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**Australian Institute of
Health and Welfare**



Breast cancer in young women

Key facts about breast cancer in women
in their 20s and 30s



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*Authoritative information and statistics
to promote better health and wellbeing*

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Number 96

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Abbreviations

ACD	Australian Cancer Database
ACHI	Australian Classification of Health Interventions
AIHW	Australian Institute of Health and Welfare
DCIS	ductal carcinoma in situ
ER	estrogen receptor
HER2	Human Epidermal Growth Factor Receptor 2
LCIS	lobular carcinoma in situ
MBS	Medicare Benefits Schedule
MRI	Magnetic Resonance Imaging
NDI	National Death Index
NHMD	National Hospital Morbidity Database
NMD	National Mortality Database
NRWTD	National Radiotherapy Waiting Times Database
PR	progesterone receptor

Symbols

–	nil or rounded to zero
..	not applicable
≥	greater than or equal to
≤	less than or equal to
<	less than
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data

Summary

Breast cancer in young women is the first national report to present key data specific to breast cancer in women in their 20s and 30s. While breast cancer occurs relatively rarely in young women, the number of young women diagnosed with the disease each year is not insignificant. Breast cancers in young women tend to have different characteristics and survival outcomes than those for older women. This report provides an overview of the condition, its risk factors, detection and diagnosis methods as well as key summary measures including incidence, hospitalisations, survival and mortality.

Breast cancer occurs in young women as well as in older women

In 2015, it is projected that 795 young women will be diagnosed with breast cancer and 65 will die from this disease. On average, this is more than 2 breast cancers diagnosed every day and more than 1 death every week. While these figures are small when compared with the equivalent figures for women aged 40 and over – namely, 40 new cases per day and 57 deaths per week – breast cancer is the most commonly diagnosed cancer for women aged 20 to 39 and is associated with poorer survival outcomes.

Overall, 5-year relative survival is significantly lower in younger women, who had an 88% chance of surviving for 5 years in 2007–2011 compared with the 5-year relative survival rate for women aged 40 and over of 90%. However, the 5-year relative survival rate has improved for young women, from 72% in 1982–1986 to 88% in 2007–2011.

Young women have lower survival rates for common types of breast cancer

Invasive ductal carcinoma is the most common breast cancer type for women of all ages. However, a higher proportion of young women are diagnosed with this type of breast cancer than older women (87% compared with 78%). Young women diagnosed with invasive ductal carcinoma have a significantly lower 5-year relative survival rate than women aged 40 and over (83% compared with 88%).

Young women have significantly lower survival rates than women aged 40 and over for invasive lobular carcinoma (84% compared with 91%). Invasive lobular carcinoma is the second most common breast cancer type. However, a lower proportion of young women are diagnosed with this type of breast cancer than older women (3% compared with 11%).

Young women have lower survival rates for small breast cancers

Young women are less likely to be diagnosed with small breast cancers (<15 mm) than women aged 40 and over (25% compared with 32%) and are slightly more likely to be diagnosed with very large breast cancers (≥50 mm) than women aged 40 and over (8% compared with 6%).

However, even for small breast cancers – which tend to be associated with more treatment options and improved survival – young women have lower survival (93%) than women aged 40 and over (99%).

Data at a glance

Table 1: Summary of breast cancer in young women

Characteristics	20–29 years	30–39 years	20–39 years	40 years or over
New cases (2015 ^(a))	80	715	795	14,800
Histology (2009)	Invasive ductal carcinoma: 82%	Invasive ductal carcinoma: 88%	Invasive ductal carcinoma: 87%	Invasive ductal carcinoma: 78%
Size (2009)	Small cancers (<15 mm): 22%	Small cancers (<15 mm): 26%	Small cancers (<15 mm): 25%	Small cancers (<15 mm): 32%
Size (2009)	Very large cancers (≥50 mm): 10%	Very large cancers (≥50 mm): 8%	Very large cancers (≥50 mm): 8%	Very large cancers (≥50 mm): 6%
5-year relative survival (2007–2011)	86%	88%	88%	90%
Histology (1992–2011)	Invasive ductal carcinoma: 80%	Invasive ductal carcinoma: 83%	Invasive ductal carcinoma: 83%	Invasive ductal carcinoma: 88%
Size (1992–2011)	Small cancers (<15 mm): 92%	Small cancers (<15 mm): 94%	Small cancers (<15 mm): 93%	Small cancers (<15 mm): 99%
Size (1992–2011)	Very large cancers (≥50 mm): 73%	Very large cancers (≥50 mm): 78%	Very large cancers (≥50 mm): 78%	Very large cancers (≥50 mm): 78%
Hospitalisations (2013–14)	594	7,879	8,473	126,302
Breast conserving surgery	20% of surgical procedures	22% of surgical procedures	22% of surgical procedures	30% of surgical procedures
Mastectomy	18% of surgical procedures	20% of surgical procedures	20% of surgical procedures	16% of surgical procedures
Reconstruction and repair	24% of surgical procedures	16% of surgical procedures	17% of surgical procedures	8% of surgical procedures
5-year prevalence (end of 2009)	168	2,060	2,228	56,725
Deaths (2015 ^(b))	5	60	65	2,970

(a) The 2015 estimates are based on 2002–2011 incidence data. The estimated numbers of cases are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000.

(b) The 2015 estimates are based on 2002–2012 mortality data. The estimated numbers of deaths are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000. Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the Australian Bureau of Statistics.

Sources: AIHW Australian Cancer Database 2011; AIHW National Hospital Morbidity Database; AIHW National Mortality Database.

1 Introduction

This report focuses on young women aged 20–39 with breast cancer. While breast cancers in young women are relatively rare, the number of young women diagnosed with breast cancer each year is not insignificant. In 2015, it is projected that 795 young women aged 20–39 will be diagnosed with breast cancer and 65 young women will die from this disease.

1.1 Purpose of this report

This report is one of a series of brief reports being developed within the framework of the National Centre for Monitoring Cancer under the guidance of the Cancer Monitoring Advisory Group. Each report incorporates a ‘spotlight’ section which highlights a particular issue associated with a specific cancer or cancer-related topic.

This report is targeted at a broad audience including young women with breast cancer, health professionals, policy makers, health planners, educators and researchers (see Box 1.1).

Box 1.1 What this report does and doesn't do

This report provides information on:

- the number of young women diagnosed with breast cancer
- the number of young women who have a hospitalisation related to breast cancer, particularly focusing on surgical procedures
- the survival rates for young women and survivorship issues
- the number of young women who die from breast cancer.

This report does not provide:

- an in-depth overview of clinical guidelines
- advice on breast cancer diagnosis and treatment.

Australian Cancer Database

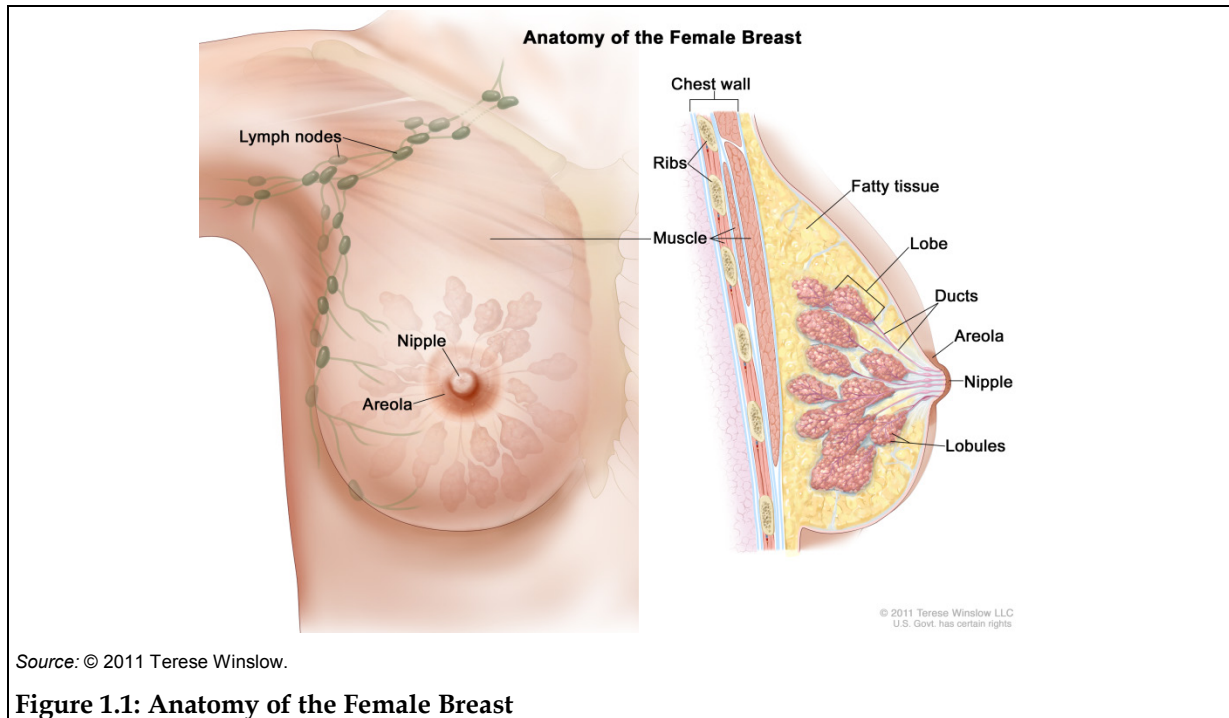
The primary data set used to produce this report is the Australia Cancer Database (ACD). The ACD contains information on Australians diagnosed with primary, invasive cancer (excluding basal cell and squamous cell carcinomas of the skin) (see Appendix D). The ACD currently contains incidence data for the period 1982–2011 – except for New South Wales and the Australian Capital Territory, for which data were available to 2009 and estimated for 2010 and 2011. For more information on the ACD, refer to *Cancer in Australia 2014* (AIHW 2014).

Detailed data are not available on some aspects of breast cancer. Currently, the ACD contains neither information to distinguish between stages 1–4 breast cancers at a national level nor data on breast cancer grade and hormone receptor status; hence, information on these aspects cannot be presented. Cancer Australia is currently leading work to enable the collection, collation and reporting of data on cancer stage at diagnosis. The ACD does, however, include information on non-invasive stage 0 breast tumours and on size of breast tumours, and this information is presented.

1.2 Facts

Defining breast cancer

Breast cancer is a disease in which malignant cells form in breast tissue. Breast tissue consists mainly of fatty tissue, glandular tissue arranged in lobes (which produce milk), and ducts (the tubes that carry milk to the nipple), as well as connective tissue (Figure 1.1). Breast cancers can invade and damage the tissue around the tumour and can spread to other parts of the body through the lymphatic or vascular system.



Breast cancer can be further characterised based on histology type, stage, grade and hormone receptor status (AIHW 2014). These characteristics (discussed below, together with their survival implications) and subsequent treatment outcomes are important determinants of cancer survival.

Histology type

Breast cancer histology describes the type of cells in which the breast cancer originates. A tumour that involves epithelial cells (such as skin cells, internal organ tissue or lining cells) is called a carcinoma, and a tumour that involves connective or supportive tissue cells (such as muscle or bone) is called a sarcoma. Most breast cancers originate in the breast ducts or lobules, with the most common types of breast cancer being invasive ductal carcinoma and invasive lobular carcinoma. Common types of stage 0 non-invasive tumours include ductal carcinoma in situ (DCIS), which is thought to be a precursor to invasive breast cancer (Cancer Australia 2009) and lobular carcinoma in situ (LCIS). See Appendix B for details on histology groupings used in this report.

Females diagnosed with tubular carcinomas and invasive cribriform carcinomas have higher 5-year relative survival rates than other histology groups. Females diagnosed with inflammatory carcinoma have the lowest 5-year relative survival rates; 5-year relative

survival rates are also low for women diagnosed with an unspecified breast cancer (AIHW & Cancer Australia 2012; NBOCC 2010).

Stage

Breast cancer stage describes the extent of cancer in the body. Staging is usually based on the size of the tumour, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body (Sobin et al. 2010). Breast cancer can be classified from stage 0 (non-invasive tumours) to stage 1–4 (invasive tumours), as well as early or advanced breast cancer, based on the stage (Cancer Australia 2012b).

Tumour size is an important factor as survival has been shown to decrease with increasing tumour size. In Australia, 5-year relative survival rates decreased with increasing tumour size, from 98% for tumours 10 mm or less to 73% for tumours 30 mm or more (AIHW & NBCC 2007). Further, women diagnosed with breast tumours 50 mm or more had a risk of breast cancer death that was about 2 times as high as that for women diagnosed with breast tumours 0–10 mm in size (BCTG 2015).

Grade

Breast cancer grade describes how quickly the cancer might grow and can be classified from grade 1–3. Generally, grade increases are based on the speed of cell growth. Research indicates that survival is poorer for females diagnosed with high-grade tumours than for those with low-grade tumours (Elston & Ellis 1991; Henson et al. 1991). Further, women diagnosed with high grade breast cancers had a risk of breast cancer death that was about 2 times as high as that for women diagnosed with low grade breast cancers (BCTG 2015).

Hormone receptor status

Hormone receptor status describes whether the cancer cells have receptors for hormones. Hormone receptors affect whether hormones affect the cell growth. Breast cancers can be classified as hormone-receptor positive (either estrogen receptor [ER] positive or progesterone receptor [PR] positive), as HER2 (Human Epidermal Growth Factor Receptor 2) positive or as triple negative (not positive for hormones or HER2). Hormone-receptor negative and triple negative breast cancers are associated with lower survival (Dunnwald et al. 2007). Women diagnosed with ER negative (ER-) and PR negative (PR-) breast cancers had a risk of breast cancer death that was about 2 times as high as that for women diagnosed with ER positive (ER+) and PR positive (PR+) breast cancers (BCTG 2007).

Breast cancer treatment

The aim of breast cancer treatment is to remove the breast cancer and any cancer cells that may be left in the breast, armpit or other parts of the body. Treatment can vary based on individual factors such as histology type, size of the tumour, location of the tumour and hormone status. Generally, there are three types of standard treatment (Cancer Australia 2012b):

- breast surgery, including breast conserving surgery (which removes the tumour and a small area of healthy tissue) and mastectomy (which removes the whole breast). As well, both types of surgery usually include the removal of lymph nodes and can be followed by breast reconstruction or repair
- chemotherapy, in which drugs are used to destroy breast cancer cells that may be left anywhere in the body that cannot be detected

- radiotherapy, in which X-rays are used to destroy breast cancer cells that may be left in the breast, chest wall or armpit following surgery.

Other treatment includes hormone therapy and HER2-targeted therapies. Hormonal therapies and HER2-targeted therapies work to interfere with the effects of hormones and HER2 on breast cancers, which can help to slow the growth of breast cancer cells (Cancer Australia 2012b). Advances in whole-genome technologies and genomic mapping of breast cancer could lead to more targeted therapies (Anders et al. 2008).

More information on treatment guidelines is available on Cancer Australia’s website (Cancer Australia 2015a).

1.3 Risk factors for young women

It is not known what causes breast cancer; however, several risk factors have been identified that may increase the chance of a woman developing breast cancer. The greatest risk factor for breast cancer is age, with most breast cancers occurring in women over the age of 50. Risk factors for young women tend to be different from those for older women.

A family history of breast cancer is a strong risk factor for young women (Anders et al. 2009; Laloo et al. 2006). A high proportion of young women diagnosed with breast cancer have the BRCA1 or BRCA2 mutation (CDC 2014; Martin et al. 2001; Peto et al. 1999). Other risk factors include having an Ashkenazi Jewish heritage or being treated with radiation therapy during childhood or early adulthood (CDC 2014), as well as other personal, lifestyle, and reproductive and hormonal factors. Risk factors for young women are described below.



Family history and genetic susceptibility

The importance of a family history of breast cancer increases with:

- the number of relatives affected
- the younger the age of diagnosis of relatives
- the degree of closeness; that is, first degree (such as mother, father, sibling, daughter) or second degree (such as aunt, grandmother, niece).



Reproductive and hormonal factors

Reproductive and hormonal factors associated with an increased risk of breast cancer for young women include:

- early menarche (age at first period)
- first birth at a late age.



Personal and lifestyle factors

Personal and lifestyle factors associated with an increased risk of breast cancer include:

- low physical activity
- high alcohol consumption.

1.4 Issues for young women

Screening and surveillance

Organised breast cancer screening aims to detect cases of unsuspected breast cancer in women, thus enabling intervention when the cancer is at an early stage. In Australia, population-based breast cancer screening is through BreastScreen Australia and involves screening mammograms (see Box 1.2).

Box 1.2: BreastScreen Australia

BreastScreen Australia targets women aged 50–74, but also allows women aged 40–49 and 75 and over to participate. BreastScreen Australia aims to reduce morbidity and mortality from breast cancer by using screening mammograms to detect unsuspected breast cancers in women with no symptoms, thus enabling intervention when the cancer is at an early stage. Finding breast cancer early often means that the cancer is small, which is associated with increased treatment options (Cancer Australia 2015b) and improved survival (AIHW & NBCC 2007). Information and data on BreastScreen Australia can be found in the BreastScreen Australia monitoring report annual series on the AIHW website (AIHW 2015b).

However, population-based breast cancer screening is not recommended for women in their 20s and 30s. This is because there is inadequate evidence to support the use of screening mammography in women aged under 40 (Lauby-Secretan et al. 2015). For young women, there is a higher chance of a false positive result (whereby the mammogram appears to suggest a breast cancer where none is present) or a false negative result (whereby a breast cancer that is present is not visible on the mammogram) due to the dense nature of breast tissue in younger women (Cancer Australia 2015b).

For young women at high risk of breast cancer due to a family history or genetic mutation, magnetic resonance imaging (MRI) can be an appropriate surveillance test as part of a tailored surveillance program (Lauby-Secretan et al. 2015). In February 2009, the Australian Government introduced a Medicare rebate for breast MRI for women aged under 50 with no signs or symptoms of breast cancer, but who are at high risk of breast cancer due to family history or genetic mutation (Department of Health 2013).

As screening is not appropriate and surveillance testing is specific to those at high risk of breast cancer, the primary method of breast cancer detection for young women is through breast awareness (Cancer Australia 2015b). It is recommended that all women are aware of how their breasts normally look and feel, and to see their doctor immediately if they notice any new or unusual changes, such as a lump, nipple changes, nipple discharge, change in skin colour, or pain in a breast. Breast abnormalities are investigated using the triple test approach, which involves clinical examination, breast imaging and breast biopsy (Cancer Australia 2015e).

Broader issues

There are a broad range of issues for young women living with the effects of breast cancer, which can have long-term impact. Issues include loss of fertility, employment and income; changes in relationships, self-image or sexuality; and changes in emotional and

psychological wellbeing (NBCF 2014). Issues associated with early menopause are highlighted in this section, as these issues may explain patterns in the treatment of young women. Other ongoing survivorship issues are discussed in Section 2.4.

Breast cancer treatment (such as chemotherapy and hormone treatment) can lead to impaired fertility and induce premature menopause for young women. Chemotherapy treatment can damage a woman's ovaries, and both chemotherapy and hormone treatment can cause irregular periods or menopausal symptoms. Further, there can be natural waning of ovarian function during the time undertaken for treatment (Cancer Australia 2015c). Research is currently exploring the administration of gonadotropin-releasing hormone concurrently during chemotherapy, and preliminary studies are finding that it can increase the likelihood of fertility preservation (Moore et al. 2015).

A loss of fertility is a major concern for many young women with breast cancer (Ruddy et al. 2011) and can affect psychosocial quality of life (Ganz et al. 2003; Rosenberg & Partridge 2013). Young women in their 20s and 30s may be planning to start a family and a breast cancer diagnosis can delay or alter this plan. For some young women, fertility issues can have an impact on treatment decisions (Partridge et al. 2004; Ruddy et al. 2014). Some women may decline treatment, desiring to preserve future fertility (Madrigano et al. 2007), or delay breast cancer treatment to undergo fertility preservation (Jeruss & Woodruff 2009).

Young women concerned about fertility issues may undergo fertility preservation options before breast cancer treatment (Reyna & Lee 2014). Storing fertilised or unfertilised eggs before treatment is an option (Jeruss & Woodruff 2009). The freezing of unfertilised eggs is a relatively new procedure, and the success rate is unknown (IVF Australia 2015). Embryo freezing can be expensive, which can add to the medical expense burden. Research indicates that the average time for fertility preservation is about 1 month (Jeruss & Woodruff 2009; Madrigano et al. 2007). This could have an impact on the effectiveness of treatment.

To understand reproductive outcomes in cancer survivors, the Randwick Hospital and the University of New South Wales have established the Fertility Understanding Through Registry and Evaluation (FUTuRE) Fertility Research Group (FUTuRE Fertility 2014).

2 Breast cancer in young women

2.1 Detection and diagnosis

Snapshot

In 2014, for women aged 15–44, Medicare processed:

- 218,247 breast ultrasounds
- 71,289 mammograms
- 2,896 breast MRI scans; of these 2,692 were surveillance MRIs and 204 were diagnostic MRIs
- 28,399 breast biopsies.

Since the introduction of a Medicare rebate for surveillance and diagnostic breast MRIs, the number of mammograms processed by Medicare for women aged 15–44 has decreased and the number of breast MRIs have increased.

Data for this section are sourced from the online Medicare Benefits Schedule (MBS) database. The MBS database records the number of tests performed; it does not contain information on the number of people who received a test or on the results of the test. This section does not include information on publicly admitted patients or on scans or biopsies undertaken privately. Due to data availability, young women are defined as being aged 15–44 rather than aged 20–39.

Breast imaging for young women

Breast imaging can be used to investigate breast symptoms or for surveillance of young women at high risk or who have a personal history of breast cancer (see Box 2.1). Breast cancer imaging tests include breast ultrasounds, breast mammograms and breast MRIs.

