

Cancer Monitoring

Issue No. 1

December 2000

Ductal carcinoma in situ (DCIS)

DCIS is a disease that involves changes in the cells in the lining of the ducts of the breast. Although the changes are like those seen in breast cancer, DCIS has not spread beyond the ducts. If left untreated, it may increase the chances that a woman will develop an invasive breast cancer. Before the introduction of nationwide mammographic screening in Australia in 1991, DCIS was rarely found. Since then mammography has increased the detection of DCIS.

This report presents statistics for the first time on DCIS diagnoses in women in Australia and covers the period from 1993 to 1998.

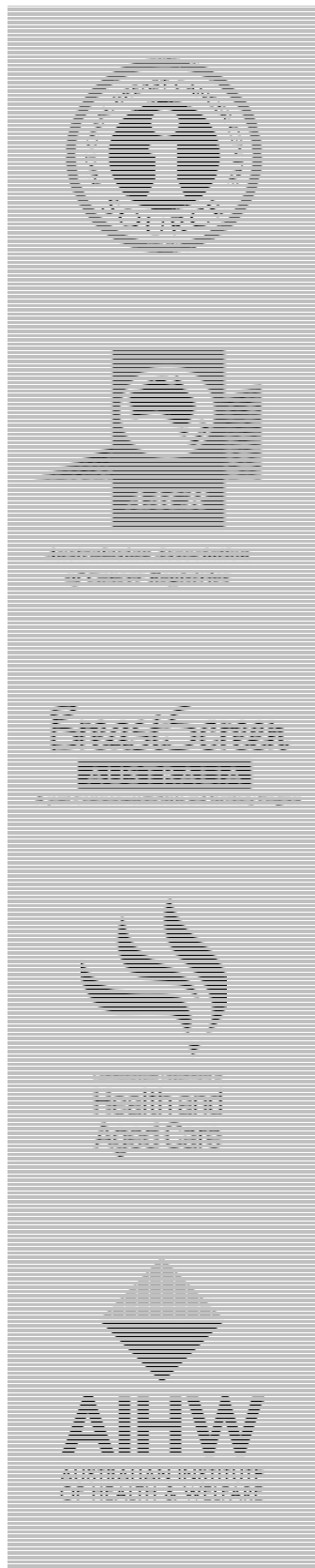
Key points

- There were almost 1,200 women with a diagnosis of DCIS in Australia in 1998. Approximately 58% were diagnosed by the BreastScreen Australia Program, and the remainder through other mammography screening services.
- The number of women being diagnosed with DCIS in Australia increased by approximately two-thirds in the period 1993 to 1998. This was mainly due to two factors—increased numbers of women receiving mammography screening and improved data collection.
- More than half of women diagnosed with DCIS were between 50 and 69 years of age, with the mean age at diagnosis around 59 years.

Introduction

This report provides summary statistics on DCIS derived from the State and Territory cancer registries and the BreastScreen Australia Program. Most women diagnosed in the BreastScreen Australia Program will have also been recorded by cancer registries.

The data highlight the changing DCIS patterns with the introduction of mammography in Australia. This information is useful to health professionals, women with DCIS, policy makers and planners.



BreastScreen Australia program

BreastScreen Australia is a Commonwealth–State funded public health program which offers free population-based breast cancer screening to eligible women. Women in the target age group 50–69 years are actively recruited to participate in the Program. Women aged 40–49 years and over 70 years are also able to access screening services. Women are usually self referred as a doctor's referral is not required. Other mammography screening is offered in the private sector; this is paid for by the woman as mammography screening is not refundable through Medicare.

What is DCIS?

Ductal carcinoma in situ (DCIS) (or intraductal carcinoma) is a form of breast disease where there is abnormal growth of duct epithelial cells. These cells have features of cancer cells, but only spread along the ducts of the breast, rather than invading surrounding tissue. If DCIS is not detected and treated, the carcinoma cells may eventually become more abnormal and develop the ability to invade through the walls of the ducts into the surrounding normal tissue.

As DCIS is not normally palpable, it is usually detected through mammography. DCIS often causes tiny deposits of calcium in the ducts which may show up on mammography. Where DCIS is suspected it is typically confirmed by pathological examination of a tissue sample, usually taken under the guidance of mammography.

