# Is there evidence of a 'cured' sub-population amongst women with screen-detected breast cancer?

## *Results from New South Wales, Australia, and the West Midlands region of England*


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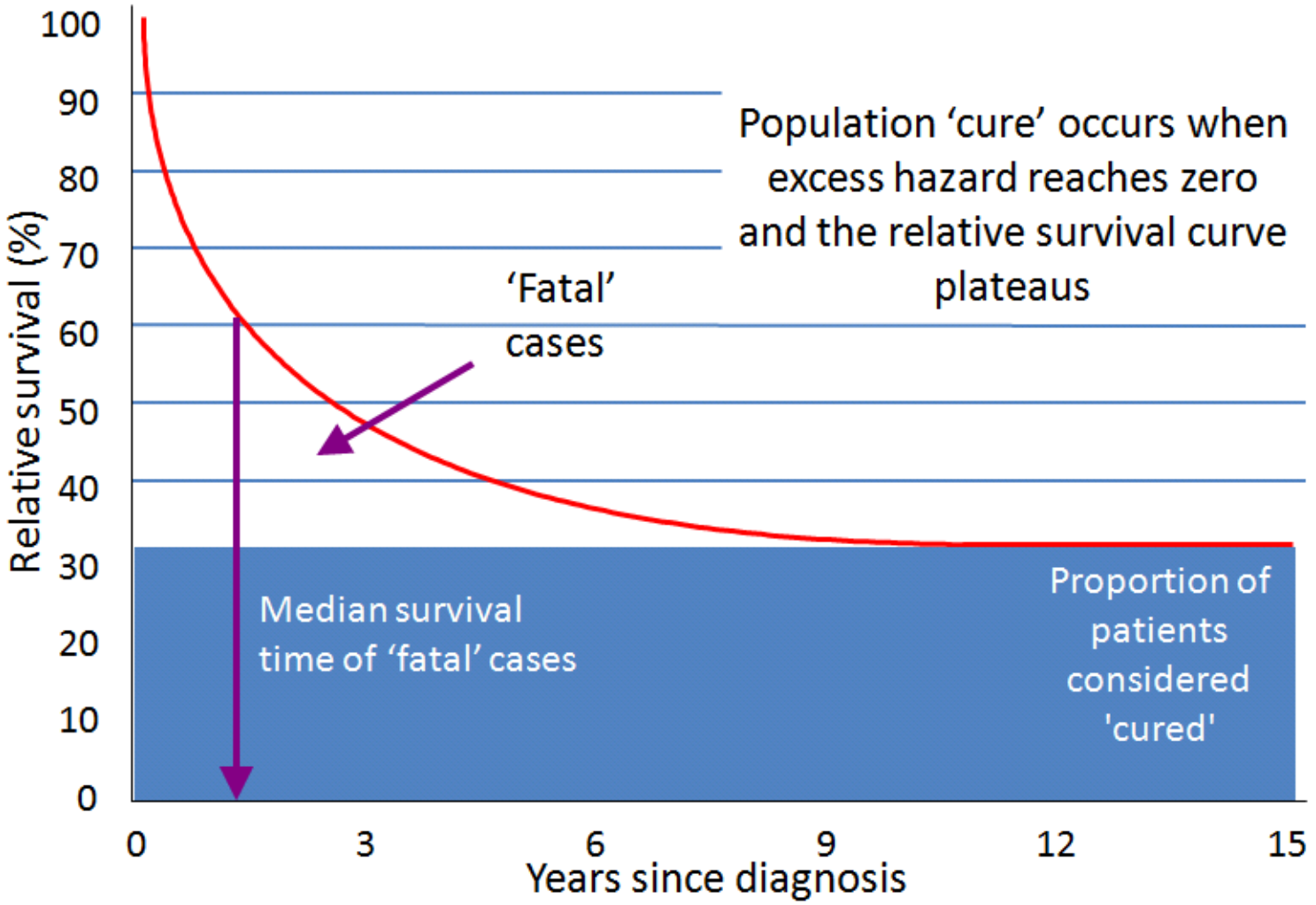
# Concept


100
90
80
70
60
50
40
30
20
10
0
Relative survival (%)
0
3
6
9
12
15
Years since diagnosis
Population 'cure' occurs when excess hazard reaches zero and the relative survival curve plateaus
'Fatal' cases
Median survival time of 'fatal' cases
Proportion of patients considered 'cured'