Box 2.1: Breast cancer detection pathways

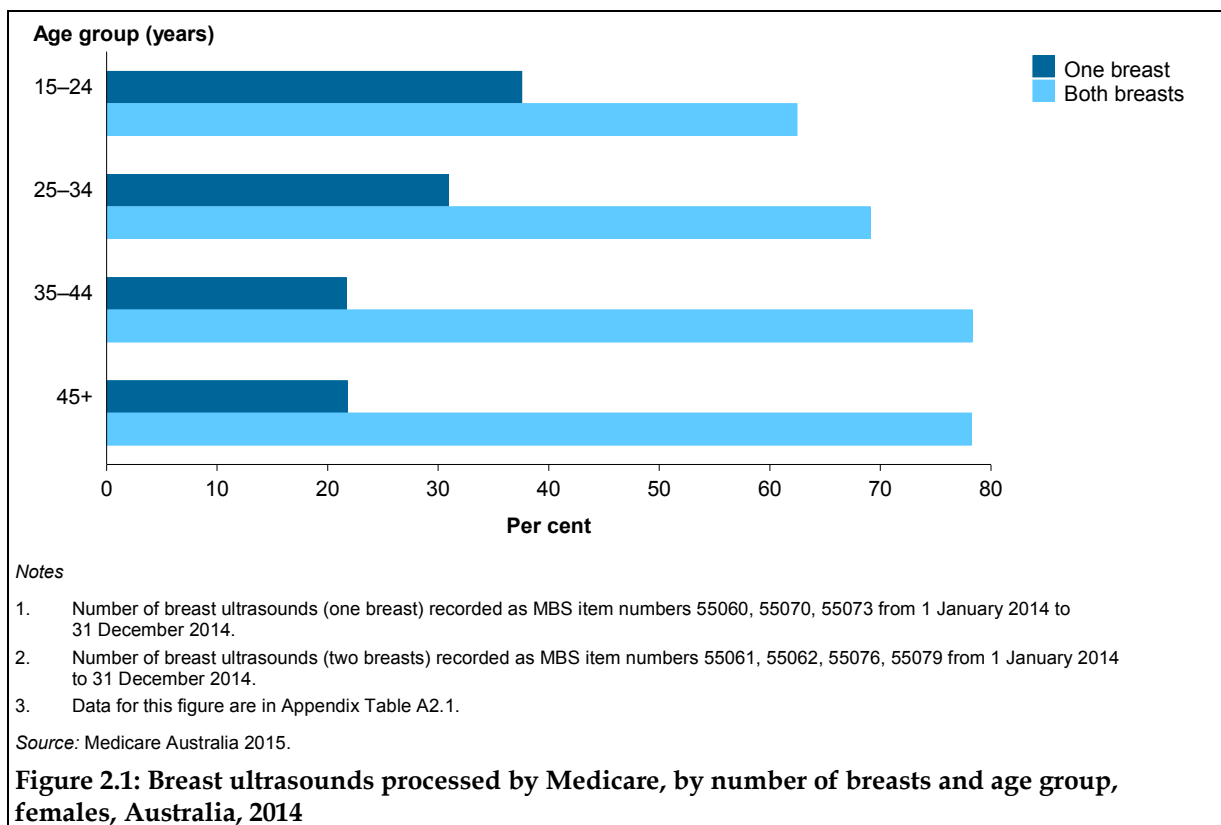
The **surveillance pathway** is used to identify unsuspected breast cancers in women with no signs or symptoms.

The **diagnostic pathway** is used to diagnose breast cancers that are suspected due to a positive surveillance test or to investigate a self-detected symptom or sign.

The **follow-up pathway** is used to identify breast cancers in women who have a personal history of breast cancer, but are currently cancer free.

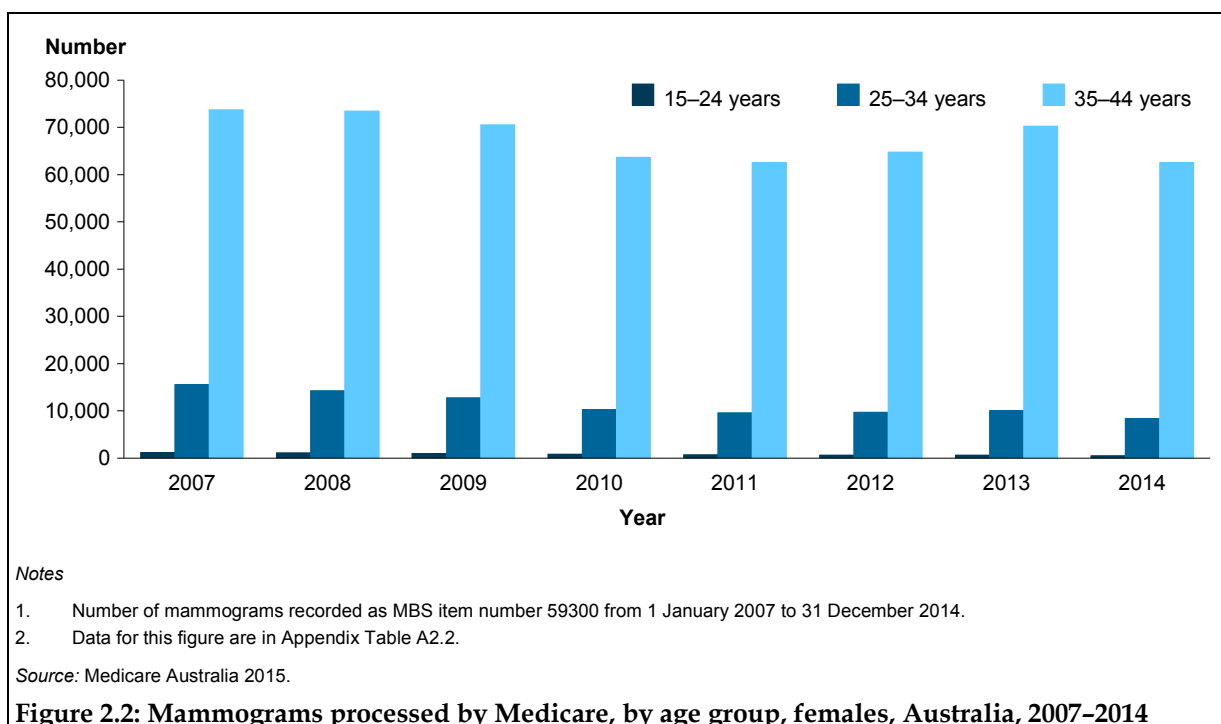
Ultrasounds

In 2014, there were 218,247 breast ultrasounds processed by Medicare for women aged 15–44. Of these, 58,278 were for an ultrasound of one breast and 159,969 were for an ultrasound of both breasts (Appendix Table A2.1). A higher proportion of women aged 15–24 and 25–34 had an ultrasound of one breast compared with older age groups (Figure 2.1).



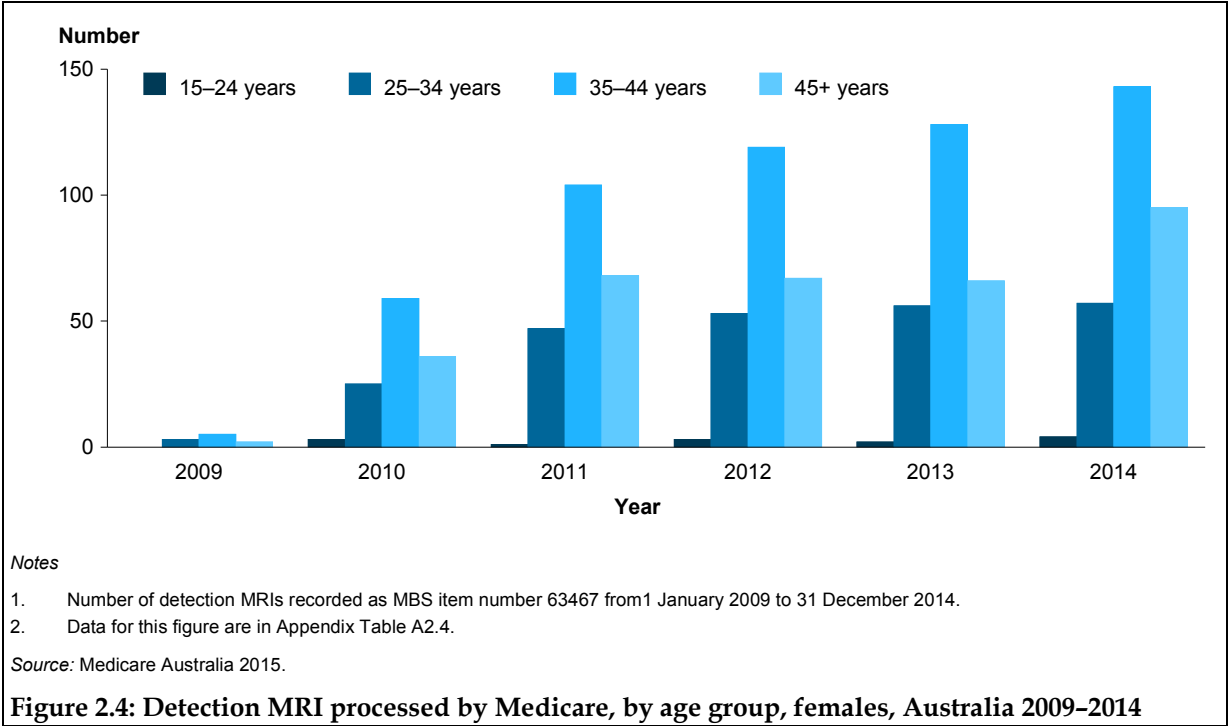
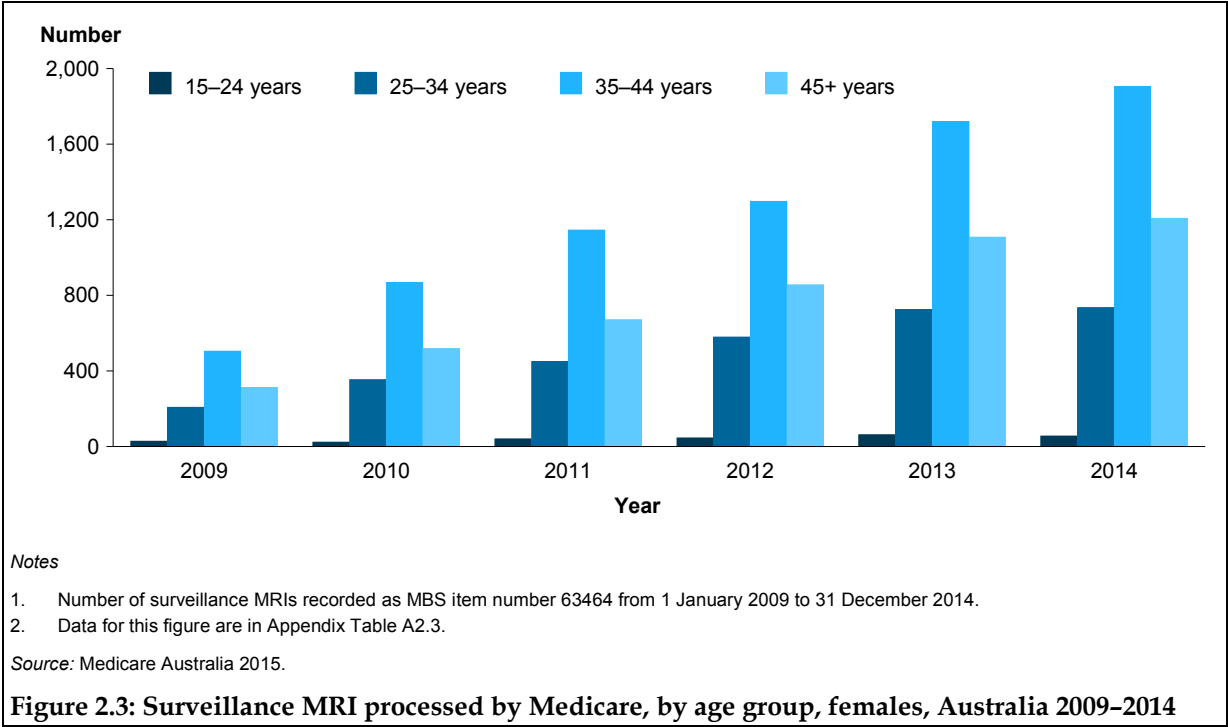
Mammograms

In 2014, there were 71,289 mammograms processed by Medicare for women aged 15-44. In 2014, 18% of mammograms were for women aged 35-44, 2% for women aged 25-34 and less than 1% for women aged 15-24 (Figure 2.2). The number of mammograms for women aged 15-44 has decreased from 90,402 in 2007 to 71,289 in 2014.



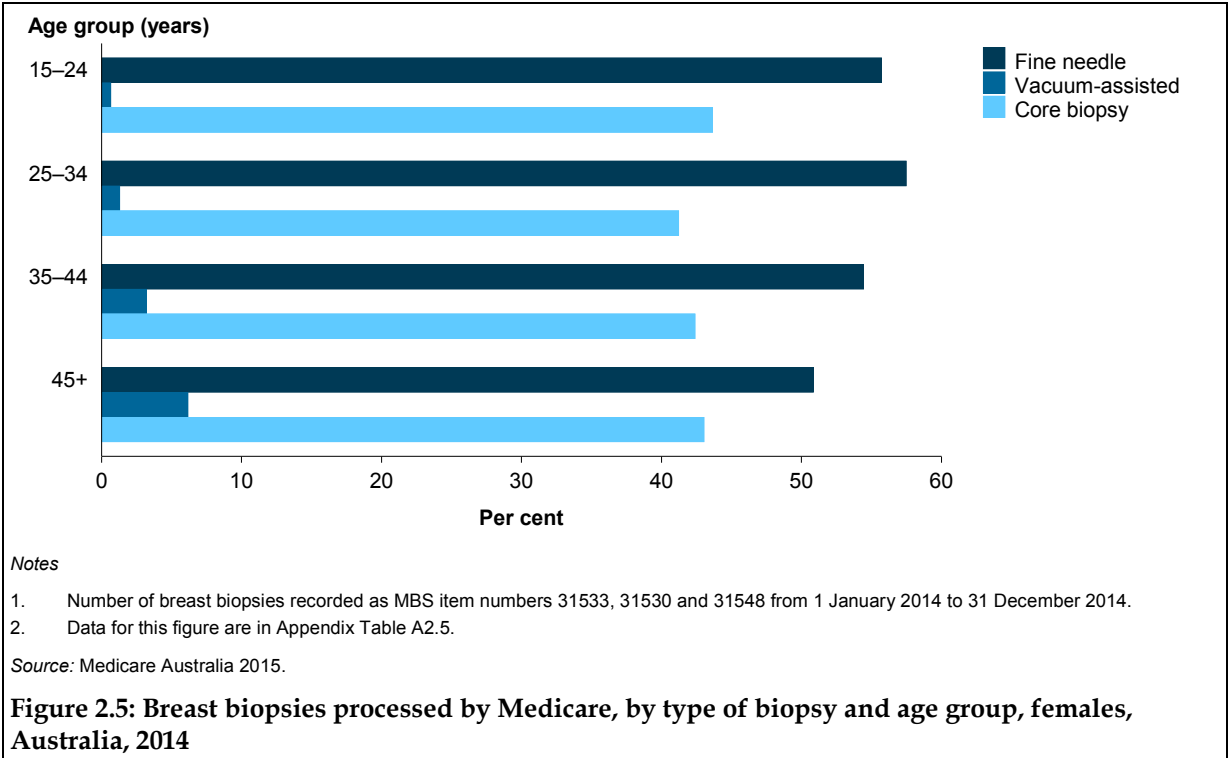
Magnetic Resonance Imaging

In 2014, there were 2,896 breast MRI scans processed by Medicare for women aged 15–44. Of these, 2,692 were surveillance MRIs and 204 were diagnostic MRIs. Between 2009 and 2014, the number of surveillance MRI scans increased from 736 to 2,692 (Figure 2.3) and the number of diagnostic MRI scans increased from 8 to 204 for women aged 15–44 (Figure 2.4). Currently, there are no data available on the number of women undertaking follow-up MRIs.



Percutaneous biopsies

A percutaneous breast biopsy can be used to investigate an abnormality indicated either through clinical examination or a breast imaging test. In 2014, there were 28,399 breast biopsies for women aged 15–44. The number of breast biopsies increased with age. Fine needle breast biopsy was the most common breast biopsy type (Figure 2.5).



2.2 Number of new cases

Snapshot

In 2015, it is projected that 795 young women aged 20–39 will be diagnosed with breast cancer. Breast cancer is the most commonly diagnosed cancer for women in this age group. The rate of young women diagnosed with breast cancer has remained relatively stable over the last 33 years.

A higher proportion of young women aged 20–39 are diagnosed with:

- invasive ductal carcinoma than older women (87% compared with 78%)
- very large breast cancers (≥ 50 mm) than older women (8% compared with 6%).

Data for this section are sourced from the 2011 ACD and focus on projected breast cancer incidence for 2015, cancer trends from 1982 to 2015 and breast cancer characteristics for 2009 (as characteristics have not been projected). The ACD does not contain information on stage, grade and hormone receptor status, but does include information on the size of breast cancers and on the number of stage 0 (in situ) tumours.

Number of cases diagnosed

In 2015, it is projected that 795 young women aged 20–39 will be diagnosed with breast cancer, representing 5% of all breast cancers diagnosed (Table 2.1). For women aged 20–39, breast cancer is projected to be the most commonly diagnosed cancer in 2015, representing 24% of all cancers diagnosed for this age group (Appendix Table A2.6).

Women in their 20s

In 2015, it is projected that 80 women aged 20–29 will be diagnosed with breast cancer, representing 1% of all breast cancers diagnosed (Table 2.1). For women in their 20s, breast cancer is projected to be the fifth most commonly diagnosed cancer, representing 9% of all cancers diagnosed for this age group (Appendix Table A2.7).

Women in their 30s

In 2015, it is projected that 715 women aged 30–39 will be diagnosed with breast cancer, representing 5% of all breast cancers diagnosed (Table 2.1). For women in their 30s, breast cancer is projected to be the most commonly diagnosed cancer, representing 29% of all cancers diagnosed for this age group (Appendix Table A2.8).

Table 2.1: Projected number of new cases of breast cancer, by age group, females, Australia, 2015

Age group (years)	Number of new cases	Per cent	Age-specific rate
20–29	80	0.5	4.7
30–39	715	4.6	42.5
20–39	795	5.1	23.6
40+	14,800	94.9	258.4
All	15,600	100.0	119.0

Notes

1. The 2015 estimates are based on 2002–2011 incidence data. The estimated numbers of cases are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000.
2. Age-specific rates are expressed per 100,000. The total rate was standardised to the Australian population as at 30 June 2001 and expressed per 100,000 population.

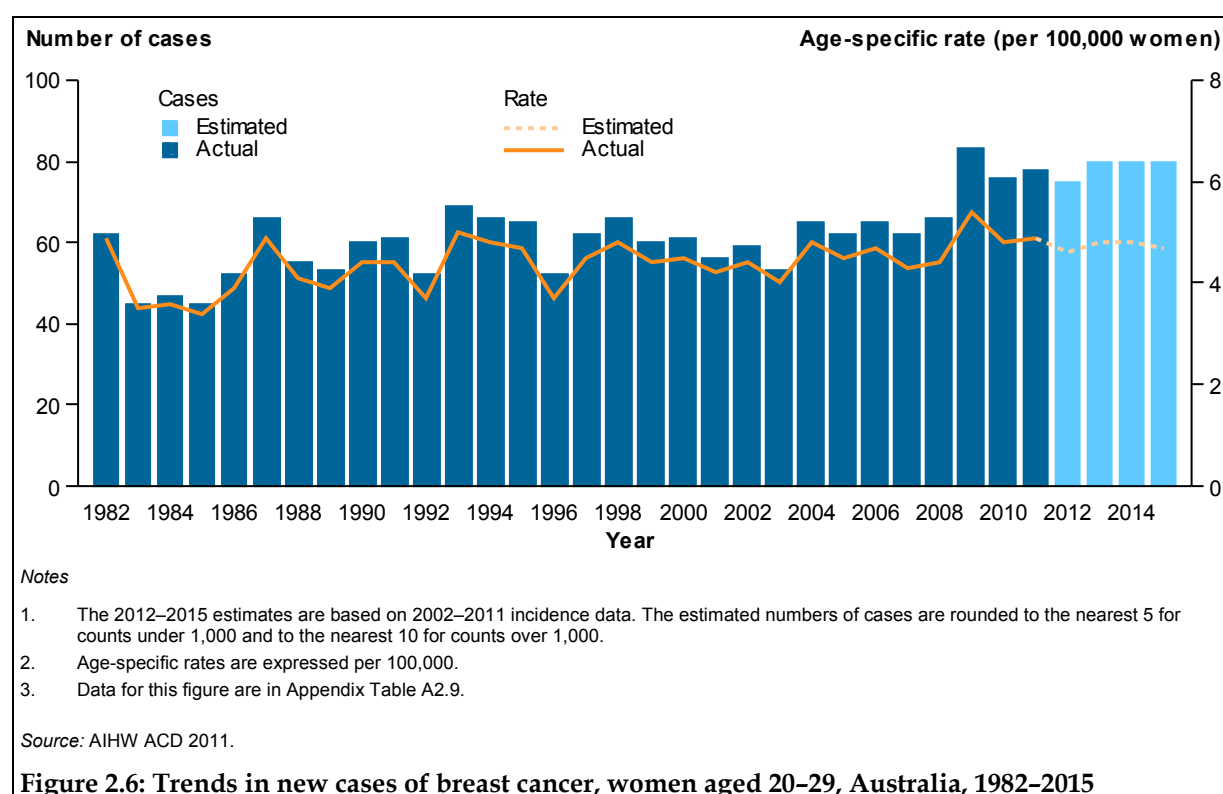
Source: AIHW ACD 2011.

Trends in new cases of breast cancer

Over the last 33 years, the rate of young women aged 20–39 diagnosed with breast cancer has varied between 20 and 26 cases per 100,000 women (Appendix Table A2.9).

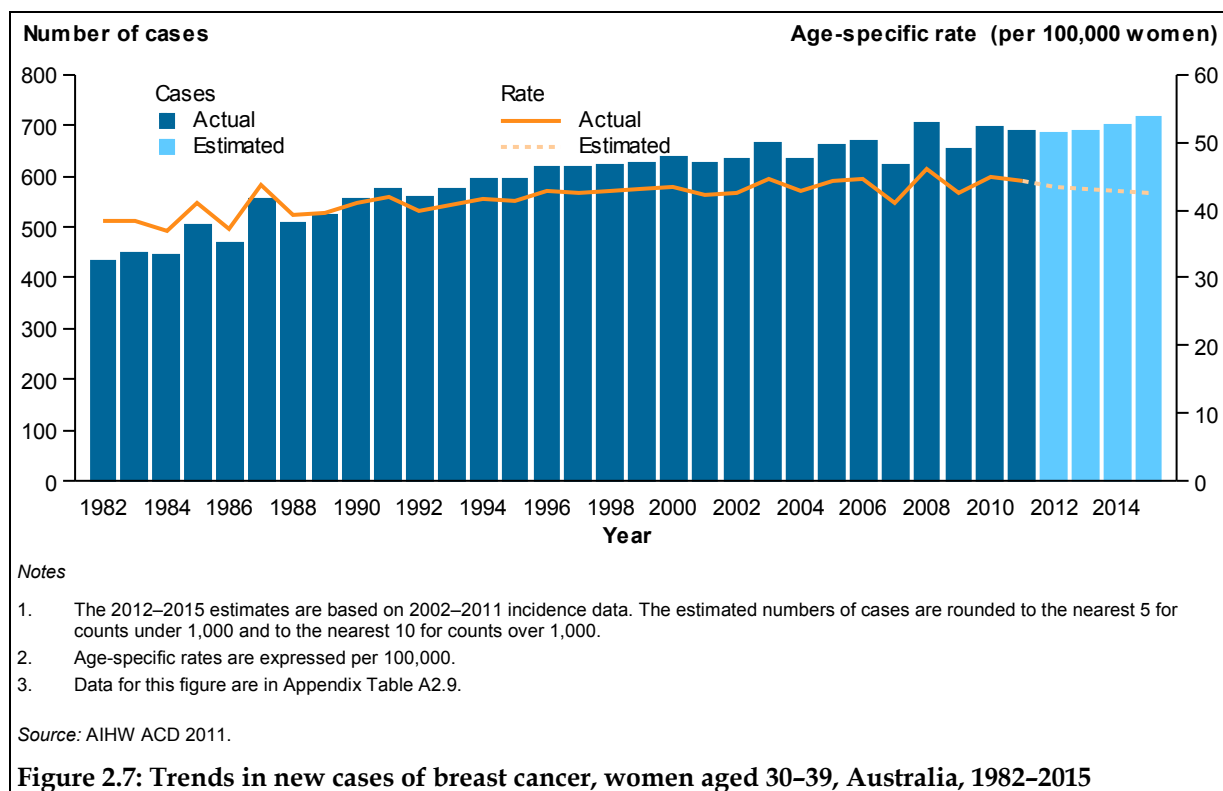
Women in their 20s

Over the last 33 years, the number of women in their 20s diagnosed with breast cancer has increased from 62 cases women in 1982 to an estimated 80 in 2015 (Figure 2.6). During this period, the age-specific rate for this age group varied between 3 and 5 cases per 100,000 women. A number of highs can be seen in the data, including for 1987, 1993 and 2009. The 2009 high coincides with the introduction of MBS-subsidised MRIs for women who are at high risk of breast cancer due to a family history or genetic mutation.



