Foreword

The impact of cancer is felt right across our community—it is the leading cause of premature death in our society and by the year 2021, approximately 53,000 people every year in NSW will be told that they have cancer.

Cancer control is an important priority, which is why the Cancer Institute NSW has led the Reporting for Better Cancer Outcomes (RBCO) program since 2010, which works to reduce the incidence of cancer, and increase the survival and quality of life of those affected by the disease.

Reporting annually, the RBCO program provides local and statewide cancer data and information to local health districts, primary health networks and participating private hospitals, which enables them to identify opportunities to improve their cancer prevention, screening, treatment and clinical trials programs, initiatives and services.

The RBCO program effectively uses existing data sets, data linkage and robust analyses to develop reports on variation in outcomes for cancer treatment.

This year’s Annual performance report provides a snapshot of cancer control across NSW, highlighting areas of positive change and opportunities for improvement.

Importantly, the data reveal there are still variations in cancer incidence, treatment and outcomes across the state, so an important priority for all involved in cancer control is to ensure every person in NSW affected by the disease receives world-class cancer treatment and care, wherever they live.

For the first time this year, the Institute has partnered with the Bureau of Health Information to report on the experiences of people with cancer in NSW as part of the RBCO program. Generally, patients have had positive experiences; however, regularly reporting this information will allow for more personalised care and help to improve the overall quality of the health system.

New data are also being reported for skin protection, alcohol consumption and cancer screening this year, as well as more detailed information around cancer treatment and service delivery.

By providing a more comprehensive picture of cancer control across NSW, we are influencing real change in cancer outcomes for the people of NSW and the health system.

Professor David Currow FAHMS
Chief Cancer Officer, NSW and
CEO, Cancer Institute NSW
Population & cancer statistics

NSW population\(^1\) 7.52 million

Cancer statistics

Total NSW cancer incidence

- **2012\(^2\)**: 42,071
- **2016\(^3\)**: 46,412
- **2021\(^3\)**: 53,206

Total NSW cancer mortality

- **2012\(^2\)**: 14,096
- **2016\(^3\)**: 15,505
- **2021\(^3\)**: 16,775

Population by NSW local health district (LHD)

<table>
<thead>
<tr>
<th>LHD</th>
<th>Population(^1)</th>
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<tbody>
<tr>
<td>Central Coast LHD</td>
<td>331,007</td>
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<tr>
<td>Far West LHD</td>
<td>31,044</td>
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<tr>
<td>Hunter New England LHD</td>
<td>903,640</td>
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<tr>
<td>Illawarra Shoalhaven LHD</td>
<td>395,940</td>
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<tr>
<td>Mid North Coast LHD</td>
<td>212,161</td>
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<tr>
<td>Murrumbidgee LHD</td>
<td>291,800</td>
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<tr>
<td>Nepean Blue Mountains LHD</td>
<td>360,588</td>
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<tr>
<td>Northern NSW LHD</td>
<td>293,607</td>
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<tr>
<td>Northern Sydney LHD</td>
<td>892,568</td>
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<tr>
<td>South Eastern Sydney LHD</td>
<td>884,063</td>
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<td>South Western Sydney LHD</td>
<td>921,725</td>
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<td>Southern NSW LHD</td>
<td>201,722</td>
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<td>Sydney LHD</td>
<td>613,265</td>
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<td>Western NSW LHD</td>
<td>278,760</td>
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<tr>
<td>Western Sydney LHD</td>
<td>906,594</td>
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</tbody>
</table>

References:
1. 2014 population data sourced from SAPHaRI (Centre for Epidemiology and Evidence, NSW Ministry of Health (latest available data)).

Note: Projections 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.
Regional variation in cancer incidence and mortality

This table shows the NSW local health districts that have significantly higher or lower cancer incidence and mortality rates when compared with NSW as a whole, for the reporting period 2008–2012.

<table>
<thead>
<tr>
<th>Clinical groups</th>
<th>Central Coast</th>
<th>Far West</th>
<th>Hunter New England</th>
<th>Illawarra Shoalhaven</th>
<th>Mid North Coast</th>
<th>Murrumbidgee</th>
<th>Nepean Blue Mountains</th>
<th>Northern NSW</th>
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</thead>
<tbody>
<tr>
<td>Incidence (I)/Mortality (M)</td>
<td>I</td>
<td>M</td>
<td>I</td>
<td>M</td>
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<td>Head and Neck</td>
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<td>Lymphohaematopoietic**</td>
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- Higher
- Lower
- < 20 observations
- No significant difference
### Notes:

- Data source: Annual NSW cancer incidence and mortality data set, 2012 (sourced from the NSW Cancer Registry).
- The indirect method of age-standardisation of incidence and mortality rates was used to compare LHDs against NSW and to determine their significance.
- The following clinical groups were excluded from the above analysis: eye; and bone and connective tissue. These groups have lower incidence making for unreliable comparison at the LHD level.
- Albury residents were included in Murrumbidgee LHD.
- 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.

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<table>
<thead>
<tr>
<th>Clinical groups</th>
<th>Northern Sydney</th>
<th>South Eastern Sydney</th>
<th>South Western Sydney</th>
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<th>Sydney</th>
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* The analyses for breast and gynaecological clinical groups were based on the female population only.
** The lymphohaematopoietic clinical group now includes ‘Myelodysplasia and other lymphoid haematopoietic’. This group was shown separately in previous reports.
Cancer prevention:
Tobacco control

Introduction

While smoking rates have declined considerably in recent years, smoking still causes more than 46,000 hospitalisations each year in NSW, and age-related mortality rates among Australian smokers are approximately three times more than those of people who have never smoked.

Smoking during pregnancy also contributes to an increased risk of maternal and infant complications, including spontaneous abortion, pregnancy and labour complications, stillbirth, low birth weight and sudden infant death syndrome.

The NSW Tobacco Strategy 2012–2017 sets out the actions that the NSW Government is taking to reduce the harm tobacco imposes on our community.

Quitting smoking at any time results in substantial health gains, including improving the prognosis of people even after the diagnosis of cancer.

Evidence suggests that quitting when newly diagnosed with cancer can enhance a person’s response to treatment, decrease the side-effects of treatment and decrease the risk of cancer recurrence.[1]

Good clinical care includes identification of smoking status and, for clients who do smoke, offering support to manage their nicotine dependence and quit. Health professionals are encouraged to identify teachable ‘moments’ for all people; particularly pregnant women (or women planning to get pregnant) who smoke.

Provision of brief, simple advice from a doctor about quitting smoking increases the likelihood that someone who smokes will successfully quit and remain a non-smoker 12 months later.[2]

All health professionals are encouraged to refer clients who smoke to the iCanQuit website (iCanQuit.com.au) or the NSW Quitline: (13 78 48). Information on how to refer a patient to Quitline can be found at www.cancerinstitute.org.au/quitline/health-professionals

References:

Notes:
• Health network and/or specialty network indicators are not calculated for tobacco control, 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.
• Adult smoking prevalence in NSW has declined, from 22.5% in 2002 to 13.5% in 2015.

• There is variation in smoking prevalence between NSW local health districts (LHDs). For example, in 2015, smoking prevalence in non-metropolitan LHDs was higher than in metropolitan LHDs.

• In NSW, adult smoking prevalence was higher among males (15.5%) than females (11.6%) in 2015.

• In 2014, 9.3% of women smoked during pregnancy in NSW. The proportion of women who smoke during pregnancy is higher in non-metropolitan LHDs than metropolitan LHDs, and smoking during pregnancy is more prevalent among Aboriginal women than non-Aboriginal women.

• In 2014, smoking prevalence among young people aged 12 to 17 years in NSW was 6.7%.

Key findings
Smoking prevalence in adults*, by LHD (ranked), 2002 and 2015

* Persons aged 16 years and over.

Notes:
1. Differences between 2015 and 2002 adult smoking rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. 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.
3. Actual estimates are shown in this graph.
Smoking prevalence in adults*, trend, NSW, 2002–2015**

* 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 interpreted 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. Actual estimates are shown in this graph.
Current smoking prevalence in adults*, by gender and age, NSW, 2015

* 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. Actual estimates are shown in this graph.
Proportion of women who smoked during pregnancy, by LHD (ranked), 2010 and 2014

Notes:
1. Differences between 2014 and 2010 adult smoking rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. 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.
3. Actual estimates are shown in this graph.
4. Refer to Appendices for LHD figures.
Proportion of women who smoked during pregnancy, trend, by population type, NSW, 2010–2014*

* Mobile phone numbers have been included in the survey sample since 2012. Any significant differences observed between 2011 and 2012 estimates should be interpreted with caution, as they may reflect both real and survey design changes.

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. Actual estimates are shown in this graph.
Proportion of Aboriginal women who smoked during pregnancy, by LHD (ranked), 2010 and 2014

Notes:
1. Differences between 2014 and 2010 adult smoking rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. 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.
3. Actual estimates are shown in this graph.
4. The figures for Northern Sydney LHD are not available, due to very small numbers of women who smoked during pregnancy.
Proportion of non-Aboriginal women who smoked during pregnancy, by LHD (ranked), 2010 and 2014

Notes:
1. Differences between 2014 and 2010 adult smoking rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. 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.
3. Actual estimates are shown in this graph.
4. The figures for Northern Sydney LHD are not available, due to very small numbers of women who smoked during pregnancy.
5. Refer to Appendices for LHD figures.
Current smoking prevalence in young people*, by LHD (ranked), 2014

* Persons aged 12 to 17 years.

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. Actual estimates are shown in this graph.
3. As a result of survey design, some LHDs were grouped for data collection and reporting. These LHDs are shown separately on the graph above but the same (grouped) result is reported.
4. Refer to Appendices for LHD figures.
Cancer prevention
Skin protection

Introduction

Australia has the second-highest rate of skin cancer in the world. 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 ultraviolet radiation.[1]

The NSW Skin Cancer Prevention Strategy provides a roadmap for government, non-government and community organisations to work together to:

• increase implementation of comprehensive and effective sun protection policies and guidelines

• improve access to adequate shade

• increase the adoption of sun protection behaviours.

Significant progress continues to be made in all of these areas; however, all health professionals are encouraged to remind clients of the importance of life-long sun protective behaviours. Healthy lifestyle programs should also encourage participants to practice sun-safe behaviours when outdoors.

Key findings

• In NSW, 60.7% of secondary school students in 2014 had a preference for a tan.

