Contents

1 Overview
   Foreword from the Chief Cancer Officer 3
   Introduction 5
   Summary of key findings 6

2 Cancer in NSW
   Cancer incidence and mortality 10
   NSW population figures and cancer statistics 12
   Extent of disease at diagnosis 15
   Cancer survival 24

3 Key performance indicators (KPIs)

   ✅ Cancer prevention 32
      Tobacco control 33
      Skin protection 44
      Healthy lifestyle 47

   ✅ Cancer screening 54
      Breast screening 54
      Cervical screening 62
      Bowel screening 70

   ✅ Cancer treatment and services 76
      Patient experience of cancer treatment 76
      Psycho-oncology 84
      Radiotherapy treatment services 90
      Surgical cancer treatment 94

   🧬 Research: Clinical trials 150

4 Acronyms & abbreviations 158

5 References 160
Foreword from the Chief Cancer Officer

Cancer continues to be a leading cause of premature death and illness in NSW, which has a significant impact on the community, and the NSW health system.

Reducing the incidence of cancer, while ensuring the best quality care and outcomes for those who do experience the disease, are key priorities for the Cancer Institute NSW and the health sector overall.

Since 2010, the Cancer Institute NSW has led the Reporting for Better Outcomes (RBCO) Program, which provides local and statewide cancer data and information to local health districts (LHDs), primary health networks and participating private hospitals. These data enable the health system to identify opportunities to improve cancer prevention initiatives; enhance screening programs; and optimise treatment services and clinical trials at a local level.

While we are seeing improvements, there is still much to do as we work together to ensure all people in NSW experience equitable cancer outcomes, no matter their background or where they live.

This annual report provides key data and information across the full spectrum of cancer control, including a greater number of indicators that provides a more comprehensive view of cancer health system performance.

In particular, information on smoking status and the number of patients advised to quit have been included within patient experience data, as we work to enhance smoking cessation support for people recently diagnosed with cancer.

For the first time this year, public hospitals have been identified within the report’s surgical cancer treatment data, and data have been reported for healthy lifestyle indicators.

Overall, cancer screening rates have increased across all NSW LHDs, with the highest participation rates being in rural and regional areas.

There has also been an increase in enrolments in cancer clinical trials across the state.

Each year, we are providing a more comprehensive view of cancer control across the state, which is making a real difference to the NSW community.

Professor David Currow FAHMS
Chief Cancer Officer, NSW
Chief Executive Officer, Cancer Institute NSW
**Introduction**

This statewide report presents the latest information about cancer control in NSW. This information is collected and reported each year as part of the Cancer Institute NSW Reporting for Better Cancer Outcomes (RBCO) Program.

Through this program, we collect and analyse statewide data across key areas of cancer control. This enables us to assess what progress is being made, and we share this information with key health organisations so they can identify opportunities for improvement at a local level.

**What is cancer control?**

Cancer control is about reducing the effect of cancer on individuals, and on the community.

**How do we do this?**

The Cancer Institute NSW works with other government and non-government organisations in the following main areas of cancer control.

- **Cancer prevention**: To reduce the number of people getting cancer
- **Cancer screening**: To find cancers early
- **Cancer treatment**: To make sure that people with cancer are assessed quickly, and get the best and most appropriate treatment
- **Cancer research**: To support the development of new treatments and approaches to cancer care.

**What you will find in this report**

- There continues to be improvements across many areas of cancer control in NSW. The key findings from each area are outlined within the relevant section.
- Each of these areas has been presented with an introduction, key findings and a series of charts. The charts show information about particular measures that are being used to see changes over time.
- In many of the charts, results are presented across the 15 local health districts (LHDs), one specialty health network and some private hospitals in NSW. LHDs are responsible for providing health services in a wide range of settings, including hospitals.

For definitions of key terms throughout this report, please refer to the Cancer Institute NSW website glossary: cancer.nsw.gov.au/glossary
Summary of key findings

Cancer in NSW

To understand the impact cancer is having on our community, it is important to monitor the number of people who are affected by the disease, and to what extent.

For this reason, the Cancer Institute NSW regularly gathers information about:

- the number of people diagnosed with cancer
- the type of cancers being diagnosed and how advanced the disease is
- the number of people who die from cancers
- the proportion of people who survive cancer within certain time periods (e.g. five years after diagnosis).

It is important to look at these data over time. This will show any changes, and look at whether there are any differences between community groups and geographical areas. This helps to inform cancer control programs at a state and local level.

Overall key findings:

- In 2018, more than 46,000 people are expected to be diagnosed with cancer in NSW. More than 15,000 people are expected to die from cancer.[1]
- Compared with the size of the population, there are some differences in the number of people being diagnosed with, or dying from, cancer between NSW local health districts (LHDs).
- In 2013, the five most common cancers diagnosed in NSW were bowel, breast, lung, prostate and melanoma.
- Survival rates varied for different types of cancer. Survival is affected by how far the cancer had spread when diagnosed (extent of disease).
- Survival rates continued to improve for most cancers.

Why are different time periods and dates reported?

Cancer information is collected from many places, so it takes time to review and analyse it. Different pieces of information may be collected over different time periods, or reported at different times. This means that not all of the measures reported here have the same dates.

The information presented is the most recent available for each measure at the time the report was developed.
Cancer prevention

Worldwide, at least one in three cancers are associated with lifestyle factors.[2] People can reduce their risk of many cancers by not smoking; limiting their alcohol intake; protecting themselves from the sun; and maintaining a healthy diet and weight, together with regular exercise.

Cancer control involves promoting these messages to the community and supporting people to make lifestyle changes. Improvements are taking place in some areas, but there is still work to be done.

Overall key findings:

- From 2007 to 2016, the NSW adult smoking rate fell by almost 5% to 15.0% of the surveyed population.
- From 2010 to 2015, the proportion of women who smoked during pregnancy fell by 2% to 8.9%. The proportion of Aboriginal women who smoked during pregnancy also fell over the same period, but was still high at 45.0% in 2015.
- Between 2011 and 2016, around 70% of adults in NSW consumed alcohol within the maximum amount suggested in the National Health and Medical Research Council guidelines (i.e. a maximum of two standard alcoholic drinks per day).
- More than 60% of NSW secondary school students continued to prefer a tan in 2014.
- In 2016, the proportion of adults consuming enough vegetables daily was only 6.7%, while the proportion of adults consuming enough fruit was 47.3%.

Cancer screening

Research indicates that the earlier someone is diagnosed with cancer, the better their treatment options and overall health outcomes.[3]

Cancer screening programs test large numbers of people, who don’t have any symptoms, for three cancers. In Australia, there are free screening programs for breast, cervical and bowel cancers.

Overall key findings:

- Overall, the number of eligible people taking part in breast, cervical and bowel cancer screening has increased across all NSW LHDs. The highest participation is in rural and regional areas.
- Between 2010–2011 and 2015–2016, participation in BreastScreen increased for all NSW women aged 50–69 years. This is an increase of almost 70,000 screens (3%).
- Between 2011–2012 and 2015–2016, participation in BreastScreen also improved for the following community groups:
  - Aboriginal women: Increase of almost 1,400 screens (3%).
  - Multicultural women: Increase of almost 18,000 screens (5%).
- More than 75,000 more NSW women aged 20–69 years were screened for cervical cancer in 2015–2016 than were screened in 2010–2011.
- Women aged 20–24 years have the lowest cervical screening participation rate, with almost 94,000 (39.0%) women screened in 2015–2016.
- Bowel screening participation for people aged 50 to 74 years in NSW increased from 31.8% in 2012 to 37.8% in 2016.
Cancer treatment and services

Cancer care in Australia is some of the best in the world.[4] However, treatments can change rapidly as new research becomes available. Health professionals need the latest evidence, research and information on treatments to ensure the best outcomes for their patients.

Several aspects of cancer treatment are regularly reviewed and reported. Some measures relate to where complex surgery for certain cancers is being performed. Others look at the radiotherapy treatment being given in different situations.

There are also measures for the experiences of patients undergoing treatment, including their psychological, emotional and general wellbeing.

Overall key findings:

- It is recommended that hospitals treating people with complex cancers perform these surgeries regularly (i.e. perform a certain number of surgeries each year). This is known as a minimum suggested annual caseload. The proportion of cancer surgeries being performed at public hospitals that meet the minimum suggested annual caseload has increased in NSW for lung, gastric, oesophageal and pancreatic cancers.

- In 2013–2016, hypofractionated radiotherapy (a smaller number of doses, each providing a higher amount of radiation) was the most common radiotherapy treatment used for early-stage breast cancer. However, its use varied between 44% and 93% across NSW LHDs.

- In 2013–2016, cancers that had spread to the bone were most commonly treated with multiple doses of radiotherapy. While the use of single treatments are as effective for most people, this varied from 20% to 55% across NSW LHDs.

- In 2016, 29% of people having cancer treatment as an outpatient in NSW public hospital cancer clinics indicated they felt anxiety at a moderate or high level. Similarly, 27% of people felt depression at a moderate or high level.

Cancer research

Clinical trials are an important way to support the development of new cancer treatments and improve cancer care.

Increasing the number of places available in cancer clinical trials in NSW means that people with cancer have more treatment choices. Overall, they also benefit from the findings of new research.

Overall key findings:

- In 2016–2017*, the number of cancer clinical trials in NSW increased by 18% compared with 2015.

- In 2016–2017*, there were 3,382 enrolments into cancer clinical trials in NSW. This was an increase of 46% compared with 2015.

- Overall in NSW, there are eight enrolments into cancer clinical trials for every 100 people newly diagnosed with cancer during the same year.

* 1 July 2016 to 23 June 2017.
Cancer incidence & mortality

What is cancer incidence?
This is the number of people diagnosed with cancer in a population or large group over a particular time. For example, the number of people in NSW diagnosed with cancer in one year.

What is cancer mortality?
This is the number of deaths from cancer in a population or group over a particular time. For example, the number of people in NSW who die from cancer in one year.

What is regional variation?
Cancer incidence, mortality, and other measures, can vary from one LHD to another. There can be many reasons for this; however, it is useful to measure these differences and understand why they occur. This can then highlight opportunities to improve outcomes for people living with cancer.

Important
The findings in this report relate to populations, or large groups of people. They do not predict what will happen to an individual person with cancer.

What are cancer types and clinical groups?
Cancers are named after the tissues or cells in the body where they start (e.g. breast, lung or bone cancers). This is the cancer type.

Some cancer types are grouped together into clinical groups. An example of this is head and neck cancers. This groups together several types of cancer that start in different parts of the head and neck area, but often behave and progress in the same way, clinically.

Overall key findings
- In 2018, 46,112 people are expected to be diagnosed with cancer in NSW. This is an incidence rate of 473.9 new cancer diagnoses for every 100,000 people living in NSW.[1]
- By 2021, the total number of people diagnosed with cancer is expected to increase as the NSW population grows, but the incidence rate is likely to stay about the same.[1]
- In 2018, 15,459 people are expected to die from cancer in NSW. This is a mortality rate of 150.1 cancer deaths for every 100,000 people living in NSW.[1]
- By 2021, the total number of cancer deaths is expected to increase as the NSW population grows, but the mortality rate is expected to fall to 142.2 for every 100,000 people.[1]
Population & cancer statistics

**NSW population**
7.61 million

**Cancer statistics**

**Total NSW cancer incidence**

- **2014**
  - 42,379
  - Rate per 100,000: 485.9

- **2018**
  - 46,112
  - Rate per 100,000: 473.9

- **2021**
  - 49,235
  - Rate per 100,000: 475.0

**Total NSW cancer mortality**

- **2014**
  - 14,114
  - Rate per 100,000: 154.6

- **2018**
  - 15,459
  - Rate per 100,000: 150.1

- **2021**
  - 15,828
  - Rate per 100,000: 142.2

**Note:** Projection of incidence and mortality are not precise predictions of the future. Models are based on projected populations and the assumption that historical cancer trends will continue into the future. The accuracy of projections become less certain over time.

**Population by NSW local health district (LHD)**

<table>
<thead>
<tr>
<th>LHD</th>
<th>Population¹</th>
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<td>Far West</td>
<td>30,921</td>
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<tr>
<td>Hunter New England</td>
<td>910,718</td>
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<tr>
<td>Illawarra Shoalhaven</td>
<td>400,295</td>
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<td>Mid North Coast</td>
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1. ¹Projection of incidence and mortality are not precise predictions of the future. Models are based on projected populations and the assumption that historical cancer trends will continue into the future. The accuracy of projections become less certain over time.
Local health districts with cancer incidence and mortality rates significantly higher or lower than NSW, 2009–2013

<table>
<thead>
<tr>
<th>Clinical group / Cancer type</th>
<th>Central Coast</th>
<th>Far West</th>
<th>Hunter New England</th>
<th>Illawarra Shoalhaven</th>
<th>Mid North Coast</th>
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Key finding:
Cancer incidence and mortality rates vary from one local health district (LHD) to another. There can be many reasons for this, but it is useful to measure these differences and understand why they occur.
## Cancer Type and Clinical Group

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* The analysis for breast and gynaecological clinical groups were based on the female population only.

** Incidence data are not available for non-melanoma skin cancer as this is not a notifiable cancer to the NSW Cancer Registry.

**Notes:**

2. Data source (non-melanoma skin cancer mortality): Cause of Death Unit Record File (CODURF), SAPHARI, Centre for Epidemiology and Evidence, NSW Ministry of Health. CODURF is provided by the Australian Coordinating Registry for CODURF, on behalf of Australian Registries of Births, Deaths and Marriages; Australian Coroners; and the National Coronial Information System.
3. Standardised incidence ratio (SIR) and standardised mortality ratio (SMR) are the ratio of observed numbers to expected numbers. Expected numbers are computed using age-specific rates from the reference population, weighted according to the age-structure of the study population. This indirect method of age-standardisation of incidence and mortality rates was used to compare LHDs against NSW, and to determine if there are any significant differences.
4. The following clinical groups were excluded from the above analysis: eye; and bone and connective tissue. These groups have lower incidence, which presents an unreliable comparison at the LHD level.
5. Albury residents were included in Murrumbidgee LHD.
6. Incidence and mortality are not calculated for health networks and/or speciality networks, as they do not form geographical boundaries with resident populations. This applies to St Vincent’s Health Network, Sydney Children’s Hospitals Network, and Justice Health and Forensic Mental Health.
Extent of disease at diagnosis

What does ‘extent of disease’ mean?

The ‘extent of disease’ means how big the cancer is, and how far it has spread when it is first diagnosed. It is similar to the ‘stage’ of cancer.

<table>
<thead>
<tr>
<th>Extent of disease</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localised</td>
<td>Still in the tissue where it started</td>
</tr>
<tr>
<td>Regional</td>
<td>Has spread to nearby organs or lymph nodes</td>
</tr>
<tr>
<td>Distant</td>
<td>Has spread from one part of the body to another</td>
</tr>
<tr>
<td>Unknown</td>
<td>The spread of the cancer is not known at diagnosis</td>
</tr>
</tbody>
</table>

Why is this important?

When cancers are found earlier (before they have spread), they are generally easier to treat and also likely to have better long-term outcomes. Evidence shows that most people do better if their cancer is diagnosed at an early stage.[3]

Supporting multidisciplinary teams

All people diagnosed with cancer in NSW should have their care overseen by a multidisciplinary cancer care team (MDT). This is considered best practice as it improves cancer outcomes.[5]

MDTs bring together the health professionals involved in a person’s care to discuss and provide the best treatment options for each person.

Supporting early diagnosis

Cancer screening programs help to increase the number of cancers found at an early stage, even before a person has any symptoms. There are currently three national screening programs for breast, cervical and bowel cancers. For all three programs, screening may also help to identify pre-cancerous changes. When these are treated, the person may avoid cancer altogether.

The Cancer Institute NSW is helping NSW local health districts (LHDs) to localise care pathways (i.e. establish a clear process) to ensure people are diagnosed and treated for cancer in a timely manner.

Overall key findings

- In 2013, the five most common cancers diagnosed in NSW were bowel, breast, lung, prostate and melanoma.
- Five-year all-cause survival for people diagnosed between 2009–2013 was higher for each of these cancers when diagnosed early.
- In 2013, almost half of all people diagnosed with lung cancer (46%) in NSW had advanced cancer that had already spread to distant parts of the body.
Bowel cancer by extent of disease at diagnosis, by LHD (ranked), 2009–2013

N= Number of cases, 2009–2013.

Notes:
2. Extent of disease is the highest degree of spread notified to the NSW Cancer Registry within the first four months of diagnosis.
3. Localised: Localised to the tissue of origin.
4. Regional: Spread to adjacent organs and/or regional lymph nodes.
5. Distant: Spread from one part of the body to another.
6. Unknown: Extent of disease at diagnosis is unknown.