While DCIS has no mortality directly associated with it, it is a disease that has the potential to progress to invasive disease. It has a significant impact on women in terms of direct treatment morbidity and psychosocial morbidity associated with its investigation, diagnosis and treatment.

Further information on description, diagnosis and treatment of DCIS can be found in a review by Gherzi and Simes (1998).

Numbers of new cases and rates of DCIS in cancer registry data

In 1998 there were 1,185 women diagnosed with DCIS in Australia and notified to State and Territory cancer registries (Table 1). The numbers of new cases were relatively stable from 1995 to 1998, around 1,000 a year. In the first two years of the period however, fewer women were recorded with DCIS.

Table 1: Cancer registry new cases of DCIS, 1993 to 1998

Age at diagnosis	1993	1994	1995	1996	1997	1998
0–19 years	0	0	0	0	1	0
20–29 years	4	2	5	2	10	5
30–39 years	41	46	52	37	48	46
40–49 years	151	174	182	207	237	240
50–59 years	190	227	283	287	328	367
60–69 years	159	193	214	234	256	308
70+ years	90	113	189	175	167	219
Total	635	755	925	942	1,047	1,185

Source: State and Territory Cancer Registries.

The highest incidence of DCIS was recorded in women 50–69 years in whom rates were approximately twice those in women 40–49 or 70 years and over (Table 2). DCIS in each age group, except women younger than 40 years, had low incidence rates in 1993–94 and increased to high rates in 1997–98. Women aged 30–39 years had similar rates throughout the time period while the youngest women had few cases of DCIS and highly variable rates. Similarly, invasive breast cancer

incidence in Australia increased steeply from 1992 to 1994 with the most substantial increases in women 50–69 years, the target age group of BreastScreen Australia (Kricker & Jelfs 1996). The high level of invasive breast cancer in 1994 has been maintained in 1995 and 1997. The increasing incidence of DCIS and invasive breast cancer in the 1990s would be mainly due to the increasing population coverage by mammography screening. There has also been some improvement in notification of diagnoses to cancer registries. Whether incidence had peaked in 1997–98 remains to be seen.

Table 2: Cancer registry age-specific and age-standardised DCIS incidence rates, 1993–1998

Age at diagnosis	1993	1994	1995	1996	1997	1998
0–19 years	—	—	—	—	0.0	—
20–29 years	0.3	0.1	0.4	0.1	0.7	0.4
30–39 years	2.9	3.2	3.6	2.5	3.3	3.2
40–49 years	12.4	13.9	14.2	15.7	17.8	17.7
50–59 years	23.5	27.1	32.5	31.7	34.3	36.6
60–69 years	22.2	27.1	30.1	32.9	35.8	42.8
70+ years	11.1	13.5	21.9	19.7	18.3	23.5
ASR (A)*	6.9	8.1	9.6	9.6	10.4	11.5
ASR (W)*	6.0	6.9	8.1	8.2	9.0	9.8

* Rates are expressed per 100,000 population and age-standardised to the Australian 1991 Population Standard (ASR (A)) and the World Standard Population (ASR (W)).

Source: State and Territory Cancer Registries.

Numbers of new cases and rates of DCIS in BreastScreen Australia program data

The BreastScreen Australia program was piloted in 1989 and put into operation in 1991, although many screening units were not operational until the mid 1990s. The sharp rise in numbers of cases diagnosed in 1993, 1994 and 1995 reflect this implementation phase (Table 3). The target group for the program is the 50–69 year age group and 71.0% of new cases diagnosed in the program from 1993 to 1998 were in this age range.