• The proportion of students who had a preference for a tan varies between local health districts, ranging from 44.3% to 73.7%.

References:


Notes:

• Health network and/or speciality network indicators are not calculated for skin protection, 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.
Proportion of students* who have a preference for a tan (light to very dark), by LHD (ranked), 2014

* Students aged 12 to 17 years.

Notes:
1. Data source: NSW School Students Health Behaviours Survey (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Actual estimates are shown in this graph.
3. The figures for Far West LHD are not available, due to very small numbers.
Cancer prevention: Alcohol consumption

Introduction

There is strong scientific evidence that drinking alcohol directly increases the risk of several cancers, including:

- liver
- colon and rectum (bowel)
- breast (for women)
- mouth, throat (larynx and pharynx)
- oesophagus [1]

Alcohol use increases the risk of cancer, even when consumption is within limits set by the National Health and Medical Research Council (NHMRC). The more a person drinks (in particular, higher frequency over a longer period of time), the higher the risk of developing an alcohol-related cancer.

It is estimated that around five per cent of all cancers diagnosed each year in NSW are attributable to long-term alcohol use.[2]

Good clinical care includes identifying a history of alcohol consumption and providing patients with relevant and timely information about the effects of alcohol and avenues for support.

Key findings

- In NSW, 72.6% of adults who consumed alcohol in 2014 did so at levels within the NHMRC guidelines.
- Generally, the proportion of adults who consumed alcohol at levels within NHMRC guidelines has increased since 2002.

References:


Notes:

- Health network and/or speciality network indicators are not calculated for alcohol consumption, 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.
Proportion of adults* who consume alcohol at levels within NHMRC guidelines**, by LHD (ranked), 2002 and 2014

**NHMRC** = National Health and Medical Research Council.
* Persons aged 16 years and over.
** Two or fewer standard drinks a day when they consume alcohol.

Notes:
1. Differences between 2014 and 2002 proportions should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. 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.
3. Actual estimates are shown in this graph.
Proportion of adults* who consume alcohol at levels within NHMRC guidelines**, trend, NSW, 2002–2014

Proportion (%) at different years (2002-2014) with confidence intervals.

Notes:
1. National Health and Medical Research Council.
2. Persons aged 16 years and over.
3. Two or fewer standard drinks a day when they consume alcohol.
4. 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.
5. Actual estimates are shown in this graph.
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Cancer screening: Breast

Introduction

In NSW, breast cancer accounted for 27.4 per cent of all new cancer cases in women, and 14.6 per cent of all cancer mortality in women in 2012.[1]

One in eight women in NSW will develop breast cancer in their lifetime, and nine in ten women in NSW with breast cancer do not have a family history.

Population-based screening programs result in treatment at earlier stages of disease, which simplifies treatment, improves survival and reduces costs.

A screening mammogram is the best method to detect breast cancer early for women aged over 50 years. The smaller the cancer when a woman is diagnosed, the more options she has for treatment. If her cancer is detected by BreastScreen NSW, she is almost half as likely to need a mastectomy. Survival at five years following a breast cancer diagnosis is much higher for women who are diagnosed early.

BreastScreen NSW provides a free two-yearly mammographic screening program to women in NSW, and specifically targets those in the 50 to 74* year age group. Women aged 40 to 49, and 75 years and over, can also access the screening program.

The BreastScreen Australia National Accreditation Standards specify a national biennial breast screening participation target of 70 per cent for women aged 50 to 69 years. This rate is yet to be achieved by any jurisdiction in Australia.

Ongoing promotion and education around the benefits of screening (in culturally-appropriate ways) has contributed to a steady increase in breast screening participation.

Endorsement by general practitioners and other primary care providers also increases participation in cancer screening, and this is a strategic focus of the NSW Cancer Plan.

* While the eligibility age range for BreastScreen was extended from 50–69 to 50–74 in 2013, the 50–69 and 70–74 year age groups will continue to be reported on separately to preserve trend analysis.
Key findings

• The total BreastScreen NSW participation rate for women aged 50 to 69 years increased from 51.6% in June 2015 to 52.1% by 30 June 2016.[2]

• The number of screens performed in this age group over this period increased by more than 12,500; from 243,115 in 2014/15 to 255,993 screens in 2015/16.[2]

• The number of Aboriginal and culturally and linguistically diverse women participating in breast screening is increasing across NSW, though remains lower than the state average. This results in later diagnosis and poorer outcomes.

• Approximately 8% of women aged 50 to 69 years in NSW undertook breast imaging, some of whom may have been eligible to use the BreastScreen NSW program.[3]

N = Number of women in population in 2014–2015.

Notes:
1. Differences between 2014–2015 and 2012–2013 participation rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. Data source: BreastScreen NSW (population data are sourced from SAPHARI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. 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 and reconciliation of interstate screening.
4. 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.
Biennial breast screening participation rate for NSW women aged 50–69, by population type, trend, NSW, 2012–2015

Notes:
1. Data source: BreastScreen NSW (total population data are sourced from the Epidemiology and Surveillance Branch, NSW Ministry of Health; Aboriginal and culturally and linguistically diverse population data are sourced from the Australian Bureau of Statistics).
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 and reconciliation of interstate screening.
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.

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Participation rate (%)</th>
<th>N=</th>
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<tbody>
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<td>Northern Sydney LHD (N=24,553)</td>
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<td>Hunter New England LHD (N=3,972)</td>
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<td>Western NSW LHD (N=752)</td>
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<td>Sydney LHD (N=28,375)</td>
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</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=5,349)</td>
<td>40.7</td>
<td></td>
</tr>
<tr>
<td>Southern NSW LHD (N=1,661)</td>
<td>33.5</td>
<td></td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=1,392)</td>
<td>30.1</td>
<td></td>
</tr>
<tr>
<td>Far West LHD (N=145)</td>
<td>24.2</td>
<td></td>
</tr>
</tbody>
</table>

N= Number of women in population in 2014–2015.

Notes:
1. Differences between 2014–2015 and 2012–2013 participation rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. Data source: BreastScreen NSW (population data are sourced from the Australian Bureau of Statistics).
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.

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Participation rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunter New England LHD (N=2,871)</td>
<td>56.2</td>
</tr>
<tr>
<td>Northern NSW LHD (N=885)</td>
<td>48.6</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=783)</td>
<td>43.8</td>
</tr>
<tr>
<td>Western NSW LHD (N=1,784)</td>
<td>42.8</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=768)</td>
<td>40.6</td>
</tr>
<tr>
<td>Southern NSW LHD (N=476)</td>
<td>36.3</td>
</tr>
<tr>
<td>Sydney LHD (N=457)</td>
<td>34.8</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=681)</td>
<td>34.4</td>
</tr>
<tr>
<td>Central Coast LHD (N=654)</td>
<td>33.6</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=618)</td>
<td>29.8</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=644)</td>
<td>29.3</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=206)</td>
<td>27.7</td>
</tr>
<tr>
<td>Western Sydney LHD (N=823)</td>
<td>27.3</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=1,081)</td>
<td>23.0</td>
</tr>
<tr>
<td>Far West LHD (N=215)</td>
<td>22.8</td>
</tr>
</tbody>
</table>

N= Number of women in population in 2014–2015.

Notes:
1. Differences between 2014–2015 and 2012–2013 participation rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. Data source: BreastScreen NSW (population data are sourced from the Australian Bureau of Statistics).
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.
Proportion of BreastScreen NSW clients 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, 2012–2015

<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>49.1</td>
<td>29.7</td>
<td>21.2</td>
</tr>
<tr>
<td>2013</td>
<td>49.8</td>
<td>28.9</td>
<td>21.3</td>
</tr>
<tr>
<td>2014</td>
<td>49.2</td>
<td>28.6</td>
<td>22.2</td>
</tr>
<tr>
<td>2015</td>
<td>49.9</td>
<td>27.6</td>
<td>22.6</td>
</tr>
</tbody>
</table>

(N=892,001)

**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 and reconciliation of interstate screening.
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 proportion rates presented for the women screened in the last 24 months cannot be compared to the biennial participation rates for the same period. This is because this indicator counts women aged 50 to 69 at any time in 2015, whereas the regular biennial participation rates count women aged 50 to 69 at the time of their screen in 2014 or 2015, as per the BreastScreen Australia Data Dictionary.
Use of Medicare Benefits Schedule (MBS) for asymptomatic bilateral mammography for NSW women aged 50–69, by LHD (ranked), 2007–2008

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Participation rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Western Sydney LHD (N=82,487)</td>
<td>9.4</td>
</tr>
<tr>
<td>Sydney LHD (N=51,464)</td>
<td>9.3</td>
</tr>
<tr>
<td>Northern Sydney LHD (N=90,620)</td>
<td>9.1</td>
</tr>
<tr>
<td>Central Coast LHD (N=36,468)</td>
<td>9.0</td>
</tr>
<tr>
<td>South Eastern Sydney LHD (N=82,503)</td>
<td>8.9</td>
</tr>
<tr>
<td>Western NSW LHD (N=29,482)</td>
<td>8.4</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=36,435)</td>
<td>8.4</td>
</tr>
<tr>
<td>Western Sydney LHD (N=75,495)</td>
<td>7.6</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=31,570)</td>
<td>7.3</td>
</tr>
<tr>
<td>Hunter New England LHD (N=99,040)</td>
<td>7.0</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=26,739)</td>
<td>6.7</td>
</tr>
<tr>
<td>Northern NSW LHD (N=35,891)</td>
<td>6.4</td>
</tr>
<tr>
<td>Southern NSW LHD (N=23,812)</td>
<td>6.3</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=42,976)</td>
<td>5.8</td>
</tr>
<tr>
<td>Far West LHD (N=3,786)</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Notes:
1. Data source: BreastScreen and 45 & Up study data linkage project. MBS screening participation rates are estimated from the 45 & Up survey cohort (population weighted). The rates represent women aged 50 to 69 who have undergone bilateral mammography:
   - with no additional referred diagnostic services (with the exception of ultrasounds performed on the same day), that is not a follow-up surveillance after surgery or a prior diagnosis, at any private radiology service that is funded through Medicare.
   - who have not also screened through BreastScreen NSW in the same 24-month period.
2. This indicator shows data from 2007–2008, as this was the time period studied as part of the BreastScreen and 45 & Up study data linkage project. This period contained the most accurate data for 45 & Up study participants, as the survey was carried out over that time period.
Cancer screening:
Cervical

Introduction

In NSW, approximately seven in every 100,000 women each year are diagnosed with cervical cancer.[1] It is now one of the most preventable cancers, with cervical screening able to detect pre-cancerous changes that can be monitored and treated before cancer develops.