- In NSW, the extent of disease at diagnosis varied across the five most common cancers (bowel, breast, lung, prostate and melanoma).
- There was also some variation in the extent of disease at diagnosis between NSW local health districts (LHDs).
Breast (female) cancer by extent of disease at diagnosis, by LHD (ranked), 2009–2013

N= Number of cases, 2009–2013.

Notes:
2. Extent of disease is the highest degree of spread notified to the NSW Cancer Registry within the first four months of diagnosis.
3. Localised: Localised to the tissue of origin.
4. Regional: Spread to adjacent organs and/or regional lymph nodes.
5. Distant: Spread from one part of the body to another.
6. Unknown: Extent of disease at diagnosis is unknown.
Lung cancer by extent of disease at diagnosis, by LHD (ranked), 2009–2013

N= Number of cases, 2009–2013.

Notes:
2. Extent of disease is the highest degree of spread notified to the NSW Cancer Registry within the first four months of diagnosis.
3. Localised: Localised to the tissue of origin.
4. Regional: Spread to adjacent organs and/or regional lymph nodes.
5. Distant: Spread from one part of the body to another.
6. Unknown: Extent of disease at diagnosis is unknown.
Melanoma by extent of disease at diagnosis, by LHD (ranked), 2009–2013

<table>
<thead>
<tr>
<th>LHD</th>
<th>Localised</th>
<th>Regional</th>
<th>Distant</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW (N=20,276)</td>
<td>84</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Far West LHD (N=77)</td>
<td>91</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Northern NSW LHD (N=1,893)</td>
<td>88</td>
<td>6</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=1,082)</td>
<td>84</td>
<td>7</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=2,540)</td>
<td>84</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=798)</td>
<td>64</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=2,280)</td>
<td>84</td>
<td>7</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Western Sydney LHD (N=1,273)</td>
<td>84</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Sydney LHD (N=842)</td>
<td>83</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Hunter New England LHD (N=3,412)</td>
<td>83</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=1,243)</td>
<td>83</td>
<td>10</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=798)</td>
<td>83</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Western NSW LHD (N=779)</td>
<td>83</td>
<td>8</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Central Coast LHD (N=1,295)</td>
<td>82</td>
<td>9</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=1,377)</td>
<td>80</td>
<td>11</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Southern NSW LHD (N=586)</td>
<td>78</td>
<td>10</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

N= Number of cases, 2009–2013.

Notes:
2. Extent of disease is the highest degree of spread notified to the NSW Cancer Registry within the first four months of diagnosis.
3. Localised: Localised to the tissue of origin.
4. Regional: Spread to adjacent organs and/or regional lymph nodes.
5. Distant: Spread from one part of the body to another.
6. Unknown: Extent of disease at diagnosis is unknown.
Prostate cancer by extent of disease at diagnosis, by LHD (ranked), 2009–2013

N= Number of cases, 2009–2013.

Notes:
2. Extent of disease is the highest degree of spread notified to the NSW Cancer Registry within the first four months of diagnosis.
3. Localised: Localised to the tissue of origin.
4. Regional: Spread to adjacent organs and/or regional lymph nodes.
5. Distant: Spread from one part of the body to another.
6. Unknown: Extent of disease at diagnosis is unknown.
Between 2009 and 2013, the five most common cancers in adolescents and young adults, aged 15 to 25 years, were testicular cancer, melanoma, thyroid cancer, bowel cancer and neurological cancers.

The extent of disease at diagnosis varied for these different cancer types.
Five most common cancers by extent of disease at diagnosis in 2013, and five-year all-cause survival* NSW, 2009–2013

- The extent of disease at diagnosis varies from one cancer type to another.
- Survival rates are lower for people with cancers that are more advanced when they are diagnosed. For example, as reported here, all-cause five-year survival from bowel cancer decreases from 79% for localised disease to 68% for regional disease, and 17% for distant (metastatic) disease at diagnosis. Furthermore, when diagnosed at the earliest stage of disease, five-year relative survival for bowel cancer is 93%, compared with 8% at advanced stage.
Overall key findings

- Five-year relative survival rates vary for different cancer types.
- In NSW, all-cause survival for most cancers has improved overall, but there is some differences between local health districts (LHDs).
- Most deaths from cancer occur in older age groups.

What is cancer survival?

This measures how many people diagnosed with cancer are still alive a certain number of years after diagnosis.

It is usually described as a survival rate. This gives the percentage of people alive at one, five or 10 years after diagnosis.

There are many things that can affect cancer survival. These include:

- cancer type
- cancer stage
- treatment given
- age and general health.

What is relative survival?

Relative survival compares the actual survival rate of people in the cancer group with the expected survival rate in a similar group of people without cancer.

It is used to reduce the effect of non-cancer deaths on the survival rate, and give a more accurate measure of survival from cancer.

Given the way it is calculated, relative survival is always higher than all-cause survival for a particular group.

What is all-cause survival?

This is the actual number of people in the cancer group who are still alive after a certain time.

All-cause survival provides useful information but cannot be used on its own to measure the impact of cancer. This is because deaths in the cancer group may be from cancer, or from something else.

Important

Survival rates are only calculated at the end of a certain period of time. It is not possible to know what survival rates will be in the future.

In Australia, the survival rates for most cancers are increasing due to improvements in earlier detection, treatment and care.
Five-year relative survival*, by cancer type, for Australia** and selected states, 2005–2009 and 2010–2014

Cancer control in NSW: Statewide report, 2017
Five-year relative survival*, by cancer type, for Australia** and selected states, 2005–2009 and 2010–2014

- Relative age-standardised survival was measured for Australian states and territories as part of the CONCORD-3 program. Net survival from cancer is an estimate of the probability of surviving cancer in the absence of other causes of death. Age-standardisation removes the effect of differences in population age structures when comparing survival estimates.

** Australia contains 100% coverage of the national population.

Notes:

- Five-year relative survival rates are much higher for some cancer types (e.g. breast cancer and melanoma of the skin) than others (e.g. lung and oesophageal cancers).

- For all of the cancers shown (lung, breast, colon, rectal, oesophageal, pancreatic, liver, melanoma of the skin and stomach), survival rates have increased in NSW and Australia for people diagnosed in 2010–2014, compared with those diagnosed in 2005–2009.

- For the cancers shown (breast, colon, gastric, head and neck, liver, lung, oesophageal, ovarian, pancreatic, rectal), five-year all-cause survival rates increased for people in NSW diagnosed between 2009–2013, compared with those diagnosed between 2004–2008.

- There was variation in survival rates between different cancer types, and also between local health districts (LHDs).

Notes:
1. Data source: Annual NSW cancer incidence and mortality dataset, 2013 linked to NSW Registry of Births Deaths and Marriages.
2. Survival rates were suppressed when there were less than 10 deaths.

N= Number of cancer cases in NSW in 2009–2013. Case counts may differ to reported incidence due to the exclusion of 'death certificate only' cases, age restriction to 15–100 years, and use of linked dataset.

* All-cause survival was measured by local health district of residence and NSW, with adjustment for age and gender using a proportional hazards model. All-cause survival is an estimate of the probability of surviving all causes of death, including causes of death other than cancer. Survival rates shown here are lower than the most recent survival data published on the Cancer Institute NSW website, which reports relative survival from cancer. Relative survival from cancer is an estimate of the probability of surviving cancer in the absence of other causes of death.
Five-year relative survival for all persons diagnosed with cancer, by age and period of diagnosis, NSW, 1972–2006

![Graph showing relative survival by age group and period of diagnosis from 1972 to 2006.](image)

**Notes:**
1. Data source: NSW Cancer Registry

**Key finding:**
Between the years 1972–2006, younger people diagnosed with cancer had a higher five-year survival rate, compared with older age groups.


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Five-year survival rate (%)</td>
<td>N</td>
</tr>
<tr>
<td>All ages</td>
<td>39</td>
<td>48,583</td>
</tr>
<tr>
<td>0–14 years</td>
<td>62</td>
<td>318</td>
</tr>
<tr>
<td>15–24 years</td>
<td>76</td>
<td>285</td>
</tr>
<tr>
<td>25+ years</td>
<td>39</td>
<td>47,980</td>
</tr>
</tbody>
</table>

N = Number of deaths.
* All-cause survival was measured by local health district of residence and NSW, with adjustment for age and gender using a proportional hazards model. All-cause survival is an estimate of the probability of surviving all causes of death, including causes of death other than cancer. Survival rates shown here are lower than the most recent survival data published on the Cancer Institute NSW website, which reports relative survival from cancer. Relative survival from cancer is an estimate of the probability of surviving cancer in the absence of other causes of death.

**Notes:**
1. Data source: Annual NSW cancer incidence and mortality dataset, 2013 linked to NSW Registry of Births Deaths and Marriages.

**Key findings:**
- For people diagnosed between 2009 and 2013, survival rates were highest for those aged 15–24 years, followed by those aged 0–14 years.
In 2013, more men than women died from cancer in NSW.

The number of cancer deaths was highest in older age groups. This reflects the fact that cancers are more common among older people.
Cancer prevention: Tobacco control

Smoking and cancer

The number of people smoking in NSW has been falling for some years. Despite this, smoking is still a major cause of illness and premature death among the NSW population.

This creates considerable pressure on the NSW health system. There are approximately 46,000 hospital admissions each year because of smoking-related illnesses.

Cigarette smoking causes most lung cancers, as well as being a risk factor for many other cancers. It increases a person's risk of premature death, both overall and as a direct result of cancer.

Quitting smoking

Quitting smoking is an important way to improve a person's health. Even people who have just been diagnosed with cancer can benefit from quitting. Evidence suggests that quitting at this time can:

- improve a person's response to treatment
- reduce the side-effects of treatment
- reduce the risk of cancer recurrence, and increase overall survival.[6,7]

Quitting advice from health professionals

The [NSW Smoking Cessation Framework](http://www.healthstats.nsw.gov.au) supports local health districts (LHDs) to increase the number of people being given information on quitting.

When a health professional gives short, simple advice about quitting smoking, it is more likely that the person will successfully quit.[8]

All health professionals are encouraged to refer people who smoke to [iCanQuit.com.au](http://icanquit.com.au) or the NSW Quitline (13 7848).

Overall key findings

- From 2007 to 2016, the proportion of adults surveyed in NSW who smoked fell by almost 5%, from 19.7% to 15.0%.
- The smoking rate among Aboriginal adults in NSW was 39.7% in 2016. This remained fairly constant over the previous 10 years.
- From 2010 to 2015, the NSW smoking rate among all pregnant women fell by more than 2%, from 11.1% to 8.9%.
- Over the same time, the smoking rate among Aboriginal pregnant women fell by nearly 3%, from 47.9% to 45.0%.
- From 2011 to 2014, the NSW smoking rate among young people aged 12–17 years decreased by almost 1%, from 7.5% to 6.7%.

Note: These data were the latest available at the time they were extracted (July 2017). For the most recent population health data, visit [www.healthstats.nsw.gov.au](http://www.healthstats.nsw.gov.au).
Smoking prevalence in adults*, trend, NSW, 2007–2016**

From 2007 to 2016, the proportion of adults in NSW who smoke decreased by almost 5%, from 19.7% to 15.0%.

N = Number of survey respondents.
* Persons aged 16 years and over.
** Mobile phone numbers have been included in the survey sample since 2012. Any significant differences observed between 2011 and 2012 estimates should be reported with caution, as they may reflect both real and survey design changes.

Notes:
1. Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Proportions are weighted and the actual number of respondents are not weighted.
Smoking prevalence in adults*, by LHD (ranked), 2011 and 2016

In 2016, the overall smoking rate in NSW was 15.0%.

There were ongoing differences in the smoking rate between NSW local health districts (LHDs).

N= Number of survey respondents, 2016.
* Persons aged 16 years and over.

Notes:
1. Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Proportions are weighted and the actual number of respondents are not weighted.
3. Figures displayed in the graph are for 2016.
In 2016, more men than women smoked in NSW, in all age groups.
Proportion of women who smoked during pregnancy, by LHD (ranked), 2010 and 2015

- From 2010 to 2015, the NSW smoking rate among all pregnant women fell by almost 2%, from 11.2% to 8.9%.
- The proportion of women who smoked during pregnancy differed between NSW local health districts (LHDs).
- For most LHDs, the proportion of women who smoked during pregnancy fell between the years 2010 and 2015.

Notes:
1. Data source: NSW Perinatal Data Collection (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Proportions are weighted and the actual number of respondents are not weighted.
3. Figures displayed in the graph are for 2015.
Proportion of women who smoked during pregnancy, trend, by population type, 2011–2015*

From 2011 to 2015, the smoking rate among Aboriginal pregnant women fell by almost 7%, from 52.2% to 45.0%. This rate remains considerably higher than for non-Aboriginal pregnant women.
Proportion of Aboriginal women who smoked during pregnancy, by LHD (ranked), 2010 and 2015

In 2015, the smoking rate for Aboriginal pregnant women differed between NSW local health districts (LHDs).

N= Number of survey respondents, 2015.
* Northern Sydney LHD data are not available due to low numbers.

Notes:
1. Data source: NSW Perinatal Data Collection (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Proportions are weighted and the actual number of respondents are not weighted.
3. Figures displayed in the graph are for 2015.
Proportion of non-Aboriginal women who smoked during pregnancy, by LHD (ranked), 2010 and 2015

- In 2015, the smoking rate for non-Aboriginal pregnant women differed between NSW local health districts (LHDs).
- For most LHDs, the smoking rate for non-Aboriginal pregnant women fell between the years 2010 and 2015.

Notes:
1. Data source: NSW Perinatal Data Collection (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Proportions are weighted and the actual number of respondents are not weighted.
3. Figures displayed in the graph are for 2015.
Smoking prevalence in Aboriginal adults*, NSW, 2007–2016**

The smoking rate among Aboriginal people in NSW was nearly 39.7% in 2016. This remained fairly constant over the previous 10 years.

Notes:
1. Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Proportions are weighted and the actual number of respondents are not weighted.
Smoking prevalence among NSW youth aged 12 to 17 years, by LHD (ranked), 2011 and 2014

From 2011 to 2014, the NSW smoking rate among young people (aged 12–17 years) decreased by almost 1%, from 7.5% to 6.7%.

The smoking rates among young people differed across NSW local health districts (LHDs).

Key findings

N = Number of survey respondents, 2014.
Notes:
1. Data source: NSW School Students Health Behaviours Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Some LHDs have been grouped for the presentation of this indicator, as a result of the survey design.
3. Proportions are weighted and the actual number of respondents are not weighted.
4. Figures displayed in the graph are for 2014.
Cancer prevention: Skin protection

About skin cancer
Australia has the second-highest rate of skin cancer in the world.[9]

Skin cancers can be:
• melanomas
• basal cell carcinomas (BCCs)
• squamous cell carcinomas (SCCs)

BCCs and SCCs are often grouped together as non-melanoma skin cancers.

Skin cancers and ultraviolet (UV) radiation
It is estimated that around 95 per cent of melanoma skin cancers, and around 99 per cent of non-melanoma skin cancers, could be prevented through reduced exposure to UV radiation.[9]

Preventing skin cancer
The NSW Skin Cancer Prevention Strategy supports government, non-government and community organisations to work together to:
• increase the use of sun protection policies and guidelines
• improve access to adequate shade
• increase the use of sun protection behaviours.

Progress is being made in these areas.

Advice for the community
It is important to develop life-long sun protection habits:

- Slip on clothing that covers your arms and legs.
- Slop on 30+ broad-spectrum, water resistant sunscreen and re-apply every two hours.
- Slap on a broad-brimmed hat that protects your face, ears and neck.
- Seek shade whenever you can.
- Slide on wrap-around sunglasses.

Health professionals should also remind their clients of these important skin protection behaviours.

Overall key finding
The proportion of secondary school students in NSW who prefer a tan continues to be high, at 60.7% in 2014.

Note: These data were the latest available at the time they were extracted (July 2017). For the most recent population health data, visit www.healthstats.nsw.gov.au
Proportion of students* who have a preference for a tan (light to very dark), by LHD (ranked), 2014

The proportion of secondary school students in NSW who prefer a tan continues to be high, at 60.7% in 2014.

Notes:
1. Data source: NSW School Students Health Behaviours Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. The figures for Far West LHD are not available due to very small numbers.
Cancer prevention: Healthy lifestyle

**Healthy lifestyle factors**

Having a healthy lifestyle can improve a person’s health outcomes.

Lifestyle changes, such as stopping smoking, reducing alcohol consumption, eating well and exercising regularly, can prevent up to one third of all cancers.[2]

Adults can reduce their cancer risk by doing the following:

- Take part in **150 minutes of moderate physical activity** each week.
- Have **fewer than two standard alcoholic drinks** per day.
- Have **two or more serves of fruit** per day.
- Have **five or more serves of vegetables** per day.
- Keep to a healthy weight, with a body mass index (BMI) above 18.5 and below 25.0.