Women in their 30s

Over the last 33 years, the number of women in their 30s diagnosed with breast cancer has increased from 434 cases in 1982 to an estimated 715 cases in 2015 (Figure 2.7). The age-specific rate has fluctuated between 37 and 45 cases per 100,000 women. A number of highs can be seen in the data, including for 1987 and 2008.



Breast cancer characteristics

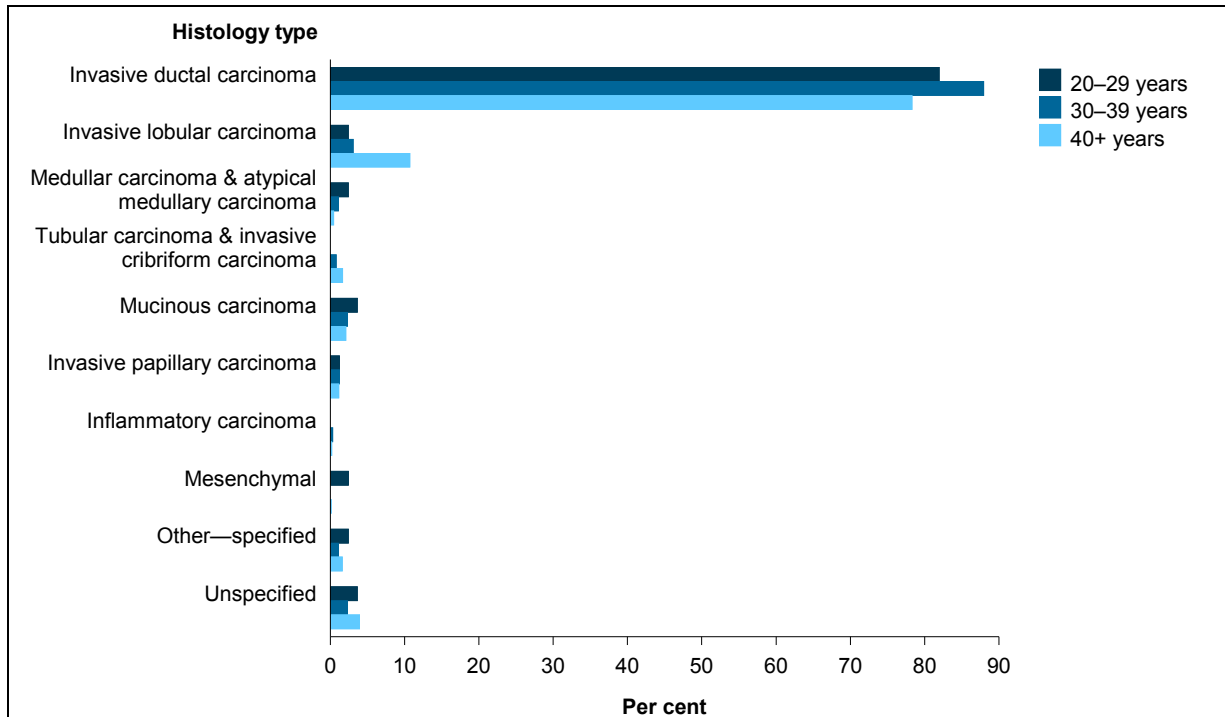
Histology type

Women in their 20s

In 2009 (the year for which there is the latest available data), 82% of breast cancers diagnosed in women aged 20–29 were invasive ductal carcinoma (Figure 2.8). Women in their 20s had a higher proportion of invasive ductal carcinoma than women aged 40 and over (82% compared with 78%) and a lower proportion of invasive lobular carcinoma than older women (2% compared with 11%).

Women in their 30s

In 2009, 88% of breast cancers diagnosed in women aged 30–39 were invasive ductal carcinoma (Figure 2.8). Women in their 30s had a higher proportion of invasive ductal carcinoma than women aged 40 and over (88% compared with 78%) and a lower proportion of invasive lobular carcinoma than older women (3% compared with 11%).



Notes

1. Histology types included in each group are listed in Appendix Table B1.
2. Data for this figure are in Appendix Table A2.10.

Source: AIHW ACD 2011.

Figure 2.8: New cases of breast cancer, by histology type and age group, females, Australia, 2009

Stage

Currently, the ACD does not contain information to distinguish between stages 1–4 breast cancers at a national level and therefore this information cannot be presented. In the absence of data on stage, size is used as an indicator. For this report, small breast cancers are defined as <15 mm and very large breast cancers are defined as ≥50 mm.

Women in their 20s

In 2009, 22% of breast cancers diagnosed in women aged 20–29 were classified as small (<15 mm) and 10% were classified as very large (≥50 mm) (Figure 2.9). Women in their 20s had a lower proportion of small breast cancers than women aged 40 and over (22% compared with 32%) and a higher proportion of very large breast cancers (10% compared with 6%). Women aged 20–29 also had a higher proportion of breast cancers with unknown size than women aged 30–39 (21% compared with 12%) and women aged 40 and over (21% compared with 14%). Rules for recording breast cancer size vary across state and territory registries; however, reasons for recording unknown tumour size include metastatic disease at presentation and potentially less total excision.

Women in their 30s

In 2009, 26% of breast cancers diagnosed in women aged 30–39 were classified as small (<15 mm) and 8% were classified as very large (≥50 mm) (Figure 2.9). Women in their 30s had a lower proportion of small breast cancers than women aged 40 and over (26% compared with 32%) and a higher proportion of very large breast cancers (8% compared with 6%).

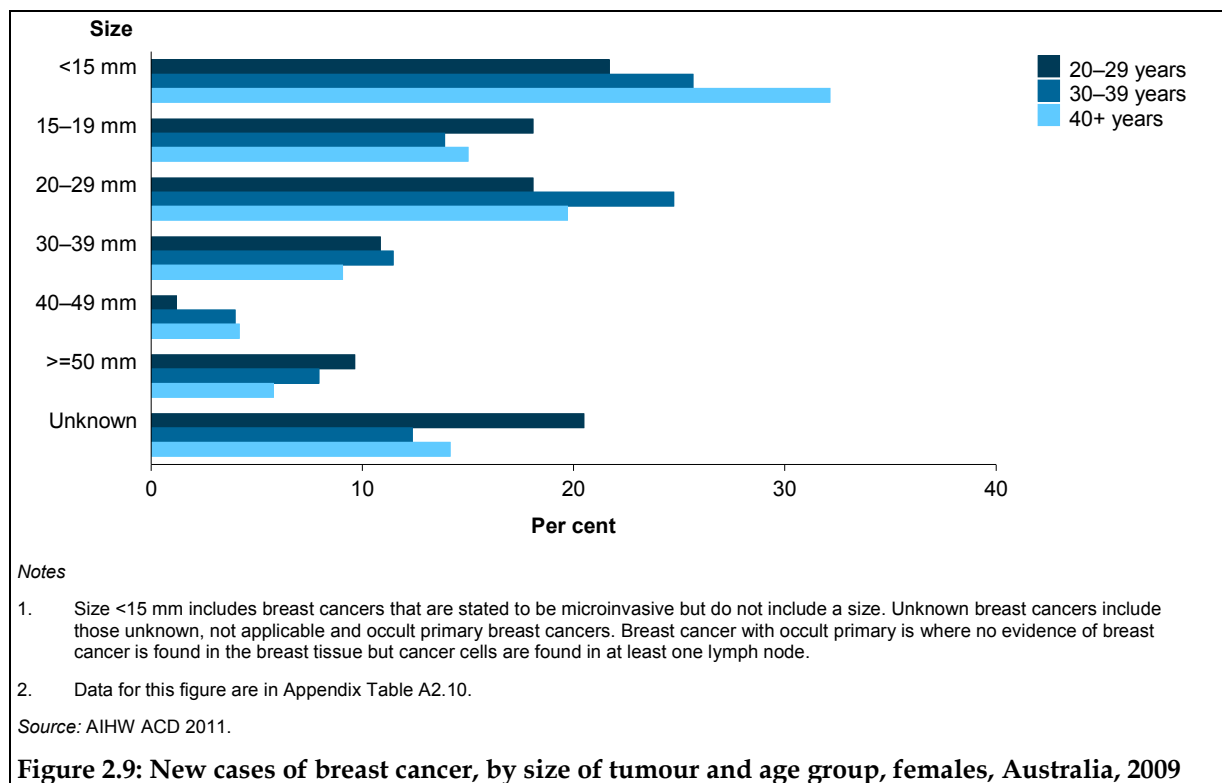


Figure 2.9: New cases of breast cancer, by size of tumour and age group, females, Australia, 2009

Stage 0: non-invasive tumours

This section presents information on carcinoma in situ tumours, which are classified as stage 0. This group is in addition to the numbers presented above (which are breast cancer). In 2009, 63 women aged 20-39 were diagnosed with DCIS and 7 were diagnosed with LCIS (Table 2.2). Women aged 20-39 represented 4% of all DCIS and LCIS diagnosed. Older women may be more likely to be diagnosed with DCIS, as DCIS is commonly detected through the breast cancer screening program.

Table 2.2: New cases of breast carcinoma in-situ tumours, by histology type and age group, females, Australia, 2009

Histology type	20-39 years			40 years or older			Total
	Number	Per cent	Age-specific rate	Number	Per cent	Age-specific rate	Number
DCIS	63	3.5	1.9	1,740	96.5	30.4	1,803
LCIS	7	3.6	0.2	185	96.4	3.2	192
Other—specified	—	—	—	1	100.0	0.0	1
Unspecified	—	—	—	3	100.0	0.1	3

Note: The histology types included in each group are listed in Appendix Table B2.

Source: AIHW ACD 2011.

Other breast cancer characteristics

Currently, the ACD does not contain data on grade and hormone receptor status of breast cancers. However, research has found that, compared with older women, young women tend to have a higher proportion of breast cancers that originate in the ducts, that are very large, that are of a high grade, that are lymph node positive, that are HER-2 positive and that are triple negative (Anders et al. 2009; BCTG 2007; NBOCC 2009, 2010; Roder et al. 2012).

2.3 Hospitalisations

Snapshot

In 2013–14 there were:

- 8,473 hospitalisations related to breast cancer for women aged 20–39
- 2,315 surgical procedures related to breast cancer for women aged 20–39. One person can have multiple surgical procedures. Forty-two per cent (42%) of surgical procedures were breast surgery procedures (either breast conserving surgery [22%] or mastectomy [20%]), 39% were excision of axilla lymph node procedures and 17% were reconstructive and repair procedures.

Of women aged 20–39 who had a surgical procedure related to breast cancer:

- 22% had breast conserving surgery procedures compared with 30% of women aged 40 and over
- 20% had mastectomy procedures compared with 16% of women aged 40 and over
- 17% had reconstruction and repair procedures compared with 8% of women aged 40 and over.

Of women aged 20–39 who had a mastectomy procedure:

- 30% had a double mastectomy procedure compared with 18% of women aged 40 and over
- 29% had a nipple-sparing mastectomy procedure compared with 13% of women aged 40 and over.

Between 2001–02 and 2013–14, the rate of mastectomy and reconstruction and repair procedures increased for young women. This pattern is unique for young women and the same trend has not been observed in women aged 40 and over.

Data for this section are sourced from the National Hospital Morbidity Database (NHMD) which contains data on admitted patients who undergo a hospital's admission process to receive treatment. A separation is the term used to refer to the episode of admitted patient care, which can be a total hospital stay or a portion of a hospital stay starting or ending in a change of type of care. In this report, a separation is also referred to as a hospitalisation. For more information on the NHMD, refer to Appendix C and to *Admitted patient care 2013–14: Australian hospital statistics* (AIHW 2015a).

In this report, hospitalisations related to breast cancer are related to:

- a principal diagnosis of breast cancer, which is the diagnosis established after study to be chiefly responsible for the episode of admitted patient care
- an additional diagnosis of breast cancer, which is a condition or complaint that either coexists with the principal diagnosis or arises during the episode of care. An additional diagnosis is reported if the condition affects patient management.

This report provides information on the number of hospitalisations and the number of procedures for young women, with a focus on surgical procedures and inpatient chemotherapy. For breast cancer, radiotherapy is often provided to outpatients on a non-admitted basis and therefore limited information is available. Hence, radiotherapy numbers are not presented in this report.

Number of hospitalisations

In 2013–14, there were 8,473 hospitalisations related to breast cancer for women aged 20–39 (Table 2.3). Women aged 20–39 represented 6% of all hospitalisations related to breast cancer, which is similar to the incidence proportion (see Table 2.1).

Women in their 20s

In 2013–14, there were 594 hospitalisations related to breast cancer for women aged 20–29, representing 0.4% of all hospitalisations related to breast cancer. For this age group, 22% were for a principal diagnosis of breast cancer and 78% were for an additional diagnosis of breast cancer (Table 2.3). One-quarter (25%) of hospitalisations related to breast cancer were overnight and 75% were same-day (Appendix Table A2.11).

Women in their 30s

In 2013–14, there were 7,879 hospitalisations related to breast cancer for women aged 30–39, representing 6% of all hospitalisations related to breast cancer. For this age group, 15% were for a principal diagnosis of breast cancer and 85% were for an additional diagnosis of breast cancer (Table 2.3). Less than one-fifth (18%) of hospitalisations related to breast cancer were overnight and 82% were same-day (Appendix Table A2.11).

Table 2.3: Breast cancer-related hospitalisations, by age group, females, Australia, 2013–14

Age group (years)	Principal diagnosis of breast cancer		Additional diagnosis of breast cancer		All breast cancer hospitalisations
	Number	Per cent	Number	Per cent	Number
20–29	131	22.1	463	77.9	594
30–39	1,165	14.8	6,714	85.2	7,879
20–39	1,296	15.3	7,177	84.7	8,473
40+	23,876	18.9	102,426	81.1	126,302
All	25,173	18.7	109,603	81.3	134,776

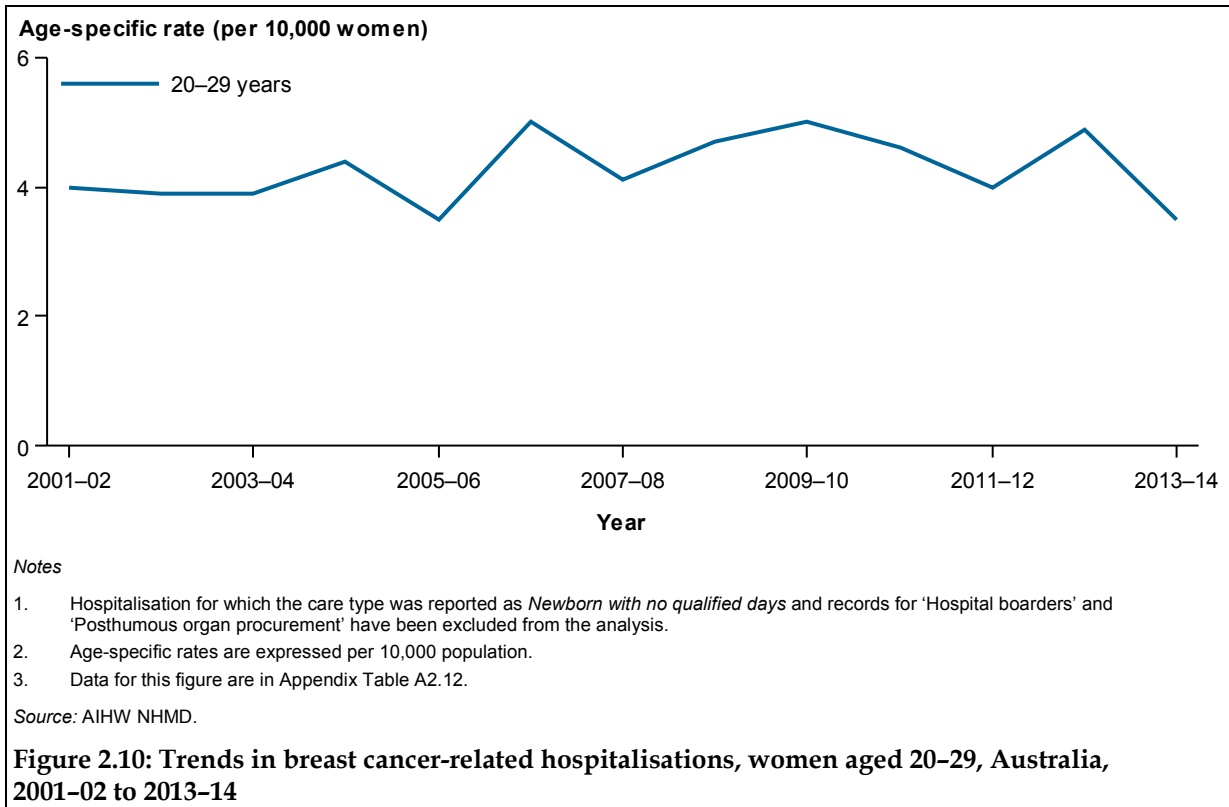
Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Trends in number of hospitalisations

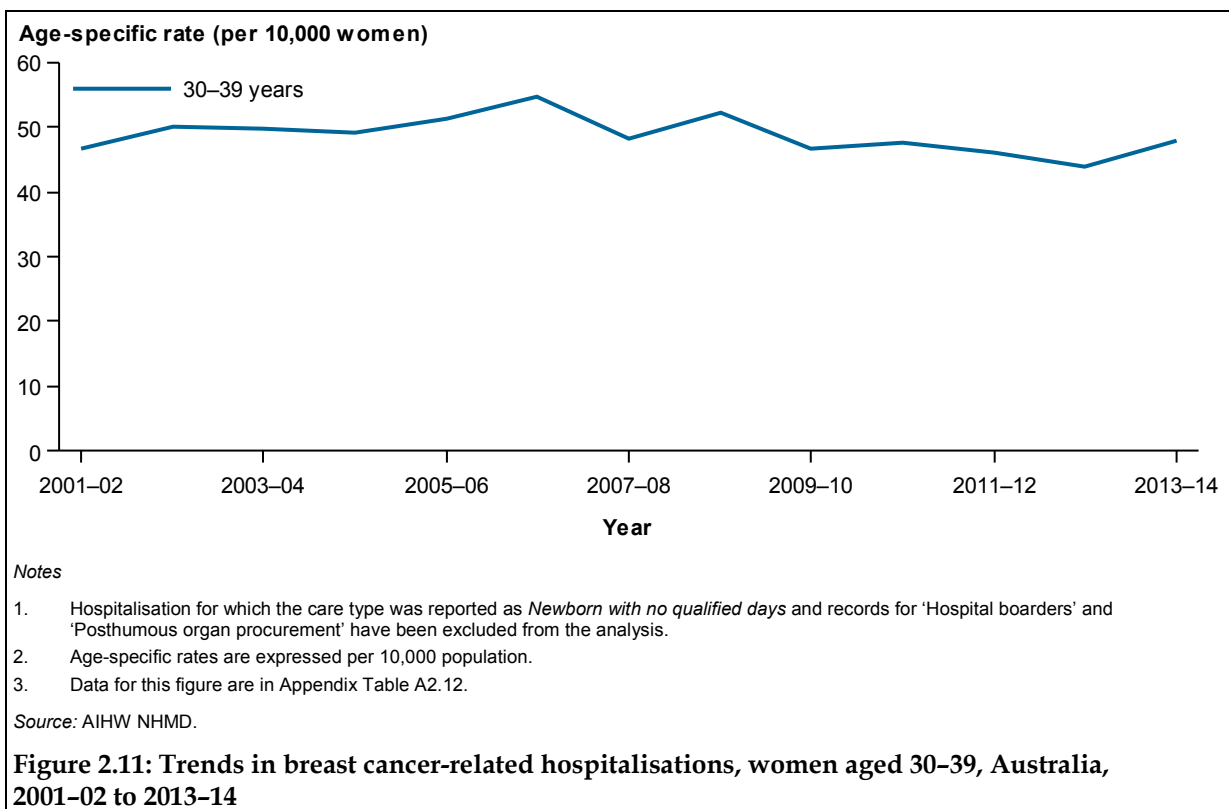
Women in their 20s

Between 2001–02 and 2013–14, the rate of hospitalisations related to breast cancer for women in their 20s ranged between 4 per 10,000 and 5 per 10,000 (Figure 2.10).



Women in their 30s

Between 2001-02 and 2013-14, the rate of hospitalisations related to breast cancer for women in their 30s varied between 44 per 10,000 and 55 per 10,000 (Figure 2.11).



Breast cancer characteristics

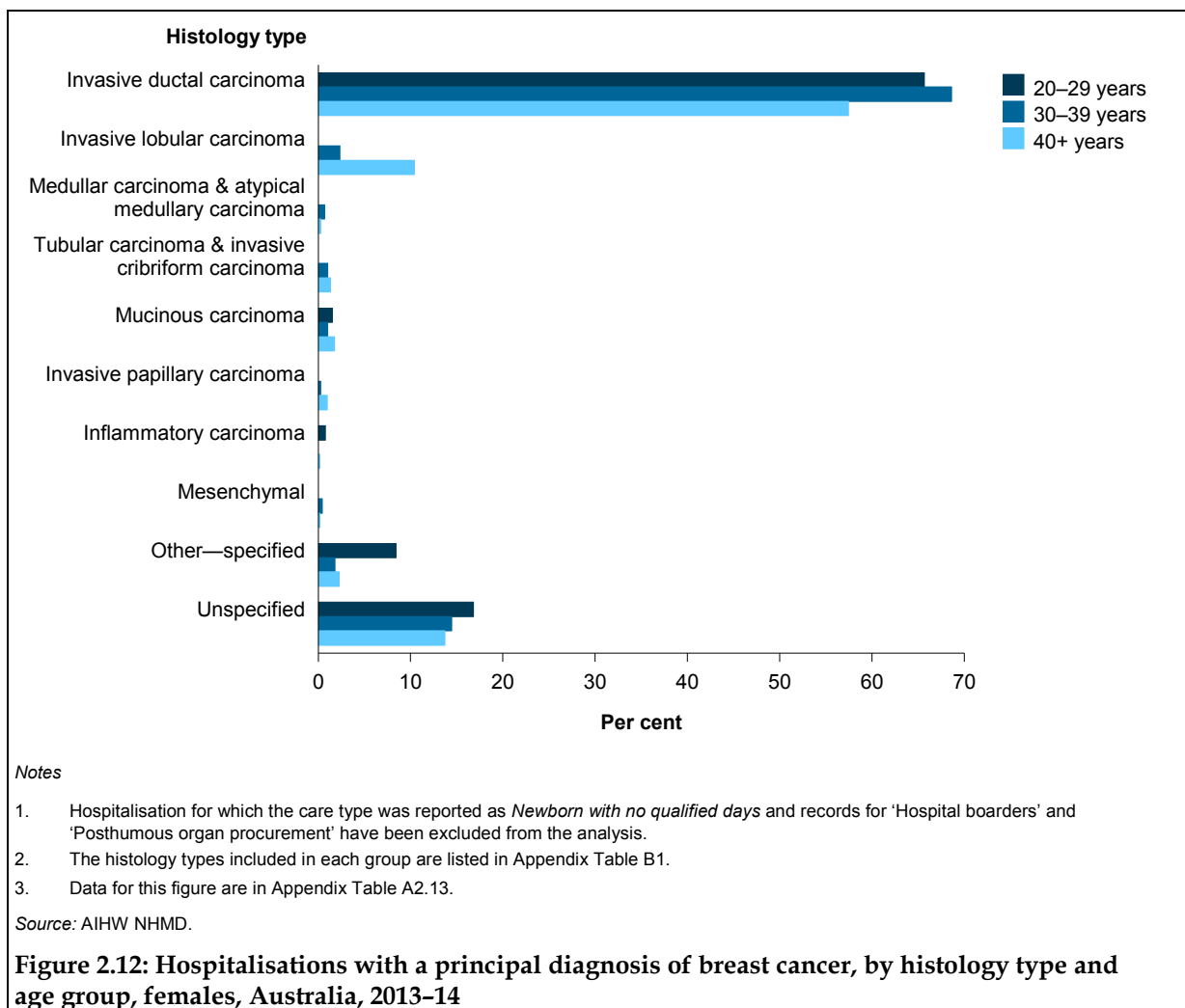
Histology type

Women in their 20s

In 2013–14, 66% of hospitalisations with a principal diagnosis of breast cancer for women aged 20–29 were for invasive ductal carcinoma (Figure 2.12). Women in their 20s had a higher proportion of hospitalisations for invasive ductal carcinoma than women aged 40 and over (66% compared with 57%). Women in their 20s had no hospitalisations for invasive lobular carcinoma (which was a common reason for hospitalisation for women aged 40 and over). This pattern was similar to the incidence pattern (see Figure 2.8).