The incidence of, and mortality from, cervical cancer has halved since the introduction of the National Cervical Screening Program (NCSP) in 1991.[2]

Currently, 80 per cent of Australian women with cervical cancer have either never screened or have not returned to screen within the recommended time period.[3]

The NSW Cervical Screening Program (CSP) supports the NCSP in promoting two-yearly screening, using a Pap test, for women aged 18 to 69 years.

Scheduled from 1 December 2017, the change to the NCSP will see women aged 25 to 74 years invited to undertake a primary human papillomavirus (HPV) test every five years. Until this time, women should continue to participate in the current two-yearly Pap test program.

Continued education and awareness programs are being used to better inform and engage women who have either never screened or do not regularly screen. Women are more likely to undertake cervical screening if their general practitioner reminds them.[4]

References:
Key findings

- There has been a decline in cervical screening participation in 13 of the 15 local health districts (LHDs) in NSW.

- 8,655 fewer 20 to 69-year-old women were screened for cervical abnormalities in NSW in the 2014/15 financial year (1,198,754), compared with the previous financial year (1,207,409).[5]

- The decline in cervical screening participation may be partially attributable to women delaying their screen until the introduction of the new test. Women should be encouraged to continue to undertake two-yearly Pap tests.

- Younger women are less likely to undertake cervical screening. It is important for health professionals to encourage women to continue cervical screening even after they have received the HPV vaccination.

- More than 85% of cervical screening across NSW is done by general practitioners. Gynaecologists perform between 10 and 20% of cervical screens in Sydney metropolitan areas; while in Far West LHD, women’s health nurses represent a substantial portion of the primary health workforce and perform almost a quarter of screens.

- The five-year cervical screening participation rate for NSW women aged 20–69 (2011–2015) is 82.9%.

Notes:
- Figures for Murrumbidgee LHD include Albury LGA.
- Health network and/or specialty network indicators are not calculated for cervical screening, 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.

N= Number of women in the population in 2014–2015 who have not had a hysterectomy.

Notes:
1. Differences between 2014–2015 and 2012–2013 participation rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. 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).
4. NSW includes de-identified tests. However, de-identified tests are excluded from local health district results as this information is not available.
Biennial cervical screening participation rate for NSW women, by age group, trend, NSW, 2012–2015

N= Number of women in the population in 2014–2015 who have not had a hysterectomy.

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 local health district results as this information is not available.
Five-year cervical screening participation rate for NSW women aged 20–69, by LHD (ranked), 2011–2015

N= Number of women in the population who have not had a hysterectomy.

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 local health district results as this information is not available.
Cervical screening activity for NSW women aged 20–69, by provider type, by LHD (ranked), 2015

N= Number of identified tests performed.

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).
2. NSW includes de-identified tests. However, de-identified tests are excluded from local health district results as this information is not available.
3. 'Other' contains unknown or dummy provider numbers, created by the NSW Pap Test Register for specific follow-up purposes.
Cancer screening: Bowel

Introduction

Bowel cancer is the second-most common cause of cancer deaths in NSW and is a priority focus area of the NSW Cancer Plan. In 2012, 100 people per week were diagnosed with bowel cancer and 34 people per week died from bowel cancer in NSW.[1]

Bowel cancer screening by faecal occult blood test (FOBT) is proven to reduce the incidence, morbidity and mortality attributable to bowel cancer by more frequently detecting pre-cancerous changes or early-stage disease that can be treated effectively.

Between 2006 and 2008, 65 per cent of people with bowel cancer who were screened were diagnosed with stage 1 or 2 disease, compared with only 45 per cent who were diagnosed as a result of symptoms.[2]

The FOBT is the gold standard, population screening tool for bowel cancer, followed by colonoscopy after a positive FOBT. Screening by FOBT is recommended every two years from age 50 years in people who have no symptoms.

Monitoring and reporting bowel cancer screening participation rates demonstrates the effectiveness of the National Bowel Cancer Screening Program (NBCSP) in achieving its aims to reduce the incidence, morbidity and mortality from bowel cancer. It also allows for the effective development of strategic marketing and recruitment activities to promote the program and ensure its aims are maximised.

Increasing awareness of the importance of bowel screening to facilitate early diagnosis and improved treatment pathways will significantly enhance outcomes for people diagnosed with bowel cancer.

Optimising care pathways and establishing priority direct access models for colonoscopy will help to facilitate early and timely access to diagnosis and treatment when it is most effective and economical.

References:
Key findings

- Bowel screening rates in NSW increased from 33.0% in 2013 to 35.1% in 2015 for people aged 50 to 74 years.

- Bowel screening participation rates have increased in all local health districts, with the highest participation rates being in rural and remote areas.

- Men are less likely to undertake bowel screening, in every age cohort.

- NSW has the second-lowest bowel screening participation rate in Australia, after the Northern Territory.[3]

- One-third of positive FOBT tests do not have a follow-up by the GP recorded in the National Bowel Screening Register.*

* This indicator reports on recorded GP follow-up consultation only, not colonoscopy.

Notes:
- Figures for Murrumbidgee LHD include Albury LGA.
- Health network and/or specialty network indicators are not calculated for bowel screening, 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.

Disclaimer:
Formal publication and reporting of National Bowel Cancer Screening Program (NBCSP) data is undertaken by the Australian Institute of Health and Welfare on behalf of the Department of Health. NBCSP data included in this report provided by the Department of Health are not part of the formal publication and reporting process for NBCSP. Prior agreement in writing must be sought from the Department of Health if you wish to publish these data.
Annual bowel screening participation rate* for people aged 50–74, by LHD (ranked), 2013 and 2015

N= Number of eligible population in 2015.
* The participation rate is the proportion of the eligible population invited to the National Bowel Cancer Screening Program (NB CSP), who returned a completed faecal occult blood test (FOBT).

Notes:
1. Differences between 2015 and 2013 participation rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. As a result of different cut-off dates for FOBT data from the NBCSP Register, participation rates shown in this report may vary slightly from data published by the Australian Institute of Health and Welfare.
3. People aged 70–74 were sent screening invitations for the first time in 2015.
Annual bowel screening participation rate* for people aged 50–74, trend, NSW, 2013–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Participation rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>33.0</td>
</tr>
<tr>
<td>2014</td>
<td>33.9</td>
</tr>
<tr>
<td>2015</td>
<td>35.1</td>
</tr>
</tbody>
</table>

**NSW (N=429,421)**

N = Number of eligible population in 2015.
* The participation rate is the proportion of the eligible population invited to the National Bowel Cancer Screening Program (NBCSP), who returned a completed faecal occult blood test (FOBT).

Notes:
1. As a result of different cut-off dates for FOBT data from the NBCSP Register, participation rates shown in this report may vary slightly from data published by the Australian Institute of Health and Welfare.
2. Participation rates shown here cannot be directly compared to the previous report. Participation rates can change as the calculation includes FOBTs received up to 18 months after the invitation is sent.
3. People aged 70–74 were sent screening invitations for the first time in 2015.
Annual bowel screening participation rate* for people aged 50–74, by gender and age group, NSW, 2015

* The participation rate is the proportion of the eligible population invited to the National Bowel Cancer Screening Program (NBCSP), who returned a completed faecal occult blood test (FOBT).

Notes:
1. As a result of different cut-off dates for FOBT data from the NBCSP Register, participation rates shown in this report may vary slightly from data published by the Australian Institute of Health and Welfare.
2. People aged 70–74 were sent screening invitations for the first time in 2015.
Proportion of positive FOBT* results for people aged 50–74, by follow-up status, by LHD (ranked), 2015

N= Number of screens.
* Faecal occult blood test (FOBT).

Notes:
1. People aged 70–74 were sent screening invitations for the first time in 2015.
2. Percentages equal the number of people who had a follow-up consultation with a GP recorded in 2015 (or who had no follow-up recorded) after a positive FOBT result, against the total number of people with positive FOBT results. Reporting of follow-up by GPs is not mandatory so follow-up rates may be underestimated.
Cancer treatment and service delivery: Patient experience in NSW

Patient-reported measures

Understanding a patient’s experience throughout each stage of their cancer journey can enable more personalised care and help to improve the overall quality of the health system.[1]

Supporting people to provide direct and timely feedback about their cancer experience and outcomes is a key priority within the NSW Cancer Plan.

The Cancer Institute NSW has partnered with the Bureau of Health Information to report on the experiences of people with cancer in NSW.[2]

Key findings

- 69% of inpatients and 72% of outpatients receiving chemotherapy, radiotherapy or surgery in NSW public hospitals were “definitely” involved in decisions about their care and treatment.

- 85% of inpatients and 89% of outpatients felt that health professionals “always” explained things in an understandable way.

- The Edmonton Symptom Assessment System (ESAS) scale measures the severity of nine common symptoms experienced by patients undergoing cancer treatment. Tiredness and poor general well-being were reported to be the most severe. There were no local health districts from which patients reported significantly worse results than the NSW average.

- The Communication and Attitudinal Self-Efficacy (CASE) scale measures a patient’s confidence and ability to engage in their care. On average, high scores were achieved across NSW for each category of the scale. No local health district showed significantly worse results than the NSW average, suggesting that outpatients across NSW have a high level of self-efficacy regarding their cancer care.

References:

Notes:
- Formal publication and reporting of inpatient and outpatient survey data is undertaken by the Bureau of Health Information (BHI). Pre-release results were reproduced with permission from BHI.
- Detailed data for these indicators can be found in the Appendices.
Self-assessed symptom scores* for outpatients undergoing active cancer treatment in NSW public hospitals at time of survey, LHD results relative to NSW, 2015

ESAS scores

Symptoms

Better reported outcomes

- LHD significantly higher than NSW
- NSW
- LHD significantly lower than NSW
- LHD not significantly different to NSW


Notes:
1. Data source: Outpatient Cancer Clinic Survey, 2015 (pre-release data supplied by Bureau of Health Information).
2. ESAS results (scores) are strongly influenced by patient case mix, patient demographics, cancer type and stage of cancer journey. The 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').
3. Significant differences occur when 95% confidence intervals do not overlap.
4. Outpatient level data were not available at the time of sampling for the following LHDs: Far West, Murrumbidgee, Southern NSW and Hunter New England LHD.
5. The number of respondents for Western NSW LHD was too small to report, but results were included in NSW figures.
6. Lower scores reflect better patient outcomes. Illawarra Shoalhaven, Mid North Coast, Northern Sydney and Western Sydney LHDs were significantly lower than NSW for outpatients in at least one of the nine symptoms assessed.
Shared decision-making among patients that received chemotherapy, radiotherapy or surgery in NSW public hospitals, LHD results relative to NSW, 2015*

```
Inpatient
'Definitely' involved in decisions about care and treatment (R=61–80)

'Definitely' asked for ideas and preferences when developing cancer care plan (R=26–58)

Outpatient
'Definitely' involved in decisions about care and treatment (R=63–83)

Had a care plan in place for cancer treatment (R=52–72)
```

Better reported measures

- LHD significantly higher than NSW
- LHD significantly lower than NSW
- LHD not significantly different to NSW

R= Range of LHD responses (%).