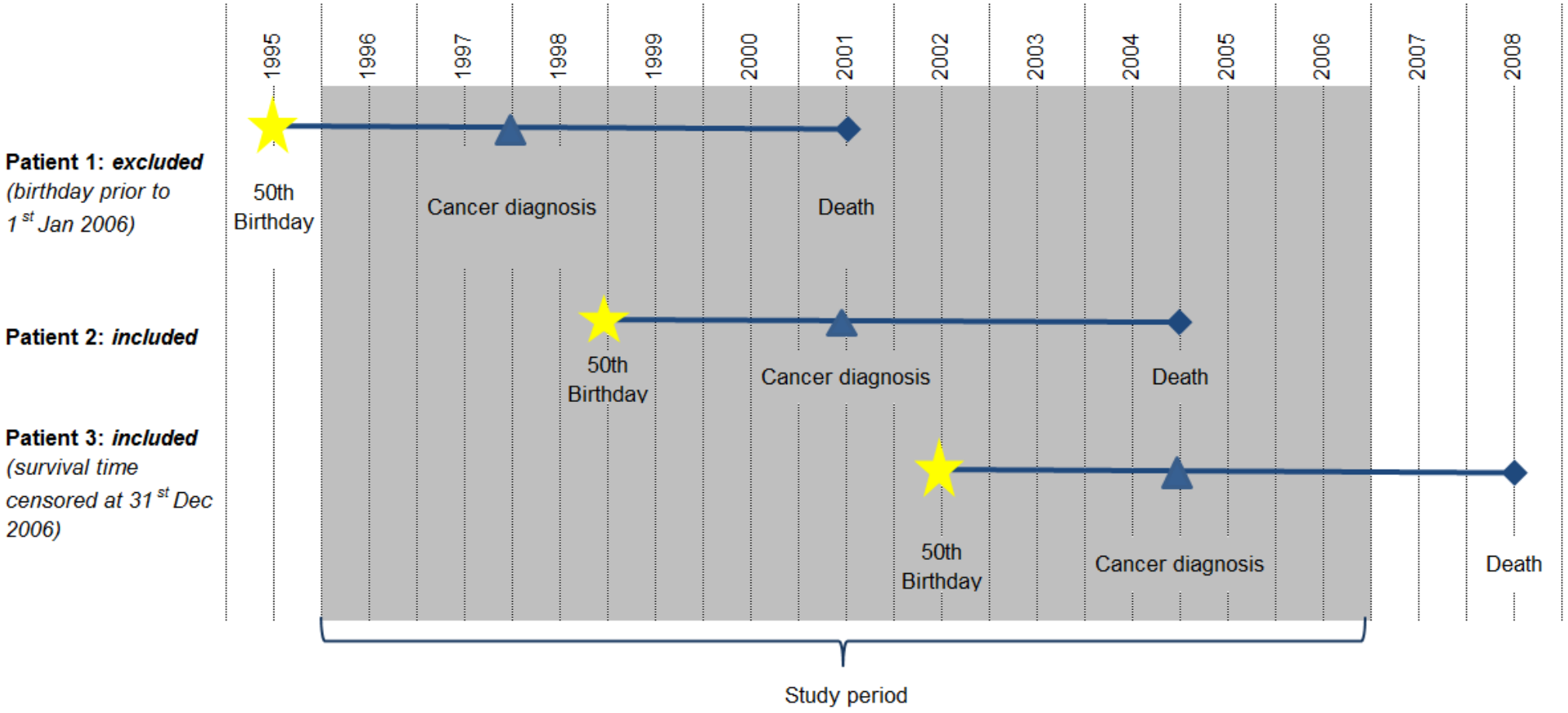
# Background

- Long-term excess mortality from breast cancer
- Our previous work:
  - Women with apparently localised disease
  - ‘Cure’ seldom attained
  - Inflexible approach?
- Statistical developments: flexible models
- ‘Cure’ and breast cancer screening

# Hypothesis

That a sub-population of women diagnosed with asymptomatic disease via screening have no excess mortality, in comparison to their counterparts, and that the presence of this ‘cured’ population could be detected using a flexible modelling approach.

# Cohort included in analyses



# Materials and Methods

- 6,396 women in New South Wales,
- 5,717 women in West Midlands
- Non-parametric flexible (spline-based) relative survival model, adjusted for age:
  - ‘cure’ option assumes zero excess mortality after the last knot
- Reduction of 3 AIC to indicate better fitting model

# Results

| Region | Screening category | AIC non-'cure' model | AIC 'cure' model | Difference | Evidence of cure? |
|---|---|---|---|---|---|
| NSW | Not screen-detected | 3054.63 | 3067.33 | 12.70 | No |
| NSW | Screen-detected | 774.97 | 775.01 | 0.05 | Yes |
| NSW | Lapsed attender | 155.32 | 156.69 | 1.36 | Yes |
| NSW | Interval cancer | 664.74 | 663.57 | -1.18 | Yes |
| WM | Not screen-detected | 2490.48 | 2510.85 | 20.38 | No |
| WM | Screen-detected | 1138.46 | 1136.54 | -1.92 | Yes |
| WM | Lapsed attender | 164.31 | * | - | - |
| WM | Interval cancer | 1555.11 | 1556.55 | 1.44 | Yes |

# Conclusions

- Evidence of ‘cure’ for screen-detected women

# Next steps

- Examination by stage of diagnosis for the non-screened (missing values)

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