Table 3: BreastScreen Australia new cases of DCIS, age-specific and age-standardised DCIS incidence rates, 1993–1998^(a)

Age at diagnosis	1993		1994		1995		1996		1997		1998	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
0–19	0	—	0	—	0	—	0	—	0	—	0	—
20–29	0	—	0	—	0	—	0	—	0	—	0	—
30–39	0	—	0	—	0	—	0	—	0	—	0	—
40–49	14	2.4	24	4.0	51	4.8	61	4.6	77	5.8	91	6.7
50–59	35	9.1	91	22.9	158	22.0	184	20.3	212	22.2	266	26.6
60–69	39	11.5	85	25.2	138	23.3	172	24.2	169	23.7	216	30.1
70+	14	3.6	26	6.5	77	10.7	95	10.7	89	9.8	119	12.7
Total	102		226		424		512		547		692	
ASR (A)*		2.4		5.2		5.3		5.2		5.4		6.7
ASR (W)*		2.1		4.6		4.6		4.5		4.7		5.8

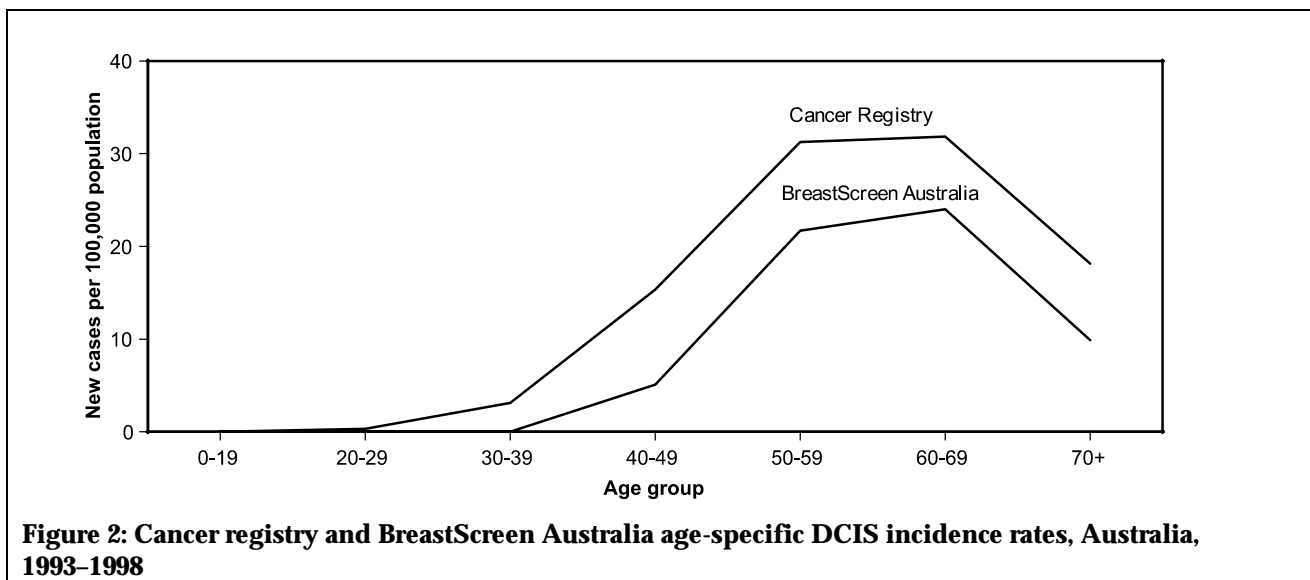
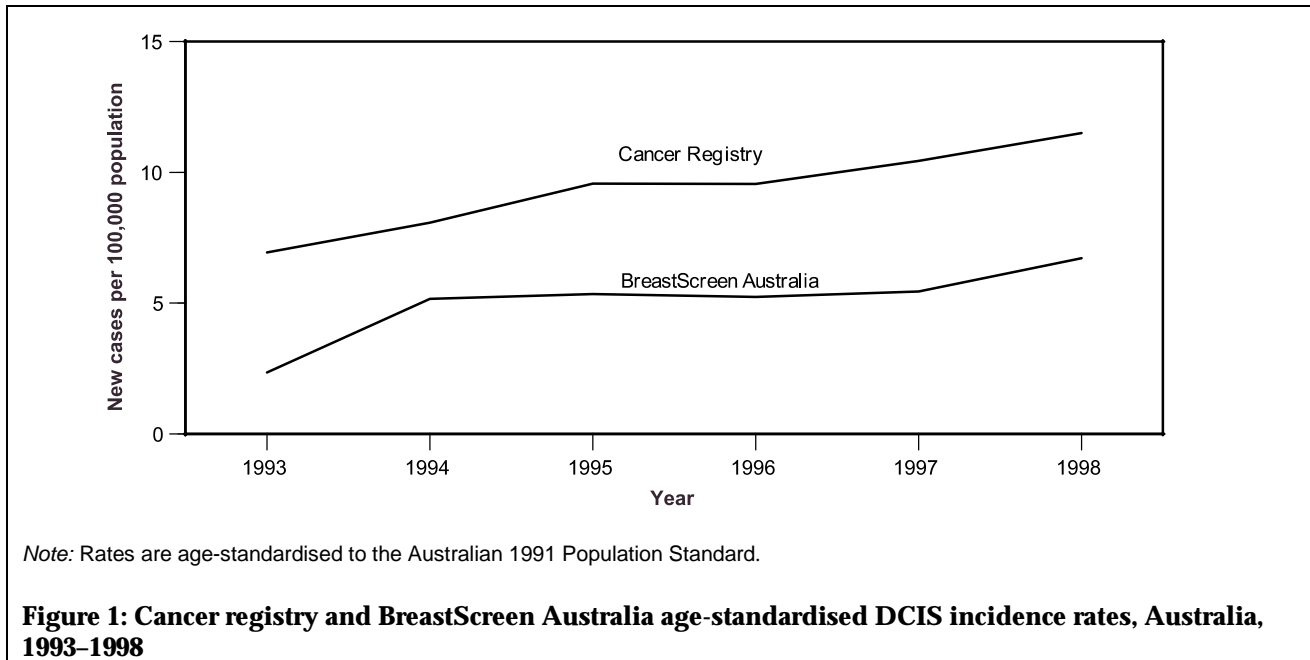
(a) Data for NSW and NT are for 1995–1998, Qld 1996–1998.