Women in their 30s

In 2013–14, 69% of hospitalisations for a principal diagnosis of breast cancer for women aged 30–39 were for invasive ductal carcinoma (Figure 2.12). Women in their 30s had a higher proportion of hospitalisations for invasive ductal carcinoma (69% compared with 57%) than women aged 40 and over, and a lower proportion of hospitalisations for invasive lobular carcinoma (2% compared with 10%) than women aged 40 and over. This pattern was similar to the incidence pattern (see Figure 2.8).



Stage

Stage 1–4: invasive tumours

The NHMD does not contain information on stage or size and therefore this information cannot be presented (see Section 1 for definition of ‘stage’).

Stage 0: non-invasive tumours

This paragraph presents hospitalisations related to DCIS, which are classified as stage 0. This group is in addition to the numbers presented in the rest of the chapter (which are hospitalisations related to breast cancer). Hospitalisations related to DCIS are defined as a principal diagnosis of DCIS or an additional diagnosis of DCIS. In 2013–14, there were 280 DCIS hospitalisations for women aged 20–39 (Appendix Table A2.14). Women aged 20–39 represented 4% of all DCIS-related hospitalisations. This proportion is similar to the incidence proportion (see Table 2.2).

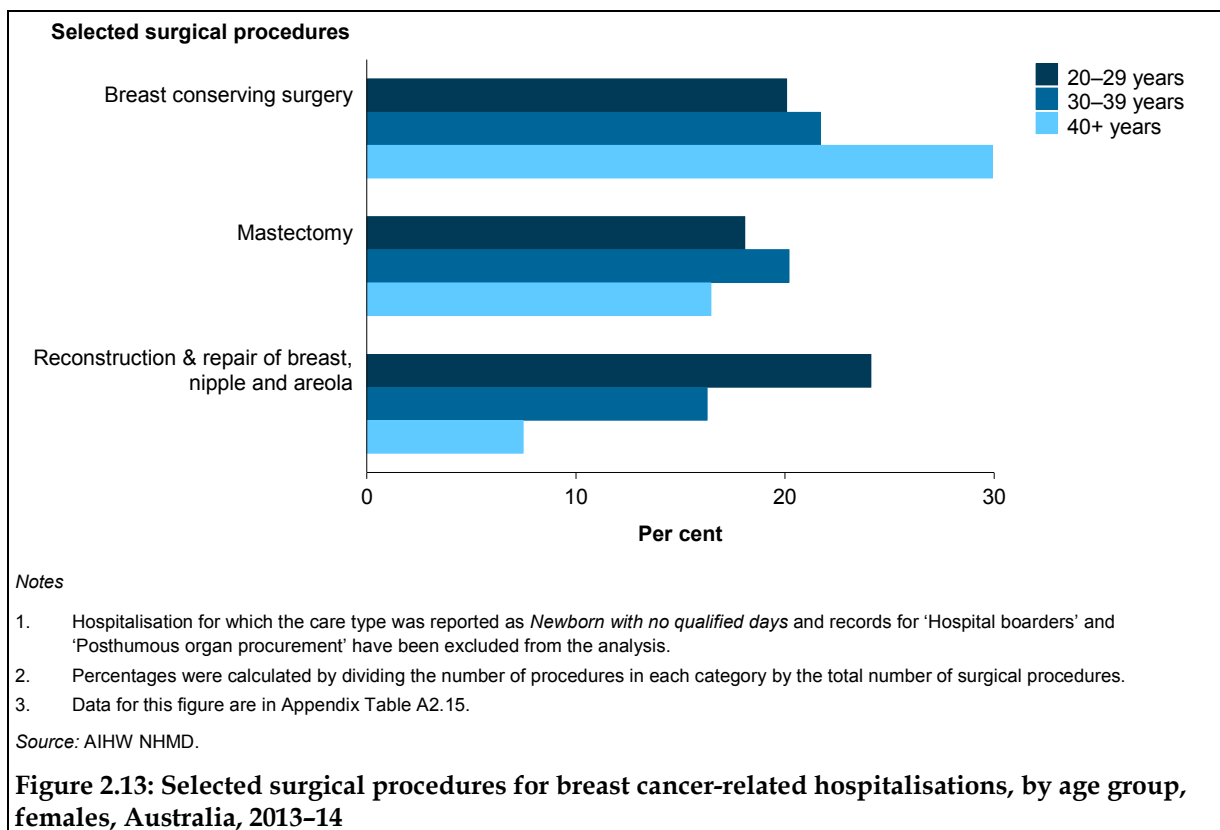
Surgical procedures

This section explores surgical procedures related to breast cancer. The data presented here do not involve data linkage; therefore, they do not relate to individuals and do not follow an individual’s treatment pathway. Instead, the section explores types of surgical procedures as a proportion of all surgical procedures related to breast cancer. Multiple surgical procedures can be reported for each person. This means that proportions presented are of all surgical procedures undertaken during the time period rather than of the number of women diagnosed with breast cancer. Further, surgical procedures relate to both public and private hospitals. See Appendix C for more information.

In 2013–14, there were 2,315 surgical procedures related to breast cancer for women aged 20–39. Of these, 42% were breast surgery procedures (either breast conserving surgery or mastectomy), 39% were an excision of axilla lymph node procedure and 17% were reconstructive and repair procedures (Appendix Table A2.15).

In 2013–14, a similar proportion of surgical procedures for women aged 20–39 were either a breast conserving procedure (22%) or mastectomy procedure (20%) (Figure 2.13). Australian research has indicated that among women with early breast cancer, young women were more likely to have breast conserving surgery (Wang et al. 2010). However, young women were less likely to have breast conserving surgery than a mastectomy if the cancer was very large (Roder et al. 2013b), of a higher grade and involved lymph nodes, as these factors might increase chances of local reoccurrence (Wang et al. 2008).

Women aged 20–39 had a higher proportion of reconstruction and repair procedures than older women (17% compared with 8%) (Figure 2.13). Australian research has indicated that young women are more likely to have breast reconstruction than older women (NBOCC 2010). Other factors predicting immediate breast reconstruction following mastectomy include some tumour characteristic (such as small tumour size, negative nodal status), treatment characteristics (such as not having chemotherapy, radiotherapy or hormone therapy) and personal characteristics (such as having a high socioeconomic status, having private health insurance) (Roder et al. 2013a).



Breast conserving surgery

Breast conserving surgery involves the removal of the tumour, as well as some healthy tissue (referred to as a margin). For this report, breast conserving surgery is categorised as either:

- excision of lesion of breast, which includes procedures such as local excision and lumpectomy
- re-excision of lesion of breast, which includes excisions following a previous open biopsy or previous surgery with unclear margins (see Appendix Table C2 for more information).

Women in their 20s

In 2013–14, there were 50 breast conserving surgery procedures for women in their 20s. For this age group, a breast conserving surgery procedure was reported for 20% of surgical procedures (Appendix Table A2.15). When comparing surgical procedures, women in their 20s had a lower proportion of breast conserving surgery than women aged 40 and older (20% compared with 30%) (Figure 2.13).

Of breast conserving surgery procedures, 82% were an excision of lesion of the breast and 18% were a re-excision of lesion of the breast (Appendix Table A2.16).

Women in their 30s

In 2013–14, there were 448 breast conserving surgeries for women in their 30s. For this age group, a breast conserving surgery procedure was reported for 22% of surgical procedures (Appendix Table A2.15). When comparing surgical procedures, women in their 30s had a lower proportion of breast conserving surgery than women aged 40 and older (22% compared with 30%) (Figure 2.13).

Of breast conserving surgery procedures, 79% were an excision of lesion of the breast and 21% were a re-excision of lesion of the breast (Appendix Table A2.16).

Mastectomy

A mastectomy involves the removal of the whole breast. For this report, mastectomy is categorised as either:

- single (unilateral), which is the removal of one breast
- double (bilateral), which is the removal of both breasts.

A mastectomy can also be defined as a nipple-sparing mastectomy, which includes the removal of the breast, excluding the skin and nipple (see Appendix Table C2 for more information).

Women in their 20s

In 2013–14, there were 45 mastectomy procedures for women in their 20s. For this age group, a mastectomy procedure was reported for 18% of surgical procedures (Appendix Table A2.15). When comparing surgical procedures, a slightly higher proportion of women in their 20s had a mastectomy than women aged 40 and over (18% compared with 16%) (Figure 2.13).

Of mastectomy procedures, 56% were a single mastectomy and 44% were a double mastectomy. Women aged 20–29 had a higher proportion of double mastectomy procedures than women aged 40 and over (44% compared with 18%) (Figure 2.14).

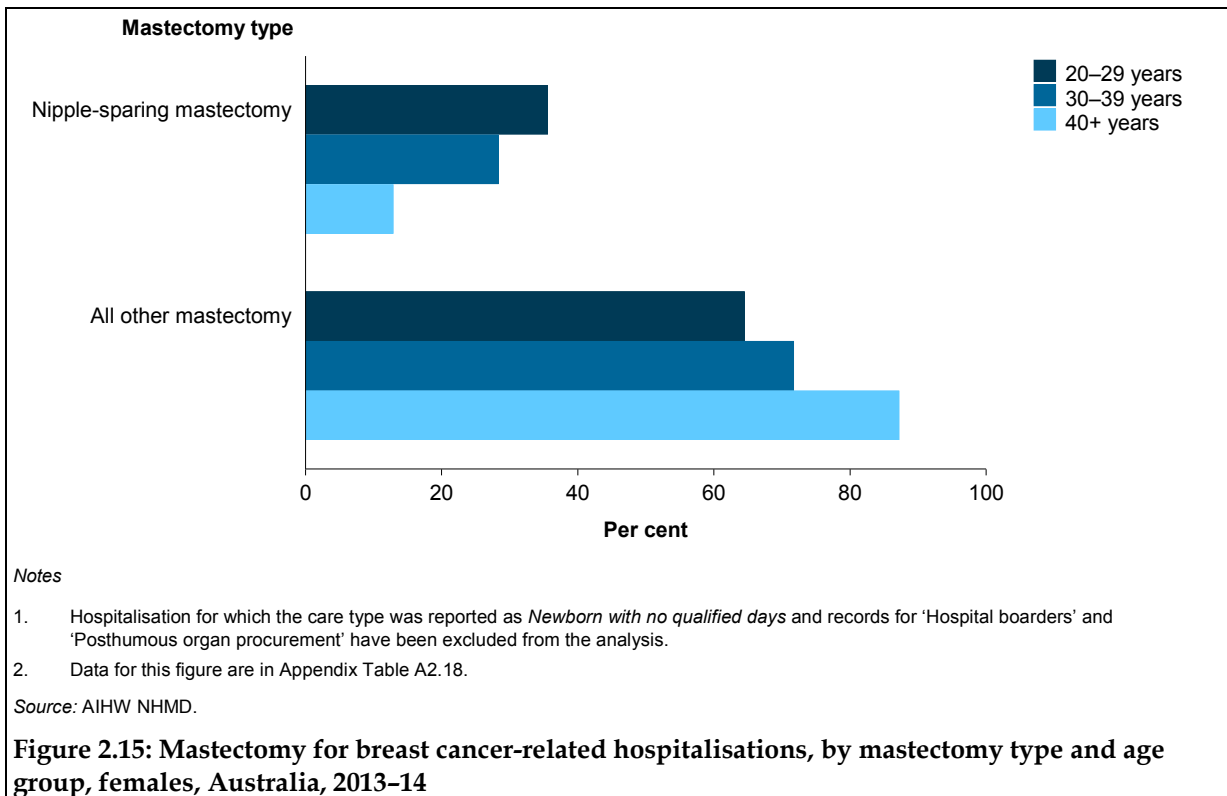
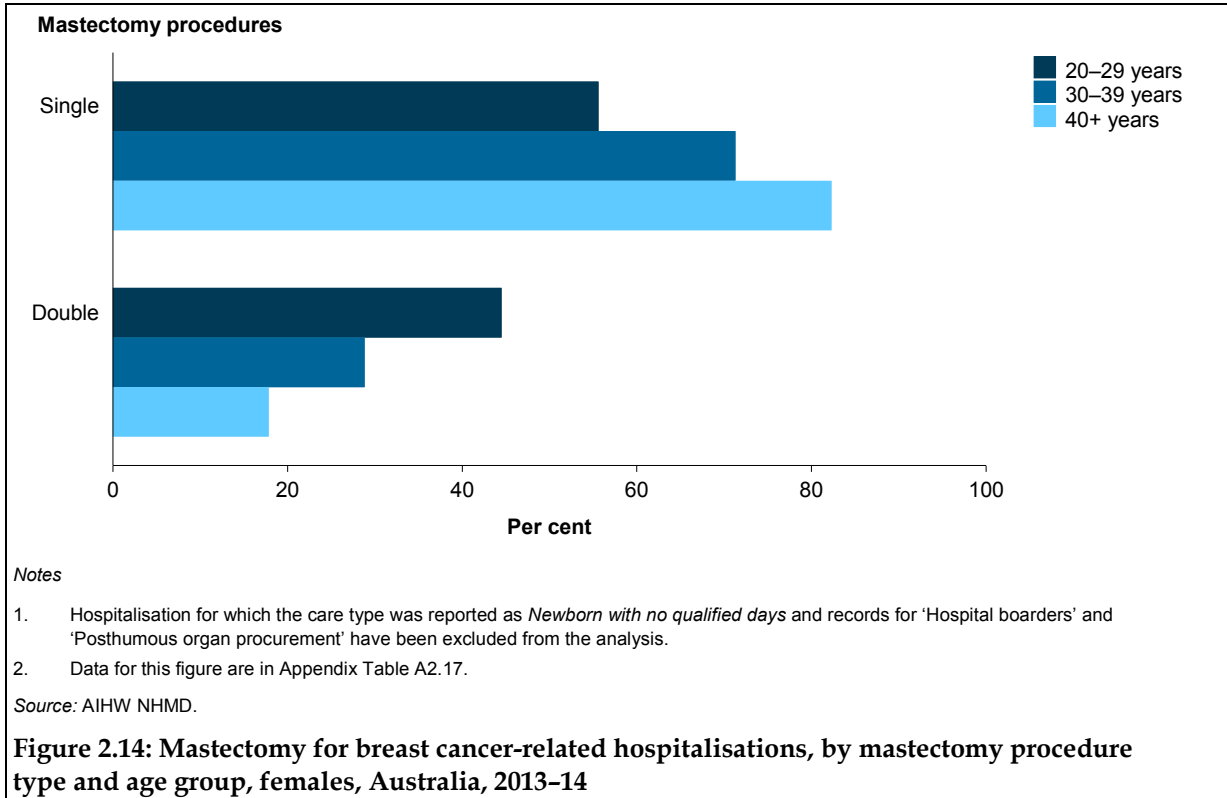
Of mastectomy procedures, 36% were a nipple-sparing mastectomy. Women aged 20–29 had a higher proportion of nipple-sparing mastectomy procedures than women aged 40 and over (36% compared with 13%) (Figure 2.15).

Women in their 30s

In 2013–14, there were 417 mastectomy procedures for women in their 30s. For this age group, a mastectomy procedure was reported for 20% of surgical procedures (Appendix Table A2.15). When comparing surgical procedures, a higher proportion of women in their 30s had a mastectomy procedure than women aged 40 years and older (20% compared with 16%) (Figure 2.13).

Of mastectomy procedures, 71% were a single mastectomy and 29% were a double mastectomy. Women in their 30s had a higher proportion of double mastectomy procedures than women aged 40 and over (29% compared with 18%) (Figure 2.14).

Of mastectomy procedures, 28% were a nipple-sparing mastectomy. Women in their 30s had a higher proportion of nipple-sparing mastectomy procedures than women aged 40 and over (28% compared with 13%) (Figure 2.15).



Reconstruction and repair surgery

Reconstruction and repair of the breast involves recreating the shape of the breast following a mastectomy. A breast reconstruction can be performed at the same time as a mastectomy or many years later. Breast reconstruction and repair can involve several procedures. Some procedures can be performed during the same hospitalisation, while others may need to be performed in a separate hospitalisation (See Appendix C for examples).

Women in their 20s

In 2013–14, there were 60 reconstruction and repair procedures for women in their 20s. For this age group, a reconstruction and repair procedure was reported for 24% of surgical procedures (Appendix Table A2.15). When comparing surgical procedures, women in their 20s had a higher proportion of reconstruction and repair procedures than both women aged 30–39 (24% compared with 16%) and women aged 40 and over (24% compared with 8%) (Figure 2.13).

Women in their 30s

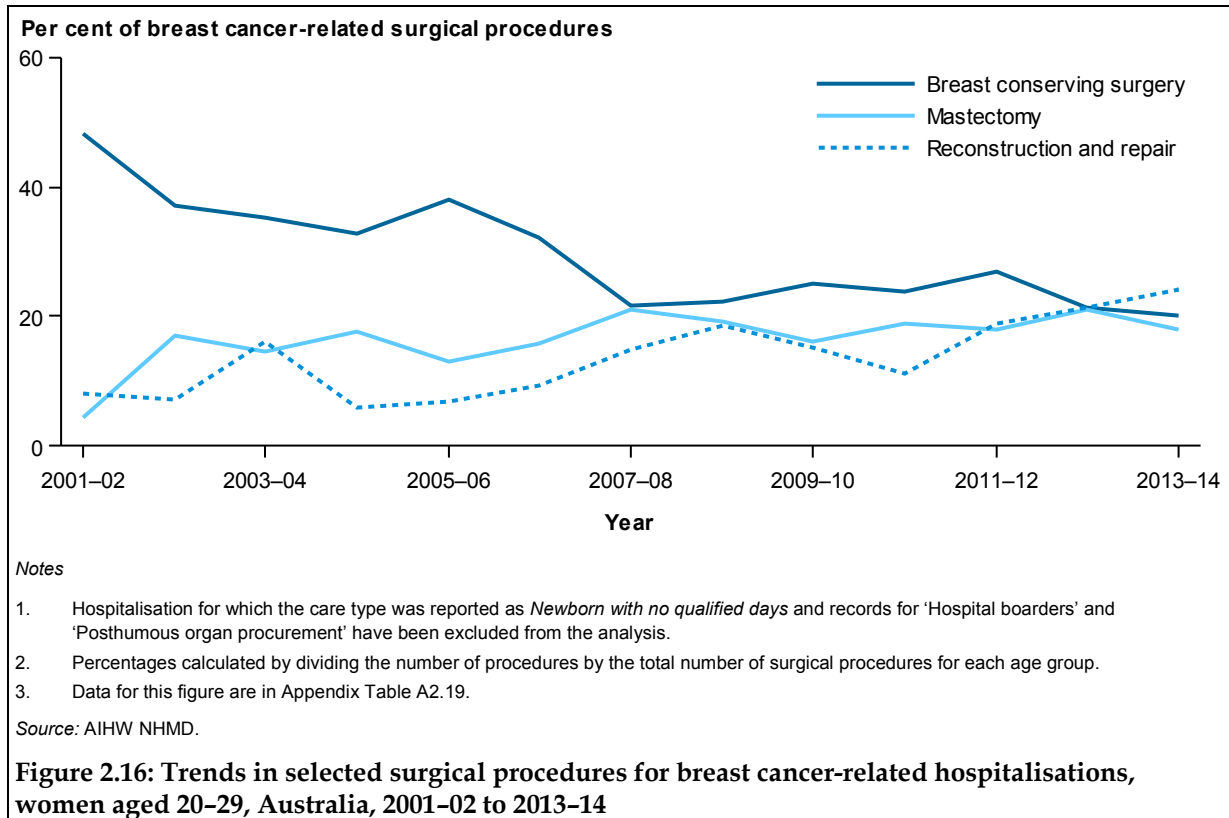
In 2013–14, there were 336 reconstruction and repair procedures for women in their 30s. For this age group, a reconstruction and repair procedure was reported for 16% of surgical procedures (Appendix Table A2.15). When comparing surgical procedures, women in their 30s had a higher proportion of reconstruction and repair procedures than women aged 40 and over (16% compared with 8%) (Figure 2.13).

Trends in surgical procedures

This section explores trends in surgical procedures related to breast cancer between 2001–02 and 2013–14. The proportions presented are of all surgical procedures undertaken during each time period rather than of the number of women diagnosed with breast cancer. Changes over time may reflect advances in surgical procedures, changes in practice and patient preference for modern techniques (BCTG 2015).