* Outpatient survey data are based on 2015; inpatient survey data are based on 2014.

Notes:
2. Significant differences occur when 95% confidence intervals do not overlap.
3. Outpatient exclusions: Far West, Murrumbidgee, Southern NSW and Hunter New England LHDs data were not available at the time of sampling and LHD where the number of respondents was too small to report (results were included in NSW figures).
4. Inpatient exclusions: The number of respondents for Far West LHD was too small to report, but results were included in NSW figures.
5. Southern NSW LHD was significantly higher than NSW for inpatients ‘definitely involved in decisions about care and treatment’.

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Cancer control in NSW: 2016
Information to support patients that received chemotherapy, radiotherapy or surgery in NSW public hospitals, LHD results relative to NSW, 2015*

<table>
<thead>
<tr>
<th>Inpatient</th>
<th>‘Completely’ enough information about medication side effects (R=52–77)</th>
<th>61</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Health professionals ‘always’ explained things in an understandable way (R=80–92)</td>
<td>85</td>
</tr>
<tr>
<td>Information</td>
<td>‘Completely’ informed about medication side effects (R=74–93)</td>
<td>80</td>
</tr>
<tr>
<td>Outpatient</td>
<td>‘Completely’ informed about other treatment side effects (R=61–86)</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>Health professionals ‘always’ explained things in an understandable way (R=85–96)</td>
<td>89</td>
</tr>
</tbody>
</table>

Response (%)

Better reported measures
- LHD significantly higher than NSW
- NSW
- LHD significantly lower than NSW
- LHD not significantly different to NSW

R = Range of LHD responses (%).
* Outpatient survey data are based on 2015; inpatient survey data are based on 2014.

Notes:
2. Significant differences occur when 95% confidence intervals do not overlap.
3. Outpatient exclusions: Far West, Murrumbidgee, Southern NSW and Hunter New England LHDs data were not available at the time of sampling and LHDs where the number of respondents was too small to report (results were included in NSW figures).
4. Inpatient exclusions: The number of respondents for Far West LHD was too small to report, but results were included in NSW figures.
5. Southern NSW LHD was significantly higher than NSW for inpatients who had ‘completely enough information about medication side effects’.
Self-efficacy scores* for outpatients undergoing active treatment in NSW public hospitals at time of survey, LHD results relative to NSW, 2015

R = Range of LHD scores.

Notes:
1. Data source: Outpatient Cancer Clinic Survey, 2015 (pre-release data supplied by Bureau of Health Information).
2. CASE results (scores) are strongly influenced by patient case mix, patient demographics, cancer type and stage of cancer journey.
3. Significant differences occur when 95% confidence intervals do not overlap.
4. Outpatient level data were not available at the time of sampling for the following LHDs: Far West, Murrumbidgee, Southern NSW and Hunter New England.
5. The number of respondents for Western NSW LHD was too small to report, but results were included in NSW figures.
6. Mid North Coast, Nepean Blue Mountains and Northern NSW LHDs were significantly higher than NSW for outpatients in at least one of the three CASE measures.
Cancer treatment and service delivery: 
Patient experience in NSW

Early diagnosis and timely treatment

Evidence indicates the earlier someone is diagnosed with cancer, the better their prognosis.

Developing optimal care pathways and the use of direct access models will help to enable the early diagnosis and timely treatment of cancer. This will provide benefits to patients and the health system in terms of costs, outcomes and quality of life.[1]

Key findings

- The five most common cancers diagnosed in NSW are bowel, breast, lung, prostate and melanoma.
- Survival at five years following diagnosis is higher for each of these cancers when diagnosed early. For example, five-year survival from bowel cancer decreases from 89% for localised disease to 72% for regional disease, and 16% for metastatic disease at diagnosis.

References:


Notes:

- Bowel cancer staging is reported according to the staging system used in the published source, which is either by TNM (tumour, nodes, metastases) stage groups (e.g. Stage I) or Modified Dukes’ stages (e.g. Dukes’ A). For reporting purposes in this document Stage I, II, III and IV are considered equivalent to Dukes’ Stage A, B, C and Stage D respectively.
- Health network and/or specialty network indicators are not calculated for extent of disease, 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 is the highest degree of spread notified to the NSW Cancer Registry within the first four months of diagnosis and is categorised as localised, regional, metastatic or unknown.
  - Localised: Localised to the tissue of origin.
  - Regional: Spread to adjacent organs and/or regional lymph nodes.
  - Metastatic: Spread from one part of the body to another.
Five most common cancers by extent of disease at diagnosis, by LHD (ranked), 2012

**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. Metastatic: Spread from one part of the body to another.

**NSW (N=5,196)**
- Localised: 29%
- Regional: 43%
- Metastatic: 19%
- Unknown: 9%

**Northern Sydney LHD (N=626)**
- Localised: 36%
- Regional: 41%
- Metastatic: 15%
- Unknown: 8%

**Mid North Coast LHD (N=202)**
- Localised: 34%
- Regional: 38%
- Metastatic: 18%
- Unknown: 10%

**Northern NSW LHD (N=267)**
- Localised: 34%
- Regional: 38%
- Metastatic: 16%
- Unknown: 12%

**Southern NSW LHD (N=141)**
- Localised: 33%
- Regional: 33%
- Metastatic: 22%
- Unknown: 11%

**Murrumbidgee LHD (N=261)**
- Localised: 33%
- Regional: 34%
- Metastatic: 17%
- Unknown: 15%

**Nepean Blue Mountains LHD (N=233)**
- Localised: 30%
- Regional: 39%
- Metastatic: 24%
- Unknown: 7%

**Western NSW LHD (N=220)**
- Localised: 30%
- Regional: 41%
- Metastatic: 21%
- Unknown: 7%

**Illawarra Shoalhaven LHD (N=335)**
- Localised: 30%
- Regional: 42%
- Metastatic: 18%
- Unknown: 9%

**Central Coast LHD (N=337)**
- Localised: 27%
- Regional: 44%
- Metastatic: 18%
- Unknown: 10%

**Hunter New England LHD (N=774)**
- Localised: 27%
- Regional: 47%
- Metastatic: 20%
- Unknown: 7%

**South Eastern Sydney LHD (N=551)**
- Localised: 27%
- Regional: 44%
- Metastatic: 20%
- Unknown: 9%

**Western Sydney LHD (N=408)**
- Localised: 26%
- Regional: 47%
- Metastatic: 17%
- Unknown: 9%

**South Western Sydney LHD (N=505)**
- Localised: 25%
- Regional: 48%
- Metastatic: 23%
- Unknown: 5%

**Sydney LHD (N=308)**
- Localised: 24%
- Regional: 47%
- Metastatic: 21%
- Unknown: 7%

**Far West LHD (N=28)**
- Localised: 21%
- Regional: 29%
- Metastatic: 11%
- Unknown: 39%
Five most common cancers by extent of disease at diagnosis, by LHD (ranked), 2012

N= Number of cases.
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. Metastatic: Spread from one part of the body to another.
Five most common cancers by extent of disease at diagnosis, by LHD (ranked), 2012

N= Number of cases.
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. Metastatic: Spread from one part of the body to another.
Five most common cancers by extent of disease at diagnosis, by LHD (ranked), 2012

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. Metastatic: Spread from one part of the body to another.

**Prostate**

<table>
<thead>
<tr>
<th>LHD</th>
<th>Localised</th>
<th>Regional</th>
<th>Metastatic</th>
<th>Unknown</th>
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</thead>
<tbody>
<tr>
<td>NSW (N=7,329)</td>
<td>56</td>
<td>14</td>
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<td>27</td>
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<tr>
<td>Sydney LHD (N=430)</td>
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<td>45</td>
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<td>Far West LHD (N=28)</td>
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<td>14</td>
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Five most common cancers by extent of disease at diagnosis, by LHD (ranked), 2012

<table>
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<th>Cancer Category</th>
<th>Localised</th>
<th>Regional</th>
<th>Metastatic</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
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<td>Western NSW LHD (N=154)</td>
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<td>South Eastern Sydney LHD (N=475)</td>
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<td>Northern NSW LHD (N=362)</td>
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<td>3</td>
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<tr>
<td>Murrumbidgee LHD (N=189)</td>
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<td>7</td>
<td>6</td>
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<td>Western Sydney LHD (N=274)</td>
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<td>Sydney LHD (N=184)</td>
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<td>5</td>
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<tr>
<td>Hunter New England LHD (N=714)</td>
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<td>Mid North Coast LHD (N=262)</td>
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<td>Central Coast LHD (N=305)</td>
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<td>75</td>
<td>16</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

N= Number of cases.

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. Metastatic: Spread from one part of the body to another.
Five most common cancers by extent of disease at diagnosis in 2012 and five-year relative survival, NSW, 2005–2009

Notes:
3. Localised: Localised to the tissue of origin.
4. Regional: Spread to adjacent organs and/or regional lymph nodes.
5. Metastatic: Spread from one part of the body to another.
6. Unknown extent of disease at diagnosis not shown.
Cancer treatment and service delivery: Surgical cancer treatment variation

Introduction

Each year in NSW, a large number of people undergo surgery to treat cancer. Cancer surgery encompasses a vast range of surgical procedures with varying degrees of complexity and associated risks.[1-4]

Optimising outcomes from these surgeries can be achieved through a health system approach that ensures complex and specialised surgery is performed in specialist hospitals best equipped for the task.

For many common cancers, such an approach can ensure patients receive high quality care closer to home. For example, variation in breast cancer service delivery is being explored using multiple measures to provide a clear view of health system performance and patterns of care, and to highlight opportunities for quality improvement.