* Rates are expressed per 100,000 population and age-standardised to the Australian 1991 Population Standard (ASR (A)) and the World Standard Population (ASR (W)).

Source: BreastScreen Australia.

Numbers of women diagnosed with DCIS in the BreastScreen Australia Program in 1998 represented about 58% of DCIS cases reported to cancer registries in the same year. There has been no linkage of the two data sets to test to what extent there is any under-reporting of BreastScreen Australia diagnoses in the cancer registry database.

The characteristics of the data for the BreastScreen Australia program (Table 3) are very similar to the findings for the cancer registry data (Figures 1 and 2).



Numbers of new cases and rates of DCIS in States and Territories

State and Territory numbers for 1993 to 1998 must be treated with caution, because screening coverage and improvements in reporting of cases diagnosed varied among States and Territories. Access to breast screening facilities also varies between city and country, and among States and Territories. BreastScreen Australia numbers of diagnoses as a proportion of cancer registry diagnoses vary among States and Territories (Tables 4 and 6).

Table 4: Cancer registry new cases of DCIS, States and Territories, 1993–1998

Age (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
0–19	0	0	1	0	0	0	0	0	1
20–29	11	9	1	4	3	0	0	0	28
30–39	85	78	44	36	18	4	3	2	270
40–49	398	324	190	126	91	29	25	8	1,191
50–59	509	473	274	170	170	57	23	6	1,682
60–69	416	396	214	159	132	32	14	1	1,364
70+	328	281	152	75	88	17	11	1	953
Total	1,747	1,561	876	570	502	139	76	18	5,489
ASR (A)*	8.6	10.5	8.6	10.9	9.9	9.0	9.0	4.6	9.4
ASR (W)*	7.3	8.9	7.3	9.4	8.6	7.9	7.5	4.0	8.0

* Rates are expressed per 100,000 population and age-standardised to the Australian 1991 Population Standard (ASR (A)) and the World Standard Population (ASR (W)).

Source: State and Territory Cancer Registries.

There are two groups of States with similar age-standardised rates for the 1993–1998 period: New South Wales, Queensland, Tasmania and the Australian Capital Territory (approximately 8.6–9.0 new cases per 100,000 population) and Victoria, Western Australia and South Australia (9.9–10.9 new cases per 100,000 population). The Northern Territory rate is lower than the other cancer registry rates because DCIS was not routinely collected there in the earlier years. (Tables 4 and 5).

This pattern is not, however, reflected in the rates for the most recent year, 1998, in which Victoria has the highest incidence rate (13.0 new cases per 100,000 population) and South Australia and Western Australia the next highest (12.6 and 12.4) (Table 8). The Tasmanian rate varies appreciably from one year to the next, suggesting that only the larger States have populations large enough to consider inter-State comparisons, and caution is needed in interpreting incidence rates in the smaller States and Territories.