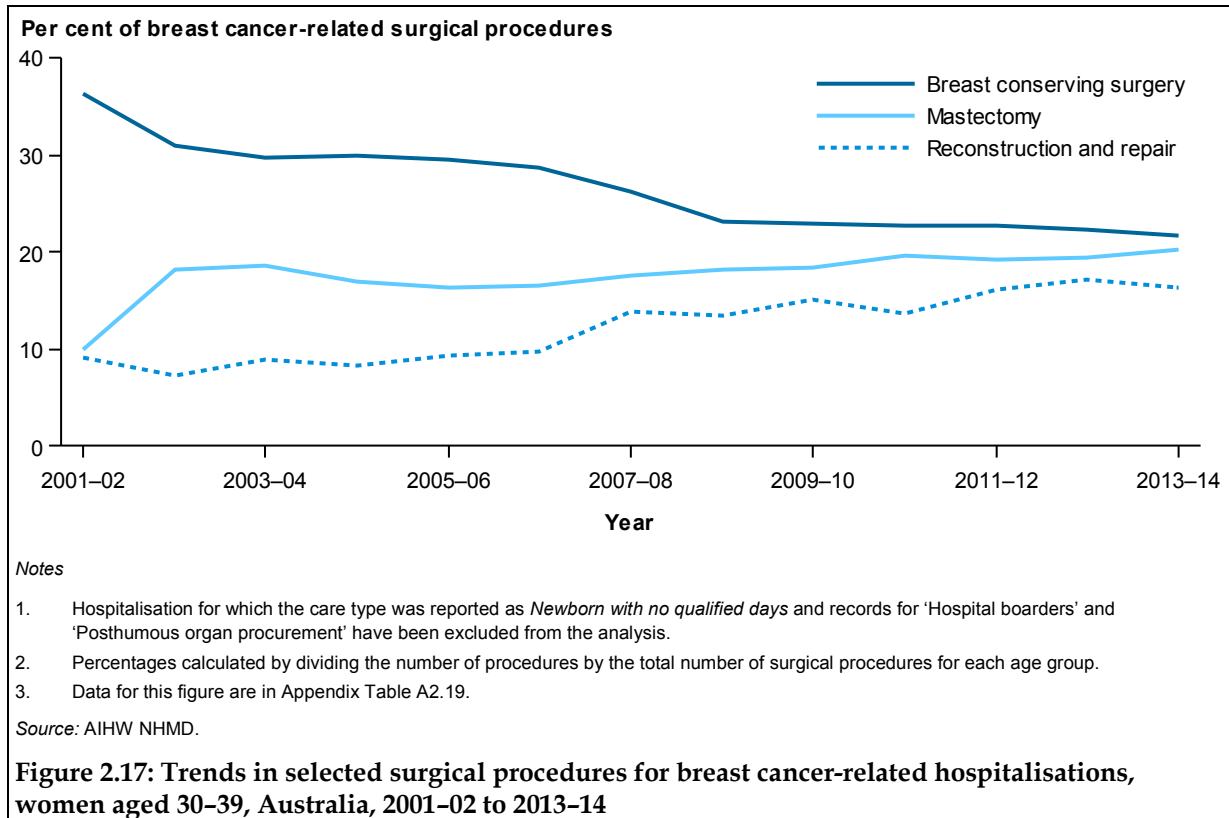
Women in their 20s

In 2001–02, a breast conserving surgery procedure was reported for 48% of all surgical procedures for women in their 20s. Since 2001–02, the proportion of breast conserving surgery procedures for women in their 20s decreased from 48% in 2001–02 to 20% in 2013–14 (Figure 2.16). Over the same time period, the proportion of mastectomy procedures increased from 4% of surgical procedures in 2001–02 to 18% of all surgical procedures in 2013–14 and the proportion of reconstruction and repair procedures increased from 8% of surgical procedures in 2001–02 to 24% of surgical procedures in 2013–14 (Figure 2.16). The increase in mastectomy procedures and reconstruction and repair procedures is unique for young women and the same trend has not been observed in women aged 40 and over.



Women in their 30s

In 2001-02, a breast conserving surgery procedure was reported for 37% of all surgical procedures for women in their 30s. Since 2001-02, the proportion of breast conserving surgery procedures for women in their 30s decreased from 37% to 22% in 2013-14 (Figure 2.17). Over the same time period, the proportion of mastectomy procedures increased from 10% of surgical procedures in 2001-02 to 20% of all surgical procedures in 2013-14; the corresponding increase in the proportion of reconstruction and repair procedures was from 9% to 17% (Figure 2.17). The mastectomy and reconstruction and repair procedures are unique for young women and the same trend is not apparent in women aged 40 and over.



Excision of axilla lymph nodes

A lymph node excision and biopsy involves the removal of the lymph nodes during surgery to check the spread of cancer. The number of lymph nodes removed during surgery depends on the spread of cancer cells. Generally, the sentinel (first) lymph node is removed and if cancer cells are not found it is not necessary to remove any more lymph nodes. This procedure is performed regardless of the type of surgery.

Women in their 20s

In 2013-14, there were 93 excision of axilla lymph node procedures for women in their 20s. For this age group, excision of axilla lymph node procedures was reported in 37% of all surgical procedures (Appendix Table A2.15). A similar number of procedures for excision of axilla lymph nodes (93 procedures) were performed as breast conserving surgery and mastectomy combined (95 procedures combined).

For women in their 20s, sentinel lymph node biopsy was the most common type of lymph node of axilla procedure (56%) (Appendix Table A2.20).

Women in their 30s

In 2013-14, there were 816 excision of axilla lymph node procedures for women in their 30s. For this age group, excision of axilla lymph node procedures was reported in 40% of all surgical procedures (Appendix Table A2.15). A similar number of procedures for excision of axilla lymph nodes (816 procedures) were performed as breast conserving surgery and mastectomy combined (865 procedures combined).

For women in their 30s, sentinel lymph node biopsy was the most common type of lymph node of axilla procedure (55%) (Appendix Table A2.20).

Chemotherapy

This section explores the number of admitted-patient hospitalisations for chemotherapy. The number and rate of breast cancer-related chemotherapy hospitalisations may be an undercount of procedures, due to the admission processes of public hospitals in New South Wales, South Australia and the Australian Capital Territory. These hospitals provide same-day chemotherapy on a non-admitted basis. This means that patients who receive same-day chemotherapy treatment for breast cancer in those hospitals are usually not recorded in the NHMD.

In 2013–14, there were 6,555 hospitalisations for chemotherapy for women aged 20–39. Young women had a higher proportion of chemotherapy hospitalisations than women aged 40 and over (77% compared with 69%) (Appendix Table A2.21).

Women in their 20s

In 2013–14, there were 411 hospitalisations for chemotherapy for women in their 20s. Young women aged 20–29 had the same proportion of chemotherapy hospitalisations as women aged 40 and over (both 69%) (Appendix Table A2.21).

Women in their 30s

In 2013–14, there were 6,144 hospitalisations for chemotherapy for women in their 30s. Young women aged 30–39 had a higher proportion of chemotherapy hospitalisations than women aged 40 and over (78% compared with 69%) (Appendix Table A2.21).

Radiation therapy

Radiotherapy is an important part of breast cancer treatment. However, for breast cancer, radiotherapy is often provided on a non-admitted basis so limited information is available in the NHMD. Therefore, radiotherapy numbers are not presented in this report, as they are likely to be an undercount.

The National Radiotherapy Waiting Times Database (NRWTD) provides information on waiting times for patients who undertake a course of radiotherapy. As well, it also provides information about the number of courses delivered in the reference year rather than numbers of patients, as patients may have more than 1 course of radiotherapy in a year. A pilot collection of the data was undertaken for 2013–14, to be published in late 2015. All states and territories have agreed that all public providers of radiotherapy will report to the NRWTD from 1 July 2015 and private providers are invited to participate.

2.4 Survival

Snapshot

Women aged 20–39 had significantly lower 5-year relative survival rates than women aged 40 and over, including:

- significantly lower survival rates for common types of breast cancer, such as invasive ductal carcinoma (83% compared with 88%) and invasive lobular carcinoma (84% compared with 91%)
- significantly lower survival rates for small breast cancers (93% compared with 99%).

At the end of 2009, there were 2,795 women aged 20–39 alive who had been diagnosed with breast cancer in the previous 10 years. Long term, young women diagnosed with breast cancer can be at a higher risk of physical and psychosocial distress than older women.

Data for this section are sourced from the 2011 ACD. For more information on the ACD, refer to Appendix D. Survival in this report refers to ‘relative survival’; that is, all survival probabilities presented are relative to those of the general population. It refers to the probability of being alive for a given amount of time after diagnosis compared with that for those of the general population, and reflects the impact of a cancer diagnosis.

Information about breast cancer survival provides an indication of prognosis and the effectiveness of the treatments. A range of factors influence survival from breast cancer including the demographic characteristics of the patient (such as age and genetics), the nature of the tumour (such as site, stage at diagnosis and histology type) and the health-care system (such as the availability of health-care services, diagnostic and treatment facilities, and follow-up services) (Black et al. 1998; WCRF & AICR 2007).

5-year relative survival

In 2007–2011, women aged 20–39 diagnosed with breast cancer had an 88% chance of surviving for 5 years compared with their counterparts in the general population (Table 2.4). Women aged 20–39 had a significantly lower 5-year relative survival rate than women aged 40 and over (88% compared with 90%).

Women in their 20s

In 2007–2011, women in their 20s diagnosed with breast cancer had an 86% chance of surviving for 5 years compared with their counterparts in the general population (Table 2.4). This compared to a 90% 5-year relative survival rate for women aged 40 and older.

Women in their 30s

In 2007–2011, women in their 30s diagnosed with breast cancer had an 88% chance of surviving for 5 years compared with their counterparts in the general population (Table 2.4). Women in their 30s had a significantly lower 5-year relative survival rate than women aged 40 and older (88% compared with 90%).

Table 2.4: Five-year relative survival rate from breast cancer, by age group, females, Australia, 2007–2011

Age group (years)	5-year relative survival (%)	95% confidence interval
20–29	86.0	81.6–89.3
30–39	87.8	86.6–88.9
20–39	87.6	86.5–88.7
40+	89.6	89.3–90.0
All	89.6	89.3–89.9

Source: AIHW ACD 2011.

Trends in 5-year relative survival

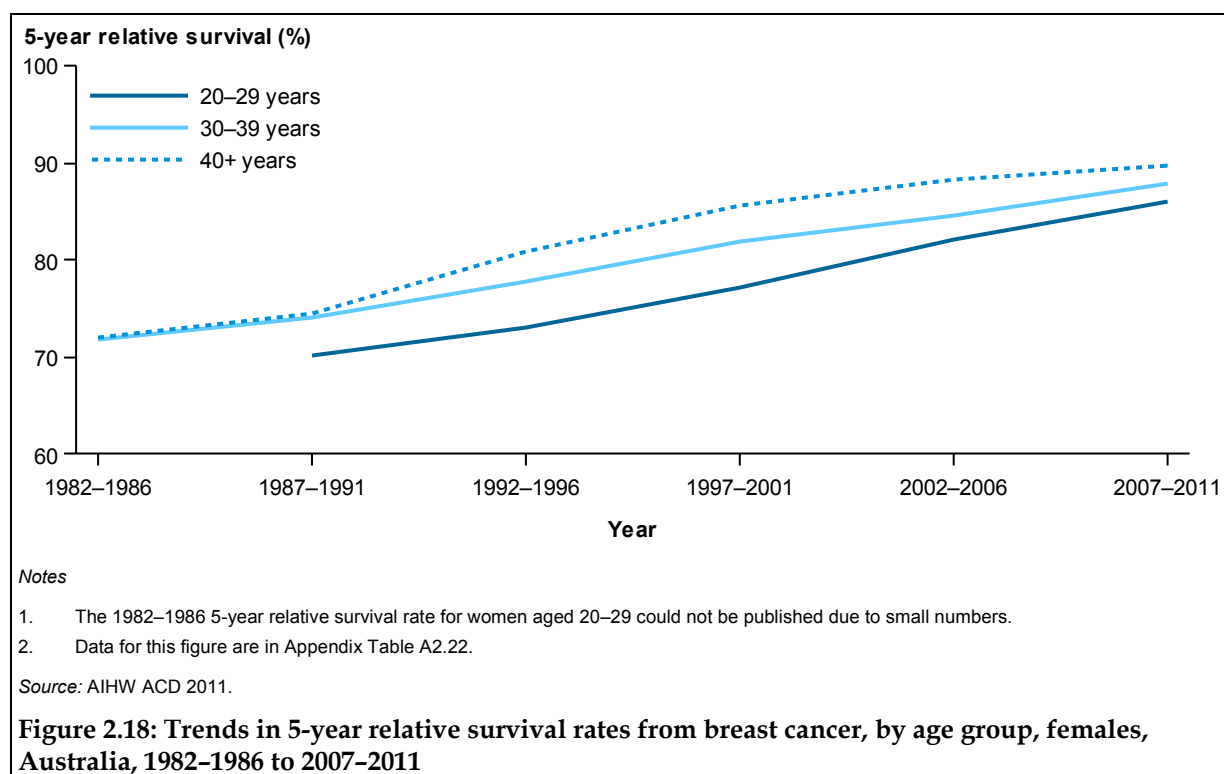
Between 1982–1986 and 2007–2011, 5-year relative survival rates improved for all age groups. However, there have been greater gains for some age groups. The largest increase in survival is for women aged 40 and over, which is likely to be associated with the introduction of the national population-based breast cancer screening program in 1991.

Women in their 20s

For women aged 20–29, the 5-year relative survival rate increased from 70% in 1987–1991 to 86% in 2007–2011 (Figure 2.18).

Women in their 30s

For women aged 30–39, the 5-year relative survival rate increased from 72% in 1982–1986 to 88% in 2007–2011 (Figure 2.18).



Breast cancer characteristics

In this section, data are presented for 1992–2011 rather than for 2007–2011 due to the small numbers associated with some breast cancer characteristics.

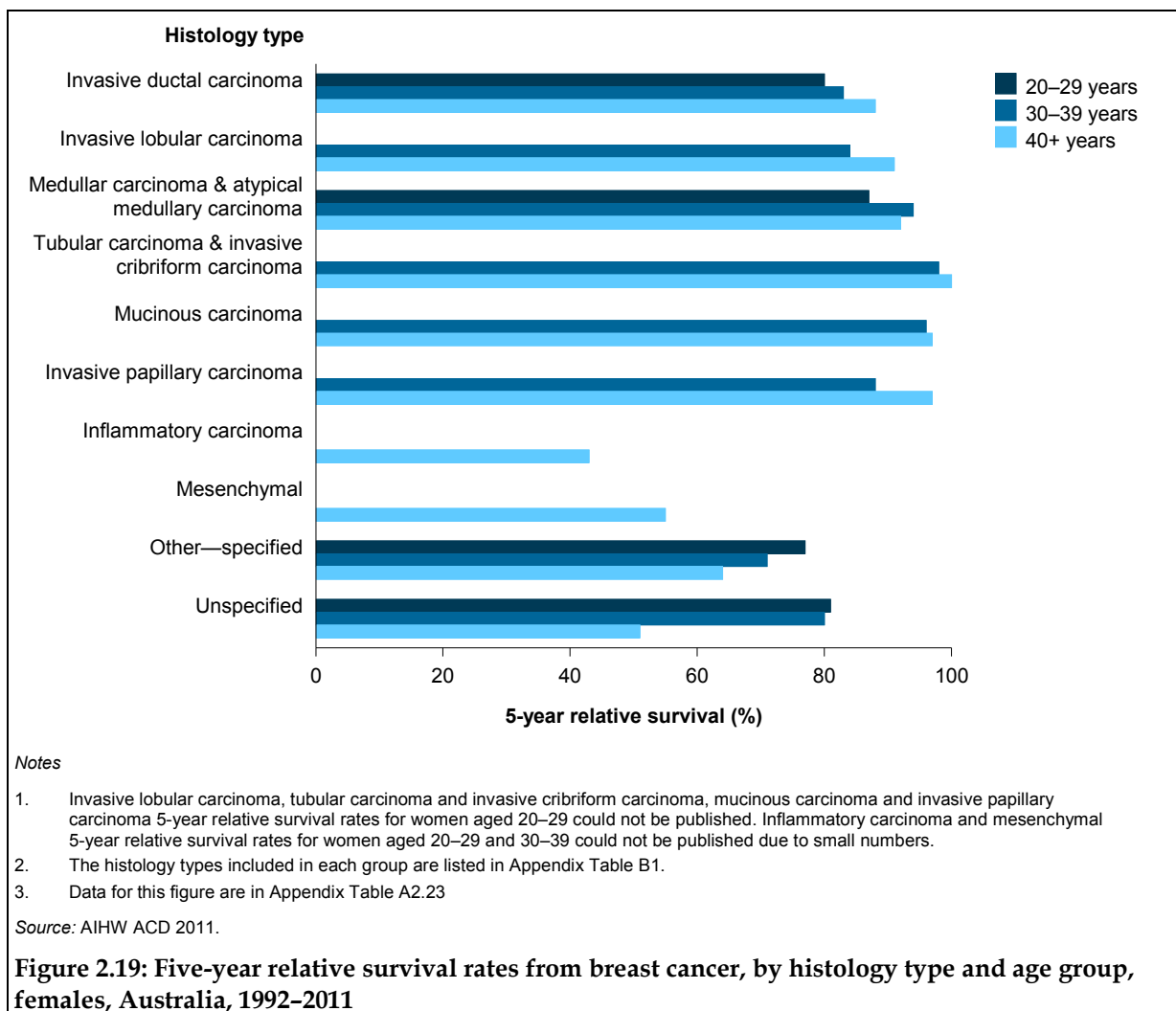
Histology type

Women in their 20s

For women in their 20s, the 5-year relative survival rate was lowest for other – specified breast cancers (77%), followed by invasive ductal carcinoma (80%). Women in their 20s had significantly lower survival rates for invasive ductal carcinoma (80% compared with 88%) than women aged 40 and over (Figure 2.19).

Women in their 30s

For women in their 30s, the 5-year relative survival rate was lowest for other – specified breast cancer (71%), followed by unspecified (80%). Women in their 30s had significantly lower survival rates for invasive ductal carcinoma (83% compared with 88%) and for invasive lobular carcinoma (84% compared with 91%) than women aged 40 and over (Figure 2.19).



Stage

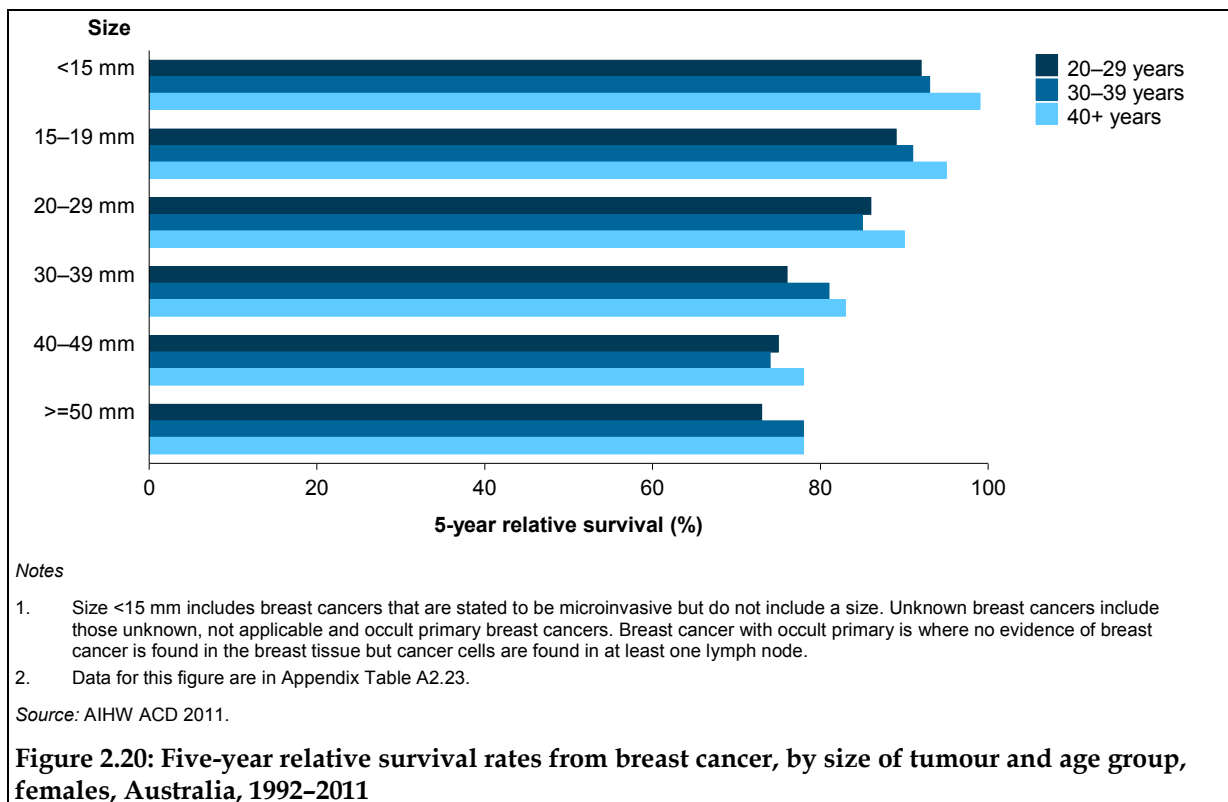
Currently, the ACD does not contain information to distinguish between stages 1–4 breast cancers at a national level and therefore survival cannot be calculated by stage. In the absence of information on cancer stage, size is used as an indicator. For this report, small breast cancers are defined as <15 mm and very large breast cancers are defined as ≥50 mm.

Women in their 20s

For women in their 20s, the 5-year relative survival rate is highest for small tumours (<15 mm) (92%) and lowest for very large tumours (≥50 mm) (73%). Women in their 20s with small breast cancers had significantly lower survival rates than women aged 40 and over (92% compared with 99%). Women in their 20s with large breast cancers had significantly lower survival rates than women aged 40 and over (73% compared with 78%) (Figure 2.20).

Women in their 30s

For women in their 30s, the 5-year relative survival rate is highest for small tumours (<15 mm) (94%) and lowest for very large tumours (≥50 mm) (78%). Women in their 30s with small breast cancers had significantly lower survival rates than women aged 40 and over (94% compared with 99%) (Figure 2.20).



Stage 0: non-invasive tumours

This section presents survival for women diagnosed with carcinoma in situ tumours, which are classified as stage 0. This group is in addition to the numbers presented above (which are recorded as a breast cancer).

In 1992–2011, women in their 20s diagnosed with DCIS had a 99% chance of surviving for at least 5 years compared with their counterparts in the general population; the equivalent figure for women in their 30s was 98% (Table 2.5).

Table 2.5: Five-year relative survival rates from breast carcinoma in-situ tumours, by age group, females, Australia, 1992–2011

Histology type	20–29 years		30–39 years		20–39 years		40 years and older	
	5-year relative survival (%)	95% confidence interval	5-year relative survival (%)	95% confidence interval	5-year relative survival (%)	95% confidence interval	5-year relative survival (%)	95% confidence interval
DCIS	98.6	89.5–100.0	98.2	96.6–99.1	98.2	96.8–99.1	100.8	100.5–101.1
LCIS	n.p.	n.p.	95.9	87.1–98.9	96.2	87.9–99.0	100.0	99.0–100.8
Other—specified	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	97.5	80.8–106.7
Unspecified	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	102.1	90.7–106.1

Notes

1. A 5-year relative survival rate greater than 100 means that people in this group have better survival than the normal population. Women aged 40+ with DCIS or unspecified carcinoma in-situ tumours may have better survival as they are under more surveillance or it may happen by chance.
2. The histology types included in each group are listed in Appendix Table B2.

Source: AIHW ACD 2011.

Other breast cancer characteristics

Currently, the ACD does not contain data on grade and hormone receptor status of breast cancers. However, research has found that young women have lower survival from breast cancer than older women (AIHW & Cancer Australia 2012; Partridge 2015; Roder et al. 2010; Roder et al. 2012; Saghir et al. 2006). The reason for poorer survival in young women is unclear (Kroman et al. 2000). Poorer survival is likely to be related to differences in breast cancer characteristics at diagnosis (such as larger cancers, higher grade, more triple negative, more HER2 positive) (Bauer et al. 2007; Roder et al. 2012).

Survivorship experience

Cancer survivorship focuses on the health and life of a person with cancer after treatment until the end of life (National Cancer Institute 2015). Cancer survivorship is more than simply not dying from cancer; it focuses on living with, and after, a cancer diagnosis (Jackson et al. 2013). Survivorship covers the physical, psychosocial and economic issues of cancer and includes issues relating to late effects of treatment, secondary cancers and quality of life (National Cancer Institute 2015).