Importantly, strategies are being developed and implemented across the NSW health sector to ensure all people diagnosed with cancer have their care overseen by a multidisciplinary team (MDT). MDTs bring together the health professionals involved in a patient’s care to discuss the best treatment options, based on evidence, and collaboratively develop an individualised treatment plan.[5,6]

References:

Notes:
• Public and private hospitals exclude nursing homes, community, psychiatric, multi-purpose services, hospices, rehabilitation and ungrouped non-acute type hospitals.
• Private hospitals may include private day procedure centres.
• Surgical data are sourced from Ministry of Health reporting data sets and are the most up-to-date information available at the time the data were extracted. There is a potential undercount of surgical volume affecting some hospitals in recent time periods, due to changes in system databases.
• The Cancer Institute NSW reserves the right to monitor, evaluate and amend minimum suggested annual institutional hospital caseloads as part of its ongoing analysis of system performance in cancer services in NSW.
Key findings

- 91% of breast cancer resections in 2014–2015 were performed in public hospitals that meet the minimum suggested annual caseload for breast cancer surgery. This is an increase from 87% in 2011–2012.

- Data for breast cancer service delivery show wide variation in multiple measures across hospitals and local health districts. For example, variation in the use of hypofractionated radiation therapy* may indicate missed opportunities to provide treatment with shorter duration and more efficient machine utilisation. Absence of this choice may unnecessarily increase mastectomy rates. The clinical scenarios and context of these measures need to be considered in order to understand the variations shown in this report.

- More than 90% of colon cancer resections were conducted in public and private hospitals that meet the minimum suggested annual caseload.

- The percentages of ovarian cancer resections occurring in specialist hospitals decreased for both public and private patients. Further investigation is needed to understand referral networks and patient flows for ovarian cancer services and treatment. The Cancer Institute NSW website currently lists recommended specialised gynaecological oncology centres in NSW (cancerinstitute.org.au/how-we-help/quality-improvement/optimising-cancer-care/gynaecological-cancer-treatment). Additionally, the Canrefer website (canrefer.org.au) can be used to search for gynaecological oncologists who are members of gynaecological MDTs.

- Progress has been made towards consolidating gastric cancer resections in public hospitals, with fewer hospitals performing this surgery and 76% of procedures occurring in specialist hospitals in 2014–2015.

- Considerable progress has been made towards consolidating complex surgical procedures, such as oesophagectomies and pancreatectomies, in specialist hospitals.

- 94% of oesophagectomies were performed in specialist hospitals in 2014–2015, which is an increase from 76% in 2011–2012.
Lung cancer


*Recommendation based on hospital-level distribution of lung cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed lung cancer resections during the reporting period appear on this chart.

2014–2015 91% of resections in hospitals ≥ 18
2011–2012 78% of resections in hospitals ≥ 18

Recommendation based on hospital-level distribution of lung cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed lung cancer resections during the reporting period appear on this chart.
Breast cancer

Average annual flows of people for breast cancer resections, by LHD of residence, FY 2011–2015

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. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs, interstate facilities and ACT.

2014–2015 91% of resections in hospitals ≥ 36
2011–2012 87% of resections in hospitals ≥ 36

* Recommendation based on analysis of unplanned readmission in NSW data for breast cancer resections.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed breast cancer resections during the reporting period appear on this chart.

2014–2015 92% of resections in hospitals >= 36
2011–2012 93% of resections in hospitals >= 36

Recommendation based on analysis of unplanned readmission in NSW data for breast cancer resections.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed breast cancer resections during the reporting period appear on this chart.
Proportion of breast cancer resections* with sentinel lymph node biopsy (SLNB) and axillary node dissection (AND) in NSW public hospitals, by LHD (ranked), FY 2011–2015

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Had SLNB</th>
<th>No SLNB</th>
<th>SLNB with AND at resection</th>
<th>SLNB with AND after resection</th>
<th>AND only</th>
<th>No SLNB or AND</th>
</tr>
</thead>
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<tr>
<td>NSW public (N=6,408)</td>
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<td>4</td>
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<tr>
<td>Sydney LHD (N=1,053)</td>
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<td>2</td>
<td>19</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=268)</td>
<td>58</td>
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<td>4</td>
<td>19</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=182)</td>
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<td>4</td>
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<td>10</td>
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<tr>
<td>Mid North Coast LHD (N=417)</td>
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<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western NSW LHD (N=351)</td>
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<td>7</td>
<td>18</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Northern Sydney LHD (N=450)</td>
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<td>19</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>St Vincent’s Health Network (N=192)</td>
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<tr>
<td>South Eastern Sydney LHD (N=731)</td>
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<td>18</td>
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<tr>
<td>Hunter New England LHD (N=1,060)</td>
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<td>Northern NSW LHD (N=456)</td>
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<td>7</td>
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</tbody>
</table>

**N=** Number of breast cancer resections.

* Women undergoing a first resection for primary invasive breast cancer. Axillary node dissections in the resection episode and subsequent episodes within three months of resection are included. The total number of breast resections reported here is lower than the breast surgical volume chart, 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. Sentinel lymph node biopsy: The removal of the first lymph node (or nodes) in the armpit to which cancer cells are most likely to spread from the breast. The sentinel node is examined to determine if cancer cells are present.
3. Axillary node dissection: The removal of most or all of the lymph nodes in the armpit.
4. LHDs performing less than 30 breast cancer resections have been removed due to large variation in annual proportions.
Proportion of breast cancer resections* with sentinel lymph node biopsy (SLNB) and axillary node dissection (AND) in NSW public hospitals, by hospital (ranked), FY 2011–2015

N= Number of breast cancer resections.
* Women undergoing a first resection for primary invasive breast cancer. Axillary node dissections in the resection episode and subsequent episodes within three months of resection are included. The total number of breast resections reported here is lower than the breast surgical volume chart, because it is first resections only.

Notes:
1. Hospitals performing less than 30 breast cancer resections have been removed due to large variation in annual proportions.
2. For data source and procedure definitions, please refer to the 'Proportion of breast cancer resections with SLNB and AND in NSW public hospitals, by LHD (ranked)' chart.
Proportion of breast cancer resections* with sentinel lymph node biopsy (SLNB) and axillary node dissection (AND) in NSW private hospitals, by hospital (ranked), FY 2011–2015

N= Number of breast cancer resections.

* Women undergoing a first resection for primary invasive breast cancer. Axillary node dissections in the resection episode and subsequent episodes within three months of resection are included. The total number of breast resections reported here is lower than the breast surgical volume chart, because it is first resections only.

Notes:
1. Hospitals performing less than 30 breast cancer resections have been removed due to large variation in annual proportions.
2. For data source and procedure definitions, please refer to the 'Proportion of breast cancer resections with SLNB and AND in NSW public hospitals, by LHD (ranked)’ chart.
Mastectomy as a proportion of breast cancer resections* in NSW public hospitals, by LHD (ranked), FY 2011–2015

Mastectomy proportion

NSW public (37%, (N=8,408))

St Vincent’s Health Network (N=152)
Central Coast LHD (N=333)
Northern Sydney LHD (N=450)
Sydney LHD (N=1,053)
Illawarra Shoalhaven LHD (N=534)
Murrumbidgee LHD (N=152)
Hunter New England LHD (N=1,060)
Western NSW LHD (N=351)
Western Sydney LHD (N=1,054)
Southern NSW LHD (N=319)
Northern NSW LHD (N=459)
South Western Sydney LHD (N=956)
Mid North Coast LHD (N=417)
South Eastern Sydney LHD (N=731)
Nepean Blue Mountains LHD (N=268)

N= Number of breast cancer resections.
* 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 chart, 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. Mastectomy: Involves removal of the whole breast (usually including the nipple) and usually one or more lymph nodes from the arm pit.
3. LHDs performing less than 30 breast cancer resections have been removed due to large variation in annual proportions.
Mastectomy as a proportion of breast cancer resections* in NSW public hospitals, by hospital (ranked), FY 2011–2015

* 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 chart, 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. Mastectomy: Involves removal of the whole breast (usually including the nipple) and usually one or more lymph nodes from the armpit.
3. Hospitals performing less than 30 breast cancer resections have been removed due to large variation in annual proportions.
Mastectomy as a proportion of breast cancer resections* in NSW private hospitals, by hospital (ranked), FY 2011–2015

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. Mastectomy: Involves removal of the whole breast (usually including the nipple) and usually one or more lymph nodes from the armpit.
3. Hospitals performing less than 30 breast cancer resections have been removed due to large variation in annual proportions.
4. Hospitals shown here without a proportion bar did not perform any mastectomies in the reporting period.

* 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 chart, because it is first resections only.
Proportion of early-stage breast cancer* patients receiving standard or hypofractioned regimens of external beam radiotherapy in NSW public facilities, with median age, by LHD (ranked), 2008–2012

- NSW public** (N=6,066)
  - Standard: 55%
  - Hypofractionation: 45%
- Hunter New England LHD (N=888)
  - Standard: 26%
  - Hypofractionation: 74%
- Nepean Blue Mountains LHD (N=260)
  - Standard: 30%
  - Hypofractionation: 70%
- Mid North Coast LHD (N=503)
  - Standard: 30%
  - Hypofractionation: 70%
- Northern NSW LHD (N=98)
  - Standard: 31%
  - Hypofractionation: 69%
- Western Sydney LHD (N=670)
  - Standard: 47%
  - Hypofractionation: 53%
- South Western Sydney LHD (N=718)
  - Standard: 53%
  - Hypofractionation: 47%
- Sydney LHD (N=520)
  - Standard: 60%
  - Hypofractionation: 40%
- Northern Sydney LHD (N=526)
  - Standard: 67%
  - Hypofractionation: 33%
- South Eastern Sydney LHD (N=1,194)
  - Standard: 76%
  - Hypofractionation: 24%
- Illawarra Shoalhaven LHD (N=571)
  - Standard: 77%
  - Hypofractionation: 23%
- St Vincent’s Health Network (N=118)
  - Standard: 93%
  - Hypofractionation: 7%

**Proportion of early-stage breast cancer* patients receiving standard or hypofractioned regimens of external beam radiotherapy in NSW public facilities, with median age, by LHD (ranked), 2008–2012

---

Notes:
1. Data source: NSW Clinical Cancer Registry (excludes private facilities and the following LHDs: Far West, Murrumbidgee, Southern NSW and Western NSW). The scope of the NSW Clinical Cancer Registry data source excluded these areas.
2. Radiotherapy did not commence in Central Coast LHD until 2013. Treatment information for 2012 may be incomplete for some facilities.
3. Standard fractionation: Dose is between 1.8 and 2.0 Gy per fraction.
4. Hypofractionation: Dose is above 2.0 Gy per fraction.
5. External beam radiotherapy: Delivered by directing the radiation treatment at the tumour from outside the body.
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Ovarian cancer


2014–2015 65% of resections in hospitals >= 18
2011–2012 76% of resections in hospitals >= 18

* Recommendation based on analysis of NSW data and hospital-level distribution of complex ovarian cancer surgery in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHsRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed ovarian cancer resections during the reporting period appear on this chart.

