Supplementary Online Content

Burton R, Stevenson C. Assessment of breast cancer mortality trends associated with mammographic screening and adjuvant therapy from 1986 to 2013 in the state of Victoria, Australia. JAMA Netw Open. 2020;3(6):e208249. doi:10.1001/jamanetworkopen.2020.8249

eMethods 1. Data Collection

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This supplementary material has been provided by the authors to give readers additional information about their work.
Calculation of breast cancer stages from the Victorian 1986 survey

Results

799 total cases

Minus 22 registered too late 777

Minus 20 no Vic surgeon 757

So 42 of 799 have missing data

Advanced/Late Cancers

Minus 33 advanced inoperable 724 33

Minus 8 operable/no surgery 716

So 716 forms sent to surgeons for surgical data

Minus 81 forms not returned forms (11%) 635 data reported

Total missing data all stages: 42 + 8*+ 81 = 131 (16%)

Pathological stage 3 for 593 of 635: Table 2 9%

Corrected for 635 × 9/100 57

Plus surgeon preoperative metastatic: 3% of 635 19

Subtotal inoperable on Survey forms returned= 76

Correct inoperable for non-returns:

76 × 716/635 = 86

Plus 33* inoperable = 119 advanced/late for 757 cases=15·7%

Assume same proportions for missing data

So late stages 3/4 rounded = 799 × 15·7/100 = 125 (16%)

So EBC stages 1/2 rounded = 799-125/100 = 674 (84%)
eMethods 2. Calculations

The female mortality reductions between 1994 and 2013 in Australia in 1995 and Victoria and WA in 1999, which adjuvant therapy commenced by women diagnosed with EBC in 1995 and 1999 could have produced. ER+ Proportions for Victoria and WA from the 1995 National survey\(^2\), since 1999 was EBC only.

EBCTCG adjuvant Tamoxifen and chemotherapy references\(^3,4\) used for calculations

AUSTRALIA 1995: all data from the NBCC survey\(^2\)

All women Tamoxifen Therapy

\[88\% \times 59\% \times 31\% \times 31\% = 16.0\%\]

Women aged 40–69 years: Chemotherapy

\[88\% \times 23\% \times 33\% = 6.7\%\]

Crude National RMR possible from 1995 adjuvant treatment = 16% + 6.7% = 22.7%

Measured Crude RMR 1991-2007\(^5\) = 28%
VICTORIA: all adjuvant therapy 1999 data from Table 2.

Women aged 40–49 years: Tamoxifen:

88%* (proportion of all breast cancer that was EBC) × 73% (proportion of women with EBC who were ER+ and aged less than 50 years-Dr V White-TCCV) × 78% (proportion of women with EBC less than 50 years of age who were ER+ and received Tamoxifen⁶) × 31% (EBCTCG: adjuvant tamoxifen reduction in mortality for ER+ women aged 40-70 years with EBC³) = 15·5%.

Women aged 50–69 years: Tamoxifen

88%* (proportion of all breast cancer that was EBC) × 78% (proportion of women with EBC who were ER+ and aged more than 50 years-Dr V white TCCV) × 92% (proportion of women with EBC more than 50 years of age who were ER+ and received Tamoxifen⁶) × 31% (EBCTCG: adjuvant tamoxifen reduction in mortality for ER+ women aged 40-70 years with EBC³) = 19·6%.

Women aged 40–49 years: Chemotherapy

88%* (proportion of all breast cancer that was EBC) × 72% (proportion of women with EBC aged less than 50 years who received adjuvant chemotherapy⁶) × 33% (EBCTCG: adjuvant chemotherapy reduction in mortality for women aged 40-70 years with EBC⁴) = 20·9%.
Women aged 50–69 years: Chemotherapy

88%* (proportion of all breast cancer that was EBC) × 29% (proportion of women with EBC aged more than 50 years who received adjuvant chemotherapy6) × 33% (EBCTCG: adjuvant chemotherapy reduction in mortality for women aged 40-70 years with EBC4) = 8.4%

Crude RMR possible from 1999 adjuvant treatment

Premenopausal Women (< 50 years) = 20% of 36.4 = 7.3%

Postmenopausal Women (> 50 years) = 80% of 28.0 = 22.4%

Crude RMR possible = 7.3% + 22.4% = 29.7%

Measured Crude RMR 1994-2013 (Figure 1) = 34.3-23.9/34.3 = 30.3%

WA: data from Mc Evoy and colleagues7 and WA breast cancer deaths trend8

Women aged 40–69 years: tamoxifen

85%* (proportion of all breast cancer that was EBC) × 68% (proportion of women with EBC who were ER+ and received tamoxifen7) × 31% (EBCTCG: adjuvant tamoxifen reduction in mortality for ER+ women aged 40-70 years with EBC3) = 15.0%.