**Benefits of a healthy lifestyle**

- Staying at a healthy weight can help reduce the risk of breast cancer (after menopause), as well as bowel, kidney, liver, endometrium, ovary, stomach, oesophagus, gallbladder, pancreas and prostate (advanced) cancers.[2]
- Maintaining a healthy diet can help reduce the risk of bowel, oesophagus, lung, and some mouth and throat cancers.[2]
- Reducing alcohol consumption can help reduce the risk of mouth, throat, oesophagus, stomach, bowel, liver and breast cancers.[2]
- Being physically active can help reduce the risk of bowel cancer, breast cancer (after menopause) and endometrium cancers.[2]

**Overall key findings**

In 2016:

- More than one in two adults in NSW were overweight or obese.
- Less than 7% of adults in NSW reported eating enough serves of vegetables (5 or more) each day.
- Less than 44% of adults in NSW reported getting the recommended amount of exercise (150 minutes) every week.
- Almost a third of adults in NSW drank alcohol above the National Health and Medical Research Council (NHMRC) guidelines.

Note: These data were the latest available at the time they were extracted (July 2017). For the most recent population health data, visit www.healthstats.nsw.gov.au
Proportion of adults* who undertake adequate physical activity**, by LHD (ranked), 2011 and 2016

N = Number of survey respondents, 2016.
* Persons aged 16 years and over.
** At least 150 minutes per week, over five separate sessions.

Notes:
1. Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Figures displayed in the graph are for 2016.

Key findings
- From 2011 to 2016, the proportion of people in NSW who reported getting the recommended amount of exercise each week (150 minutes) fell by 4%, from 45.7% to 41.7%.
- The proportion of people getting enough exercise differed between NSW local health districts (LHDs).
Proportion of adults* who consume alcohol at levels within NHMRC guidelines**, by LHD (ranked), 2011 and 2016

- From 2011 to 2016, the proportion of people drinking alcohol at or below recommended levels remained stable at 70.4% and 70.2%, respectively.
- The proportion of people drinking alcohol at recommended levels differed between NSW local health districts (LHDs).

Key findings

Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.

Notes:
1. Person aged 16 years and over.
2. Two or fewer standard alcoholic drinks per day.

N= Number of survey respondents, 2016.
NHMRC= National Health and Medical Research Council.

---

0 10 20 30 40 50 60 70 80 90 100 Proportion (%) 2016 2011 NSW 2016 (70.2%, N=13,408) NSW 2011 (70.4%, N=12,956)
Proportion of adults* who consume alcohol at levels within NHMRC guidelines**, trend, NSW, 2007–2016

The proportion of adults drinking alcohol at or below recommended levels has increased slightly over the 10 years to 2016.

N= Number of survey respondents, 2016.
NHMRC= National Health and Medical Research Council.
* Persons aged 16 years and over.
** Two or fewer standard alcoholic drinks per day.
Notes:
1. Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health, Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
Proportion of adults* who have adequate fruit consumption**, by LHD (ranked), 2011 and 2016

<table>
<thead>
<tr>
<th>LHD</th>
<th>2011</th>
<th>2016</th>
<th>NSW 2016 (47.3%, N=13,428)</th>
<th>NSW 2011 (50.4%, N=12,901)</th>
<th>Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Sydney LHD (N=815)</td>
<td></td>
<td>51.0</td>
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</tr>
<tr>
<td>Mid North Coast LHD (N=819)</td>
<td></td>
<td>50.9</td>
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<tr>
<td>Northern NSW LHD (N=911)</td>
<td></td>
<td>49.6</td>
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<tr>
<td>Nepean Blue Mountains LHD (N=862)</td>
<td></td>
<td>49.2</td>
<td></td>
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<tr>
<td>Illawarra Shoalhaven LHD (N=963)</td>
<td></td>
<td>48.8</td>
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<tr>
<td>South Western Sydney LHD (N=911)</td>
<td></td>
<td>48.6</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Central Coast LHD (N=817)</td>
<td></td>
<td>48.4</td>
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<tr>
<td>Southern NSW LHD (N=817)</td>
<td></td>
<td>48.0</td>
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<tr>
<td>South Eastern Sydney LHD (N=813)</td>
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<td>47.5</td>
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<tr>
<td>Murrumbidgee LHD (N=875)</td>
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<td>47.5</td>
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<tr>
<td>Sydney LHD (N=88)</td>
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<td>46.3</td>
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<tr>
<td>Hunter New England LHD (N=814)</td>
<td></td>
<td>45.9</td>
<td></td>
<td></td>
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<tr>
<td>Western NSW LHD (N=864)</td>
<td></td>
<td>45.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Sydney LHD (N=814)</td>
<td></td>
<td>42.7</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Far West LHD (N=840)</td>
<td></td>
<td>39.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N= Number of survey respondents, 2016.
* Persons aged 16 years and over.
** Consumed two or more serves of fruit per day.

Notes:
1. Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Figures displayed in the graph are for 2016.

From 2011 to 2016, the proportion of adults in NSW who reported consuming enough fruit fell by almost 3%, from 50.4% to 47.3%.
Proportion of adults* who have adequate vegetable consumption**, by LHD (ranked), 2011 and 2016

From 2011 to 2016, the proportion of people in NSW who reported consuming enough vegetables stayed the same (6.8%).

Notes:
1. Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Figures displayed in the graph are for 2016.
Proportion of adults* who are overweight or obese**, by LHD (ranked), 2011 and 2016

From 2011 to 2016, the proportion of adults in NSW who were overweight or obese slightly increased from 52.1% to 53.3%.

Notes:
1. Data source: NSW Population Health Survey (sourced from HealthStats NSW, Centre for Epidemiology and Evidence, NSW Ministry of Health. Available at www.healthstats.nsw.gov.au). Data presented here are based on data available on the HealthStats NSW website at the time of data extraction.
2. Figures displayed in the graph are for 2016.

N= Number of survey respondents, 2016.
* Persons aged 16 years and over.
** Body mass index (BMI) of 25.0 and over.
Breast cancer screening

About breast cancer

Breast cancer is cancer that starts in the breast tissue.

One in eight women in NSW will develop breast cancer in their lifetime.[10,11]

Nine out of ten women in NSW with breast cancer do not have a family history of the disease.

About breast cancer screening

Breast cancer screening programs test large numbers of women for early evidence of breast cancer, long before a woman could feel any breast changes.

The screening test used is a type of x-ray of the breasts. This is called a mammogram.

Breast cancer screening is for women without any symptoms. Women who have noticed changes in their breast should talk to their doctor straight away.
Overall key findings

• In NSW, more than half of women aged 50–69 took part in BreastScreen at least once during 2015–2016.
• Between 2010–2011 and 2015–2016, participation in BreastScreen increased for all NSW women aged 50–69 years. This is an increase of almost 70,000 screens (3%).
• BreastScreen participation rates have increased in 12 out of 15 LHDs from 2010–2011 to 2015–2016, with the highest participation in rural and regional areas.
• Participation in BreastScreen NSW by women from Aboriginal and multicultural communities was lower than for the general population.
• Participation increased for both groups, between 2011–2012 and 2015–2016.

Breast cancer screening in NSW

BreastScreen NSW provides free two-yearly screening mammograms to women in NSW.

The program invites women aged 50 to 74 years to take part. However, women aged 40 to 49, and those 75 years and over, can also use the program.

In 2013, the target age range for BreastScreen Australia was extended to include women aged 70 to 74. Since then, BreastScreen NSW has extended the screening invitation to this age group.

Participation among 50 to 69-year-old women is reported here. In 2019, national reporting will move to women aged 50–74, as will NSW.

Benefits of breast cancer screening

A screening mammogram is the best way to detect breast cancer early for women aged 50 years and over. The smaller the cancer is when it is found, the more options the woman has for treatment, and the better long-term outcomes across the population.

Women whose cancers are detected by BreastScreen NSW are less likely to need a mastectomy (surgery to remove the whole breast, due to the size of the cancer, or its position in the breast), compared with women whose breast cancers are found after seeing a doctor because of symptoms.[11]

Survival at five years after a breast cancer diagnosis is also much higher for women who are diagnosed earlier.[12]

In NSW, more than half of women aged 50–69 took part in BreastScreen at least once during 2015–2016.

The participation rate differed between local health districts (LHDs), but increased in most LHDs from 2010–2011 to 2015–2016.

Key findings

Notes:
1. Data source: BreastScreen NSW (population data are sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. The participation rates presented here are expected to differ from figures published by the Australian Institute of Health and Welfare for the same period, due to variations in the population projections used in the denominator.
3. The participation rates presented here are based on the number of women who live in NSW and are screened in NSW. Interstate clients have been excluded.
4. Part of Southern NSW LHD was serviced by BreastScreen ACT in 2010–2011.
5. Figures displayed in the graph are for 2015–2016.
Biennial breast screening participation rate for NSW women aged 50–69, by population type, trend, NSW, 2012–2016

- Participation in BreastScreen NSW by women from Aboriginal and multicultural communities was lower than for all women.
- Participation is increasing for both groups.

Notes:
1. Data source: BreastScreen NSW (population data are sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. The participation rates presented here are expected to differ from figures published by the Australian Institute of Health and Welfare for the same period, due to variations in the population projections used in the denominator.
3. The participation rates presented here are based on the number of women who live in NSW and are screened in NSW. Interstate clients have been excluded.
4. The method used to calculate Aboriginal participation rates has been updated in the 2017 report. All historical trend data have also been refreshed based on the new methodology.

- In NSW, 97,000 (48.3%) women aged 50–69 from multicultural communities attended BreastScreen at least once during 2015–2016. This is an increase of more than 20,000 screens compared with 2010–2011.
- The participation rate differed between local health districts (LHDs), but increased in most LHDs from 2010–2011 to 2015–2016.

Key findings

Notes:
1. Data source: BreastScreen NSW (population data are sourced from SAPHarT, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. The participation rates presented here are expected to differ from figures published by the Australian Institute of Health and Welfare for the same period, due to variations in the population projections used in the denominator.
3. The participation rates presented here are based on the number of women who live in NSW and are screened in NSW. Interstate clients have been excluded.
4. Part of Southern NSW LHD was serviced by BreastScreen ACT in 2010–2011.
5. Figures displayed in the graph are for 2015–2016.

N= Number of women aged 50 to 69 years in population, 2015–2016.

Notes:
1. Data source: BreastScreen NSW (population data are sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. The participation rates presented here are expected to differ from figures published by the Australian Institute of Health and Welfare for the same period, due to variations in the population projections used in the denominator.
3. The participation rates presented here are based on the number of women who live in NSW and are screened in NSW. Interstate clients have been excluded.
4. The method used to calculate Aboriginal participation rates has been updated in the 2017 RBCO report. All historical trend data has also been refreshed based on the new methodology.
5. Part of Southern NSW LHD was serviced by BreastScreen ACT in 2010–2011.

- In NSW, more than 6,000 (38.2%) Aboriginal women aged 50–69 years attended BreastScreen at least once during 2015–2016. This is an increase of almost 1,400 screens compared with 2011–2012.
- The participation rate differed between local health districts (LHDs), but increased in most LHDs from 2010–2011 to 2015–2016.
Proportion of NSW women aged 50–69 who were screened by BreastScreen in the last 24 months; were screened but not in the last 24 months; and have never been screened by BreastScreen, NSW, 2012–2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Screened in the last 24 months</th>
<th>Screened but not in the last 24 months</th>
<th>Never screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>22.1</td>
<td>28.8</td>
<td>51.0</td>
</tr>
<tr>
<td>2013</td>
<td>22.2</td>
<td>28.1</td>
<td>50.7</td>
</tr>
<tr>
<td>2014</td>
<td>22.9</td>
<td>27.9</td>
<td>50.2</td>
</tr>
<tr>
<td>2015</td>
<td>23.2</td>
<td>26.9</td>
<td>50.9</td>
</tr>
<tr>
<td>2016</td>
<td>23.4</td>
<td>25.7</td>
<td>51.0</td>
</tr>
</tbody>
</table>

N= Number of women aged 50 to 69 years in population.

Notes:
1. Data source: BreastScreen NSW (population data are sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. The participation rates presented here are expected to differ from figures published by the Australian Institute of Health and Welfare for the same period, due to variations in the population projections used in the denominator.
3. The participation rates presented here are based on the number of women who live in NSW and are screened in NSW. Interstate clients have been excluded.
4. The proportions presented for the women screened in the last 24 months cannot be compared with the biennial participation rates for the same period. This indicator counts women aged 50–69 at any time in 2016, whereas the regular biennial participation rates count women aged 50–69 at the time of their screen in 2015 or 2016, as per the BreastScreen Australia Data Dictionary.

Each year between 2012 and 2016, for women in NSW aged 50–69 years:
- around half had been screened by BreastScreen within the recommended period of two years
- around 25% had screened in the past, but had not returned within the recommended timeframe
- almost a quarter had never attended for screening.
Cervical cancer screening

About cervical cancer

Cervical cancer affects the cervix. This is the lowest part of the uterus (womb), which connects it to the vagina.

Cervical cancer is now one of the most preventable cancers in Australia. This is mostly due to the success of the National Cervical Screening Program (NCSP), and the vaccination program for human papillomavirus (HPV).[13]

Since the NCSP started in 1991, the number of women diagnosed with, and dying from, cervical cancer has halved.[13]

Cervical cancer and HPV

More than 99 per cent of cervical cancers are caused by HPV.[14] Because of this, Australia introduced a school-based HPV Vaccination Program in 2007. This started with females and extended to males in 2013.

Over time, this program is expected to reduce cervical cancer rates, and deaths from the disease, even further.[15]

The vaccine has been shown to reduce:

- HPV infection rates
- the number and severity of cervical abnormalities in young women who have been vaccinated.[15]

A new HPV vaccine was introduced into the program in 2018. This protects against nine HPV subtypes, which cause around 93 per cent of cervical cancers. This is an increase from four subtypes in the previous vaccine.[16]

The National Immunisation Program provides free catch-up vaccinations, including HPV, for individuals up to 19 years of age. This includes refugees and humanitarian entrants to Australia.[17]
The Cervical Screening Test

In the past, the NCSP used the Pap test. This looked for abnormal cells in the cervix, and women had it every two years.[18]

From December 2017, the Cervical Screening Test replaced the Pap test. This new test looks for HPV in the cells of the cervix. It is recommended that women aged 25 to 74 years have the test every five years, if their previous test result was negative.[18]

Women already having regular screening should go for their first Cervical Screening Test when they would have been due for their Pap test. Those under 25 years should discuss cervical screening with their general practitioner (GP).[18]

The role of health professionals

Around 75 per cent of Australian women diagnosed with invasive cervical cancer (cancer that has spread to tissue deeper in the cervix, or to other parts of the body) have never had cervical screening, or have not returned for screening within the recommended time.[18]

GP’s are the main providers of cervical screening, and play an important role in reaching women who are not screening regularly.

GP’s are linked to primary health networks, which work collaboratively with one or more NSW local health districts (LHDs).

It is important for health professionals to encourage women to continue cervical screening, even after they have received the HPV vaccination.

Overall key findings

- In 2015–2016, 75,000 more women aged 20 to 69 years had cervical screening in NSW, compared with 2010–2011.
- 56.3% of women in NSW aged 20 to 69 years took part in cervical screening during 2015–2016.
- 82.8% of women in NSW aged 20 to 69 years took part in cervical screening in the five years, 2012–2016.
- There has been a small increase in the cervical screening participation rate in 11 of the 15 NSW local health districts (LHDs).
- In 2014–2015, 81.5% of females aged 15 years and 64.7% of males aged 15 years were fully immunised against HPV in NSW.

- In 2015–2016, 75,000 (0.4%) more NSW women aged 20–69 years had cervical screening, compared with 2010–2011.
- There was a small increase in the cervical screening participation rate in 10 of the 15 NSW local health districts (LHDs) between 2010–2011 and 2015–2016.
Biennial cervical screening participation rate for NSW women, by age group, trend, NSW, 2011–2016

- The cervical screening participation rates for NSW women in different age groups have been fairly consistent over each two-year period from 2011 to 2016.
- Cervical screening rates are higher in the age groups covered by the National Cervical Screening program (25–69); however, the 70–74 year age group has not been reported here.

N= Number of women aged 20 to 69 years in the population who have not had a hysterectomy, 2015–2016.
Notes:
1. Data source: NSW Pap Test Register (population data are sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health and adjusted for hysterectomies).
3. NSW includes de-identified tests. However, de-identified tests are excluded from finer geographical breakdowns as this information is not available.

More than 1.7 million women in NSW (82.8%) aged 20 to 69 years took part in cervical screening in the five years 2012–2016.
Proportion of NSW females aged 15 who were fully immunised against HPV, by primary health network (PHN), 2014–2015

- In 2014–2015, 81.5% of females in NSW aged 15 years were fully immunised against human papillomavirus (HPV).
- Immunisation levels differed between primary health networks (PHNs).