Table 5: Cancer registry rates per 100,000 population of DCIS, States and Territories, 1993–1998

Age (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
0–19	—	—	0.0	—	—	—	—	—	0.0
20–29	0.4	0.4	0.1	0.5	0.5	—	—	—	0.3
30–39	2.9	3.6	2.8	4.2	2.6	1.8	1.9	2.1	3.1
40–49	15.3	16.7	13.6	16.5	14.3	14.5	17.1	11.2	15.3
50–59	27.5	34.7	28.6	34.2	37.6	39.9	27.1	16.8	31.3
60–69	27.4	35.6	29.7	43.2	34.5	27.5	28.1	6.4	31.9
70+	17.5	20.5	17.6	17.6	17.5	11.6	21.5	10.1	18.1
ASR (A)*	8.6	10.5	8.6	10.9	9.9	9.0	9.0	4.6	9.4
ASR (W)*	7.3	8.9	7.3	9.4	8.6	7.9	7.5	4.0	8.0

* Rates are expressed per 100,000 population and age-standardised to the Australian 1991 Population Standard (ASR (A)) and the World Standard Population (ASR (W)).

Source: State and Territory Cancer Registries.

Table 6: BreastScreen Australia new cases of DCIS, States and Territories, 1993–1998^(a)

Age (years)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
0–19	0	0	0	0	0	0	0	0	0
20–29	0	0	0	0	0	0	0	0	0
30–39	0	0	0	0	0	0	0	0	0
40–49	112	72	36	28	44	14	12	0	318
50–59	271	294	76	115	134	33	18	5	946
60–69	255	271	69	82	108	23	9	2	819
70+	160	127	49	30	39	5	8	2	420
Total	798	764	230	255	325	75	47	9	2,503
ASR (A)*	5.8	5.1	4.3	4.9	6.5	4.9	5.7	5.4	5.3
ASR (W)*	4.9	4.5	3.7	4.4	5.8	4.4	4.8	4.2	4.6

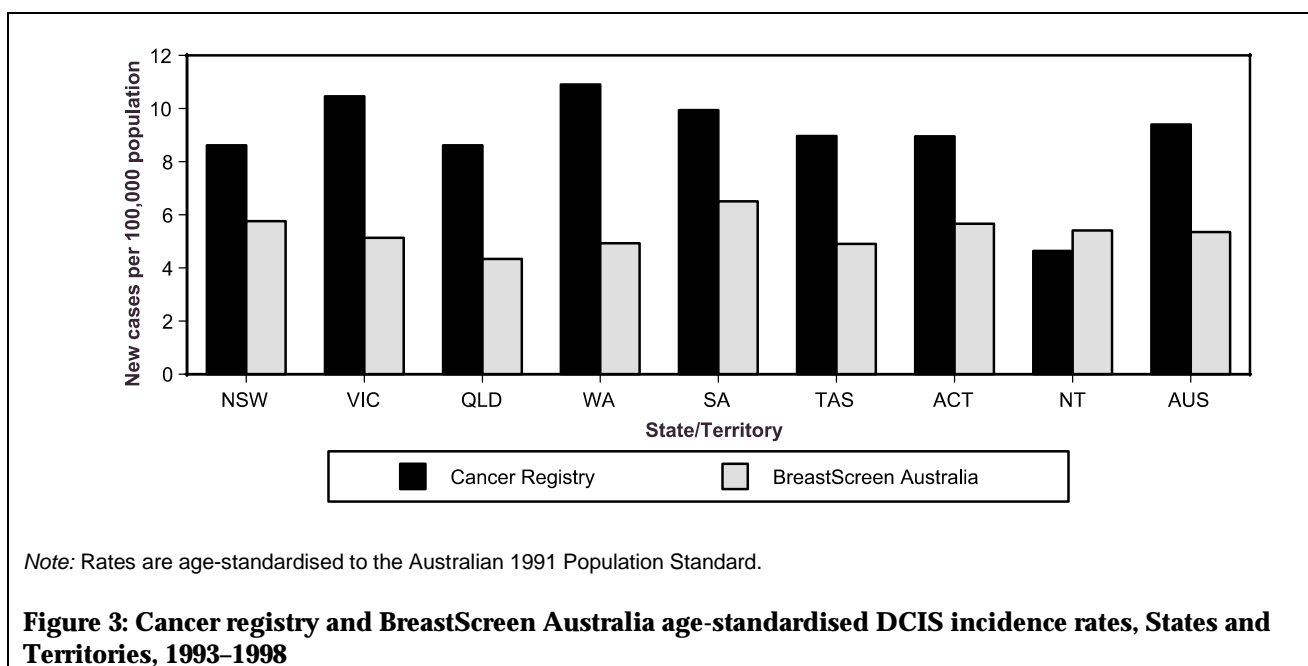
(a) Data for NSW and NT are for 1995–1998, Qld 1996–1998.