The combined effect of several factors – increasing incidence, decreasing mortality and improving survival – is leading to an increase in the population who have ever been diagnosed with cancer. Further, improvement in detection technology, improved surgical procedures (including better reconstruction and repair procedures, changes in pharmacology and hormone interventions and developments in treatment) have an impact on the survivorship experience for women with breast cancer.

At the end of 2009, there were 2,228 women aged 20–39 alive who had been diagnosed with breast cancer in the previous 5 years and 2,795 who had been diagnosed in the previous 10 years (Table 2.6). (Note that in these prevalence statistics, age refers to the age of a woman on the index date of 31 December 2009.)

Table 2.6: Prevalence of breast cancer, by age group, females, Australia, end of 2009

Age group (years)	5-year prevalence		10-year prevalence	
	Number	Rate per 100,000	Number	Rate per 100,000
0–19	2	0.1	2	0.1
20–29	168	10.7	181	11.6
30–39	2,060	132.8	2,614	168.5
20–39	2,228	71.5	2,795	89.7
40+	56,725	1,108.3	100,785	1,969.2
Total	58,955	258.7	103,582	453.9

Source: AIHW ACD 2011.

Breast cancer survivors often face emotional, physical and financial challenges as a result of the detection, diagnosis and treatment of cancer. However, in the long term, young women diagnosed with breast cancer can be more at risk of physical and psychosocial distress than older women (Ahmad et al. 2015; Ganz et al. 2003; Partridge 2013; Ruddy et al. 2013; Thewes et al. 2004).

Physical burden for young women with breast cancer can include fatigue and sleep problems, weight gain, issues with cardiovascular health, and reduction in bone mineral density which could lead to osteopenia and osteoporosis (Cancer Australia 2012a; Partridge 2013). Further, rates of swelling of the arms (lymphedema) have been reported to be higher in younger women than older women (Parbhoo 2006; Reyna & Lee 2014).

Psychosocial distress in young women with breast cancer may be due to issues such as loss of fertility and early menopause, family stress due to role at home or child-rearing activities, work and finances and fear of recurrence. Young breast cancer survivors report that they feel too young for a cancer diagnosis and can feel different from others in their age group, as well as different from older women who have breast cancer (Ruddy et al. 2013). Further, young women express high levels of fear that the breast cancer may return (Lebel et al. 2013) and this is associated with poorer quality of life (McGinty et al. forthcoming).

The potential financial implications are greater for young women than for older women (Access Economics 2007). Young women are more likely to be at the start or middle of their career rather than approaching retirement or already retired (Thewes et al. 2004) and therefore may be required to take a break from full-time employment to receive treatment (Ruddy et al. 2013). Further, after treatment is complete, breast cancer survivors can find it difficult to re-enter the workforce and view the cancer diagnosis as contributing to lost control over career success (Raque-Bogdan et al. forthcoming).

Another way to examine the ongoing issues for young breast cancer survivors is to look at burden of disease data. Burden of disease data examines the health lost due to diagnosis and primary therapy; health loss in the control phase, metastatic phase and terminal phase; as well as long-term health loss due to mastectomy. The AIHW is currently undertaking a project to update Australia's burden of disease data, and data are expected to be released by early 2016.

2.5 Number of deaths

Snapshot

In 2012, breast cancer was the fourth leading cause of death for women aged 20–39. In 2015, it is projected that 65 young women in their 20s and 30s will die from breast cancer. Since 1997, the breast cancer mortality rate for young women aged 20–39 has steadily decreased from 5 deaths per 100,000 in 1997 to 2 deaths per 100,000 in 2015.

Data for this section are sourced from the AIHW National Mortality Database (NMD). Number of deaths refers to the number of deaths for which the underlying cause of death was breast cancer. The breast cancer that led to the death of the person may have been diagnosed many years previously; in the same year in which the person died; or, in some cases, after death. Information on underlying cause of death is derived from the medical certificate for cause of death.

Number of deaths

In 2015, it is projected that 65 young women aged 20–39 will die from breast cancer, representing 2% of all breast cancer deaths (Table 2.7). The proportion of deaths for women in their 20s and 30s is slightly lower than the incidence proportion (see Table 2.1). In 2012, breast cancer was the fourth leading cause of death for women aged 20–39 (Appendix Table A2.24).

Women in their 20s

In 2015, it is projected that 5 women aged 20–29 will die from breast cancer, representing less than 1% of all breast cancer deaths (Table 2.7). In 2012, breast cancer was the eighteenth leading cause of death for women in their 20s, representing 1% of all deaths (Appendix Table A2.25).

Women in their 30s

In 2015, it is projected that 60 women aged 30–39 will die from breast cancer, representing 2% of all breast cancer deaths (Table 2.7). In 2012, breast cancer was the third leading cause of death for women in their 30s, representing 7% of all deaths (Appendix Table A2.26).

Table 2.7: Projected number of deaths from breast cancer, by age group, females, Australia, 2015

Age group (years)	Number	Per cent	Age specific rate
20–29	5	0.2	0.3
30–39	60	2.0	3.6
20–39	65	2.1	1.9
40+	2,970	97.9	51.9
All	3,040	100.0	20.7

Notes

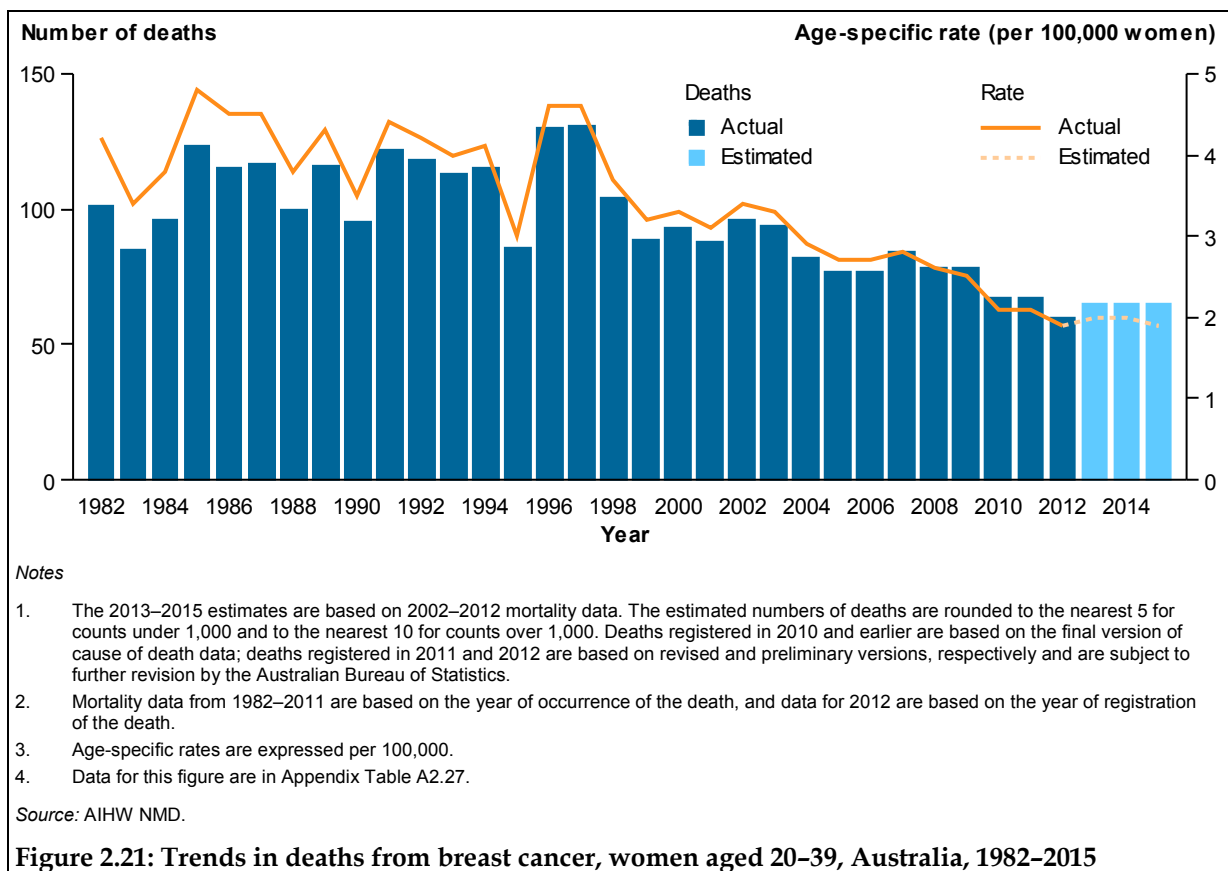
1. The 2015 estimates are based on 2002–2012 mortality data. The estimated numbers of deaths are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000. Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions and are subject to further revision by the Australian Bureau of Statistics.
2. Age-specific rates are expressed per 100,000. The total rate was standardised to the Australian population as at 30 June 2001 and expressed per 100,000 population.

Source: AIHW NMD.

Trends in number of deaths

Between 1982 and 1997, the number of women aged 20–39 who died from breast cancer varied between 85 and 131. Since 1997, the number of women aged 20–39 who died from breast cancer steadily decreased from 131 deaths in 1997 to an estimated 65 deaths in 2015 (Figure 2.21).

In the 1980s and early 1990s, the age-specific mortality rate varied between 3 and 5 deaths per 100,000. Since 1997, the mortality rate decreased from 5 deaths per 100,000 in 1997 to an estimated 2 deaths per 100,000 in 2015 (Figure 2.21). A decrease in the mortality rate may be due to various factors such as increased breast cancer awareness, early detection, the development of clinical guidelines and better treatment.



Breast cancer characteristics

Currently, the mortality database does not contain data on breast cancer histology, size, stage, grade or hormone receptor status.

3 Spotlight on risk-reducing strategies

3.1 Family or genetic risk

A family history of breast cancer is common; however, for most families, breast cancer is not due to a genetic predisposition. About 5–10% of breast cancers can be explained by an inherited gene fault. There are a number of key factors to be considered for assessing risk due to family history. Risk of breast cancer can be categorised as an average risk, moderately increased risk or potentially high risk. Less than 4% of the female population are considered at moderately increased risk and less than 1% at potentially high risk (Cancer Australia 2010).

Women at potentially higher risk of breast cancer may have a breast cancer gene mutation. Women who carry a fault in the BRCA1 or BRCA2 gene have a higher lifetime risk of developing breast cancer and ovarian/fallopian tube cancer. In Australia, the risk of developing breast cancer by the age of 70 has been estimated to be 57% for women with a BRCA1 mutation and 49% for women with a BRCA2 mutation (Cancer Australia 2014).

Women concerned about their genetic risk for breast cancer should consult their general practitioner and can undertake a Familial Risk Assessment – Breast and Ovarian Cancer (FRA-BOC) (Cancer Australia 2015d). Women considered at potentially high risk may undergo genetic counselling at a Family Cancer Clinic. If appropriate, BRCA1 or BRCA2 gene mutation testing may be undertaken (Cancer Australia 2010).

Currently, there is no central database on the number of women who undergo genetic testing for BRCA1 and BRCA2 and therefore numbers and trends cannot be presented.

3.2 Risk-reducing strategies

Snapshot

In 2013–14, there were:

- 1,331 hospitalisations related to reducing the risk of breast cancer for women aged 20–39
- 680 risk-reducing surgical procedures for women aged 20–39. Fifty seven per cent (57%) of surgical procedures were reconstructive and repair procedures and 33% were a mastectomy.

Between 2001–02 and 2013–14, the rate of mastectomy increased from 0.1 per 10,000 in 2001–02 to 0.7 per 10,000 in 2013–14.

Women at increased risk of developing breast cancer may consider risk-reducing strategies such as risk-reducing surgery or medication, as well as participating in ongoing surveillance strategies (Cancer Australia 2010, 2011).

Risk-reducing surgery

This section provides information on risk-reducing surgery for breast cancer. Data for this section are sourced from the NHMD (see Section 2.3 and Appendixes C and D for information on the NHMD).

In this report, hospitalisations related to reducing breast cancer risk are defined as those where the principal diagnosis (the diagnosis that is chiefly responsible for the episode of care) is:

- risk-reducing surgery for risk factors related to malignant neoplasms – breast
- family history of malignant neoplasm of breast.

Hospitalisations related to reducing risk do not include those where the principal diagnosis is breast cancer.

In 2013–14, there were 1,331 hospitalisations related to reducing the risk of breast cancer for women aged 20–39 (Table 3.1).

Table 3.1: Hospitalisations related to reducing risk of breast, by age group, females, Australia, 2013–14

Age group (years)	Number
20–29	221
30–39	1,110
20–39	1,331
40+	3,836
All	5,167

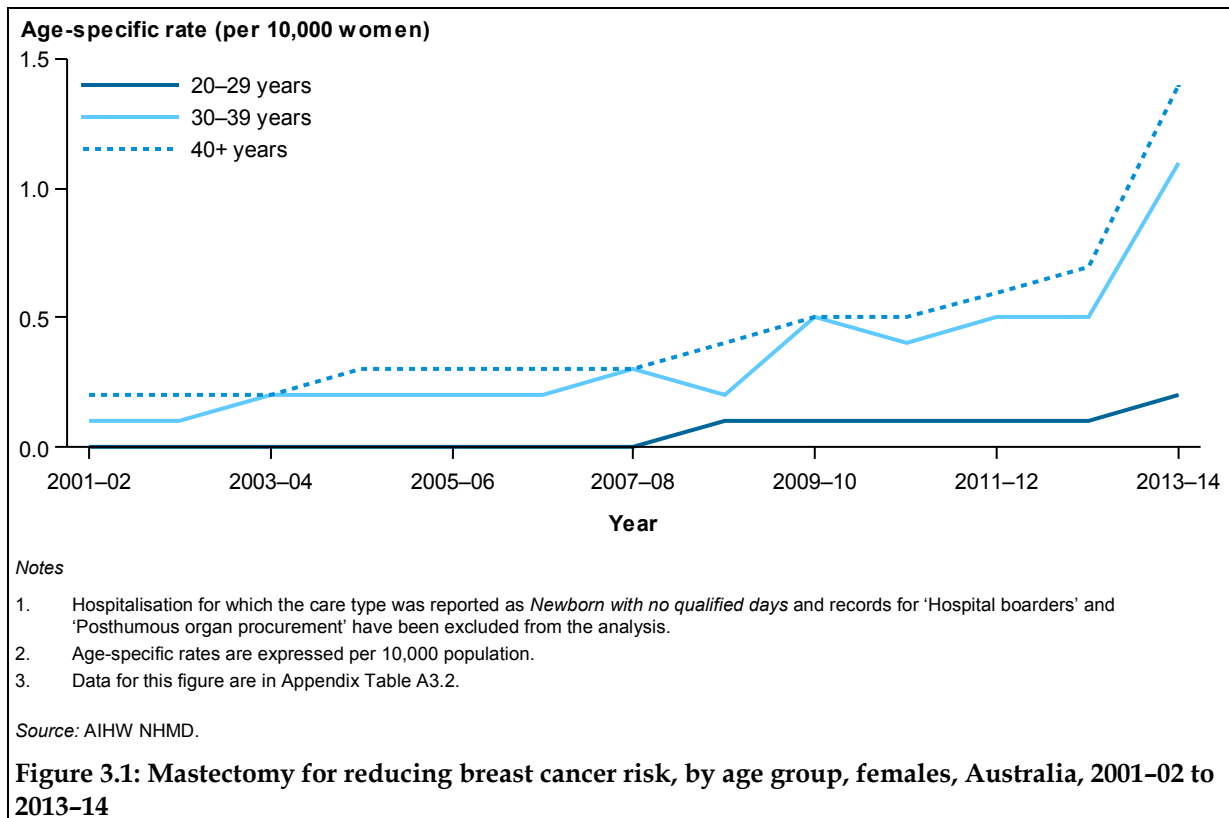
Note: Hospitalisations for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Surgical procedures

In 2013–14, there were 680 risk-reducing surgical procedures for women aged 20–39. Of these, 57% were reconstruction and repair procedures and 33% were a mastectomy (Appendix Table A3.1).

Between 2001–02 and 2013–14, the rate of mastectomy increased from 0.1 per 10,000 in 2001–02 to 0.7 per 10,000 in 2013–14 for women aged 20–39. The biggest increase was seen for women aged 30–39, where the rate increased from 0.1 per 10,000 in 2001–02 to 1.1 per 10,000 in 2013–14. For women of all ages, the largest increase occurred in 2013–14 (Figure 3.1).



Risk-reducing medication

Currently, there is no central database on the number of women who have risk-reducing medication for breast cancer and therefore numbers and trends cannot be presented.

Appendix A: Additional tables

Additional tables for Chapter 2

2.1: Detection and diagnosis

Table A2.1: Breast ultrasounds processed by Medicare, by number of breasts and age group, females, Australia, 2014

Age group (years)	One breast	Both breasts	Total
≤14	2,092	1,153	3,245
15–24	10,172	16,921	27,093
25–34	22,273	49,735	72,008
35–44	25,833	93,313	119,146
15–44	58,278	159,969	218,247
45+	77,734	279,294	357,028
Total	138,104	440,416	578,520

Notes

1. Number of breast ultrasounds (one breast) recorded as MBS item numbers 55060, 55070, 55073 from 1 January 2014 to 31 December 2014.
2. Number of breast ultrasounds (two breasts) recorded as MBS item numbers 55061, 55062, 55076, 55079 from 1 January 2014 to 31 December 2014.

Source: Medicare Australia 2015.

Table A2.2: Mammograms processed by Medicare, by age group, females, Australia, 2007–2014

Age group (years)	2007	2008	2009	2010	2011	2012	2013	2014
≤14	33	29	27	27	21	14	19	12
15–24	1,164	1,081	937	773	648	600	584	475
25–34	15,522	14,224	12,756	10,300	9,578	9,705	10,053	8,349
35–44	73,716	73,415	70,518	63,661	62,566	64,749	70,198	62,465
15–44	90,402	88,720	84,211	74,734	72,792	75,054	80,835	71,289
45+	225,040	232,167	237,478	235,158	238,847	252,257	270,830	272,378
Total	315,475	320,916	321,716	309,919	311,660	327,325	351,684	343,679

Note: Number of mammograms recorded as MBS item number 59300 from 1 January 2007 to 31 December 2014.

Source: Medicare Australia 2015.

Table A2.3: Surveillance MRIs processed by Medicare, by age group, females, Australia, 2009–2014

Age group (years)	2009	2010	2011	2012	2013	2014
15–24	27	22	39	44	61	54
25–34	206	353	449	577	724	733
35–44	503	867	1,144	1,297	1,719	1,905
15–44	736	1,242	1,632	1,918	2,504	2,692
45+	312	516	670	854	1,107	1,207
Total	1,048	1,758	2,302	2,772	3,611	3,905

Notes

1. Number of surveillance MRIs recorded as MBS item number 63464 from 1 January 2009 to 31 December 2014.
2. Total number of surveillance MRIs for 2014 includes 6 cases with unknown age.

Source: Medicare Australia 2015.

Table A2.4: Detection MRIs processed by Medicare, by age group, females, Australia, 2009–2014

Age group (years)	2009	2010	2011	2012	2013	2014
15–24	—	3	1	3	2	4
25–34	3	25	47	53	56	57
35–44	5	59	104	119	128	143
15–44	8	87	152	175	186	204
45+	2	36	68	67	66	95
Total	10	123	220	242	252	299

Note: Number of detection MRIs recorded as MBS item number 63467 from 1 January 2009 to 31 December 2014.

Source: Medicare Australia 2015.

Table A2.5: Breast biopsies processed by Medicare, by type of biopsy age group, females, Australia, 2014

Age group (years)	Fine needle, imaging guided	Vacuum-assisted, image guided	Core biopsy	Total
≤14	44	0	8	52
15–24	1,632	19	1,278	2,929
25–34	4,800	108	3,443	8,351
35–44	9,319	544	7,256	17,119
15–44	15,751	671	11,977	28,399
45+	24,778	2,996	20,967	48,741
Total	40,573	3,667	32,952	77,192

Note: Number of breast biopsies recorded as MBS item numbers 31533, 31530 and 31548 from 1 January 2014 to 31 December 2014.

Source: Medicare Australia 2015.

2.2: Number of new cases

Table A2.6: Estimated 5 most commonly diagnosed cancers for females aged 20–39, Australia, 2015

Rank	Cause of death	Number	Per cent
1	Breast (C50)	795	24.0
2	Melanoma of the skin (C43)	660	19.9
3	Thyroid (C73)	450	13.6
4	Cervix (C53)	275	8.3
5	Lymphoma (C81–C85)	230	6.9
	All cancers combined	3,315	100.0

Note: The 2015 estimates are based on 2002–2011 incidence data. The estimated numbers of cases are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000.

Source: AIHW ACD 2011.

Table A2.7: Estimated 5 most commonly diagnosed cancers for females aged 20–29, Australia, 2015

Rank	Cause of death	Number	Per cent
1	Melanoma of the skin (C43)	215	24.2
2	Thyroid (C73)	120	13.5
3	Lymphoma (C81–C85)	105	11.8
4	Cervix (C53)	90	10.1
5	Breast (C50)	80	9.0
	All cancers combined	890	100.0

Note: The 2015 estimates are based on 2002–2011 incidence data. The estimated numbers of cases are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000.

Source: AIHW ACD 2011.

Table A2.8: Estimated 5 most commonly diagnosed cancers for females aged 30–39, Australia, 2015

Rank	Cause of death	Number	Per cent
1	Breast (C50)	715	29.4
2	Melanoma of the skin (C43)	445	18.3
3	Thyroid (C73)	325	13.4
4	Cervix (C53)	185	7.6
5	Lymphoma (C81–C85)	125	5.1
	All cancers combined	2,430	100.0

Note: The 2015 estimates are based on 2002–2011 incidence data. The estimated numbers of cases are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000.

Source: AIHW ACD 2011.

Table A2.9: Trends in new cases of breast cancer, by age group, females, Australia, 1982–2015

Year	20–29 years		30–39 years		20–39 years		40 years and older	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
1982	62	4.9	434	38.3	496	20.6	4,810	176.0
1983	45	3.5	451	38.4	496	20.1	4,870	175.0
1984	47	3.6	444	37.0	491	19.6	5,218	183.4
1985	45	3.4	503	41.0	548	21.5	5,366	184.6
1986	52	3.9	469	37.3	521	20.2	5,566	187.1
1987	66	4.9	555	43.7	621	23.8	6,072	198.1
1988	55	4.1	508	39.2	563	21.3	6,162	195.8
1989	53	3.9	524	39.6	577	21.5	6,595	204.0
1990	60	4.4	555	41.1	615	22.5	6,809	205.5
1991	61	4.4	577	41.9	638	23.1	7,398	217.7
1992	52	3.7	559	39.9	611	21.9	7,393	212.8
1993	69	5.0	576	40.7	645	23.0	8,129	228.9
1994	66	4.8	595	41.6	661	23.5	9,087	250.1
1995	65	4.7	595	41.4	660	23.4	9,396	252.8
1996	52	3.7	620	42.8	672	23.7	9,072	238.3
1997	62	4.5	617	42.5	679	23.9	9,521	243.9
1998	66	4.8	622	42.8	688	24.3	10,045	251.1
1999	60	4.4	628	43.0	688	24.4	9,973	243.2
2000	61	4.5	637	43.4	698	24.8	10,694	254.5
2001	56	4.2	625	42.2	681	24.2	11,154	258.7
2002	59	4.4	635	42.6	694	24.6	11,385	258.3
2003	53	4.0	666	44.6	719	25.4	11,154	247.6
2004	65	4.8	636	42.7	701	24.7	11,512	250.5
2005	62	4.5	661	44.2	723	25.3	11,537	246.3
2006	65	4.7	668	44.6	733	25.3	11,960	250.8
2007	62	4.3	624	41.2	686	23.3	11,957	245.8
2008	66	4.4	706	46.1	772	25.6	12,843	258.8
2009	83	5.4	655	42.4	738	23.9	13,017	257.0
2010	76	4.8	696	44.8	772	24.6	13,484	260.7
2011	78	4.9	689	44.2	767	24.2	13,698	259.0
2012	75	4.6	685	43.5	760	23.7	13,860	256.4
2013	80	4.8	690	43.1	765	23.5	14,170	256.9
2014	80	4.8	700	42.8	780	23.6	14,490	257.8
2015	80	4.7	715	42.5	795	23.6	14,800	258.4

Notes

1. The 2012–2015 estimates are based on 2002–2011 incidence data. The estimated numbers of cases are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000.
2. Age-specific rates are expressed per 100,000.