N= Number of females aged 15 years in the population, 2014–2015.
HPV= Human papillomavirus.
Notes:
1. Data source: Australian Institute of Health and Welfare (sourced from My Healthy Communities website: myhealthycommunities.gov.au). Data presented here are based on data available on the website at the time of data extraction.
2. Data is only available by PHN.
Proportion of NSW males aged 15 who were fully immunised against HPV, by primary health network (PHN), 2014–2015

- Northern Sydney PHN (N=5,297): 69.0%
- Murrumbidgee PHN (N=1,651): 68.7%
- Hunter New England and Central Coast PHN (N=7,951): 68.2%
- South Western Sydney PHN (N=6,461): 65.9%
- Central and Eastern Sydney PHN (N=6,717): 64.1%
- South Eastern NSW PHN (N=3,843): 64.0%
- Western NSW PHN (N=2,137): 60.6%
- Western Sydney PHN (N=5,963): 60.3%
- Nepean Blue Mountains PHN (N=2,451): 59.3%
- North Coast PHN (N=3,415): 56.8%

NSW (64.7%, N=46,216)

Notes:
1. Data source: Australian Institute of Health and Welfare (sourced from My Healthy Communities website: myhealthycommunities.gov.au). Data presented here are based on data available on the website at the time of data extraction.
2. Data is only available by PHN.

In 2014–2015, 64.7% of males in NSW aged 15 years were fully immunised against human papillomavirus (HPV).

Immunisation levels differed between primary health networks (PHNs).
About bowel cancer

Bowel cancer, also known as colorectal cancer, can affect any part of the large bowel (colon) or rectum. It may also be referred to as colon cancer or rectal cancer, depending on where the cancer is located.

Bowel cancer is the second-most common cause of cancer deaths in NSW. The risk of bowel cancer also increases with age.

Each week in NSW, projections show that in 2018:
- 111 people will be diagnosed with bowel cancer
- 36 people will die from bowel cancer.[19]

Bowel cancer is a priority focus area of the NSW Cancer Plan and the NSW Government’s Leading Better Value Care program of work.

About bowel cancer screening

The National Bowel Cancer Screening Program (the Program) is a Commonwealth government-funded program that invites people aged 50 to 74 years to do a free bowel screening test. This involves collecting small samples of bowel motions (faeces/poo), which are sent to a laboratory for testing.

The test, called the immunochemical faecal occult blood test (iFOBT), can detect small amounts of blood in the sample. It cannot diagnose bowel cancer, but the results indicate whether a further test (usually a colonoscopy; a procedure to visually examine the bowel) is needed to rule out bowel cancer.

The Program began in 2006; sending kits to men and women at ages 55 and 65. Men and women at age 50 were included from 2008, and by 2015, men and women aged 50 to 74 years were invited to screen every five years.

The National Health and Medical Research Council (NHMRC) has endorsed the Clinical practice guidelines for the prevention, early detection and management of colorectal cancer. These guidelines recommends two-yearly bowel screening for people aged 50–74. Implementation is underway and is due for completion by 2020.

Benefits of bowel cancer screening

The aim of screening is to find bowel cancer early, when it can be successfully treated in more than 90 per cent of cases.[20]

Between 2006 and 2008, 65 per cent of people whose bowel cancer was diagnosed after screening had early-stage disease. This is compared with only 45 per cent of those diagnosed after seeing a health professional about symptoms.

Overall key findings

- Bowel screening participation for people aged 50 to 74 years in NSW increased from 31.8% in 2012 to 37.8% in 2016.
- In every age group, men are less likely than women to undertake bowel screening.
### Annual bowel screening participation rate* for NSW people aged 50–74, by LHD (ranked), 2012 and 2016

<table>
<thead>
<tr>
<th>LHD</th>
<th>2016</th>
<th>2012</th>
<th>NSW 2016 (37.8%, N=573,924)</th>
<th>NSW 2012 (31.8%, N=324,283)</th>
<th>Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern NSW LHD (N=17,700)</td>
<td>42.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunter New England LHD (N=72,919)</td>
<td>42.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid North Coast LHD (N=20,249)</td>
<td>41.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=33,019)</td>
<td>41.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=22,349)</td>
<td>40.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern NSW LHD (N=26,966)</td>
<td>40.3</td>
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<td></td>
</tr>
<tr>
<td>Northern Sydney LHD (N=69,393)</td>
<td>39.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western NSW LHD (N=29,440)</td>
<td>38.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Coast LHD (N=28,678)</td>
<td>37.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Far West LHD (N=2,570)</td>
<td>36.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=27,947)</td>
<td>36.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=62,601)</td>
<td>35.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Western Sydney LHD (N=67,158)</td>
<td>34.3</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Western Sydney LHD (N=61,131)</td>
<td>34.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sydney LHD (N=40,804)</td>
<td>33.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N= Number eligible for screening in the population, 2016.
* The participation rate is the proportion of the eligible population invited to the National Bowel Cancer Screening Program (NBCSP), who returned a completed immunochemical faecal occult blood test (iFOBT).

Notes:
1. As a result of different cut-off dates for iFOBT data from the NBCSP Register, participation rates shown in this report vary slightly from Australian Institute of Health and Welfare published data.
2. Figures displayed in the graph are for 2016.

#### Key Findings
- Bowel screening participation for people aged 50 to 74 years in NSW increased from 31.8% in 2012 to 37.8% in 2016.
- Bowel screening participation rates have increased in all NSW local health districts (LHDs). The highest participation is in rural and regional areas.
Annual bowel screening participation rate* for NSW people aged 50–74, trend, NSW, 2012–2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Participation rate (%)</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>31.8</td>
<td>(N=324,283)</td>
</tr>
<tr>
<td>2013</td>
<td>32.8</td>
<td>(N=332,844)</td>
</tr>
<tr>
<td>2014</td>
<td>33.8</td>
<td>(N=424,715)</td>
</tr>
<tr>
<td>2015</td>
<td>36.0</td>
<td>(N=429,415)</td>
</tr>
<tr>
<td>2016</td>
<td>37.8</td>
<td>(N=573,924)</td>
</tr>
</tbody>
</table>

Notes:
1. As a result of different cut-off dates for iFOBT data from the NBCSP Register, participation rates shown in this report vary slightly from Australian Institute of Health and Welfare published data.
2. Participation rates shown here cannot be directly compared with the 2016 report. Participation rates can change as the calculation includes iFOBTs received up to 18 months after the invitation is sent.

Key finding

The NSW bowel screening participation rate for people aged 50 to 74 years increased each year from 2012 to 2016.
Annual bowel screening participation rate*, by gender and age group, NSW, 2016

![Bar chart showing participation rates for different age groups and genders.]

N = Number eligible for screening in the population, 2016.
* The participation rate is the proportion of the eligible population invited to the National Bowel Cancer Screening Program (NBCSP), who returned a completed immunochemical faecal occult blood test (iFOBT).

Notes:
1. As a result of different cut-off dates for iFOBT data from the NBCSP Register, participation rates shown in this report vary slightly from Australian Institute of Health and Welfare published data.

In 2016, men in NSW were less likely than women to undertake bowel screening in every age group between 50 and 74 years.

Age of participants invited to the National Bowel Cancer Screening Program, 2015–2020

<table>
<thead>
<tr>
<th>Year</th>
<th>Age of participants invited to the National Bowel Cancer Screening Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>50, 55, 60, 65, 70, 74</td>
</tr>
<tr>
<td>2016</td>
<td>50, 55, 60, 64, 65, 70, 72, 74</td>
</tr>
<tr>
<td>2017</td>
<td>50, 54, 55, 58, 60, 64, 68, 70, 72, 74</td>
</tr>
<tr>
<td>2018</td>
<td>50, 54, 58, 60, 62, 64, 66, 68, 70, 72, 74</td>
</tr>
<tr>
<td>2019</td>
<td>50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74</td>
</tr>
<tr>
<td>2020</td>
<td>50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74</td>
</tr>
</tbody>
</table>

The number of people being invited to take part in the National Bowel Cancer Screening Program is increasing as the time between invitations was reduced from five years to two years.
Cancer treatment and services: Patient experience of cancer treatment in NSW

Patient-reported measures

Enabling people to give feedback about their cancer experience can lead to more personal care being provided. This can improve the quality of the health system and assist in focusing on aspects of concern to patients.

The Cancer Institute NSW has partnered with the NSW Bureau of Health Information to report on the experiences of people with cancer in NSW. People who attended outpatient cancer clinics across NSW in November 2016 were surveyed, and asked for feedback about their experiences and outcomes of care. The psychological wellbeing of patients was also assessed (see page 85).

People attend outpatient cancer clinics for a range of reasons. The results shown look at those people who reported they had cancer and were being treated for cancer at the time.

Overall key findings

In November 2016:

- almost 12,000 people attending outpatient cancer clinics (96%) felt they were ‘always’ treated with respect and dignity
- more than 10,000 people (85%) reported a ‘very good’ overall rating of care received
- 55% of relevant people surveyed were advised by a health professional at an outpatient cancer clinic to quit smoking.
Function* of patients in an active phase of treatment attending an outpatient cancer clinic in NSW public hospitals, by LHD (ranked), November 2016

In 2016, 80% of surveyed people being treated for cancer in an outpatient cancer clinic in NSW public hospitals reported they were either ‘able to be up and about with fairly normal activities’ (58%) or ‘able to carry out normal activities with no limitations’ (22%).

Note: The ‘daily function’ of people with cancer can be measured by the Eastern Cooperative Oncology Group Performance Status Scale (ECOG).[21] This scale looks at a person's level of function in terms of activities of daily living, such as ability of self-care and physical ability.
Smoking status of patients attending an outpatient cancer clinic in NSW public hospitals, by LHD (ranked), November 2016

<table>
<thead>
<tr>
<th>LHD</th>
<th>Never smoked</th>
<th>I smoke daily</th>
<th>I smoke occasionally</th>
<th>I’ve tried it a few times but never smoked regularly</th>
<th>I don’t smoke now, but I used to</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW (N=13,702)</td>
<td>46</td>
<td>62</td>
<td>43</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Southern NSW LHD (N=2,488)</td>
<td>42</td>
<td>92</td>
<td>46</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=63)</td>
<td>57</td>
<td>83</td>
<td>29</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Northern NSW LHD (N=566)</td>
<td>35</td>
<td>73</td>
<td>51</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Western Sydney LHD (N=864)</td>
<td>48</td>
<td>72</td>
<td>38</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Hunter New England LHD (N=1,287)</td>
<td>45</td>
<td>72</td>
<td>43</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=359)</td>
<td>42</td>
<td>73</td>
<td>47</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Central Coast LHD (N=789)</td>
<td>42</td>
<td>63</td>
<td>48</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>South Western Sydney LHD (N=1,251)</td>
<td>47</td>
<td>62</td>
<td>41</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Mid North Coast LHD (N=1,169)</td>
<td>42</td>
<td>62</td>
<td>47</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Western NSW LHD (N=758)</td>
<td>45</td>
<td>62</td>
<td>44</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=984)</td>
<td>42</td>
<td>53</td>
<td>47</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>Sydney LHD* (N=611)</td>
<td>54</td>
<td>44</td>
<td>35</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>St Vincent’s Health Network (N=320)</td>
<td>49</td>
<td>44</td>
<td>42</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Northern Sydney LHD (N=632)</td>
<td>50</td>
<td>44</td>
<td>41</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=586)</td>
<td>52</td>
<td>45</td>
<td>37</td>
<td>52</td>
<td></td>
</tr>
</tbody>
</table>

N= Number of eligible responses to question.  
^ Number of respondents too small to report.

Notes:
1. Data source: Outpatient Cancer Clinic Survey, November 2016 (pre-release data supplied by the Bureau of Health Information).
2. Far West LHD was suppressed as there were less than 30 survey respondents. Refer to the Appendices for the full list of participating hospitals.
3. Survey details (NSW): Number mailed = 21,474; Response rate = 56%.

- In 2016, more than half (55%) of relevant people surveyed were advised to quit smoking by a health professional at an outpatient cancer clinic.
- Almost 7,500 people surveyed at an outpatient cancer clinic reported they had a history of smoking (64%).
- Of the people surveyed, 702 (6%) smoked daily, 234 (2%) reported smoking occasionally and 5,032 (43%) ‘were not current smokers, but had a history of smoking’.
- Supporting a person to quit smoking, especially after a cancer diagnosis, can improve overall health outcomes and cancer-specific mortality.[7]
Self-assessed symptom scores* for patients in an active phase of treatment attending an outpatient cancer clinic in NSW public hospitals, by LHD, November 2016

<table>
<thead>
<tr>
<th>Local health district</th>
<th>Pain</th>
<th>Tiredness</th>
<th>Nausea</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Drowsiness</th>
<th>Appetite</th>
<th>General wellbeing</th>
<th>Breathlessness</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>2.1</td>
<td>4.4</td>
<td>1.4</td>
<td>2.2</td>
<td>2.4</td>
<td>2.7</td>
<td>3.1</td>
<td>3.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Central Coast LHD</td>
<td>2.0</td>
<td>4.9</td>
<td>1.4</td>
<td>2.2</td>
<td>2.3</td>
<td>3.1</td>
<td>3.4</td>
<td>3.8</td>
<td>3.0</td>
</tr>
<tr>
<td>Hunter New England LHD</td>
<td>2.2</td>
<td>4.6</td>
<td>1.9</td>
<td>2.3</td>
<td>2.4</td>
<td>3.1</td>
<td>3.5</td>
<td>3.9</td>
<td>3.0</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD</td>
<td>1.8</td>
<td>4.7</td>
<td>1.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.6</td>
<td>3.2</td>
<td>3.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Mid North Coast LHD</td>
<td>1.8</td>
<td>4.4</td>
<td>1.1</td>
<td>1.9</td>
<td>2.0</td>
<td>2.8</td>
<td>3.0</td>
<td>3.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD</td>
<td>2.8</td>
<td>4.7</td>
<td>1.3</td>
<td>2.5</td>
<td>2.8</td>
<td>3.1</td>
<td>3.1</td>
<td>4.1</td>
<td>3.1</td>
</tr>
<tr>
<td>Northern NSW LHD</td>
<td>2.0</td>
<td>4.7</td>
<td>1.3</td>
<td>1.9</td>
<td>2.1</td>
<td>3.1</td>
<td>3.3</td>
<td>3.8</td>
<td>3.1</td>
</tr>
<tr>
<td>Northern Sydney LHD</td>
<td>1.9</td>
<td>4.2</td>
<td>1.5</td>
<td>1.9</td>
<td>2.1</td>
<td>2.4</td>
<td>2.6</td>
<td>3.2</td>
<td>2.4</td>
</tr>
<tr>
<td>South Eastern Sydney LHD</td>
<td>2.1</td>
<td>4.4</td>
<td>1.3</td>
<td>2.1</td>
<td>2.3</td>
<td>2.8</td>
<td>3.2</td>
<td>3.5</td>
<td>2.6</td>
</tr>
<tr>
<td>Southern NSW LHD</td>
<td>2.2</td>
<td>4.5</td>
<td>1.5</td>
<td>2.5</td>
<td>2.4</td>
<td>2.9</td>
<td>3.4</td>
<td>4.0</td>
<td>3.2</td>
</tr>
<tr>
<td>South Western Sydney LHD</td>
<td>2.2</td>
<td>4.2</td>
<td>1.3</td>
<td>2.2</td>
<td>2.2</td>
<td>2.5</td>
<td>3.2</td>
<td>3.7</td>
<td>2.8</td>
</tr>
<tr>
<td>St Vincent's Health Network</td>
<td>1.9</td>
<td>4.3</td>
<td>1.4</td>
<td>2.1</td>
<td>2.6</td>
<td>2.4</td>
<td>2.6</td>
<td>3.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Sydney LHD*</td>
<td>1.9</td>
<td>4.3</td>
<td>1.1</td>
<td>2.3</td>
<td>2.6</td>
<td>2.5</td>
<td>2.7</td>
<td>3.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Western NSW LHD</td>
<td>1.9</td>
<td>4.4</td>
<td>1.3</td>
<td>1.9</td>
<td>1.9</td>
<td>3.1</td>
<td>3.3</td>
<td>3.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Western Sydney LHD</td>
<td>1.9</td>
<td>4.2</td>
<td>1.4</td>
<td>2.6</td>
<td>2.7</td>
<td>2.3</td>
<td>3.0</td>
<td>3.9</td>
<td>2.7</td>
</tr>
</tbody>
</table>

* Edmonton Symptom Assessment System (ESAS); ESAS measures respondents’ rating of nine common symptoms on a 10-point numerical rating scale of severity (e.g. from 0 for ‘no pain’ to 10 for ‘worst possible pain’).

Notes:
1. Data source: Outpatient Cancer Clinic Survey, November 2016 (pre-release data supplied by the Bureau of Health Information).
2. Patients who reported that they were currently in a course of treatment were classed as being in an active phase of treatment.
3. Far West LHD and Murrumbidgee LHD were suppressed as there were less than 30 survey respondents.
4. Survey details (NSW): Number mailed = 21,474; Response rate = 56%.
5. Sydney LHD excludes Chris O’Brien Lifehouse.