2014–2015 36% of resections in hospitals >= 18
2011–2012 53% of resections in hospitals >= 18

Recommendation based on analysis of NSW data and hospital-level distribution of complex ovarian cancer surgery in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed ovarian cancer resections during the reporting period appear on this chart.
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Colon cancer

Average annual flows of people for colon cancer resections, by LHD of residence, FY 2011–2015

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaR1, Centre for Epidemiology and Evidence, NSW Ministry of Health).
2. Outside LHD of residence: Facilities outside LHD of residence include other NSW LHDs, interstate facilities and ACT.

2014–2015 97% of resections in hospitals >= 12
2011–2012 97% of resections in hospitals >= 12

* Recommendation based on hospital-level distribution of colon cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed colon cancer resections during the reporting period appear on this chart.

2014–2015 92% of resections in hospitals >= 12
2011–2012 94% of resections in hospitals >= 12

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRi, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed colon cancer resections during the reporting period appear on this chart.
Rectal cancer


2014–2015 85% of resections in hospitals >= 12
2011–2012 86% of resections in hospitals >= 12

Recommendation based on hospital-level distribution of rectal cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed rectal cancer resections during the reporting period appear on this chart.

2014–2015 76% of resections in hospitals >= 12
2011–2012 82% of resections in hospitals >= 12

Number of rectal resections in
2014–2015
Minimum suggested annual institutional caseload*

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHrI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed rectal cancer resections during the reporting period appear on this chart.

* Recommendation based on hospital-level distribution of rectal cancer resections in NSW.
Gastric cancer

Gastric cancer resections in NSW public hospitals, FY 2011–2012 and FY 2014–2015

2014–2015 76% of resections in hospitals >= 6
2011–2012 63% of resections in hospitals >= 6

* Recommendation based on international studies and hospital-level distribution of gastrectomies in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed gastric cancer resections during the reporting period appear on this chart.
Gastric cancer resections in NSW private hospitals, FY 2011–2012 and FY 2014–2015

2014–2015 45% of resections in hospitals ≥ 6
2011–2012 54% of resections in hospitals ≥ 6

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed gastric cancer resections during the reporting period appear on this chart.
Oesophageal cancer


2014–2015 94% of resections in hospitals >= 6
2011–2012 76% of resections in hospitals >= 6

* Recommendation based on international studies, analysis of NSW data and hospital-level distribution of oesophagectomies in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed oesophageal cancer resections during the reporting period appear on this chart.

2014–2015 79% of resections in hospitals >= 6
2011–2012 72% of resections in hospitals >= 6

* Recommendation based on international studies, analysis of NSW data and hospital-level distribution of oesophagectomies in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHRRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed oesophageal cancer resections during the reporting period appear on this chart.
Pancreatic cancer


Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed pancreatic cancer resections during the reporting period appear on this chart.

* Recommendation based on international studies and hospital-level distribution of pancreatectomies in NSW.

2014–2015 92% of resections in hospitals >= 6
2011–2012 79% of resections in hospitals >= 6


Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHarI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed pancreatic cancer resections during the reporting period appear on this chart.

* Recommendation based on international studies and hospital-level distribution of pancreatectomies in NSW.
Liver cancer


Cancer control in NSW: 2016

Recommendation based on hospital-level distribution of liver cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed liver cancer resections during the reporting period appear on this chart.

2014–2015 84% of resections in hospitals >= 12
2011–2012 86% of resections in hospitals >= 12

* Recommendation based on hospital-level distribution of liver cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed liver cancer resections during the reporting period appear on this chart.
Neurological cancer


2014–2015 97% of resections in hospitals >= 12
2011–2012 95% of resections in hospitals >= 12

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed neurological cancer resections during the reporting period appear on this chart.

2014–2015 96% of resections in hospitals >= 12
2011–2012 94% of resections in hospitals >= 12

* Recommendation based on hospital-level distribution of neurological cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed neurological cancer resections during the reporting period appear on this chart.
Head and neck cancer


2014–2015 94% of resections in hospitals >= 12
2011–2012 90% of resections in hospitals >= 12

* Recommendation based on hospital-level distribution of head and neck cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed head and neck cancer resections during the reporting period appear on this chart.

2014–2015 70% of resections in hospitals >= 12
2011–2012 61% of resections in hospitals >= 12

* Recommendation based on hospital-level distribution of head and neck cancer resections in NSW.

Notes:
1. Differences between 2014–2015 and 2011–2012 resections should not be interpreted as a trend change. Data between years may be subject to random variation.
2. Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
3. Only hospitals that have performed head and neck cancer resections during the reporting period appear on this chart.
Cancer treatment and service delivery: Clinical cancer services in NSW

Introduction

External beam radiotherapy (EBRT) is the recommended treatment for uncomplicated painful cancer that has metastasised (spread) to the bone. There is evidence that single fraction radiotherapy treatments lead to good pain management for most people; however, multiple fraction regimens lead to a lower incidence of re-treatment due to pain and disease-related bone fractures.[1,2]

Despite evidence supporting the use of single fraction treatments, recent estimates indicate that most centres continue to prescribe multiple fraction regimens for the treatment of bone metastases, both in Australia and internationally.[3,4]

Variation exists in access to single fraction radiotherapy for eligible patients. There is potential to increase the use of single fraction radiotherapy, resulting in more convenient treatment for people and increased cost-effectiveness for radiotherapy departments. Factors including location of centre and centre type were independently predictive of the use of single fraction radiotherapy.[3]

Key findings

- Across public facilities in NSW, multiple fraction regimens were most commonly used, with only 28% of patients receiving single fraction treatments.
- The use of single fraction radiotherapy varied widely across local health districts, from 43% of patients in one LHD to 9% in another.
- Patients receiving single fraction treatments tended to be older than those receiving multiple fraction regimens.

References:

Notes:
- Public hospitals exclude nursing homes, community, psychiatric, multi-purpose services, hospices, rehabilitation and ungrouped non-acute type hospitals.
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), FY 2013–2014

Notes:
1. Data source: NSW public facilities within the NSW Enhanced Radiation Oncology Data. The data source was incomplete at the time of data extraction and some public facilities were not available for reporting.
2. Bone metastases were identified by radiotherapy centre data managers, from the descriptive text field for 'site of treatment'.
3. 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.
4. Palliative treatment: Given primarily for the purpose of pain relief or other symptom control.
5. External beam radiotherapy: Delivered by directing the radiation treatment at the tumour from outside the body.

**NSW public**

(N=1,476)

<table>
<thead>
<tr>
<th>Median age (yrs)</th>
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<th>2–5 Fractions</th>
<th>Single</th>
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<tbody>
<tr>
<td>50</td>
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Illawarra Shoalhaven LHD

(N=218)

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Northern Sydney LHD

(N=245)

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Nepean Blue Mountains LHD

(N=146)

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South Eastern Sydney LHD

(N=131)

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Western Sydney LHD

(N=269)

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Central Coast LHD

(N=135)

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Sydney LHD

(N=100)

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South Western Sydney LHD

(N=232)

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<td>50</td>
<td>16</td>
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Cancer research: Clinical trials

Introduction

Funding hospitals to conduct cancer clinical trials directly supports the pipeline of development of new treatments and interventions for people with cancer in NSW. There is collateral benefit to all clinical care offered in research-active clinical units, even if patients themselves do not participate.

Investment in clinical trial operations supports NSW institutions to be strategic and efficient in the selection and delivery of cancer trials, and enhances the ability of clinicians to provide patient access to clinical trials.

The provision of cancer incidence data and tumour groups, together with operational performance metrics, enables us to:

- detect trends within a local health district/clinical trial unit with regards to patient population participation by clinical group
- categorise the number of recruiting industry and high quality non-industry sponsored trials across the state
- identify under-represented clinical groups
- identify barriers in the timely approval of clinical trials
- provide clinician and patient referral tools via a searchable master list of recruiting cancer clinical trials on the Cancer Institute NSW website (cancerinstitute.org.au).

Translational cancer research

- Since 2012, there has been an investment in seven translational cancer research centres (TCRCs) across NSW. The aim of the TCRCs is to facilitate the rapid translation of discoveries into clinical practice and policy to improve patient outcomes.
- Each TCRC represents a consortium of clinicians and researchers. In 2015, there were a total of 848 members from hospitals, research institutes and universities across NSW; 36% of whom were clinicians or clinician researchers.
Key findings

• In 2015, there were 351 recruiting cancer clinical trials in NSW. This was an increase of 56 trials available to people with cancer from 2014.

• In NSW, the median calendar days from Research Governance Office submission to approval was 27 days in 2015. This reflects a reduction of eight days in approval time since 2014.

• Throughout 2015, 5.5% of people with a new diagnosis of cancer have been enrolled in a cancer clinical trial. This is an increase from 5.0% in 2014.

Notes:

• All clinical trial activity data are based on data self-reported by clinical trial units/LHDs in receipt of any proportion of Cancer Institute NSW cancer trial staff funding (may not be 100% LHD/unit level trial activity). Far West LHD has never been in receipt of any Program funding and as far as we are aware they have no established Clinical Trial Unit.

• Activity data reported include interventional cancer clinical trials only. Trials that target non-cancer populations or non-malignant haematology are excluded. Prospective observational studies and sub-studies are also excluded.

• A trial is considered recruiting if it was open at any time within the reporting period.

• Unique recruiting trials are reported for an LHD unless otherwise stated (i.e. a trial that may be open at more than one unit within an LHD is counted once for reporting purposes at that level (the same applies at a NSW level if conducted at > 1 LHD)).

• Figures for Southern NSW LHD include NSW patients treated in ACT, but do not include figures for ACT patients treated in ACT.