Source: AIHW ACD 2011.

Table A2.10: New cases of breast cancer, by histology type, size of tumour and age group, females, Australia, 2009

Characteristics	20–29 years		30–39 years		20–39 years		40 years or older	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Histology type								
Invasive ductal carcinoma	68	81.9	576	87.9	644	87.3	10,177	78.3
Invasive lobular carcinoma	2	2.4	20	3.1	22	3.0	1,389	10.7
Medullar carcinoma and atypical medullary carcinoma	2	2.4	7	1.1	9	1.2	56	0.4
Tubular carcinoma and invasive cribriform carcinoma	—	—	5	0.8	5	0.7	214	1.6
Mucinous carcinoma	3	3.6	15	2.3	18	2.4	270	2.1
Invasive papillary carcinoma	1	1.2	8	1.2	9	1.2	145	1.1
Inflammatory carcinoma	—	—	2	0.3	2	0.3	21	0.2
Mesenchymal	2	2.4	—	—	2	0.3	13	0.1
Other—specified	2	2.4	7	1.1	9	1.2	207	1.6
Unspecified	3	3.6	15	2.3	18	2.4	524	4.0
Size								
<15 mm	18	21.7	168	25.6	186	25.2	4,179	32.1
15–19 mm	15	18.1	91	13.9	106	14.4	1,950	15.0
20–29 mm	15	18.1	162	24.7	177	24.0	2,563	19.7
30–39 mm	9	10.8	75	11.5	84	11.4	1,179	9.1
40–49 mm	1	1.2	26	4.0	27	3.7	542	4.2
≥50 mm	8	9.6	52	7.9	60	8.1	753	5.8
Unknown	17	20.5	81	12.4	98	13.3	1,851	14.2
All	83	100.0	655	100.0	738	100.0	13,017	100.0

Notes

1. The histology types included in each group are listed in Appendix Table B1.
2. Size <15 mm includes breast cancers that are stated to be microinvasive but do not include a size. Unknown breast cancers include those unknown, not applicable and occult primary breast cancers. Breast cancer with occult primary is where no evidence of breast cancer is found in the breast tissue but cancer cells are found in at least one lymph node.

Source: AIHW ACD 2011.

2.3: Hospitalisations

Table A2.11: Breast cancer-related hospitalisations, by age group, females, Australia, 2013–14

Age group (years)	Principal diagnosis of breast cancer		Additional diagnosis of breast cancer		All breast cancer hospitalisations	
	Same-day	Overnight	Same-day	Overnight	Same-day	Overnight
20–29	33	98	415	48	448	146
30–39	242	923	6,181	533	6,423	1,456
20–39	275	1,021	6,596	581	6,871	1,602
40+	4,641	19,235	89,997	12,429	94,638	31,664
All	4,916	20,257	96,593	13,010	101,509	33,267

Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Table A2.12: Trends in breast cancer-related hospitalisations, by age group, females, Australia, 2001–02 to 2013–14

Year	20–29 years		30–39 years		20–39 years		40 years and older	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
2001–02	539	4.0	6,964	46.7	7,503	26.6	80,350	180.4
2002–03	519	3.9	7,488	50.2	8,007	28.2	88,974	195.6
2003–04	527	3.9	7,451	49.9	7,978	28.0	96,167	207.3
2004–05	609	4.4	7,354	49.1	7,963	27.7	96,903	205.0
2005–06	489	3.5	7,710	51.2	8,199	28.1	99,164	205.9
2006–07	724	5.0	8,327	54.7	9,051	30.4	110,997	226.0
2007–08	619	4.1	7,447	48.4	8,066	26.4	113,442	226.3
2008–09	731	4.7	8,095	52.2	8,826	28.3	115,925	226.5
2009–10	794	5.0	7,283	46.8	8,077	25.7	119,416	228.3
2010–11	749	4.6	7,464	47.7	8,213	25.8	121,310	226.9
2011–12	663	4.0	7,312	46.0	7,975	24.7	122,195	223.8
2012–13	811	4.9	7,120	44.0	7,931	24.2	122,251	219.5
2013–14	594	3.5	7,879	47.8	8,473	25.5	126,302	223.0

Notes

- Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.
- Age-specific rates are expressed per 10,000 population.

Source: AIHW NHMD.

Table A2.13: Hospitalisations with a principal diagnosis of breast cancer, by histology type and age group, females, Australia, 2013–14

Histology type	20–29 years		30–39 years		20–39 years		40 years and older	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Invasive ductal carcinoma	86	65.6	799	68.6	885	68.3	13,707	57.4
Invasive lobular carcinoma	—	—	27	2.3	27	2.1	2,484	10.4
Medullar carcinoma and atypical medullary carcinoma	—	—	8	0.7	8	0.6	57	0.2
Tubular carcinoma and invasive cribriform carcinoma	—	—	12	1.0	12	0.9	315	1.3
Mucinous carcinoma	2	1.5	12	1.0	14	1.1	417	1.7
Invasive papillary carcinoma	—	—	3	0.3	3	0.2	230	1.0
Inflammatory carcinoma	1	0.8	—	—	1	0.1	34	0.1
Mesenchymal	—	—	5	0.4	5	0.4	41	0.2
Other—specified	11	8.4	21	1.8	32	2.5	538	2.3
Unspecified	22	16.8	168	14.4	190	14.7	3,267	13.7
Unknown	9	6.9	110	9.4	119	9.2	2,786	11.7
All	131	100.0	1,165	100.0	1,296	100.0	23,876	100.0

Notes

1. Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.
2. The histology types included in each group are listed in Appendix Table B1.

Source: AIHW NHMD.

Table A2.14: DCIS-related hospitalisations, by age group, females, Australia, 2013–14

Age group (years)	Principal diagnosis of DCIS		Additional diagnosis of DCIS		All DCIS hospitalisations	
	Number	Per cent	Number	Per cent	Number	Per cent
20–29	10	71.4	4	28.6	14	100.0
30–39	137	50.9	129	48.5	266	100.0
20–39	147	51.9	133	47.5	280	100.0
40+	4,510	71.9	1,643	26.7	6,153	100.0
All	4,658	71.0	1,776	27.6	6,434	100.0

Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Table A2.15: Surgical procedures for breast cancer-related hospitalisations, by age group, females, Australia, 2013–14

Procedure	20–29 years		30–39 years		20–39 years		40 years and older	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Breast conserving surgery	50	20.1	448	21.7	498	21.5	12,294	29.9
Mastectomy	45	18.1	417	20.2	462	20.0	6,757	16.4
Reconstruction and repair	60	24.1	336	16.3	396	17.1	3,067	7.5
Excision of axilla lymph node	93	37.3	816	39.5	909	39.3	17,913	43.6
Other procedures on breast	1	0.4	49	2.4	50	2.2	1,072	2.6
All	249	100	2,066	100	2,315	100	41,103	100

Notes

1. Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.
2. Percentages were calculated by dividing the number of procedures in each category by the total number of surgical procedures.
3. More than one procedure can be reported for each hospitalisation.

Source: AIHW NHMD.

Table A2.16: Breast conserving procedures for breast cancer-related hospitalisations, by procedure type and age group, females, Australia, 2013–14

Procedure	20–29 years		30–39 years		20–39 years		40 years and older	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Excision of lesion of breast	41	82.0	354	79.0	395	79.3	9,903	80.6
Re-excision of lesion of breast	9	18.0	94	21.0	103	20.7	2,391	19.4
All	50	100.0	448	100.0	498	100.0	12,294	100.0

Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Table A2.17: Mastectomy for breast cancer-related hospitalisations, by mastectomy procedure type and age group, females, Australia, 2013–14

Procedure	20–29 years		30–39 years		20–39 years		40 years and older	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Single	25	55.6	297	71.2	322	69.7	5,555	82.2
Double	20	44.4	120	28.8	140	30.3	1,202	17.8
All	45	100.0	417	100.0	462	100.0	6,757	100.0

Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Table A2.18: Mastectomy for breast cancer-related hospitalisations, by mastectomy type and age group, females, Australia, 2013–14

Procedure	20–29 years		30–39 years		20–39 years		40 years and older	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Nipple-sparing mastectomy	16	35.6	118	28.3	134	29.0	867	12.8
All other mastectomies	29	64.4	299	71.7	328	71.0	5,890	87.2
All	45	100.0	417	100.0	462	100.0	6,757	100.0

Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Table A2.19: Trends in selected surgical procedures for breast cancer-related hospitalisations, by age group, females, Australia, 2001–02 to 2013–14

Year	20–29 years		30–39 years		20–39 years		40 years and older	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Breast conserving surgery								
2001–02	65	48.1	470	37.3	535	36.2	7,435	37.4
2002–03	52	37.1	529	31.5	581	31.0	9,041	31.7
2003–04	48	35.3	562	30.1	610	29.7	9,078	31.2
2004–05	56	32.9	528	30.2	584	30.0	9,045	30.8
2005–06	56	38.1	558	30.2	614	29.6	9,737	30.9
2006–07	65	32.3	528	29.1	593	28.7	9,895	30.4
2007–08	38	21.6	530	25.7	568	26.1	9,939	29.6
2008–09	57	22.4	481	23.1	538	23.2	10,170	28.2
2009–10	61	25.2	486	23.1	547	22.9	10,232	27.6
2010–11	53	24.0	473	22.9	526	22.8	10,716	29.5
2011–12	59	27.1	477	23.2	536	22.8	11,225	30.3
2012–13	61	21.3	474	22.2	535	22.3	11,514	29.9
2013–14	50	20.1	448	21.5	498	21.7	12,294	29.9

(continued)

Table A2.19 (continued): Trends in selected surgical procedures for breast cancer-related hospitalisations, by age group, females, Australia, 2001-02 to 2013-14

Year	20-29 years		30-39 years		20-39 years		40 years and older	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Mastectomy								
2001-02	6	4.4	130	9.5	136	10.0	1,597	8.0
2002-03	24	17.1	311	18.2	335	18.2	4,711	16.5
2003-04	20	14.7	353	18.4	373	18.7	4,761	16.4
2004-05	30	17.6	299	17.0	329	17.0	4,710	16.0
2005-06	19	12.9	308	16.1	327	16.3	4,809	15.3
2006-07	32	15.9	302	16.4	334	16.4	4,823	14.8
2007-08	37	21.0	358	17.9	395	17.6	5,170	15.4
2008-09	49	19.3	377	18.3	426	18.2	5,615	15.6
2009-10	39	16.1	388	18.1	427	18.3	5,819	15.7
2010-11	42	19.0	406	19.5	448	19.5	5,941	16.4
2011-12	39	17.9	401	19.0	440	19.1	6,052	16.3
2012-13	60	21.0	413	19.6	473	19.5	6,477	16.8
2013-14	45	18.1	417	20.0	462	20.2	6,757	16.4
Reconstruction and repair								
2001-02	11	8.1	118	9.0	129	9.1	838	4.2
2002-03	10	7.1	122	7.2	132	7.2	827	2.9
2003-04	22	16.2	170	9.5	192	9.0	835	2.9
2004-05	10	5.9	146	8.1	156	8.3	1,022	3.5
2005-06	10	6.8	176	9.1	186	9.3	1,207	3.8
2006-07	19	9.5	180	9.8	199	9.8	1,237	3.8
2007-08	26	14.8	280	13.9	306	13.8	1,511	4.5
2008-09	47	18.5	277	13.9	324	13.3	1,710	4.7
2009-10	37	15.3	320	15.1	357	15.1	1,872	5.1
2010-11	25	11.3	285	13.5	310	13.7	2,249	6.2
2011-12	41	18.8	336	16.3	377	16.0	2,490	6.7
2012-13	61	21.3	364	17.6	425	17.1	2,871	7.4
2013-14	60	24.1	336	17.1	396	16.3	3,067	7.5

Notes

1. Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.
2. Percentages were calculated by dividing the number of procedures in each category by the total number of surgical procedures for each age group.

Source: AIHW NHMD.

Table A2.20: Excision of axilla lymph node for breast cancer-related hospitalisations, by age group, females, Australia, 2013–14

Procedures	20–29 years		30–39 years		20–39 years		40 years and older	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Excision of lymph node of axilla	7	7.5	29	3.6	36	4.0	534	3.0
Sentinel lymph node biopsy	52	55.9	448	54.9	500	55.0	11,914	66.5
Regional excision of lymph nodes of axilla	3	3.2	35	4.3	38	4.2	970	5.4
Radical excision of lymph nodes of axilla	31	33.3	304	37.3	335	36.9	4,495	25.1
All	93	100.0	816	100.0	909	100.0	17,913	100.0

Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Table A2.21: Chemotherapy breast cancer-related hospitalisations, by age group, females, Australia, 2013–14

Age group (years)	Number	Per cent of breast cancer-related hospitalisations
20–29	411	69.2
30–39	6,144	78.0
20–39	6,555	77.4
40 years and older	87,698	69.4
Total	94,253	..

Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

2.4: Survival

Table A2.22: Trends in 5-year relative survival rates from breast cancer, by age group, females, Australia, 1982–1986 to 2007–2011

Year	20–29 years		30–39 years		20–39 years		40 years and older	
	5-year relative survival (%)	95% confidence interval	5-year relative survival (%)	95% confidence interval	5-year relative survival (%)	95% confidence interval	5-year relative survival (%)	95% confidence interval
1982–1986	n.p.	n.p.	71.8	67.9–75.4	71.9	68.2–75.2	72.0	70.7–73.2
1987–1991	70.1	64.2–75.2	74.0	72.2–75.7	73.6	71.9–75.3	74.5	73.9–75.1
1992–1996	73.0	67.5–77.8	77.8	76.2–79.3	77.3	75.8–78.8	80.7	80.2–81.2
1997–2001	77.2	72.0–81.6	81.9	80.5–83.2	81.5	80.1–82.8	85.7	85.2–86.1
2002–2006	82.0	77.1–85.9	84.5	83.2–85.7	84.3	83.0–85.5	88.3	87.9–88.6
2007–2011	86.0	81.6–89.3	87.8	86.6–88.9	87.6	86.5–88.7	89.6	89.3–90.0

Source: AIHW ACD 2011.

Table A2.23: Five-year relative survival rates from breast cancer, by histology type, size of tumour and age group, females, Australia, 1992–2011

Characteristics	20–29 years		30–39 years		20–39 years		40 years and older	
	5-year relative survival	95% confidence interval	5-year relative survival (%)	95% confidence interval	5-year relative survival (%)	95% confidence interval	5-year relative survival (%)	95% confidence interval
Histology type								
Invasive ductal carcinoma	79.6	77.0–82.0	83.1	82.3–83.8	82.8	82.1–83.5	88.0	87.8–88.3
Invasive lobular carcinoma	n.p.	n.p.	84.3	81.2–87.0	84.0	80.9–86.6	90.9	90.4–91.4
Medullar carcinoma and atypical medullary carcinoma	86.8	70.9–94.4	93.8	89.5–96.4	92.8	88.7–95.4	91.6	89.4–93.5
Tubular carcinoma and invasive cribriform carcinoma	n.p.	n.p.	98.4	92.5–99.9	98.4	92.8–99.9	99.7	98.9–100.4
Mucinous carcinoma	n.p.	n.p.	95.7	90.8–98.1	95.0	90.3–97.5	96.8	95.4–98.2
Invasive papillary carcinoma	n.p.	n.p.	88.2	73.4–95.1	90.0	77.2–95.9	96.8	94.2–99.0
Inflammatory carcinoma	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	42.9	35.6–50.1
Mesenchymal	n.p.	n.p.	n.p.	n.p.	62.5	44.3–76.2	54.6	45.7–62.9
Other—specified	76.5	60.7–86.7	71.0	66.0–75.4	71.6	66.9–75.8	64.2	62.7–65.7
Unspecified	81.2	67.7–89.5	79.6	74.7–83.6	79.8	75.3–83.5	50.7	49.4–51.9
Size								
<15 mm	91.8	86.6–95.0	93.5	92.3–94.5	93.3	92.2–94.3	98.7	98.5–99.0
15–19 mm	89.1	81.7–93.6	90.6	88.8–92.1	90.4	88.8–91.9	95.2	94.7–95.6
20–29 mm	85.7	79.8–90.1	84.7	82.9–86.3	84.8	83.1–86.3	90.2	89.7–90.7
30–39 mm	76.4	64.0–85.1	81.2	78.1–83.8	80.8	77.9–83.4	83.2	82.4–84.1
40–49 mm	74.5	57.7–85.5	74.5	69.6–78.7	74.5	69.9–78.6	78.1	76.6–79.4
≥50 mm	73.2	69.5–76.5	77.9	76.8–78.9	77.5	76.4–78.5	77.6	77.3–78.0

Notes

1. The histology types included in each group are listed in Appendix Table B1.
2. Size <15 mm includes breast cancers that are stated to be microinvasive but do not include a size. Unknown breast cancers include those unknown, not applicable and occult primary breast cancers. Breast cancer with occult primary is where no evidence of breast cancer is found in the breast tissue but cancer cells are found in at least one lymph node.

Source: AIHW ACD 2011.

2.5: Number of deaths

Table A2.24: Leading causes of death in women aged 20–39, Australia, 2012

Rank	Cause of death	Number	Per cent
1	Suicide (X60–X84)	208	17.3
2	Accidental poisoning (X40–X49)	107	8.9
3	Land transport accidents (V01–V89)	104	8.7
4	Breast cancer (C50)	60	5.0
5	Assault (X85–Y09)	36	3.0
	All deaths	1,202	100.0

Notes

1. Deaths registered in 2012 are based on a preliminary version of the cause of death data and are subject to further revision by the Australian Bureau of Statistics.
2. Data for 2012 are based on the year of registration of the death.

Source: AIHW NMD.

Table A2.25: Leading causes of death in women aged 20–29, Australia, 2012

Rank	Cause of death	Number	Per cent
1	Suicide (X60–X84)	92	21.9
2	Land transport accidents (V01–V89)	68	16.2
3	Accidental poisoning (X40–X49)	33	7.9
4	Assault (X85–Y09)	15	3.6
5	Epilepsy and status epilepticus (G40, G41)	14	3.3
18	Breast cancer (C50)	4	1.0
	All deaths	420	100.0

Notes

1. Deaths registered in 2012 are based on a preliminary version of the cause of death data and are subject to further revision by the Australian Bureau of Statistics.
2. Data for 2012 are based on the year of registration of the death.

Source: AIHW NMD.

Table A2.26: Leading causes of death in women aged 30–39, Australia, 2012

Rank	Cause of death	Number	Per cent
1	Suicide (X60–X84)	116	14.8
2	Accidental poisoning (X40–X49)	74	9.5
3	Breast cancer (C50)	56	7.2
4	Land transport accidents (V01–V89)	36	4.6
5	Cerebrovascular diseases (I60–I69)	27	3.5
	All deaths	782	100.0

Notes

1. Deaths registered in 2012 are based on a preliminary version of the cause of death data and are subject to further revision by the Australian Bureau of Statistics.
2. Data for 2012 are based on the year of registration of the death.

Source: AIHW NMD.

Table A2.27: Trend in deaths from breast cancer, by age group, females, Australia, 1982–2015

Year	20–39 years		40 years and older	
	Number	Rate	Number	Rate
1982	101	4.2	1,886	69.0
1983	85	3.4	1,955	70.2
1984	96	3.8	2,070	72.8
1985	123	4.8	2,073	71.3
1986	115	4.5	2,050	68.9
1987	117	4.5	2,176	71.0
1988	100	3.8	2,261	71.8
1989	116	4.3	2,333	72.2
1990	95	3.5	2,327	70.2
1991	122	4.4	2,404	70.7
1992	118	4.2	2,310	66.5
1993	113	4.0	2,497	70.3
1994	115	4.1	2,554	70.3
1995	86	3.0	2,549	68.6
1996	130	4.6	2,490	65.4
1997	131	4.6	2,473	63.4
1998	104	3.7	2,437	60.9
1999	89	3.2	2,423	59.1
2000	93	3.3	2,428	57.8
2001	88	3.1	2,506	58.1
2002	96	3.4	2,585	58.6
2003	94	3.3	2,616	58.1
2004	82	2.9	2,583	56.2
2005	77	2.7	2,632	56.2
2006	77	2.7	2,547	53.4
2007	84	2.8	2,638	54.2
2008	78	2.6	2,667	53.8
2009	78	2.5	2,707	53.4
2010	67	2.1	2,770	53.6
2011	67	2.1	2,833	53.6
2012	60	1.9	2,735	50.6
2013	65	2.0	2,900	52.6
2014	65	2.0	2,940	52.3
2015	65	1.9	2,970	51.9

Notes

1. The 2013–2015 estimates are based on 2002–2012 mortality data. The estimated numbers of deaths are rounded to the nearest 5 for counts under 1,000 and to the nearest 10 for counts over 1,000. Deaths registered in 2010 and earlier are based on the final version data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the Australian Bureau of Statistics.
2. Mortality data from 1982–2011 are based on the year of occurrence of the death, and data for 2012 are based on the year of registration.
3. Age-specific rates are expressed per 100,000.

Source: AIHW NMD.

Additional tables for Chapter 3

3.2: Risk-reducing surgery

Table A3.1: Surgical procedures for breast cancer risk-reducing-related hospitalisations, by age group, females, Australia, 2013–14

Procedure	20–29 years		30–39 years		20–39 years		40 years and older	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Breast conserving surgery	—	—	3	0.5	3	0.4	7	0.4
Mastectomy	40	33.1	187	33.5	227	33.4	802	46.7
Reconstruction and repair of breast, nipple and areola	66	54.5	323	57.8	389	57.2	751	43.7
Excision of axilla lymph node	12	9.9	40	7.2	52	7.6	141	8.2
Other procedures on breast	3	2.5	6	1.1	9	1.3	17	1.0
All	121	100.0	559	100.0	680	100.0	1,718	100.0

Note: Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Source: AIHW NHMD.