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The Edmonton Symptom Assessment System (ESAS) scale measures the severity of nine common symptoms that may be experienced by patients with cancer.[22] Tiredness and poor general wellbeing were the symptoms rated highest among people attending outpatient cancer clinics in NSW public hospitals in 2016.
Self-efficacy scores* for patients in an active phase of treatment attending an outpatient cancer clinic in NSW public hospitals, by LHD, November 2016

<table>
<thead>
<tr>
<th>Local health district</th>
<th>Understand and participate in care</th>
<th>Maintain a positive attitude</th>
<th>Seek and obtain information</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>8.4</td>
<td>7.9</td>
<td>8.9</td>
</tr>
<tr>
<td>Central Coast LHD</td>
<td>8.3</td>
<td>7.9</td>
<td>8.9</td>
</tr>
<tr>
<td>Hunter New England LHD</td>
<td>8.6</td>
<td>8.0</td>
<td>9.1</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD</td>
<td>8.4</td>
<td>7.9</td>
<td>9.1</td>
</tr>
<tr>
<td>Mid North Coast LHD</td>
<td>8.5</td>
<td>8.1</td>
<td>9.0</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD</td>
<td>8.2</td>
<td>7.5</td>
<td>8.7</td>
</tr>
<tr>
<td>Northern NSW LHD</td>
<td>8.8</td>
<td>8.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Northern Sydney LHD</td>
<td>8.5</td>
<td>7.8</td>
<td>8.9</td>
</tr>
<tr>
<td>South Eastern Sydney LHD</td>
<td>8.4</td>
<td>8.1</td>
<td>9.0</td>
</tr>
<tr>
<td>Southern NSW LHD</td>
<td>8.4</td>
<td>7.4</td>
<td>8.9</td>
</tr>
<tr>
<td>South Western Sydney LHD</td>
<td>8.1</td>
<td>7.9</td>
<td>8.6</td>
</tr>
<tr>
<td>St Vincent’s Health Network</td>
<td>8.4</td>
<td>7.8</td>
<td>8.8</td>
</tr>
<tr>
<td>Sydney LHD(^5)</td>
<td>8.4</td>
<td>7.7</td>
<td>9.0</td>
</tr>
<tr>
<td>Western NSW LHD</td>
<td>8.6</td>
<td>8.1</td>
<td>9.1</td>
</tr>
<tr>
<td>Western Sydney LHD</td>
<td>8.3</td>
<td>7.6</td>
<td>8.6</td>
</tr>
</tbody>
</table>

![Significantly lower than NSW](image1.png) ![Significantly higher than NSW](image2.png) ![Not significantly different to NSW](image3.png)

*Communication and Attitudinal Self-Efficacy Scale (CASE-cancer). Twelve questions were answered on a four-category response scale. These have been scored linearly and aggregated to give means for the three domains: Seek and obtain information; maintain a positive attitude; and understand and participate in care.

Notes:
1. Data source: Outpatient Cancer Clinic Survey, November 2016 (pre-release data supplied by the Bureau of Health Information).
2. Patients who reported that they were currently in a course of treatment were classed as being in an active phase of treatment.
3. Far West LHD and Murrumbidgee LHD were suppressed as there were less than 30 survey respondents.
4. Survey details (NSW): Number mailed = 21,474; Response rate = 56%.
5. Sydney LHD excludes Chris O’Brien Lifehouse.

The Communication and Attitudinal Self-Efficacy (CASE) scale measures a patient’s confidence and ability to engage in their care.[23] On average, high scores were achieved across NSW for each category of the scale for people undergoing an active phase of cancer treatment in November 2016. This suggests outpatients had a high level of confidence regarding their cancer care.
Patient-reported responses to aspects of care for patients attending an outpatient cancer clinic in NSW, by LHD, November 2016

<table>
<thead>
<tr>
<th>Local health district</th>
<th>Access and timeliness</th>
<th>Assistance and responsiveness</th>
<th>Communication and information</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Out-of-pocket cost for treatment excluding medication was ‘less than $500’ (%)</td>
<td>Worries or fears ‘completely’ discussed by health professional (%)</td>
<td>Advised by health professional at clinic to quit smoking (if applicable) (%)</td>
<td>'Completely' given enough information about how to manage side effects of treatment (%)</td>
</tr>
<tr>
<td>NSW</td>
<td>92 65 55 29 75 94 89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Coast LHD</td>
<td>91 69 57 27 76 91 85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunter New England LHD</td>
<td>97 65 54 29 77 95 89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD</td>
<td>93 68 59 34 80 96 93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid North Coast LHD</td>
<td>94 69 53 33 73 95 90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murrumbidgee LHD</td>
<td>88</td>
<td>^ 42</td>
<td>83 95  ^</td>
<td></td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD</td>
<td>94 68 53 16 74 93 91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern NSW LHD</td>
<td>96 59 57 33 69 91 85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Sydney LHD</td>
<td>86 55 38 32 66 96 94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Eastern Sydney LHD</td>
<td>91 72 52 33 73 95 90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern NSW LHD</td>
<td>90 69 47 46 78 93 85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Western Sydney LHD</td>
<td>93 67 60 29 75 93 91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St Vincent's Health Network</td>
<td>86 58 69 30 73 94 91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sydney LHD¹</td>
<td>95 67 49 22 70 95 89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western NSW LHD</td>
<td>94 70 53 42 83 95 93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Sydney LHD</td>
<td>92 60 57 23 75 94 86</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- In 2016, close to 2,300 people (65%) attending outpatient cancer clinics in NSW had their worries and fears completely discussed by a health professional.
- Three in four people were completely given enough information about how to manage the side effects of treatment.
- More than 10,000 people (87%) definitely had confidence and trust in their health professionals.
### Patient-reported responses to aspects of care for patients attending an outpatient cancer clinic in NSW, by LHD, November 2016 (cont.)

<table>
<thead>
<tr>
<th>Comprehensive and whole-person care</th>
<th>Coordination and continuity</th>
<th>Engagement and participation</th>
<th>Overall experience</th>
<th>Trust and confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Had a written care plan for treatment (%)</td>
<td>Informed of who to contact if worried about condition or treatment after leaving clinic (%)</td>
<td>Care received at the clinic was ‘very well organised’ (%)</td>
<td>Asked about preferences for care and treatment when developing the care plan (%)</td>
<td>‘Very good’ rating of health professionals (%)</td>
</tr>
<tr>
<td>38</td>
<td>89</td>
<td>83</td>
<td>84</td>
<td>86</td>
</tr>
<tr>
<td>49</td>
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<td>39</td>
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<td>43</td>
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<td>90</td>
</tr>
<tr>
<td>34</td>
<td>86</td>
<td>73</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

^ Number of respondents too small for reporting.

Notes:
1. Data source: Outpatient Cancer Clinic Survey, November 2016 (pre-release data supplied by the Bureau of Health Information).
2. Patients who reported that they were currently in a course of treatment were classed as being in an active phase of treatment.
3. Far West LHD was suppressed as there were less than 30 survey respondents.
4. Survey details (NSW): Number mailed = 21,474; Response rate = 56%.
5. Sydney LHD excludes Chris O’Brien Lifehouse.
Cancer treatment and services: Psycho-oncology

Psycho-oncology in cancer care

Having cancer can affect people in many ways. The psychological impact of cancer can affect a person's overall functioning, quality of life and capacity to cope. The field of psycho-oncology considers the psychological, social and behavioural aspects of cancer.

Assessing psychological symptoms can help to identify patients' concerns, levels of distress and the severity of symptoms. This can allow health professionals to provide support at an early stage.

People who attended outpatient cancer clinics across NSW in November 2016 were surveyed, and asked for feedback about their experiences and outcomes of care. People having treatment for cancer were asked to rate:

- their levels of anxiety or depression
- how confident they felt about their ability (self-efficacy) to keep a positive attitude or control negative feelings.

Identifying differences in the experiences of patients across NSW may help to target efforts to address the psychological problems associated with cancer.

Overall key findings

In 2016, people who attended outpatient cancer clinics in NSW hospitals reported the following experiences:

- 29% of people felt anxiety at a moderate or high level.
- 27% of people felt depressed at a moderate or high level.
- The majority of people felt confident in their ability to keep a positive attitude.
- The majority of people felt they had some degree of confidence in their ability to control negative feelings.
Self-assessed rating of anxiety* for patients in an active phase of treatment attending an outpatient cancer clinic in NSW public hospitals, by LHD (ranked), November 2016

<table>
<thead>
<tr>
<th>LHD</th>
<th>Response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW (N=2,807)</td>
<td>37 (Low)</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=303)</td>
<td>44 (Low)</td>
</tr>
<tr>
<td>Northern NSW LHD (N=136)</td>
<td>44 (Low)</td>
</tr>
<tr>
<td>Western NSW LHD (N=196)</td>
<td>41 (Low)</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=295)</td>
<td>38 (Low)</td>
</tr>
<tr>
<td>Hunter New England LHD (N=276)</td>
<td>38 (Low)</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=126)</td>
<td>37 (Low)</td>
</tr>
<tr>
<td>St Vincent’s Health Network (N=91)</td>
<td>36 (Low)</td>
</tr>
<tr>
<td>Central Coast LHD (N=197)</td>
<td>35 (Low)</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=101)</td>
<td>32 (Low)</td>
</tr>
<tr>
<td>Southern NSW LHD (N=78)</td>
<td>35 (Low)</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=147)</td>
<td>34 (Low)</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=229)</td>
<td>34 (Low)</td>
</tr>
<tr>
<td>Western Sydney LHD (N=191)</td>
<td>32 (Low)</td>
</tr>
<tr>
<td>Sydney LHD (N=130)</td>
<td>31 (Low)</td>
</tr>
</tbody>
</table>

0 (No symptoms) 1-3 (Low severity) 4-6 (Moderate severity) 7-10 (High severity)

N= Number of eligible responses to question.
* Edmonton Symptom Assessment System (ESAS). The respondents’ response to the anxiety item, rated on a 10-point numerical scale of severity, was collapsed into four categories for this chart.

Notes:
1. Data source: Outpatient Cancer Clinic Survey, November 2016 (pre-release data supplied by the Bureau of Health Information).
2. Patients who reported that they were currently in a course of treatment were classed as being in active phase of treatment.
3. Far West LHD and Murrumbidgee LHD were suppressed as there were less than 30 survey respondents.
4. Survey details (NSW): Number mailed = 21,474; Response rate = 56%.
5. Sydney LHD excludes Chris O’Brien Lifehouse.

In 2016, 29% of people attending outpatient cancer clinics in NSW public hospitals reported moderate or high severity for anxiety. There were some differences in results between NSW local health districts (LHDs).
Self-assessed rating of depression* for patients in an active phase of treatment attending an outpatient cancer clinic in NSW public hospitals, by LHD (ranked), November 2016

<table>
<thead>
<tr>
<th>LHD</th>
<th>0 (No symptoms)</th>
<th>1-3 (Low severity)</th>
<th>4-6 (Moderate severity)</th>
<th>7-10 (High severity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW (N=2,820)</td>
<td>42</td>
<td>31</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Western NSW LHD (N=200)</td>
<td>47</td>
<td>29</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=306)</td>
<td>47</td>
<td>25</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Northern NSW LHD (N=138)</td>
<td>47</td>
<td>32</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=125)</td>
<td>46</td>
<td>33</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>St Vincent’s Health Network (N=92)</td>
<td>46</td>
<td>33</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Central Coast LHD (N=199)</td>
<td>43</td>
<td>29</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=292)</td>
<td>42</td>
<td>35</td>
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<td>5</td>
</tr>
<tr>
<td>Sydney LHD (N=133)</td>
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<td>8</td>
</tr>
<tr>
<td>Hunter New England (N=277)</td>
<td>40</td>
<td>33</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=149)</td>
<td>39</td>
<td>29</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=101)</td>
<td>38</td>
<td>38</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=229)</td>
<td>38</td>
<td>35</td>
<td>21</td>
<td>6</td>
</tr>
<tr>
<td>Southern NSW LHD (N=78)</td>
<td>37</td>
<td>36</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>Western Sydney LHD (N=189)</td>
<td>35</td>
<td>26</td>
<td>28</td>
<td>11</td>
</tr>
</tbody>
</table>

N = Number of eligible responses to question.
* Edmonton Symptom Assessment System (ESAS). The respondents’ response to the anxiety item, rated on a 10-point numerical scale of severity, was collapsed into four categories for this chart.

Notes:
1. Data source: Outpatient Cancer Clinic Survey, November 2016 (pre-release data supplied by the Bureau of Health Information).
2. Patients who reported that they were currently in a course of treatment were classed as being in an active phase of treatment.
3. Far West LHD and Murrumbidgee LHD were suppressed as there were less than 30 survey respondents.
4. Survey details (NSW): Number mailed = 21,474; Response rate = 56%.
5. Sydney LHD excludes Chris O’Brien Lifehouse.

In 2016, 27% of people attending outpatient cancer clinics in NSW public hospitals reported moderate or high severity for depression. There were some differences in results between NSW local health districts (LHDs).
Self-efficacy regarding keeping a positive attitude*, patients in an active phase of treatment attending an outpatient cancer clinic in NSW public hospitals, by LHD (ranked), November 2016

In 2016, the majority of people who attended an outpatient cancer clinic in NSW public hospitals felt they had some degree of confidence in their ability to keep a positive attitude. There were some differences in results between NSW local health districts (LHDs).

Notes:
1. Data source: Outpatient Cancer Clinic Survey, November 2016 (pre-release data supplied by the Bureau of Health Information).
2. Patients who reported that they were currently in a course of treatment were classed as being in an active phase of treatment.
3. Far West LHD and Murrumbidgee LHD were suppressed as there were less than 30 survey respondents.
4. Survey details (NSW): Number mailed = 21,474; Response rate = 56%.
5. Sydney LHD excludes Chris O’Brien Lifehouse.
Self-efficacy regarding controlling negative feelings* for patients in an active phase of treatment attending an outpatient cancer clinic in NSW public hospitals, by LHD (ranked), November 2016

N = Number of eligible responses to question.
* Individual item from Communication and Attitudinal Self-Efficacy Scale (CASE-cancer): “I am confident that I can control my negative feelings about cancer”, answered on a four-category response scale.

Notes:
1. Data source: Outpatient Cancer Clinic Survey, November 2016 (pre-release data supplied by the Bureau of Health Information).
2. Patients who reported that they were currently in a course of treatment were classed as being in an active phase of treatment.
3. Far West LHD and Murrumbidgee LHD were suppressed as there were less than 30 survey respondents.
4. Survey details (NSW): Number mailed = 21,474; Response rate = 56%.
5. Sydney LHD excludes Chris O’Brien Lifehouse.

In 2016, the majority of people who attended an outpatient cancer clinic in NSW public hospitals felt they had some degree of confidence in their ability to control negative feelings. There were some differences in results between NSW local health districts (LHDs).
Cancer treatment and services: Radiotherapy treatment services in NSW

Radiotherapy treatment services
Radiotherapy is a common treatment for people with many cancers.

Most radiotherapy cancer treatment is given as external beam radiotherapy (EBRT). Radiation is produced by a machine called a linear accelerator, and given from outside the body to the area where the cancer is.

When patients have EBRT, the total dose of radiation they need is divided into a number of smaller doses, known as fractions.

What is hypofractionated radiotherapy?
Hypofractionation uses a smaller number of fractions, each providing a higher dose of radiation. This means that people need less visits to complete their course of radiotherapy.

The total dose given using hypofractionated radiotherapy is also generally lower than for the standard EBRT.

Radiotherapy treatment for early-stage breast cancer
Hypofractionated radiotherapy for early-stage breast cancer is recommended as the standard of care for the majority of women, both in Australia and internationally.[24–28]

Studies have shown benefits including improved patient choice, health outcomes and patient experience.[24,27,28] Increased use could also reduce health care costs and allow more people to be treated with existing radiotherapy resources.

Despite this, there is variation in the use of hypofractionation across NSW hospitals and local health districts (LHDs).
Radiotherapy treatment for cancer-related bone pain

EBRT is the recommended treatment for cancer that has spread (metastasised) to the bone and is causing pain, without other complications.

Long-term evidence shows radiotherapy treatment using a single fraction (dose) is as effective as using multiple fractions for relieving bone pain for most people with pain and no complications.[29] However, for a small number of people, multiple fractions can help reduce the need for retreatment.[30]

Despite evidence supporting the use of single fractions for most people with pain, estimates indicate most cancer centres continue to use multiple fractions to treat cancer that has spread to the bone and is causing pain.

Overall key findings

For early stage breast cancer

- Across public facilities in NSW, hypofractionation was the most common radiotherapy treatment used for early-stage breast cancer, with 68% of patients receiving this treatment.
- In 2013–2016, the use of hypofractionation varied widely across LHDs, ranging from 44% to 93% of patients.
- Patients receiving hypofractionated radiotherapy tended to be older than those receiving non-hypofractionated treatment.