• Data for previous years are revised upon receipt of subsequent activity reports. When key dates or trial details are updated this can result in revised figures for previous years.
Ratio of newly-enrolled participants to cancer incidence (per 100 cases), by LHD (ranked), 2015*

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>Central Coast LHD (N=2,361)</td>
<td>11.3</td>
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<tr>
<td>Western Sydney LHD (N=3,726)</td>
<td>9.6</td>
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<tr>
<td>Sydney LHD (N=2,691)</td>
<td>9.6</td>
</tr>
<tr>
<td>Mid North Coast LHD (N=1,763)</td>
<td>5.4</td>
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<tr>
<td>South Eastern Sydney LHD (N=4,897)</td>
<td>3.2</td>
</tr>
<tr>
<td>South Western Sydney LHD (N=4,194)</td>
<td>4.4</td>
</tr>
<tr>
<td>Murramarangge LHD (N=1,955)</td>
<td>4.2</td>
</tr>
<tr>
<td>Hunter New England LHD (N=5,749)</td>
<td>3.0</td>
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<tr>
<td>Northern Sydney LHD (N=4,943)</td>
<td>2.5</td>
</tr>
<tr>
<td>Western NSW LHD (N=1,689)</td>
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</tr>
<tr>
<td>Northern NSW LHD (N=2,148)</td>
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<tr>
<td>Nepean Blue Mountains LHD (N=1,851)</td>
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<tr>
<td>Illawarra Shoalhaven LHD (N=2,591)</td>
<td>1.0</td>
</tr>
<tr>
<td>Southern NSW LHD (N=1,296)</td>
<td>0.7</td>
</tr>
</tbody>
</table>

* NSW (5.5, N=42,079)

N= Number of cancer cases (incidence).
* The reporting period for clinical trial data is 2015, and 2012 for cancer incidence (latest available data).

Note:
1. LHD data exclude two private institutions (external to LHD structure) and St. Vincent’s Health Network and the Sydney Children’s Hospitals Network. However, these institutions are included in the NSW figure.
Ratio of newly-enrolled participants to cancer incidence (per 100 cases), by clinical group (ranked), NSW, in 2014^ and 2015*

Number and proportion of recruiting trials with enrolments, NSW, 2015

<table>
<thead>
<tr>
<th>Clinical group</th>
<th>NSW recruiting trials</th>
<th>No. of trials</th>
<th>No. of trials with enrolments</th>
<th>% of trials with enrolments</th>
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</thead>
<tbody>
<tr>
<td>Bowel</td>
<td>20</td>
<td>12</td>
<td>60.0</td>
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</tr>
<tr>
<td>Breast</td>
<td>33</td>
<td>24</td>
<td>72.7</td>
<td></td>
</tr>
<tr>
<td>Cancer unknown primary</td>
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<td>0.0</td>
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<tr>
<td>Gynaecological</td>
<td>15</td>
<td>13</td>
<td>86.7</td>
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<tr>
<td>Head and neck</td>
<td>7</td>
<td>2</td>
<td>28.6</td>
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<tr>
<td>Lymphohaematopoietic</td>
<td>77</td>
<td>51</td>
<td>66.2</td>
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<tr>
<td>Neurological</td>
<td>8</td>
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<td>Skin</td>
<td>26</td>
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<td>80.8</td>
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<td>Upper gastrointestinal</td>
<td>22</td>
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<td>72.7</td>
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<tr>
<td>Urogenital</td>
<td>31</td>
<td>24</td>
<td>77.4</td>
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<tr>
<td><strong>All cancers</strong></td>
<td><strong>351</strong></td>
<td><strong>241</strong></td>
<td><strong>68.7</strong></td>
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</tr>
</tbody>
</table>

N = Number of cancer cases (incidence) in 2012.

^ The reporting period for clinical trial data is 2014, and 2010 for cancer incidence.

* The reporting period for clinical trial data is 2015, and 2012 for cancer incidence (latest available data).

Note:
1. Differences between 2015 and 2014 ratios should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. The ten most common clinical groups (plus neurological) have been presented, based on ranking 2012 cancer incidence data. All non-reported clinical groups have also been included in “All cancers”.
3. Trials were counted as having nil recruitment if there were no new enrolments at any site within NSW for the reporting period.
Number of recruiting cancer clinical trials, portfolio, by LHD (ranked), 2014 and 2015

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>2015 figures displayed</th>
<th>2014 figures displayed</th>
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</thead>
<tbody>
<tr>
<td>Sydney LHD (N=80)</td>
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<tr>
<td>Hunter New England LHD (N=71)</td>
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<tr>
<td>South Western Sydney LHD (N=60)</td>
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<tr>
<td>South Eastern Sydney LHD (N=88)</td>
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<tr>
<td>Western Sydney LHD (N=82)</td>
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<tr>
<td>St Vincent’s Health Network (N=48)</td>
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<tr>
<td>Northern Sydney LHD (N=45)</td>
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<tr>
<td>Murrumbidgee LHD (N=32)</td>
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<tr>
<td>Mid North Coast LHD (N=28)</td>
<td>11</td>
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</tr>
<tr>
<td>Northern NSW LHD (N=22)</td>
<td>9</td>
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<tr>
<td>Central Coast LHD (N=24)</td>
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<td>Illawarra Shoalhaven LHD (N=14)</td>
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<td>Western NSW LHD (N=7)</td>
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<tr>
<td>Nepean Blue Mountains LHD (N=15)</td>
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</tr>
<tr>
<td>Southern NSW LHD (N=31)</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

N= Number of recruiting cancer clinical trials in 2015.

Notes:
1. Differences between 2015 and 2014 number of recruiting trials should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. LHD data exclude two private institutions (external to LHD structure) and the Sydney Children’s Hospitals Network.
3. Portfolio trials are high quality, industry independent trials that are compliant with defined principles and criteria. Cancer Institute NSW-funded cancer trial staff resources can only be directed towards portfolio-compliant trials.
Number of recruiting cancer clinical trials, non-portfolio (non-industry), by LHD (ranked), 2014 and 2015

- Western Sydney LHD (N=82): 17
- South Eastern Sydney LHD (N=88): 15
- Hunter New England LHD (N=71): 12
- Northern Sydney LHD (N=45): 11
- South Western Sydney LHD (N=60): 7
- Sydney LHD (N=80): 5
- St Vincent’s Health Network (N=48): 4
- Central Coast LHD (N=24): 4
- Southern NSW LHD (N=11): 2
- Northern NSW LHD (N=22): 2
- Mid North Coast LHD (N=28): 2
- Illawarra Shoalhaven LHD (N=14): 2
- Nepean Blue Mountains LHD (N=15): 1
- Western NSW LHD (N=7):
- Murrumbidgee LHD (N=32):

2015 figures displayed

Note:
1. Differences between 2015 and 2014 number of recruiting trials should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. LHD data exclude two private institutions (external to LHD structure) and the Sydney Children’s Hospitals Network.
3. Portfolio trials are high quality, industry independent trials that are compliant with defined principles and criteria. Cancer Institute NSW-funded cancer trial staff resources can only be directed towards portfolio-compliant trials.
Number of recruiting cancer clinical trials, non-portfolio (industry), by LHD (ranked), 2014 and 2015

<table>
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<td>Murrumbidgee LHD (N=32)</td>
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<td>Mid North Coast LHD (N=28)</td>
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<td>Northern NSW LHD (N=22)</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Central Coast LHD (N=24)</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=15)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Southern NSW LHD (N=11)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD (N=14)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Western NSW LHD (N=7)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

N= Number of recruiting cancer clinical trials in 2015.

Notes:
1. Differences between 2015 and 2014 number of recruiting trials should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. LHD data exclude two private institutions (external to LHD structure) and the Sydney Children’s Hospitals Network.
3. Portfolio trials are high quality, industry independent trials that are compliant with defined principles and criteria. Cancer Institute NSW-funded cancer trial staff resources can only be directed towards portfolio-compliant trials.
Median calendar days from Research Governance Office submission to authorisation of clinical trials, by LHD (ranked), 2014 and 2015

N= Number of clinical trials in 2015.
Note:
1. Differences between 2015 and 2014 median calendar days should not be interpreted as a change in trend. Data between years may be subject to random variation.
## Glossary

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>AND</td>
<td>Axillary node dissection</td>
</tr>
<tr>
<td>APEDDR</td>
<td>Admitted Patient, Emergency Department Attendance, and Deaths Register</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>CASE</td>
<td>Communication and Attitudinal Self-efficacy (scale)</td>
</tr>
<tr>
<td>CINSW</td>
<td>Cancer Institute NSW</td>
</tr>
<tr>
<td>ESAS</td>
<td>Edmonton Symptom Assessment System</td>
</tr>
<tr>
<td>FTE</td>
<td>Full-time equivalent</td>
</tr>
<tr>
<td>FY</td>
<td>Financial year</td>
</tr>
<tr>
<td>GP</td>
<td>General practitioner</td>
</tr>
<tr>
<td>HPV</td>
<td>Human papillomavirus</td>
</tr>
<tr>
<td>KPI</td>
<td>Key performance indicator</td>
</tr>
<tr>
<td>LGA</td>
<td>Local government area</td>
</tr>
<tr>
<td>LHD</td>
<td>Local health district</td>
</tr>
<tr>
<td>MBS</td>
<td>Medicare Benefits Schedule</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>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>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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Appendix 1:  
2016 key performance indicators

Prevention
- Current smoking prevalence in adults
- Proportion of women who smoked during pregnancy—Aboriginal and non-Aboriginal
- Current smoking prevalence in young people
- Proportion of students who have a preference for a tan (light to very dark)
- Proportion of adults who consume alcohol at levels within NHMRC guidelines

Breast screening
- Biennial breast screening participation rate for NSW women aged 50–69
- Biennial breast screening participation rate for NSW culturally and linguistically diverse (CALD) women aged 50–69
- Biennial breast screening participation rate for NSW Aboriginal women aged 50–69
- Proportion of BreastScreen NSW clients aged 50–69 who:
  - were screened by BreastScreen in the last 24 months
  - were screened but not in the last 24 months
  - have never been screened by BreastScreen
- Use of Medicare Benefits Schedule (MBS) for asymptomatic bilateral mammography for women aged 50–69

Cervical screening
- Biennial cervical screening participation rate for NSW women aged 20–69
- Five-year cervical screening participation rate for NSW women aged 20–69
- Cervical screening activity for NSW women aged 20–69 by:
  - GP
  - Gynaecologist
  - Women’s health nurse
  - Other