Women aged 40–69 years: Chemotherapy

85%* (proportion of all breast cancer that was EBC) × 44% (proportion of women with EBC who received adjuvant chemotherapy7) × 33% (EBCTCG: adjuvant...
chemotherapy reduction in mortality for women aged 40-70 years with EBC⁴) = 12·3%.

**Crude WA RMR possible from 1995 adjuvant treatment** = 15% + 12.3% = 27·3%

Population crude breast cancer calculated deaths and incidence trends from the WA Cancer Registry⁸ and ABS population reports⁹

1999: deaths 239, female population 0·92m, incidence = 25·9 per 100,000

2014: deaths 249, female population, 1·27m, incidence = 19·6 per 100,000

**Measured Crude breast cancer RMR 1999-2014 = 24·3%**
eTable. Data Provided by Vicky Thursfield From VCR

| Year | Vic ASM | VICMortC | VICIncCru | VIC ASI |
|------|---------|----------|-----------|---------|
| 1982 | 34.3    | 31.57    | 75.82346  | 86.7    |
| 1983 | 32.5    | 29.83218 | 71.73213  | 81.3    |
| 1984 | 31.4    | 29.1258  | 78.51377  | 88.3    |
| 1985 | 34.4    | 28.29808 | 78.89001  | 87.1    |
| 1986 | 31.8    | 29.11532 | 78.94547  | 87.4    |
| 1987 | 33.2    | 30.60852 | 86.07171  | 94.5    |
| 1988 | 32.5    | 30.24227 | 83.78367  | 91.2    |
| 1989 | 33.5    | 31.3899  | 87.87334  | 94.9    |
| 1990 | 33.4    | 31.46027 | 87.98902  | 94.9    |
| 1991 | 34.9    | 33.03026 | 91.95516  | 98.5    |
| 1992 | 31.3    | 29.84475 | 93.8996   | 99.4    |
| 1993 | 33.3    | 32.70477 | 99.48995  | 103.8   |
| 1994 | 34.5    | 34.29012 | 117.5156  | 120.6   |
| 1995 | 31.1    | 31.13485 | 116.0081  | 118.1   |
| 1996 | 30.5    | 30.89614 | 113.6926  | 114.5   |
| 1997 | 30.4    | 31.49536 | 112.6747  | 112.1   |
| 1998 | 27.6    | 28.99101 | 116.6492  | 114.3   |
| 1999 | 27.6    | 29.23969 | 118.5267  | 115     |
| 2000 | 27.6    | 29.82846 | 121.6599  | 116.7   |
| 2001 | 25.1    | 27.38213 | 123.0128  | 118.1   |
| 2002 | 26.5    | 29.4662  | 121.4662  | 115.6   |
| 2003 | 27      | 30.08287 | 116.809   | 109.9   |
| 2004 | 24.5    | 27.65319 | 122.155   | 114.3   |
| 2005 | 24.5    | 27.68691 | 120.2143  | 111.1   |
| 2006 | 21.4    | 24.81846 | 124.0923  | 114.2   |
| 2007 | 23.6    | 25.20722 | 122.9236  | 112.5   |
| 2008 | 24.1    | 28.238   | 129.3519  | 117.6   |
| 2009 | 22.4    | 26.95132 | 120.9487  | 109.7   |
| 2010 | 23.1    | 28.27069 | 127.2     | 115     |
| 2011 | 21.6    | 25.77893 | 134.1863  | 120.7   |
| 2012 | 22      | 26.6341  | 130.7109  | 117.3   |
| 2013 | 19.9    | 23.8799  | 141.0018  | 125.3   |
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