For bone metastases

- Across public facilities in NSW, multiple-fraction radiotherapy treatments (multiple doses of a smaller amount of radiotherapy) were most commonly used to treat patients with cancer that had spread to the bone. Only 33% of patients received single-fraction treatments (single doses) in 2013–2016.
- The use of single fractions varied widely across LHDs, ranging from 20% to 55% of patients.
- Patients receiving single-fraction treatments tended to be older than those receiving multiple fractions.
Proportion of early-stage breast cancer* patients receiving non-hypofractionated or hypofractionated regimens of external beam radiotherapy in selected LHDs** in NSW public facilities, with median age, by LHD (ranked), 2013–2016

N= Number of treatments.
* Early-stage breast cancer is defined as TNM Stage I or IIA.
** LHDs with TNM staging completeness greater than 60% were reported for this indicator. Refer to the Appendices for the list of public facilities included in this indicator. 'NSW public' includes 10 out of 18 facilities.

Notes:
1. Data source: NSW Enhanced Radiation Oncology (EROD) Data extracts. Extracts from source systems were completed between June 2017 and August 2017. As the data were not loaded to the NSW Cancer Registry (NSWCR), the data were not cleaned, validated or passed through NSWCR business rules. Results should be viewed and interpreted with caution.
2. Fractions were estimated using an operational definition. The programming logic to estimate fractions is complex owing to differences in the recording of treatment between individual radiotherapy centres.
3. The proportions presented here are not comparable with the previous report due to changes in data scope; data source; and the methodology used to estimate fractions.
4. Non-hypofractionation: Dose is between 1.8 and 2.0 Gy per fraction.
5. Hypofractionation: Dose is above 2.0 Gy per fraction.
6. External beam radiotherapy: Delivered by directing the radiation treatment at the tumour from outside the body.
Proportion of patients with bone metastases receiving single or multiple fraction regimens of external beam radiotherapy with palliative treatment intent in NSW public facilities, with median age, by LHD (ranked), 2013–2016

<table>
<thead>
<tr>
<th>Facility</th>
<th>Single</th>
<th>2-5 Fractions</th>
<th>&gt; 5 Fractions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW public (N=10,899)</td>
<td>33</td>
<td>49</td>
<td>18</td>
</tr>
<tr>
<td>Northern NSW LHD (N=447)</td>
<td>55</td>
<td>36</td>
<td>10</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=637)</td>
<td>40</td>
<td>42</td>
<td>18</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=771)</td>
<td>40</td>
<td>46</td>
<td>15</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=1,240)</td>
<td>39</td>
<td>49</td>
<td>13</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=991)</td>
<td>38</td>
<td>43</td>
<td>19</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=670)</td>
<td>37</td>
<td>50</td>
<td>13</td>
</tr>
<tr>
<td>Western Sydney LHD (N=1,330)</td>
<td>31</td>
<td>54</td>
<td>15</td>
</tr>
<tr>
<td>Hunter New England LHD (N=1,612)</td>
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<td>53</td>
<td>18</td>
</tr>
<tr>
<td>Sydney LHD (N=435)</td>
<td>29</td>
<td>55</td>
<td>16</td>
</tr>
<tr>
<td>Central Coast LHD (N=699)</td>
<td>27</td>
<td>52</td>
<td>21</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=1,490)</td>
<td>25</td>
<td>51</td>
<td>24</td>
</tr>
<tr>
<td>Western NSW LHD (N=455)</td>
<td>23</td>
<td>48</td>
<td>29</td>
</tr>
<tr>
<td>St Vincent’s Health Network (N=122)</td>
<td>20</td>
<td>57</td>
<td>22</td>
</tr>
</tbody>
</table>

Median age (yrs)

---

N= Number of treatments.

Notes:
1. Data source: NSW Enhanced Radiation Oncology Data (EROD) extracts. Extracts from source systems were completed between July 2017 and August 2017. As the data were not loaded to the NSW Cancer Registry (NSWCR), the data were not cleaned, validated or passed through NSWCR business rules. Results should be viewed and interpreted with caution.
2. Fractions were estimated using an operational definition. The programming logic to estimate fractions is complex owing to differences in the recording of treatment between individual radiotherapy centres.
3. The proportions presented here are not comparable with the previous report due to changes in the scope of data included; more rigorous identification of bone metastases; and change to the methodology used to estimate fractions.
4. New centres and closures in the reporting period: Royal Prince Alfred Hospital services transitioned to Chris O’Brien Lifehouse in November 2013; St Vincent’s Hospital services transitioned to St Vincent’s Private Hospital in August 2015; and Blacktown Cancer and Haematology Centre became operational in April 2016.
5. Despite evidence supporting the use of single fraction radiotherapy, recent estimates indicate that most centres continue to prescribe multiple fraction regimens for the treatment of bone metastases, both in Australia and internationally.
6. Palliative treatment: Given primarily for the purpose of pain relief or other symptom control.
7. External beam radiotherapy: Delivered by directing the radiation treatment at the tumour from outside the body.
Cancer treatment and services:  
Surgical cancer treatment

About surgery

Surgery is the key treatment for many types of cancer. Surgery to remove a cancer is called a resection. It involves removing some or all of the tissue (or organ) where the cancer is located.

The best treatment for someone with cancer depends on many things, including the cancer type, how far it has spread (if at all), and the age and general health of the person.

Where should surgery be performed?

Most cancer surgery in NSW is performed at larger hospitals. Some people may have to travel to another local health district (LHD) to have surgery for some cancers.

The complexity and risks of cancer surgery is different for each person. It depends on the type of cancer (location in the body) and the different ways a resection can be performed.

Evidence shows that people who need complex surgery for certain cancers (such as gastric, pancreatic and oesophageal cancers) are better to have this done at a hospital that performs these procedures often[31]

It is recommended that hospitals treating people with these cancer types should perform a certain number of resections each year. This is known as a “minimum suggested annual caseload”.

People having surgery should also have their care overseen by a multidisciplinary cancer care team (MDT). The management of these cancers requires a team of health care professionals with suitable experience in providing appropriate care following surgery.
Who should have surgery?

When surgery is the appropriate first-line treatment of cancer, research shows that the percentage of people who receive surgery as the first treatment for their cancer is different across geographical areas and population groups.[31–35]

Early access to surgery can improve outcomes for some cancers, including lung, gastric and pancreatic cancers.[31,33–35]

It is important to give people with cancer access to surgery if they are likely to benefit from it. However, it is important to avoid unnecessary surgery for those who are not likely to benefit.

This section includes information on the percentage of people having surgery for different cancer types across NSW LHDs.

Overall key findings

- From 2011 to 2016, the proportion of surgical resections performed at NSW public hospitals that met the minimum suggested annual caseload, either improved or stayed the same for some cancers, such as:
  - **Lung**: Increased 6% to 90%
  - **Gastric**: Increased 7% to 75%
  - **Oesophageal**: Increased 13% to 88%
  - **Pancreatic**: Increased 11% to 91%

- The proportion of people having a resection (surgery) as their first treatment varies for different cancer types.
- Resections for lung, ovarian, gastric, oesophageal, pancreatic and primary liver cancers generally involve complex surgery.
- When comparing the period 2013–2016 with 2009–2012, the proportion of people having a resection has appropriately increased for some cancer types and decreased for others in NSW, as treatments change.
- For each cancer type, the proportion of people having resections differs between local health districts (LHDs). There are many reasons for this.
Lung cancer

Lung cancer causes more deaths than any other cancer in NSW and Australia. Survival from lung cancer is much lower than most other cancers. A person’s likelihood of surviving lung cancer increases with early diagnosis.

The management of lung cancer can be complex, especially for people who require surgery. Treatment should be overseen by a team of health care professionals with experience in lung cancer (including surgery and radiation therapy), who also provide appropriate care following treatment.

NSW local health districts are working to align processes with the *National optimal care pathway for people with lung cancer.*

- Most lung cancer resections are performed in local health districts (LHDs) which have major hospitals and cancer centres.
- People in other areas travel outside of their LHD of residence for lung cancer surgery.
- Lung cancer resections are performed in public and private hospitals.

**Key Findings**

* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.

Notes:
1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHar1, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHar1, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.
The minimum recommended number of lung cancer resections performed annually at NSW hospitals is 18.

From 2011 to 2016, the proportion of lung cancer resections performed at NSW public hospitals that met this minimum annual caseload increased by 6% to 90%.
Lung cancer resections in NSW private hospitals, 2011 and 2016

From 2011 to 2016, the proportion of lung cancer resections performed at NSW private hospitals that met the minimum suggested annual caseload increased by 12% to 85%.

N = Number of lung resections, 2016.
* Recommendation based on hospital-level distribution of lung cancer resections in NSW.
Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed lung cancer resections in 2011 or 2016 appear on this chart.
Breast cancer

Breast cancer is cancer that starts in any part of the breast. Treatment for breast cancer aims to remove the cancer and reduce the risk of the cancer from coming back. Treatment can involve surgery, chemotherapy, targeted therapy, radiotherapy, hormone therapy, or a combination of these.

Breast cancer surgery was performed in all local health districts (LHDs) between 2013 and 2016.

Most breast cancer surgery was conducted within the LHD that the person lived.

Breast cancer resections were performed in public and private hospitals.

Notes:
1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.

N= Number of breast resections, 2013–2016.

* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.
Breast cancer resections in NSW public hospitals, 2011 and 2016

- The minimum recommended number of breast cancer resections performed annually at NSW hospitals is 36.
- From 2011 to 2016, the proportion of breast cancer resections performed at NSW public hospitals that met this minimum annual caseload remained at 90%.

**Notes:**
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed breast cancer resections in 2011 or 2016 appear on this chart.
Breast cancer resections in NSW private hospitals, 2011 and 2016

From 2011 to 2016, the proportion of breast cancer resections performed at NSW private hospitals that met the minimum suggested annual caseload increased by 1% to 92%.

N=% Number of breast resections, 2016.
* Recommendation based on analysis of unplanned readmission in NSW data for breast cancer resections.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed breast cancer resections in 2011 or 2016 appear on this chart.

Many factors need to be considered when looking at the quality of care for people having treatment for breast cancer. Indicators in 2013–2016 included the number of women having external beam radiotherapy using hypofractionation for early-stage breast cancer, and those having the following types of breast cancer surgery:

- Sentinel lymph node biopsy
- Mastectomy
- Reconstructive surgery

There were differences in these measures between NSW local health districts (LHDs). The differences were much greater for reconstructive surgery and hypofractionation.

Notes:
1. For further information regarding indicator data sources and definitions, refer to the individual indicators.
2. Hypofractionation data for 2009–2012 have not been included as they are not comparable to 2013–2016 data. This is due to changes in the clinical evidence base.
The proportion of breast cancer resections with sentinel lymph node biopsy in NSW public hospitals increased to 73% in 2016, compared with 66% in 2011.

There were some differences between local health districts (LHDs).

Note: Sentinel lymph node biopsy is the removal and examination of the sentinel node(s), the first lymph node(s) to which the breast cancer cells may have spread.
The proportion of breast cancer resections with sentinel lymph node biopsy in NSW public hospitals increased to 73% in 2016, compared with 66% in 2011.

There were some differences between hospitals.
The proportion of breast cancer resections with sentinel lymph node biopsy in NSW private hospitals increased to 80% in 2016, compared with 74% in 2011. There were some differences between hospitals.

**Proportion of breast cancer resections* with sentinel lymph node biopsy (SLNB) in NSW private hospitals, by hospital (ranked), 2011 and 2016**

*Women undergoing a first resection for primary invasive breast cancer. The total number of breast resections reported here is lower than the breast surgical volume report, because it is first resections only.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Hospitals performing less than 30 breast cancer resections in 2016 have been removed due to large variation in annual proportions.
3. Figures displayed in the graph are for 2016.

N= Number of breast cancer resections, 2016.

---

Mastectomy as a proportion of breast cancer resections* in NSW public hospitals, by LHD (ranked), 2011 and 2016

- The number of mastectomies as a proportion of breast cancer resections in NSW public hospitals appropriately fell 2% to 35% in 2016, compared with 2011.
- There were some differences between local health district (LHDs).

Note: A mastectomy is surgery to remove the whole breast.

---

Key findings

- The number of mastectomies as a proportion of breast cancer resections in NSW public hospitals appropriately fell 2% to 35% in 2016, compared with 2011.
- There were some differences between local health district (LHDs).

Note: A mastectomy is surgery to remove the whole breast.
Mastectomy as a proportion of breast cancer resections* in NSW public hospitals, by hospital (ranked), 2011 and 2016

The number of mastectomies as a proportion of breast cancer resections in NSW public hospitals appropriately fell 2% to 35% in 2016, compared with 2011.

N= Number of breast cancer resections, 2016.
* Women undergoing a first resection for primary invasive breast cancer. The total number of breast resections reported here is lower than the breast surgical volume report, because it is first resections only.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Hospitals performing less then 30 breast cancer resections have been removed due to large variation in annual proportions.
3. Figures displayed in the graph are for 2016.
Mastectomy as a proportion of breast cancer resections* in NSW private hospitals, by hospital (ranked), 2011 and 2016

<table>
<thead>
<tr>
<th>Private Hospitals</th>
<th>Hospital 2016</th>
<th>Hospital 2011</th>
<th>NSW private 2016 (29%, N=2,449)</th>
<th>NSW private 2011 (33%, N=2,205)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N=149)</td>
<td>39</td>
<td>43</td>
<td>38</td>
<td>48</td>
</tr>
<tr>
<td>(N=234)</td>
<td>36</td>
<td>36</td>
<td>34</td>
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<tr>
<td>(N=168)</td>
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<td>(N=16)</td>
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<td>29</td>
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</tr>
<tr>
<td>(N=109)</td>
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<td>(N=155)</td>
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<td>(N=119)</td>
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<td>(N=61)</td>
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<td>(N=227)</td>
<td>16</td>
<td>16</td>
<td>16</td>
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</tr>
</tbody>
</table>

N= Number of breast cancer resections, 2016.
* Women undergoing a first resection for primary invasive breast cancer. The total number of breast resections reported here is lower than the breast surgical volume report, because it is first resections only.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHRaI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Hospitals performing less then 30 breast cancer resections have been removed due to large variation in annual proportions.
3. Figures displayed in the graph are for 2016.

The number of mastectomies as a proportion of breast cancer resections in NSW private hospitals appropriately fell by 4% to 29% in 2016, compared with 2011.
The proportion of mastectomies performed with immediate breast reconstruction in NSW public hospitals increased appropriately by 2% to 14% in 2016, compared with 2011.

There were some difference between local health districts (LHDs).

Note: When a breast is removed by mastectomy, it is possible to reconstruct it to look as it was. Breast reconstruction can be done at the same time as mastectomy, called ‘immediate reconstruction’. Alternatively, it can be done as a separate surgery later on, called ‘delayed reconstruction’.

**Key findings**

N= Number of mastectomies, 2016.

*Reconstruction procedure in the same admission as mastectomy, for women undergoing surgery for primary invasive breast cancer.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Figures displayed in the graph are for 2016.
Proportion of mastectomies for invasive breast cancer with immediate breast reconstruction* in NSW public hospitals, by hospital (ranked), 2011 and 2016

The proportion of mastectomies performed with immediate breast reconstruction in NSW public hospitals increased 2% to 14% in 2016, compared with 2011.

There were some differences between hospitals.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Hospitals performing less than 30 breast cancer resections have been removed due to large variation in annual proportions.
3. Figures displayed in the graph are for 2016.

N= Number of mastectomies, 2016.
* Reconstruction procedure in the same admission as mastectomy, for women undergoing surgery for primary invasive breast cancer.
The proportion of mastectomies with immediate breast reconstruction in NSW private hospitals increased 11% to 27% in 2016, compared with 2011.
Ovarian cancer

Primary ovarian cancer is cancer that may originate from the ovaries, fallopian tube or peritoneum.

The management of ovarian cancer requires a team of healthcare professionals with experience in ovarian cancer treatment (including surgery), who also provide appropriate care following treatment.

Specialist centres have been identified for the treatment of gynaecological cancers in NSW, including ovarian cancer.

There are currently seven specialist gynaecological oncology centres in NSW:

- **Chris O’Brien Lifehouse Private** – Sydney LHD
- **Hunter New England Centre for Gynaecological Cancer** (collaboration between John Hunter Hospital and The Calvary Mater Hospital Newcastle) – Hunter New England LHD
- **Liverpool Hospital** – South Western Sydney LHD
- **Royal Hospital for Women** – South Eastern Sydney
- **Royal North Shore Hospital** – Northern Sydney LHD
- **St George Hospital** – South Eastern Sydney LHD
- **Westmead Hospital** – Western Sydney LHD
Average annual flows of people for ovarian cancer resections, by LHD of residence, 2013–2016

Most ovarian cancer resections are performed in local health districts (LHDs) which have specialist gynaecological oncology centres.