* Rates are expressed per 100,000 population and age-standardised to the Australian 1991 Population Standard (ASR (A)) and the World Standard Population (ASR (W)).

Source: BreastScreen Australia.

Annual numbers and rates of DCIS in States and Territories

The rates of DCIS detected in the BreastScreen Australia program were generally lower than the population-based rates in each State and Territory, as would be expected.



Annual incidence rates of DCIS have been highly variable in the States and Territories in 1993–1998. The three largest States—New South Wales, Victoria and Queensland—had steady increases in incidence over time. Other States and Territories had a mixture of higher and lower rates in these years (Table 8).

Table 7: Cancer registry new cases of DCIS, States and Territories, 1993–1998

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
1993	201	164	99	72	66	17	15	1	635
1994	199	252	128	87	56	20	7	6	755
1995	278	272	145	100	86	32	12	0	925
1996	289	267	156	99	93	23	13	2	942
1997	387	266	164	96	92	27	11	4	1,047
1998	393	340	184	116	109	20	18	5	1,185
Total	1,747	1,561	876	570	502	139	76	18	5,489

Source: State and Territory Cancer Registries.

Table 8: Cancer registry age-standardised rates of DCIS, States and Territories, 1993–1998

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Australia 1991 standard population									
1993	6.3	6.9	6.4	8.9	8.1	7.0	12.0	1.2	6.9
1994	6.1	10.5	8.0	10.5	6.8	7.6	5.3	8.0	8.1
1995	8.2	11.0	8.8	11.5	10.2	12.3	8.7	0.0	9.6
1996	8.4	10.7	9.0	11.3	10.7	9.1	7.8	2.2	9.6
1997	11.2	10.4	9.2	10.5	10.9	10.4	7.5	7.5	10.4
1998	11.1	13.0	10.2	12.4	12.6	7.5	12.3	7.7	11.5
World standard population									
1993	5.6	5.8	5.5	7.8	6.9	6.3	10.0	1.1	6.0
1994	5.2	9.1	6.9	9.1	5.9	6.3	4.1	7.3	6.9
1995	6.9	9.3	7.6	9.6	8.6	10.9	7.2	0.0	8.1
1996	7.2	9.1	7.6	9.7	9.2	8.2	6.9	2.0	8.2
1997	9.6	8.9	7.8	9.2	9.7	9.5	6.7	5.2	9.0
1998	9.4	11.1	8.5	10.5	11.0	6.4	10.1	7.2	9.8

Note: Rates are expressed per 100,000 population and age-standardised to the Australian 1991 Population Standard (ASR (A)) and the World Standard Population (ASR (W)).

Source: State and Territory Cancer Registries.

Table 9: BreastScreen Australia new cases of DCIS, States and Territories, 1993–1998

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
1993	—	35	—	18	37	6	6	—	102
1994	—	144	—	31	38	10	3	—	226
1995	150	148	—	49	50	19	7	1	424
1996	173	147	50	52	64	14	11	1	512
1997	227	126	64	42	65	14	6	3	547
1998	248	164	116	63	71	12	14	4	692
Total	798	764	230	255	325	75	47	9	2,503

Source: BreastScreen Australia.

