment category

1980-1987
1988-1995
1996-2002

Affluent 2 3 4 Deprived
Model includes:
- deprivation X region
- age group X region
- extent of disease X region
- year of diagnosis
- histological group

Age group
- 15-39
- 40-49
- 50-54
- 55-59
- 60-64
- 65-69
- 70-79
- 80-99

Excess hazard ratio
- 1.0
- 3.0
- 5.0
- 7.0
- 9.0
- 11.0
- 13.0

Up to one year after diagnosis

- 1980-1987
- 1988-1995
- 1996-2002
Model includes:
- deprivation X region
- age group X region
- extent of disease X region
- year of diagnosis
- histological group

2nd-5th years after diagnosis

Excess hazard ratio

Age group


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

![Graph showing excess hazard ratio over time for different extents of disease at diagnosis (localised, regional, distant) with four time periods: 1980-1987, 1988-1995, 1996-2002.)](image-url)
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)