People in other areas travel outside of their LHD for ovarian cancer surgery.

Most resections are performed in public hospitals with a smaller number performed in private hospitals.

Notes:
1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.

N= Number of ovarian resections, 2013–2016.
* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.
Ovarian cancer resections in NSW public hospitals, 2011 and 2016

- In 2016, the majority of ovarian cancer resections in NSW public hospitals were carried out in hospitals identified as specialist gynaecological oncology centres.
- Fewer public hospitals carried out ovarian cancer resections in 2016, compared with 2011.
- A number of hospitals continue to operate on women with ovarian cancer, as planned procedures outside a specialist gynaecological oncology centre.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed ovarian cancer resections in 2011 or 2016 appear on this chart.

N= Number of ovarian resections, 2016.
Ovarian cancer resections in NSW private hospitals, 2011 and 2016

N=145
N=139

In 2016, the majority of ovarian cancer resections in NSW private hospitals were carried out in a relatively small number of hospitals.

Fewer private hospitals carried out ovarian cancer resections in 2016, compared with 2011.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed ovarian cancer resections in 2011 or 2016 appear on this chart.
Colon cancer is a common cancer in NSW. It is a type of bowel cancer. The colon is the main part of the large intestine. It is common for people with colon cancer to have surgery. Most patients can have surgery in a hospital close to home.
Average annual flows of people for colon cancer resections, by LHD of residence, 2013–2016

Most colon cancer resections are performed in the local health district (LHD) where the patient lives.

People in some remote or regional areas are more likely to travel out of their LHD for colon cancer surgery.

Resections are performed in public and private hospitals.
Colon cancer resections in NSW public hospitals, 2011 and 2016

- The minimum recommended number of colon cancer resections performed annually in NSW hospitals is 12.
- From 2011 to 2016, the proportion of colon cancer resections performed at NSW public hospitals that met this minimum caseload remained constant at 96%.
- Some surgeries are reported as emergencies.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed colon cancer resections in 2011 or 2016 appear on this chart.

N= Number of colon resections, 2016.
* Recommendation based on hospital-level distribution of colon cancer resections in NSW.
Colon cancer resections in NSW private hospitals, 2011 and 2016

From 2011 to 2016, the proportion of colon cancer resections performed at NSW private hospitals that met the suggested minimum annual caseload was 93%.

N= Number of colon resections, 2016.
* Recommendation based on hospital-level distribution of colon cancer resections in NSW.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed colon cancer resections in 2011 or 2016 appear on this chart.
Rectal cancer

Rectal cancers are often grouped together with colon cancers, and this group of cancers are referred to as “bowel cancer”.

There has been rapid development in the diagnosis and treatment of rectal cancer in the past decade. Management of rectal cancer often includes more than a single treatment. Treatment options include surgery, chemotherapy and radiotherapy. The management of these cancers are complex and requires a team of health care professionals with experience in rectal cancer treatment, who also provide appropriate care following treatment.
Average annual flows of people for rectal cancer resections, by LHD of residence, 2013–2016

<table>
<thead>
<tr>
<th>LHD of residence</th>
<th>Had surgery in LHD of residence</th>
<th>Had surgery outside LHD of residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid North Coast LHD (N=157)</td>
<td>66</td>
<td>24</td>
</tr>
<tr>
<td>Northern NSW LHD (N=*)</td>
<td>68</td>
<td>20</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=542)</td>
<td>35</td>
<td>53</td>
</tr>
<tr>
<td>Hunter New England LHD (N=739)</td>
<td>50</td>
<td>37</td>
</tr>
<tr>
<td>Central Coast LHD (N=*)</td>
<td>45</td>
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</tr>
<tr>
<td>Northern Sydney LHD (N=494)</td>
<td>22</td>
<td>59</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=284)</td>
<td>63</td>
<td>16</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=506)</td>
<td>62</td>
<td>9</td>
</tr>
<tr>
<td>Western Sydney LHD (N=137)</td>
<td>45</td>
<td>26</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=166)</td>
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<td>28</td>
</tr>
<tr>
<td>Sydney LHD (N=305)</td>
<td>51</td>
<td>11</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=*)</td>
<td>43</td>
<td>17</td>
</tr>
<tr>
<td>Western NSW LHD (N=226)</td>
<td>36</td>
<td>11</td>
</tr>
<tr>
<td>Southern NSW LHD (N=175)</td>
<td>18</td>
<td>56</td>
</tr>
<tr>
<td>Far West LHD (N=17)</td>
<td>6</td>
<td>88</td>
</tr>
</tbody>
</table>

Had surgery in: public facility in LHD of residence  private facility in LHD of residence  public facility outside LHD of residence  private facility outside LHD of residence

N= Number of rectal resections, 2013–2016.
* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.

Notes:
1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.

- Most rectal cancer resections are performed in local health districts (LHDs) which have major hospitals and cancer centres.
- Some people in other areas travel outside of their LHD for rectal cancer surgery.
Rectal cancer resections in NSW public hospitals, 2011 and 2016

- The minimum recommended number of rectal cancer resections performed annually in NSW hospitals is 12.
- From 2011 to 2016, the proportion of rectal cancer resections performed at NSW public hospitals that met this minimum caseload increased slightly (1%) to 87%.
- Some surgeries are reported as emergencies.

N= Number of rectal resections, 2016.
* Recommendation based on hospital-level distribution of rectal cancer resections in NSW.
Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed rectal cancer resections in 2011 or 2016 appear on this chart.
Rectal cancer resections in NSW private hospitals, 2011 and 2016

From 2011 to 2016, the proportion of rectal cancer resections performed at NSW private hospitals that met the suggested minimum annual caseload dropped slightly (4%) to 80%.

N= Number of rectal resections, 2016.
* Recommendation based on hospital-level distribution of rectal cancer resections in NSW.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed rectal cancer resections in 2011 or 2016 appear on this chart.
Gastric cancer

Gastric cancer is cancer of the stomach. Surgical resection can offer the best long-term survival for patients.

Surgery for gastric cancer requires the right level of hospital capabilities and surgical expertise. The management of these cancers requires a team of health care professionals with suitable experience, who also provide appropriate care following treatment.

<table>
<thead>
<tr>
<th>LHD of residence</th>
<th>Had surgery in LHD of residence</th>
<th>Had surgery outside LHD of residence</th>
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<td>70%</td>
<td>10%</td>
</tr>
<tr>
<td>Hunter New England LHD (N=76)</td>
<td>66%</td>
<td>58%</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=88)</td>
<td>43%</td>
<td>14%</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=*)</td>
<td>72%</td>
<td>17%</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=62)</td>
<td>27%</td>
<td>19%</td>
</tr>
<tr>
<td>Central Coast LHD (N=*)</td>
<td>70%</td>
<td>13%</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=*)</td>
<td>68%</td>
<td>15%</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=52)</td>
<td>54%</td>
<td>19%</td>
</tr>
<tr>
<td>Sydney LHD (N=75)</td>
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<td>Western NSW LHD (N=23)</td>
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<td>4%</td>
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<tr>
<td>Murrumbidgee LHD (N=*)</td>
<td>43%</td>
<td>13%</td>
</tr>
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<td>Western Sydney LHD (N=86)</td>
<td>40%</td>
<td>21%</td>
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<tr>
<td>Mid North Coast LHD (N=*)</td>
<td>35%</td>
<td>26%</td>
</tr>
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<td>Far West LHD (N=3)</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>Southern NSW LHD (N=18)</td>
<td>6%</td>
<td>6%</td>
</tr>
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</table>

Had surgery in: public facility in LHD of residence, private facility in LHD of residence, public facility outside LHD of residence, private facility outside LHD of residence.

N= Number of gastric resections, 2013–2016.
* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.

Notes:
1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHR1, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHR1, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.

- More gastric cancer resections are performed in local health districts (LHDs) which have major hospitals and cancer centres.
- People in other areas travel outside of their LHD for gastric cancer surgery.
- More gastric cancer resections are performed in public hospitals.
Gastric cancer resections in NSW public hospitals, 2011 and 2016

Key findings

- The minimum recommended number of gastric cancer resections performed annually in NSW hospitals is 6.
- From 2011 to 2016, the proportion of gastric cancer resections performed at NSW public hospitals that met this minimum annual caseload increased 7% to 75%.
- Some surgeries are reported as emergencies.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed gastric cancer resections in 2011 or 2016 appear on this chart.

N= Number of gastric resections, 2016.
* Recommendation based on international studies and hospital-level distribution of gastrectomies in NSW.
From 2011 to 2016, the proportion of gastric cancer resections performed at NSW private hospitals that met the suggested minimum annual caseload fell 10% to 47%.

N = Number of gastric resections, 2016.
* Recommendation based on international studies and hospital-level distribution of gastrectomies in NSW.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed gastric cancer resections in 2011 or 2016 appear on this chart.
Oesophageal cancer

The oesophagus is the tube that carries food from the back of the mouth, down into the stomach. Surgery for oesophageal cancer is very complex and can involve removing the oesophagus. This is called an oesophagectomy.

International research indicates that performing oesophagectomies at hospitals that do a certain number of these surgeries contributes to improving outcomes.[36,37]

The management of these cancers requires a team of health care professionals with suitable experience in providing appropriate care before and after surgery.
Average annual flows of people for oesophageal cancer resections, by LHD of residence, 2013–2016

<table>
<thead>
<tr>
<th>LHD of residence</th>
<th>Had surgery in LHD of residence</th>
<th>Had surgery outside LHD of residence</th>
</tr>
</thead>
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<td>Northern Sydney LHD (N=79)</td>
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<td>14/1</td>
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<td>South Eastern Sydney LHD (N=65)</td>
<td>48/35</td>
<td>14/3</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=39)</td>
<td>77/6</td>
<td>21/3</td>
</tr>
<tr>
<td>Sydney LHD (N=4*)</td>
<td>61/6</td>
<td>18/15</td>
</tr>
<tr>
<td>Hunter New England LHD (N=98)</td>
<td>57/4</td>
<td>27/12</td>
</tr>
<tr>
<td>Central Coast LHD (N=45)</td>
<td>60/20</td>
<td>20/20</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=47)</td>
<td>60/20</td>
<td>19/21</td>
</tr>
<tr>
<td>Western Sydney LHD (N=49)</td>
<td>55/20</td>
<td>29/16</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=70)</td>
<td>53/37</td>
<td>37/10</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=48)</td>
<td>48/19</td>
<td>19/33</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=34)</td>
<td>21/44</td>
<td>44/35</td>
</tr>
<tr>
<td>Western NSW LHD (N=26)</td>
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<tr>
<td>Southern NSW LHD (N=24)</td>
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<td>Northern NSW LHD (N=17)</td>
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<td></td>
</tr>
<tr>
<td>Far West LHD (N=2)</td>
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<td></td>
</tr>
</tbody>
</table>

Had surgery in: public facility in LHD of residence, private facility in LHD of residence, public facility outside LHD of residence, private facility outside LHD of residence

**N=** Number of oesophageal resections, 2013–2016.

* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.

Notes:

1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).

2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.

- Oesophageal cancer resections are complex surgery and only performed in some local health districts (LHDs).
- People in other areas travel outside of their LHD for oesophageal cancer surgery.
- Most resections are performed in public hospitals.
Oesophageal cancer resections in NSW public hospitals, 2011 and 2016

The minimum recommended number of oesophageal cancer resections performed annually in NSW hospitals is 6.

From 2011 to 2016, the proportion of oesophageal cancer resections performed at NSW public hospitals that met this minimum annual caseload increased 13% to 88%.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPhAReI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed oesophageal cancer resections in 2011 or 2016 appear on this chart.
From 2011 to 2016, the proportion of oesophageal cancer resections performed at NSW private hospitals that met the suggested minimum annual caseload increased 11% to 87%.
Pancreatic cancer

The pancreas is a small organ at the back of the abdomen.

Surgery for pancreatic cancer may involve removing the pancreas. This is called a pancreatectomy. This is complex surgery that should be performed at a hospital with expertise in this surgery.

The management of these cancers requires a team of health care professionals with suitable experience in providing appropriate care following surgery.
Average annual flows of people for pancreatic cancer resections, by LHD of residence, 2013–2016

<table>
<thead>
<tr>
<th>LHD of residence</th>
<th>Had surgery in LHD of residence</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Northern Sydney LHD (N=136)</td>
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<td>South Eastern Sydney LHD (N=142)</td>
<td>46</td>
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<tr>
<td>Northern NSW LHD (N= *)</td>
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<td>Western Sydney LHD (N= *)</td>
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</tr>
<tr>
<td>South Western Sydney LHD (N=129)</td>
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</tr>
<tr>
<td>Hunter New England LHD (N= *)</td>
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</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=59)</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=41)</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N= *)</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=38)</td>
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<td>Western NSW LHD (N=31)</td>
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<tr>
<td>Central Coast LHD (N= *)</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>Southern NSW LHD (N=38)</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

N= Number of pancreatic resections, 2013–2016.
* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.

Notes:
1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.

- Pancreatic cancer resections are complex surgery and mainly performed in local health districts (LHDs) with larger hospitals or cancer centres.
- People in other areas travel outside of their LHD for pancreatic cancer surgery.
- Pancreatic cancer resections are performed in public and private hospitals.
Pancreatic cancer resections in NSW public hospitals, 2011 and 2016

- The minimum recommended number of pancreatic cancer resections performed annually in NSW hospitals is 6.
- From 2011 to 2016, the proportion of pancreatic cancer resections performed at NSW public hospitals that met this minimum annual caseload increased 9% to 91%.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed pancreatic cancer resections in 2011 or 2016 appear on this chart.
Pancreatic cancer resections in NSW private hospitals, 2011 and 2016

From 2011 to 2016, the proportion of pancreatic cancer resections performed at NSW private hospitals that met the suggested minimum annual caseload increased 18% to 90%.

N= Number of pancreatic resections, 2016.
* Recommendation based on international studies and hospital-level distribution of pancreatectomies in NSW.
Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed pancreatic cancer resections in 2011 or 2016 appear on this chart.
Primary liver cancer

Primary liver cancer is cancer that starts in the cells of the liver. Some cancers spread to the liver from other parts of the body, but these are known as secondary liver cancers.

The number of people being diagnosed with primary liver cancer has increased significantly in NSW over the last 10 years.

There are a number of health problems that increase the risk of developing primary liver cancer. These include chronic hepatitis B and C infections, drinking alcohol at harmful levels, and being obese.

Primary liver cancer resections are complex surgery that should be performed at a hospital with expertise in this surgery.
Average annual flows of people for primary liver cancer resections, by LHD of residence, 2013–2016

<table>
<thead>
<tr>
<th>LHD of residence</th>
<th>Had surgery in LHD of residence</th>
<th>Had surgery outside LHD of residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Eastern Sydney LHD (N=98)</td>
<td>40</td>
<td>11</td>
</tr>
<tr>
<td>Hunter New England LHD (N=*)</td>
<td>49</td>
<td>12</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=68)</td>
<td>21</td>
<td>26</td>
</tr>
<tr>
<td>Western Sydney LHD (N=76)</td>
<td>49</td>
<td>20</td>
</tr>
<tr>
<td>Sydney LHD (N=*)</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=*)</td>
<td>41</td>
<td>17</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=41)</td>
<td>37</td>
<td>20</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=*)</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>Northern NSW LHD (N=13)</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=*)</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=20)</td>
<td>53</td>
<td>17</td>
</tr>
<tr>
<td>Western NSW LHD (N=15)</td>
<td>88</td>
<td>12</td>
</tr>
<tr>
<td>Southern NSW LHD (N=17)</td>
<td>72</td>
<td>28</td>
</tr>
<tr>
<td>Central Coast LHD (N=18)</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Had surgery in: public facility in LHD of residence  private facility in LHD of residence  public facility outside LHD of residence  private facility outside LHD of residence

N= Number of primary liver resections, 2013–2016.
* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.

Notes:
1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRi, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHaRi, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.

Key Findings

- Primary liver cancer resections are complex surgery and are only performed in some local health districts (LHDs).
- People in other areas travel outside of their LHD for liver cancer surgery.
- More liver cancer resections are performed in public hospitals.
Primary liver cancer resections in NSW public hospitals, 2011 and 2016

N=113

N=78

Most primary liver cancer resections are performed in public hospitals.

Note: A Clinical Advisory Committee has been established to investigate potential areas of system improvement relating to treatment for primary liver cancer.
Primary liver cancer resections in NSW private hospitals, 2011 and 2016

A smaller number of primary liver resections are performed in private hospitals.

N= Number of primary liver resections, 2016.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed primary liver cancer resections in 2011 or 2016 appear on this chart.
Head and neck cancer

The term head and neck cancers incorporates a number of different cancer types that start in different parts of the head and neck (e.g. mouth, throat (larynx), salivary glands, etc).