Table A3.2: Mastectomy for reducing breast cancer risk, by age group, females, Australia, 2001–02 to 2013–14

Year	20–29 years		30–39 years		20–39 years		40 years and older	
	No.	Age-specific rate	No.	Age-specific rate	No.	Age-specific rate	No.	Age-specific rate
2001–02	6	0.0	18	0.1	24	0.1	97	0.2
2002–03	—	—	20	0.1	20	0.1	111	0.2
2003–04	3	0.0	33	0.2	36	0.1	102	0.2
2004–05	4	0.0	23	0.2	27	0.1	121	0.3
2005–06	6	0.0	32	0.2	38	0.1	143	0.3
2006–07	3	0.0	37	0.2	40	0.1	141	0.3
2007–08	1	0.0	45	0.3	46	0.2	161	0.3
2008–09	12	0.1	36	0.2	48	0.2	212	0.4
2009–10	12	0.1	71	0.5	83	0.3	253	0.5
2010–11	17	0.1	63	0.4	80	0.3	249	0.5
2011–12	17	0.1	80	0.5	97	0.3	313	0.6
2012–13	16	0.1	83	0.5	99	0.3	399	0.7
2013–14	40	0.2	187	1.1	227	0.7	802	1.4

Notes

- Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.
- Age-specific rates are expressed per 10,000 population.

Source: AIHW NHMD.

Appendix B: Defining breast cancer

Invasive breast cancer

Histology groupings for invasive breast cancers are listed in Table B1.

Table B1: Breast cancer histology groupings

Breast cancer group	Type of breast cancer (ICD-O-3 codes)
Invasive ductal carcinoma	Pleomorphic carcinoma (8022)
	Carcinoma with osteoclast-like giant cells (8035)
	Basaloid carcinoma (8123)
	Scirrhus adenocarcinoma (8141)
	Carcinoma simplex (8231)
	Infiltrating duct carcinoma, not otherwise specified (8500)
	Duct carcinoma, desmoplastic type (8514)
	Infiltrating ductular carcinoma (8521)
	Infiltrating duct and lobular carcinoma (8522)
	Infiltrating duct mixed with other types of carcinoma (8523)
	Paget disease and infiltrating duct carcinoma of breast (8541)
	Paget disease and intraductal carcinoma of breast (8543)
	Invasive lobular carcinoma
Lobular carcinoma, not otherwise specified (8520)	
Infiltrating lobular mixed with other types of carcinoma (8524)	
Medullary carcinoma and atypical medullary carcinoma	Medullary carcinoma, not otherwise specified (8510)
	Atypical medullary carcinoma (8513)
	Medullary carcinoma with lymphoid stroma (8512)
Tubular carcinoma and invasive cribriform carcinoma	Tubular adenocarcinoma (8211)
	Cribriform carcinoma, not otherwise specified (8201)
Mucinous carcinoma	Mucinous adenocarcinoma (8480)
	Mucin-producing adenocarcinoma (8481)
	Signet ring cell carcinoma (8490)
Invasive papillary carcinoma	Intraductal papillary adenocarcinoma with invasion (8503)
	Papillary adenocarcinoma, not otherwise specified (8260)
	Intracystic (papillary) adenocarcinoma (8504)
	Papillary carcinoma, not otherwise specified (8050)
	Solid papillary carcinoma (8509)
	Invasive micropapillary carcinoma (8507)
Inflammatory carcinoma	Inflammatory carcinoma (8530)
Mesenchymal	Sarcoma, not otherwise specified (8800)
	Spindle cell sarcoma (8801)
	Giant cell sarcoma (8802)

(continued)

Table B1 (continued): Breast cancer histology groupings

Breast cancer group	Type of breast cancer (ICD-O-3 codes)	
Mesenchymal (<i>continued</i>)	Epithelioid sarcoma (8804)	
	Undifferentiated sarcoma (8805)	
	Fibrosarcoma (8810)	
	Fibromyxosarcoma (8811)	
	Low grade myofibroblastic sarcoma (8825)	
	Malignant fibrous histiocytoma (8830)	
	Liposarcoma, not otherwise specified (8850)	
	Well differentiated liposarcoma, not otherwise specified (excluding superficial soft tissue) (8851)	
	Myxoid liposarcoma (8852)	
	Pleomorphic liposarcoma (8854)	
	Leiomyosarcoma (8890)	
	Angiomyosarcoma (8894)	
	Myosarcoma (8895)	
	Rhabdomyo sarcoma (8900)	
	Alveolar rhabdomyo sarcoma (8920)	
	Stromal sarcoma, not otherwise specified (8935)	
	Haemangiosarcoma (9120)	
	Haemangioendothelioma, malignant (9130)	
	Haemangiopericytoma, malignant (9150)	
	Lymphangio sarcoma (9170)	
	Osteosarcoma, not otherwise specified (9180)	
	Chondrosarcoma, not otherwise specified (9220)	
	Other—specified	Metaplastic carcinoma, not otherwise specified (8575)
		Adenocarcinoma with squamous differentiation (8570)
Adenocarcinoma with spindle cell metaplasia (8572)		
Squamous cell carcinoma, not otherwise specified (8070)		
Squamous cell carcinoma, keratinising, not otherwise specified (8071)		
Squamous cell carcinoma, large cell nonkeratinising, not otherwise specified (8072)		
Squamous cell carcinoma, spindle cell (8074)		
Spindle cell carcinoma, not otherwise specified (8032)		
Carcinosarcoma, not otherwise specified (8980)		
Adenocarcinoma with cartilaginous and osseous metaplasia (8571)		
Pseudosarcomatous carcinoma (8033)		
Malignant myoepithelioma (8982)		
Adenocarcinoma, not otherwise specified (8140)		
Phyllodes tumour, malignant (9020)		
Paget disease, mammary (8540)		
Adenocarcinoma with apocrine metaplasia (8573)		
Apocrine adenocarcinoma (8401)		

(continued)

Table B1 (continued): Breast cancer histology groupings

Breast cancer group	Type of breast cancer (ICD-O-3 codes)	
Other—specified <i>(continued)</i>	Neuroendocrine carcinoma, not otherwise specified (8246)	
	Small cell carcinoma, not otherwise specified (8041)	
	Carcinoma with neuroendocrine differentiation (8574)	
	Large cell neuroendocrine carcinoma (8013)	
	Carcinoid, not otherwise specified (8240)	
	Atypical carcinoid tumour (8249)	
	Adenocarcinoma with mixed subtypes (8255)	
	Mixed cell adenocarcinoma (8323)	
	Secretory carcinoma of breast (C50.)(8502)	
	Acinar cell carcinoma (8550)	
	Mucoepidermoid carcinoma (8430)	
	Lipid-rich carcinoma (C50.)(8314)	
	Glycogen-rich carcinoma (8315)	
	Clear cell adenocarcinoma, not otherwise specified (8310)	
	Sebaceous carcinoma (8410)	
	Mixed tumour, malignant (8940)	
	Lymphoepithelial carcinoma (8082)	
	Basal cell adenocarcinoma (8147)	
	Trabecular carcinoma (8190)	
	Solid carcinoma, not otherwise specified(8230)	
	Adenomyoepithelioma, malignant (8983)	
	Adenoid cystic carcinoma (8200)	
	Epithelial-myoeithelial carcinoma (8562)	
	Peripheral neuroectodermal tumour, not otherwise specified (9364)	
	Granular cell tumour, malignant (9580)	
	Adenosquamous carcinoma (8560)	
	Comedocarcinoma, not otherwise specified (C50.)(8501)	
	Unspecified	Neoplasm, malignant (8000)
		Tumour cells, malignant (8001)
		Malignant tumour, spindle cell type (8004)
		Carcinoma, not otherwise specified (8010)
		Large cell carcinoma, not otherwise specified (8012)
		Carcinoma, undifferentiated (8020)
Carcinoma, anaplastic (8021)		
Giant cell and spindle cell carcinoma (8030)		
Giant cell carcinoma (8031)		

Notes

1. Breast cancer histology types have been categorised by the Australasian Association of Cancer Registries.
2. Codes were sourced from the International Classification of Diseases for Oncology third edition.

Non-invasive

Histology groupings for non-invasive tumours are listed in Table B2.

Non-invasive tumours that are diagnosed within 4 months of an invasive breast cancer are excluded. This is referred to as the '4-month rule' and is based on the consensus view that, in such a situation, the invasive breast cancer was almost certainly present at the time of the DCIS diagnosis, but was not detected. The rule removed any non-invasive records in which an invasive breast cancer was diagnosed in less than or equal to 121 days of a non-invasive tumour.

Table B2: Non-invasive breast tumours – histology groupings

Breast cancer group	Type of breast cancer (ICD-O-3 codes)
Ductal carcinoma in situ	Papillary carcinoma in situ, not otherwise specified (8050)
	Cribriform carcinoma in situ (8201)
	Ductal carcinoma in situ, solid type (8230)
	Papillary adenocarcinoma, not otherwise specified, in situ (8260)
	Apocrine adenocarcinoma in situ (8401)
	Intraductal carcinoma, noninfiltrating, not otherwise specified (8500)
	Comedocarcinoma, non-infiltrating (8501)
	Secretory carcinoma of breast in situ (8502)
	Non-infiltrating intraductal papillary adenocarcinoma (8503)
	Non-infiltrating intracystic carcinoma (8504)
	Intraductal micropapillary carcinoma (8507)
	Cystic hypersecretory carcinoma in situ (8508)
	Solid papillary carcinoma in situ (8509)
	Non-infiltrating ductular carcinoma (8521)
	Intraductal carcinoma and lobular carcinoma in situ (8522)
Ductal carcinoma in situ mixed with other types of carcinoma in situ (8523)	
Lobular carcinoma in situ	Paget disease, in situ, and intraductal carcinoma of breast (8543)
	Pleomorphic lobular carcinoma in situ (8519)
Other specified carcinoma in situ	Lobular carcinoma in situ, not otherwise specified (8520)
	Squamous cell carcinoma in situ, not otherwise specified (8070)
	Adenocarcinoma in situ (8140)
	Mucinous adenocarcinoma in situ, not otherwise specified (8480)
	Paget disease, in situ, mammary (8540)
Unspecified	Adenocarcinoma in situ with squamous metaplasia (8570)
	Carcinoma in situ, not otherwise specified (8010)

Notes

1. Non-invasive breast tumours have been categorised by the Australasian Association of Cancer Registries.
2. Codes were sourced from the International Classification of Diseases for Oncology third edition.

Appendix C: Defining hospitalisations related to breast cancer

Terms and classifications relating to admitted patient care

Statistics on admitted patients are compiled when an **admitted patient** (a patient who undergoes a hospital's formal admission process) completes an episode of admitted patient care and 'separates' from the hospital. This is because most of the data on the use of hospitals by admitted patients are based on information provided at the end of the patients' episodes of care, rather than at the start. The length of stay and the procedures carried out are then known and the diagnostic information is more accurate.

Separation is the term used to refer to the episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay starting or ending in a change of type of care (for example, from acute care to rehabilitation). 'Separation' also means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.

Patient day (or day of patient care) means the occupancy of a hospital bed (or chair in the case of some same-day patients) by an admitted patient for all or part of a day. The length of stay for an overnight patient is calculated by subtracting the date the patient is admitted from the date of separation and deducting days the patient was on leave. A same-day patient is allocated a length of stay of 1 day.

A **same-day separation** occurs when a patient is admitted to and separated from the hospital on the same date. It should be noted that a separation may be generated by a transfer between hospitals, or by a change in the type of care provided. Therefore, same-day separations may include records for patients whose stay in hospital was longer than 1 day but involved more than one separation.

An **overnight** separation occurs when a patient is admitted to and separated from the hospital on different dates.

The **principal diagnosis** is the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care. An **additional diagnosis** is a condition or complaint that either coexists with the principal diagnosis or arises during the episode of care. An additional diagnosis is reported if the condition affects patient management.

In 2013–14, diagnoses and external causes of injury were recorded using the eighth edition of the *International statistical classification of diseases and related health problems, 10th revision, Australian modification* (ICD-10-AM) (NCCC 2012).

A **procedure** is a clinical intervention that is surgical in nature, carries an anaesthetic risk, requires specialised training and/or requires special facilities or services available only in an acute care setting. Procedures therefore encompass surgical procedures and non-surgical investigative and therapeutic procedures, such as X-rays. Patient support interventions that are neither investigative nor therapeutic (such as anaesthesia) are also included. In 2013–14,

procedures were recorded using the eighth edition of the *Australian Classification of Health Interventions* (ACHI) (NCCC 2012).

See Glossary for more information, and for more terms relating to admitted patient care.

Hospitalisations related to breast cancer

Codes used for hospitalisations related to breast cancer are provided in Table C1.

Table C1: Definition of breast cancer-related hospitalisations

Group	Definition	Codes	
		Principal diagnosis	Additional diagnosis
Breast cancer	Principal diagnosis of breast cancer	C50 (breast cancer)	—
	Additional diagnosis of breast cancer	—	C50 (breast cancer)

Note: Codes were sourced from the eighth edition of the ACHI (NCCC 2012).

Surgical procedures

Table C2: Definition of breast cancer-related procedures

Group	Block code	Procedure	Procedure code
Breast conserving surgery	1744	Excision of lesion of breast	31500-00
		Re-excision of lesion of breast	31515-00
Mastectomy	1747 and 1748	Nipple-sparing (subcutaneous) mastectomy	31524-00 and 31524-01
		All other mastectomies	31518-00 and 31518-01
		Single (unilateral)	31524-00 and 31518-00
		Double (bilateral)	31524-01 and 31518-01
Reconstruction and repair surgery	1756, 1757, 1753, 1754, 1755, 1758 and 1741	Not further classified	
Chemotherapy	1920 and 1922	Antineoplastic chemotherapy	96196-00, 96197-00, 96198-00, 96199-00, 96200-00, 96201-00, 96202-00, 96203-00, 96205-00, 96206-00, 96209-00

Note: Block and procedure codes were sourced from the eighth edition of the ACHI (NCCC 2012).

Example combination of surgical procedures

Case one

A young woman was admitted into hospital for a double mastectomy (hospitalisation 1). Following surgery, the young women received chemotherapy (hospitalisation 2–8). Once the chemotherapy was complete, the young woman was admitted into hospital for breast reconstruction and repair procedures (hospitalisation 9–10). All the procedures associated with these hospitalisations are listed below. Note that these 10 hospitalisations could occur over multiple years or they could occur in 1 year.

Hospitalisation 1:

1. Mastectomy, bilateral (31518-01)
2. Sentinel lymph node biopsy (30300-00)
3. Reconstruction of breast with insertion of tissue expander (45539-00)

Hospitalisation 2–8:

1. Chemotherapy (96199-00)

Hospitalisation 9:

1. Removal of breast tissue expander and insertion of permanent prosthesis (45542-00)

Hospitalisation 10:

1. Reconstruction of nipple (45545-00)
2. Reconstruction of areola (45545-01)

Case two

A young woman is admitted into hospital for a mastectomy with reconstruction (hospitalisation 1). Due to the histology type and as chemotherapy and radiotherapy were not recommended, only one hospitalisation was required. All the procedures associated with this hospitalisation are listed below.

Hospitalisation 1:

1. Nipple sparing (subcutaneous) mastectomy, unilateral (31524-00)
2. Sentinel lymph node biopsy (30300-00)
3. Reconstruction of breast using flap (45530-02)
4. Insertion of prosthesis (45524-00)

Ductal carcinoma in situ hospitalisations

Codes used for DCIS hospitalisations are provided in Table C3. Hospitalisations where the additional diagnosis is recorded as DCIS and the principal diagnosis is recorded as invasive breast cancer have been excluded.

Table C3: Definition of breast cancer-related hospitalisations

Group	Definition	Codes	
		Principal diagnosis	Additional diagnosis
DCIS	Principal diagnosis is a DCIS	D05 (DCIS)	—
	Additional diagnosis is a DCIS and the principal diagnosis is not related to breast cancer	—	D05 (DCIS)

Note: Codes were sourced from the eighth edition of the ACHI (NCCC 2012).

Risk-reducing surgery

Codes used for risk-reducing surgery are provided in Table C4.

Table C4: Definition of risk-reducing-related hospitalisations

Group	Principal diagnosis	Codes
		Additional diagnosis
Risk reducing	Z4000 (risk-reducing surgery for risk-factors related to malignant neoplasms—breast)	—
	Z803 (family history of malignant neoplasm of breast)	

Note: Codes were sourced from the eighth edition of the ACHI (NCCC 2012).

Appendix D: Data sources

To provide a comprehensive picture of national cancer statistics in this report, a range of data sources were used, including AIHW and external data sources. These data sources are described in this appendix.

AIHW Australian Cancer Database

The ACD contains unit record data for every cancer diagnosed in Australia since 1982, excluding non-melanoma skin cancer. The state and territory cancer registries collect these data in their respective jurisdictions (and under their respective legislation). An agreed subset of the data is supplied annually to the AIHW, where it is compiled into the ACD. The ACD currently contains data on all cases of cancer diagnosed from 1982 to 2009 for all states and territories, and for 2010 and 2011 for all except New South Wales and the Australian Capital Territory. Incidence projections were calculated for 2012–16 (see *Cancer in Australia: an overview 2014* (AIHW 2014) for more details).

The 2010 and 2011 incidence data for New South Wales and the Australian Capital Territory were not available for inclusion in the 2011 version of the ACD. The 2010 and 2011 incidence data for New South Wales and the Australian Capital Territory were estimated by the AIHW. See *Cancer in Australia: an overview 2014* (AIHW 2014) for more details.

The Data Quality Statement for the ACD 2011 can be found at the following AIHW website: <<http://meteor.aihw.gov.au/content/index.phtml/itemId/586979>>.

AIHW National Hospital Morbidity Database

The AIHW NHMD is compiled from data supplied by the state and territory health authorities. It is a collection of electronic confidentialised summary records for episodes of admitted patient care (separations or hospitalisations) in essentially all public and private hospitals in Australia. The data include demographic, administrative and clinical information, including patient diagnoses and other procedures.

The Data Quality Statement for the AIHW NHMD 2013–14 can be found at the following AIHW website: <<http://meteor.aihw.gov.au/content/index.phtml/itemId/611030>>.

AIHW National Mortality Database

The AIHW NMD contains information on the number of deaths from 1964 to 2012. Cause of Death Unit Record File data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the Australian Bureau of Statistics. The data are maintained by the AIHW in the NMD.

The data quality statements underpinning the AIHW NMD can be found in the following ABS publication: Quality declaration summary, *Causes of death, 2012*, ABS cat. no. 3303.0 <<http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/3303.0Quality+Declaration02012>>.

National Death Index

The National Death Index (NDI) is a database, housed at the AIHW, which contains records of all deaths occurring in Australia since 1980. The data are obtained from the Registrars of Births, Deaths and Marriages in each state and territory. The NDI is designed to facilitate the conduct of epidemiological studies and its use is strictly confined to medical research.

Cancer incidence records from the ACD were linked to the NDI and used to calculate the survival and prevalence data presented in this report.

The Data Quality Statement for the NDI can be found at the following AIHW website: <<http://meteor.aihw.gov.au/content/index.phtml/itemId/480010>>.

Population data

Throughout this report, population data were used to derive rates of, for example, cancer incidence and mortality. The population data were sourced from the Australian Bureau of Statistics using the most up-to-date estimates available at the time of analysis.

To derive its estimates of the resident populations, the Australian Bureau of Statistics uses the 5-yearly Census of Population and Housing data and adjusts it as described below:

- All respondents in the Census are placed in their state or territory, Statistical Local Area and postcode of usual residence; overseas visitors are excluded.
- An adjustment is made for persons missed in the Census.
- Australians temporarily overseas on Census night are added to the usual residence Census count.

Estimated resident populations are then updated each year from the Census data, using indicators of population change such as births, deaths and net migration. More information is available from the Australian Bureau of Statistics website at <www.abs.gov.au>.

Glossary

additional diagnosis: a condition or complaint that either coexists with the principal diagnosis or arises during the episode of care. An additional diagnosis is reported if the condition affected patient management.

admitted patient: a patient who undergoes a hospital's admission process to receive treatment and/or care. This treatment and/or care is provided over a period of time and can occur in hospital and/or in the person's home (for hospital-in-the-home patients).

age-specific rate: a rate for a specific age group. The numerator and denominator relate to the same age group.

age-standardisation: a method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure; then the disease rates that would have occurred with that structure are calculated and compared.

benign: describes non-cancerous tumours that may grow larger but do not spread to other parts of the body.

cancer (malignant neoplasm): a large range of diseases in which some of the body's cells become defective, begin to multiply out of control, can invade and damage the area around them, and can spread to other parts of the body to cause further damage.

carcinoma: a cancer that begins in the lining layer (epithelial cells) of organs.

death due to cancer: a death where the underlying cause is indicated as cancer.

false negative screening result: an outcome whereby a breast cancer that is present is not visible on the screening test.

false positive screening result: an outcome whereby the results suggest a breast cancer where none is present.

grade: describes how quickly the cancer might grow.

histology: the microscopic characteristics of cellular structure and composition of tissue.

hospitalisation: see **separation**.

hormone receptor status: describes whether the cancer cells have receptors for hormones. Hormone receptors affect whether the cell growth is influenced by hormones.

incidence: the number of new cases diagnosed (of an illness or event, and so on) in a given period.

International Statistical Classification of Diseases and Related Health Problems: The World Health Organisation's internationally accepted classification of death and disease. The tenth revision (ICD-10) is currently in use. ICD-10-AM is the Australian modification of ICD-10; it is used for diagnoses and procedures recorded for patients admitted to hospitals.

invasive: see **malignant**.

malignant: a tumour with the capacity to spread to surrounding tissue or to other sites in the body.

metastasis: the process by which cancerous cells are transferred from one part of the body to another; for example, via the lymphatic system or the bloodstream.

principal diagnosis: the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care.

relative survival: the ratio of *observed survival* of a group of persons diagnosed with cancer to *expected survival* of those in the corresponding general population after a specified interval following diagnosis (such as 5 or 10 years).

risk factor: any factor that represents a greater risk of a health disorder or other unwanted condition or event. Some risk factors are regarded as cause of disease, other are not necessarily so. Along with their opposite, namely protective factors, risk factors are known as 'determinants'.

separation: an episode of care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay starting or ending in a change of type of care (for example, from acute care to rehabilitation).

Separation also means the process by which an admitted patient completes an episode of care either by being discharged, dying, transferring to another hospital or changing type of care.

In this report, separations are also referred to as hospitalisations.

stage: the extent of a cancer in the body. Staging is usually based on the size of the tumour, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body.

survival: a general term indicating the probability of being alive for a given amount time after a particular event, such as a diagnosis of cancer (see also **relative survival**).

survivorship: a term which covers the physical, psychosocial and economic issues of cancer and includes issues relating to late effects of treatment, secondary cancers and quality of life after treatment until the end of life.

underlying cause of death: the disease or injury that initiated the sequence of events leading directly to death.

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Related publications

The following AIHW publications relating to breast cancer might also be of interest:

- AIHW 2015. BreastScreen Australia monitoring report 2012–2013. Cancer series no. 95. Cat. no. CAN 93. Canberra: AIHW.
- AIHW 2014. Cancer in Australia: an overview 2012. Cancer series no. 90. Cat. no. CAN 88. Canberra: AIHW.
- AIHW 2012. Breast cancer in Australia: an overview. Cancer series no. 71. Cat no. CAN 67. Canberra: AIHW.

The following references relating to breast cancer might also be of interest:

- Cancer Australia 2015. Breast cancer. Sydney: Cancer Australia. Viewed 2 October 2015, <<http://canceraustralia.gov.au/clinical-best-practice/breast-cancer>>.
- NBCF 2014. Not just an older woman's disease: breast cancer in your 20s and 30s. Sydney: National Breast Cancer Foundation.

Breast cancer in young women is the first national report presenting key data specific to breast cancer in women in their 20s and 30s. This report provides an overview of breast cancer, risk factors for young women, breast cancer detection and diagnosis methods, and key summary measures including incidence, hospitalisations, survival and mortality.