Table 10: BreastScreen Australia age-standardised rates of DCIS, States and Territories, 1993–1998

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Australia 1991 standard population									
1993	—	1.5	—	2.3	4.7	2.5	5.4	—	2.4
1994	—	6.0	—	3.9	4.7	4.0	2.4	—	5.2
1995	4.5	6.0	—	5.7	6.0	7.3	5.3	4.8	5.3
1996	5.0	5.9	2.9	5.9	7.6	5.6	7.1	3.1	5.2
1997	6.5	4.9	3.6	4.7	7.6	5.5	3.8	8.4	5.4
1998	6.9	6.3	6.3	6.7	8.2	4.4	9.5	5.1	6.7
World standard population									
1993	—	1.2	—	2.0	4.2	2.2	4.4	—	2.1
1994	—	5.3	—	3.5	4.2	3.6	2.3	—	4.6
1995	3.9	5.2	—	4.9	5.3	6.8	4.3	2.6	4.6
1996	4.3	5.1	2.5	5.2	6.7	5.1	6.1	2.6	4.5
1997	5.6	4.3	3.1	4.1	6.8	5.0	3.5	6.1	4.7
1998	5.9	5.5	5.4	6.0	7.3	3.8	7.8	5.1	5.8

Note: Rates are expressed per 100,000 population and age-standardised to the Australian 1991 Population Standard (ASR (A)) and the World Standard Population (ASR (W)).

Source: BreastScreen Australia.

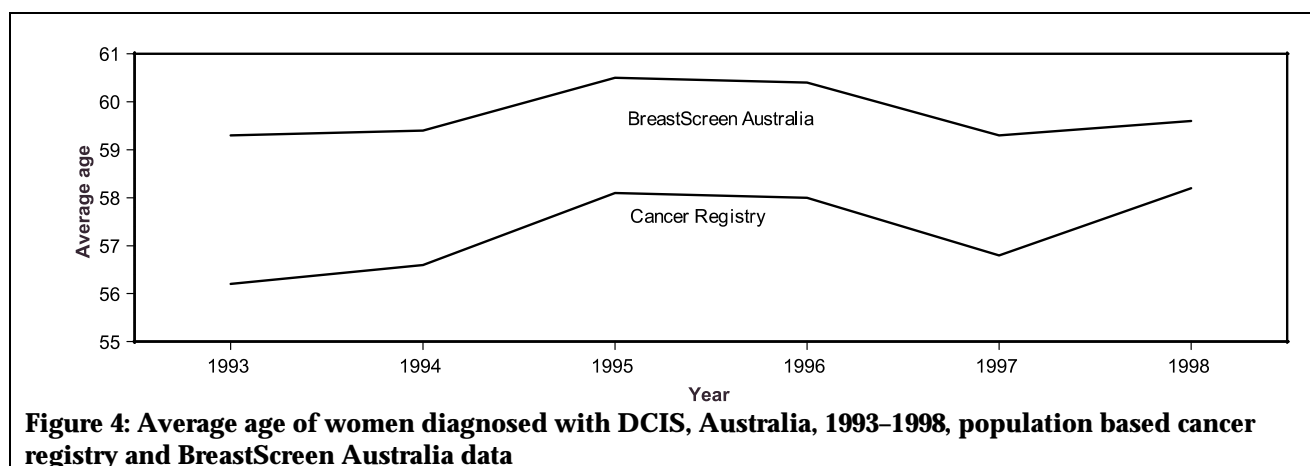


Figure 4: Average age of women diagnosed with DCIS, Australia, 1993–1998, population based cancer registry and BreastScreen Australia data

References

- Australian Institute of Health and Welfare (AIHW) & Australasian Association of Cancer Registries (AACR) 1999. Cancer in Australia 1996: Incidence and mortality data for 1996 and selected data 1997 and 1998. AIHW Cat. No. CAN 7. Canberra: AIHW (Cancer Series).
- Kricker A & Jelfs P 1996. Breast cancer in Australian women 1921–1994. AIHW Cat. No. CAN 1. Canberra: AIHW (Cancer Series).
- Kricker A, Smoothy V & Armstrong BK 2000. Ductal carcinoma in situ in NSW women in 1995 to 1997. Sydney: National Breast Cancer Centre.
- Ghersid D & Simes J 1998. The prognosis and management of women with ductal carcinoma in situ of the breast: A review. Sydney: National Breast Cancer Centre.