Because of their location, surgery for some head and neck cancers can be very complex. There is evidence of improved survival from having surgery for complex head and neck cancer in a specialist cancer centre or hospital.[38]

The management of these cancers requires a team of health care professionals with suitable experience in providing appropriate care following surgery.
### Average annual flows of people for complex head and neck cancer resections, by LHD of residence, 2013–2016

<table>
<thead>
<tr>
<th>LHD of residence</th>
<th>Had surgery in LHD of residence</th>
<th>Had surgery outside LHD of residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunter New England LHD (N=607)</td>
<td><img src="chart1.png" alt="Chart for Hunter New England LHD" /></td>
<td><img src="chart2.png" alt="Chart for Hunter New England LHD" /></td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=506)</td>
<td><img src="chart3.png" alt="Chart for South Eastern Sydney LHD" /></td>
<td><img src="chart4.png" alt="Chart for South Eastern Sydney LHD" /></td>
</tr>
<tr>
<td>Northern Sydney LHD (N=495)</td>
<td><img src="chart5.png" alt="Chart for Northern Sydney LHD" /></td>
<td><img src="chart6.png" alt="Chart for Northern Sydney LHD" /></td>
</tr>
<tr>
<td>Western Sydney LHD (N=* *)</td>
<td><img src="chart7.png" alt="Chart for Western Sydney LHD" /></td>
<td><img src="chart8.png" alt="Chart for Western Sydney LHD" /></td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=311)</td>
<td><img src="chart9.png" alt="Chart for Illawarra Shoalhaven LHD" /></td>
<td><img src="chart10.png" alt="Chart for Illawarra Shoalhaven LHD" /></td>
</tr>
<tr>
<td>Sydney LHD (N=* *)</td>
<td><img src="chart11.png" alt="Chart for Sydney LHD" /></td>
<td><img src="chart12.png" alt="Chart for Sydney LHD" /></td>
</tr>
<tr>
<td>South Western Sydney LHD (N=411)</td>
<td><img src="chart13.png" alt="Chart for South Western Sydney LHD" /></td>
<td><img src="chart14.png" alt="Chart for South Western Sydney LHD" /></td>
</tr>
<tr>
<td>Central Coast LHD (N=* *)</td>
<td><img src="chart15.png" alt="Chart for Central Coast LHD" /></td>
<td><img src="chart16.png" alt="Chart for Central Coast LHD" /></td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=* *)</td>
<td><img src="chart17.png" alt="Chart for Nepean Blue Mountains LHD" /></td>
<td><img src="chart18.png" alt="Chart for Nepean Blue Mountains LHD" /></td>
</tr>
<tr>
<td>Northern NSW LHD (N=* *)</td>
<td><img src="chart19.png" alt="Chart for Northern NSW LHD" /></td>
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<tr>
<td>Southern NSW LHD (N=151)</td>
<td><img src="chart21.png" alt="Chart for Southern NSW LHD" /></td>
<td><img src="chart22.png" alt="Chart for Southern NSW LHD" /></td>
</tr>
<tr>
<td>Mid North Coast LHD (N=* *)</td>
<td><img src="chart23.png" alt="Chart for Mid North Coast LHD" /></td>
<td><img src="chart24.png" alt="Chart for Mid North Coast LHD" /></td>
</tr>
<tr>
<td>Western NSW LHD (N=237)</td>
<td><img src="chart25.png" alt="Chart for Western NSW LHD" /></td>
<td><img src="chart26.png" alt="Chart for Western NSW LHD" /></td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=198)</td>
<td><img src="chart27.png" alt="Chart for Murrumbidgee LHD" /></td>
<td><img src="chart28.png" alt="Chart for Murrumbidgee LHD" /></td>
</tr>
<tr>
<td>Far West LHD (N=13)</td>
<td><img src="chart29.png" alt="Chart for Far West LHD" /></td>
<td><img src="chart30.png" alt="Chart for Far West LHD" /></td>
</tr>
</tbody>
</table>

**N=** Number of complex head and neck resections, 2013–2016.

* Private hospital data are not available for this LHD. Either one private hospital is performing surgeries or one private hospital performs more than 90% of surgeries in this LHD.

**Notes:**
1. Data source: NSW public data are sourced from Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHAR1, Centre for Epidemiology and Evidence, NSW Ministry of Health). Interstate data are sourced from Combined Admitted Patient Epidemiology Data (sourced from SAPHARI, Centre for Epidemiology and Evidence, NSW Ministry of Health). ACT public data are sourced from Admitted Patient Care (sourced from ACT Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs and interstate public facilities.

- Complex head and neck cancer resections are mainly performed in local health districts (LHDs) with larger hospitals or cancer centres.
- People in other areas travel outside of their LHD for complex head and neck cancer surgery.
- A greater number of complex head and neck resections are performed in public hospitals.
Complex head and neck cancer resections in NSW public hospitals, 2011 and 2016

N= Number of complex head and neck resections, 2016.

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Only hospitals that have performed complex head and neck cancer resections in 2011 or 2016 appear on this chart.

A greater number of complex head and neck cancer resections are performed in public hospitals.

Note: The threshold for minimum suggested annual surgical caseload for a given cancer is determined by a range of factors, including international studies, analysis of NSW data, and the hospital-level distribution of resections in NSW. Clinical engagement and analyses are underway to determine the minimum suggested annual caseload applicable for complex head and neck cancer resections in NSW.
A smaller number of head and neck resections are performed at private hospitals.
Cancer research: Clinical trials

What are cancer clinical trials?
Clinical trials are research studies that test new approaches to cancer care. They can be used to test new cancer treatments or other ways of improving cancer care. They compare the new treatment to the best available current treatments.

Why are they important?
Clinical trials are an important way to support the development of new cancer treatments and improve cancer care.

Increasing the number of places available in cancer clinical trials in NSW means that individual patients have more treatment choices. There is also evidence that, when hospitals are involved in research, this can improve their processes of care and health outcomes for all patients.[39–42]

Where do trials take place?
Cancer clinical trials are being conducted in hospitals and cancer centres across most local health districts (LHDs) in NSW.

People with cancer in NSW can take part in trials that are suitable for them, even if these are in a different LHD.

Some clinical trials may have very small numbers of people enrolled; for example, trials which focus on rare cancers. Clinical trials are expensive to set up so it is important for hospitals and cancer centres to review trials which are not enrolling people and have been open for a long period of time.

Who can take part?
Each trial has rules about who can take part. These include things like the type and stage of cancer a person has, and whether the treatment being tested is suitable for that person.

Who pays for them?
Commercially sponsored clinical trials are funded by pharmaceutical companies.

Non-commercial clinical trials designed by cancer researchers and clinicians, are funded from a variety of sources, including government or non-government organisations. The Cancer Institute NSW supports non-commercial trials which it defines as ‘portfolio trials’.

Overall key findings

- In 2016–2017*, the number of cancer clinical trials in NSW increased by 18% compared with 2015.
- In 2016–2017*, there were 3,382 enrolments into cancer clinical trials in NSW. This was an increase of 46% compared with 2015.
- Overall in NSW, there are eight enrolments into cancer clinical trials for every 100 people newly diagnosed with cancer during the same year.

* 1 July 2016 to 23 June 2017.
### Ratio of cancer clinical trial enrolments to cancer incidence (per 100 cases), by LHD (ranked), 2015 and 2016–2017*

<table>
<thead>
<tr>
<th>LHD</th>
<th>2016–17</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney LHD (N=2,572)</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Western Sydney LHD (N=3,769)</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=4,162)</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=1,958)</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Hunter New England LHD (N=5,974)</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=4,865)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=2,720)</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=1,618)</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=4,668)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Central Coast LHD (N=2,312)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Western NSW LHD (N=1,699)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Southern NSW LHD (N=1,330)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Northern NSW LHD (N=2,224)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=1,786)</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ratio (per 100 cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 5 10 15 20 25</td>
</tr>
</tbody>
</table>

N= Number of incident cancer cases.
* 1 July 2016 to 23 June 2017.

**Notes:**

1. Cancer incidence is determined by LHD of residence (2013 data sourced from the NSW Cancer Registry).
2. Clinical trial enrolments are calculated according to the LHD where the clinical trial is conducted.
3. NSW total includes private institutions that are external to the LHD structure, St Vincent’s Health Network, and the Sydney Children’s Hospitals Network.

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In 2016–2017*, the ratio of enrolments into a cancer clinical trial, for every 100 people diagnosed with cancer, increased from 6 to 8 (by 33%), compared with 2015.

* 1 July 2016 to 23 June 2017
Ratio of cancer clinical trial enrolments to cancer incidence (per 100 cases), by clinical group (ranked), 2015 and 2016–2017*

N= Number of incident cancer cases.
* 1 July 2016 to 23 June 2017.

Notes:
1. Cancer incidence is determined by LHD of residence (2013 data sourced from the NSW Cancer Registry).
2. Clinical trial enrolments are calculated according to the LHD where the clinical trial is conducted.
3. NSW total includes private institutions that are external to the LHD structure, St Vincent’s Health Network, and the Sydney Children’s Hospitals Network.

In 2016–2017*, for every 100 people diagnosed with cancer in NSW, the ratio of enrolments into a cancer clinical trial increased for most cancer types, compared with 2015.

* 1 July 2016 to 23 June 2017
Number of cancer clinical trials open for recruitment, by trial category, NSW, 2014, 2015, 2016–2017*

**Notes:**

1. Portfolio trials are investigator-initiated cancer clinical trials which meet the Cancer Institute NSW portfolio criteria and are eligible for funding. For more information, visit https://www.cancerinstitute.org.au/data-research/clinical-trials/clinical-trial-program-overview
2. Non-portfolio trials are investigator-initiated cancer clinical trials that do not meet the Cancer Institute NSW portfolio criteria.
3. Commercial trials are those which are funded by (and for which the data are owned by) pharmaceutical and biotechnology companies.

- In NSW, the number of cancer clinical trials open for people with cancer to join increased from 297 in 2014 to 423 in 2016–2017*.
- Around half of all cancer clinical trials are ‘commercial’ trials funded by pharmaceutical companies. The other half are non-commercial trials designed by cancer researcher and clinicians, and funded by government or non-government organisations. The Cancer Institute NSW supports non-commercial trials which they define as ‘portfolio trials’.
- There were differences in the number of trials open for recruitment between local health districts (LHDs).

* 1 July 2016 to 23 June 2017.
Number of enrolments in cancer clinical trials, by trial category, NSW, 2014, 2015, 2016–2017*

Number of enrolments in cancer clinical trials, by trial category, by LHD and specialty network (ranked), 2016–2017*

* 1 July 2016 to 23 June 2017.

Notes:
1. Portfolio trials are investigator-initiated cancer clinical trials which meet the Cancer Institute NSW portfolio criteria and are eligible for funding. For more information, visit https://www.cancerinstitute.org.au/data-research/clinical-trials/clinical-trial-program-overview
2. Non-portfolio trials are investigator-initiated cancer clinical trials that do not meet the Cancer Institute NSW portfolio criteria.
3. Commercial trials are those which are funded by (and for which the data are owned by) pharmaceutical and biotechnology companies.

Key Findings
- In NSW, the number of enrolments into cancer clinical trials increased from 1,193 in 2014 to 3,382 in 2016–2017*.
- Around two thirds of enrolments were to non-commercial cancer clinical trials designed by cancer researchers and clinicians, and funded by government or non-government organisations. The Cancer Institute NSW supports non-commercial trials which it defines as ‘portfolio trials’.
- There were differences in the number of enrolments into cancer clinical trials between local health districts (LHDs).

* 1 July 2016 to 23 June 2017
Proportion of cancer clinical trials open for recruitment for more than 180 days with nil recruitment, by LHD and specialty network (ranked), 2016–2017*

- Western NSW LHD (N=13)
- Sydney LHD (N=99)
- Illawarra Shoalhaven LHD (N=18)
- Private institutions not elsewhere classified (N=56)
- Western Sydney LHD (N=74)
- Hunter New England LHD (N=83)
- Northern Sydney LHD (N=56)
- Southern NSW LHD (N=11)
- Murrumbidgee LHD (N=29)
- South Eastern Sydney LHD (N=74)
- Central Coast LHD (N=23)
- Mid North Coast LHD (N=23)
- South Western Sydney LHD (N=57)
- Sydney Children’s Hospitals Network (N=37)
- Nepean Blue Mountains LHD (N=12)
- Northern NSW LHD (N=24)
- St Vincent’s Health Network (N=38)

Trials with nil recruitment (%)

N= Number of trials open for recruitment.
* 1 July 2016 to 23 June 2017.

Notes:
1. Trials were counted as having nil recruitment if any clinical trial unit in the LHD was open for recruitment for 180 days or more, and had no enrolments.
2. The Children’s Cancer & Haematology Service is located in Hunter New England LHD but reports through Sydney Children’s Hospitals Network.

- Within each NSW local health district (LHD), there are a number of cancer clinical trials that have been open for six months or more without any people enrolling to take part. The proportion of these differs between LHDs.
- The reasons for this can vary – some trials may be for rare cancers and so the numbers of people who can take part are low.
- Local health districts (LHDs) need to investigate why trials are not enrolling people to determine if they should continue.
## Acronyms & abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>ACT</td>
<td>Australian Capital Territory</td>
</tr>
<tr>
<td>AND</td>
<td>Axillary node dissection</td>
</tr>
<tr>
<td>APEDDR</td>
<td>Admitted Patient, Emergency Department Attendance and Death Register</td>
</tr>
<tr>
<td>ASA</td>
<td>American Society of Anesthesiologists</td>
</tr>
<tr>
<td>ASCO</td>
<td>American Society of Clinical Oncology</td>
</tr>
<tr>
<td>ASGS</td>
<td>Australian Statistical Geography Standard</td>
</tr>
<tr>
<td>AVG.</td>
<td>Average</td>
</tr>
<tr>
<td>BHI</td>
<td>Bureau of Health Information</td>
</tr>
<tr>
<td>Biennial</td>
<td>24-month period</td>
</tr>
<tr>
<td>BMI</td>
<td>Body mass index</td>
</tr>
<tr>
<td>CAG</td>
<td>Clinical advisory group</td>
</tr>
<tr>
<td>CALD</td>
<td>Culturally and linguistically diverse</td>
</tr>
<tr>
<td>Camrefer</td>
<td>Cancer referral network</td>
</tr>
<tr>
<td>CASE</td>
<td>Communication and Attitudinal Self-Efficacy scale</td>
</tr>
<tr>
<td>EBRT</td>
<td>External beam radiation therapy</td>
</tr>
<tr>
<td>ECOG</td>
<td>Eastern Coorperative Oncology Group</td>
</tr>
<tr>
<td>EROD</td>
<td>Enhanced Radiation Oncology Data</td>
</tr>
<tr>
<td>ESAS</td>
<td>Edmonton Symptom Assessment System</td>
</tr>
<tr>
<td>GP</td>
<td>General practitioner</td>
</tr>
<tr>
<td>Gy</td>
<td>Gray</td>
</tr>
</tbody>
</table>

For definitions of key terms throughout this report, please refer to the Cancer Institute NSW website glossary: [cancer.nsw.gov.au/glossary](cancer.nsw.gov.au/glossary)
# Acronyms & abbreviations (cont.)

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV</td>
<td>Human papillomavirus</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>iFOBT</td>
<td>Immunochemical faecal occult blood test</td>
</tr>
<tr>
<td>LHD</td>
<td>Local health district</td>
</tr>
<tr>
<td>LGA</td>
<td>Local government area</td>
</tr>
<tr>
<td>MDT</td>
<td>Multidisciplinary team</td>
</tr>
<tr>
<td>NBCSP</td>
<td>National Bowel Cancer Screening Program</td>
</tr>
<tr>
<td>NCSP</td>
<td>National Cervical Screening Program</td>
</tr>
<tr>
<td>NHMRC</td>
<td>National Health and Medical Research Council</td>
</tr>
<tr>
<td>N</td>
<td>Number</td>
</tr>
<tr>
<td>NSW</td>
<td>New South Wales</td>
</tr>
<tr>
<td>NSWCR</td>
<td>NSW Cancer Registry</td>
</tr>
<tr>
<td>PHN</td>
<td>Primary health network</td>
</tr>
<tr>
<td>RBCO</td>
<td>Reporting for Better Cancer Outcomes</td>
</tr>
<tr>
<td>SAPHaRI</td>
<td>Secure Analytics for Population Health Research and Intelligence</td>
</tr>
<tr>
<td>SLNB</td>
<td>Sentinel lymph node biopsy</td>
</tr>
<tr>
<td>SIR</td>
<td>Standardised incidence ratio</td>
</tr>
<tr>
<td>SMR</td>
<td>Standardised mortality ratio</td>
</tr>
<tr>
<td>TCRC</td>
<td>Translational cancer research centre</td>
</tr>
<tr>
<td>TNM</td>
<td>Cancer staging system (tumour, nodes, metastasis)</td>
</tr>
</tbody>
</table>

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References


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