Bowel screening
- Annual bowel screening participation rate for NSW people aged 50–74
- Proportion of positive FOBT results for NSW people aged 50–74 who:
  - had GP follow-up
  - had no follow-up recorded
Cancer treatment and service delivery

- Self-assessed symptom scores for outpatients undergoing active treatment
- Shared decision-making among patients that received chemotherapy, radiotherapy or surgery
- Information to support patients that received chemotherapy, radiotherapy or surgery
- Self-efficacy scores for outpatients undergoing active treatment
- Annual caseload of resections by cancer type: lung, breast, ovarian, colon, rectal, gastric, oesophageal, pancreatic, primary liver, neurological, and head and neck cancer.
- Public and private hospital inflows and outflows (for breast and colon cancer)
- Proportion of breast cancer resections with sentinel lymph node biopsy and axillary node dissection
- Mastectomy as a proportion of breast cancer resections
- Proportion of early-stage breast cancer patients receiving standard or hypofractionated regimens of external beam radiotherapy (EBRT)
- Proportion of patients with bone metastases receiving single or multiple fraction regimens of external beam radiotherapy with palliative treatment intent

Research: Clinical trials

- Ratio of newly-enrolled participants to cancer incidence (per 100 cases)
- Number of recruiting cancer clinical trials by trial category
- Median calendar days from Research Governance Office submission to authorisation of clinical trials

Other

- Regional variation in cancer incidence and mortality
- Five most common cancers by extent of disease at diagnosis and five-year survival: bowel, breast, lung, prostate, melanoma
Appendix 2:
Key performance indicators:
Technical document

Introduction
This section provides background information for each of the 2016 RBCO key performance indicators (KPIs), including:
• rationale for inclusion
• an assessment of what the indicator is attempting to measure
• technical information about the derivation of the indicator, as appropriate.
A short literature review accompanies each indicator as further support for inclusion.

Cancer prevention indicators

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Current smoking prevalence in adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent of the indicator</td>
<td>The intent of this indicator is to highlight the proportion of adults that smoke daily or occasionally. This indicator will provide local health districts (LHDs) with evidence to support tobacco control efforts.</td>
</tr>
<tr>
<td>Target population and setting</td>
<td>All smoking adults (persons aged 16 years and over) within each LHD.</td>
</tr>
<tr>
<td>Feasibility/ value assessment</td>
<td>The Ministry of Health’s NSW Population Health Survey collects data on smoking prevalence annually and is committed to continuing to do so under the NSW Tobacco Strategy 2012–2017[1]. The Population Health Survey is an annual telephone survey of all state residents living in private households and, from 2012, residents of NSW that have access to a mobile phone. [2] The target sample was approximately 1,000 persons in each of the health administrative areas (total sample 8,000–16,000 depending on the number of administrative areas). Data are available from 2002 onwards.</td>
</tr>
<tr>
<td>Operational definition</td>
<td>This indicator includes those who reported smoking daily or occasionally. The question used to define the indicator is: ‘Which of the following best describes your smoking status: smoke daily; smoke occasionally; do not smoke now but I used to; I have tried it a few times but never smoked regularly; or, I have never smoked?’</td>
</tr>
<tr>
<td>Evidence to support the indicator</td>
<td>Tobacco smoking remains the number one cause of preventable disease and death in Australia.[3] As such, any action that reduces smoking prevalence is likely to have considerable impact on reducing the burden of death and disease in NSW. In 2015, 13.5% of adults aged 16 years and over were current smokers. Although smoking prevalence has been trending downwards in NSW since 2002, it varies significantly across LHDs. [2] LHDs with the highest smoking prevalence in 2015 were Central Coast (21.4%) and Illawarra Shoalhaven (18.9%). Northern Sydney (9.5%) LHD had the lowest smoking prevalence.</td>
</tr>
<tr>
<td>Interpretation</td>
<td>This indicator provides an estimate of smoking prevalence for all persons aged 16 years and over in NSW, with a large enough sample size in each LHD to provide robust estimates. However, the exact sample size varies depending on the number of health administrative areas, which may influence the robustness of the result. The data reported use actual estimates (not smoothed estimates) from the Health Statistics NSW website.[2]</td>
</tr>
<tr>
<td>Interventions that may affect the indicator</td>
<td>Any tobacco control measures implemented by the Federal Government, NSW Government (including the Cancer Institute NSW), or individual LHDs or PHNs is likely to impact this indicator. This includes measures such as tax increases, mass media campaigns and GP-based interventions.</td>
</tr>
</tbody>
</table>
**Indicator name**: Proportion of women who smoked during pregnancy

**Intent of the indicator**: The intent of this indicator is to highlight the proportion of women who smoked during pregnancy and the differences between Aboriginal and non-Aboriginal women. This indicator will provide the local health districts (LHDs) and Primary Health Networks (PHNs) with evidence to support tobacco control efforts.

**Target population and setting**: All women who have smoked during pregnancy within each LHD. LHD data are also broken down by Aboriginality (Aboriginal and non-Aboriginal).

**Feasibility/value assessment**: The Ministry of Health's NSW Perinatal Data Collection (PDC) collects data on smoking during pregnancy.[1] The PDC is a population-based surveillance system covering all births in NSW public and private hospitals, as well as homebirths. The PDC is a statutory data collection under the NSW Public Health Act 2010.

Data for some LHDs will not be included due to low numbers. As Aboriginal mothers are under-reported on the PDC, it is likely that the numbers are underestimated.

**Operational definition**: • Any smoking in pregnancy is included.
• Up to 2010, the question asked at data collection was: ‘Did you smoke at all during pregnancy?’
• From 2011, there are two questions asked: ‘Did you smoke at all during the first half of pregnancy?’ and ‘Did you smoke at all during the second half of pregnancy?’ The revised questions provide more opportunity for women to report their smoking history, and are likely to produce a more reliable measure of smoking rates in pregnancy than the original question.
• The question asked to determine Aboriginality is ‘Are you of Aboriginal or Torres Strait Islander origin?’
• Those who answered that they smoked at all are classified as smoking during pregnancy.

**Evidence to support the indicator**: Although the prevalence of smoking has been steadily declining in the past decade[1] encouraging and supporting women who smoke during pregnancy remains as a key public health priority and a part of the NSW Tobacco Strategy 2012–2017.[2]

**Interpretation**: This indicator provides an estimate of the proportion of women in NSW who smoked during pregnancy overall, and for Aboriginal and non-Aboriginal women, with large enough sample size in some LHDs to provide robust estimates. The estimates for smoking in pregnancy by Aboriginality also need to be interpreted with caution given some LHDs have small sample sizes with wide confidence intervals. The data reported use actual estimates (not smoothed estimates) from the Health Statistics NSW website.

**Interventions that may affect the indicator**: Any tobacco control measures implemented by the Federal Government, NSW Government (including the Cancer Institute NSW), or individual LHDs or PHNs is likely to impact this indicator. This includes measures such as tax increases; mass media campaigns; and GP, midwife, or hospital-based interventions.

**References**
**Operational definition**
The indicator includes those students who consider themselves to be heavy, light or occasional smokers.
The question used to define the indicator was: ‘At the present time, do you consider yourself:
a heavy smoker, a light smoker, an occasional smoker, an ex-smoker, a non-smoker?’

**Evidence to support the indicator**
Tobacco smoking remains the number one cause of preventable disease and death in Australia.[2]
As such, any action that contributes to reducing smoking prevalence is likely to have considerable impact on reducing the burden of death and disease in NSW.
6.7% of students aged 12-17 years (7.1% of boys and 6.3% of girls) were current smokers in 2014.

**Interpretation**
This indicator provides an estimate of the proportion of young people in NSW who have never been smokers, with a large enough sample size in each LHD to provide robust estimates. However, the exact sample size varies depending on the number of health administrative areas, which may influence the robustness of the result. The data reported use actual estimates (not smoothed estimates) from the Health Statistics NSW website.

**Interventions that may affect the indicator**
Any tobacco control measures implemented by the Federal Government, NSW Government (including the Cancer Institute NSW), or individual LHDs or PHNs is likely to impact this indicator. This includes measures such as mass media campaigns, provision of cessation services to support smokers to quit (Quitline and iCanQuit.com.au), embedding brief interventions for smoking cessation in clinical care and GP-based interventions.

**References**
Appendices

Interventions that may affect the indicator

The NSW Skin Cancer Prevention Strategy 2012–2015 provides a framework for a coordinated comprehensive, community-wide approach to reducing over-exposure to the sun in NSW.

There were four priority areas and goals in the Strategy, designed to prevent and limit the burden of skin cancer in NSW:

- Ultraviolet radiation (UVR) protection behaviours
- Shade provision
- UVR protection policy
- Strategic research

References

- Centre for Epidemiology and Evidence. Health Statistics New South Wales.

Indicator name: Proportion of adults who consume alcohol at levels within NHMRC guidelines

Intent of the indicator

To assist monitoring lifetime risk of harm, this indicator provides information on the proportion of adults who consume more than two standard drinks on a day when they consume alcohol.

This indicator will provide the local health districts (LHDs) with evidence to support efforts to reduce alcohol consumption.

Target population and setting

All adults in NSW aged 16 years and over who consume alcohol.

Feasibility/value assessment

The Population Health Survey is an annual telephone survey of all state residents living in private households and, from 2012, residents of NSW that have access to a mobile phone.[1] The target sample was approximately 1,000 persons in each of the health administrative areas (total sample 8,000–16,000 depending on the number of administrative areas). Data are available from 2002 onwards.

Operational definition

This indicator provides information on the proportion of adults who consume more than 2 standard drinks on a day when they consume alcohol.

The questions used to define the indicator were: How often do you usually drink alcohol? On a day when you drink alcohol, how many standard drinks do you usually have? A standard drink is equal to one middy of full-strength beer, one schooner of light beer, one small glass of wine or one pub-sized nip of spirits.

Evidence to support the indicator

In 2009, the NHMRC published new guidelines to reduce the health risks from drinking alcohol.[2] These guidelines focus on the effects of alcohol during, and immediately after, drinking, and introduce the concept of lifetime risk of alcohol-related disease or injury. Guideline 1 states that the lifetime risk of harm from alcohol-related disease or injury is reduced by drinking no more than two standard drinks on any day when drinking alcohol.

A total of 1,289 deaths were attributed to alcohol in NSW in 2013, which was approximately 2.6% of all deaths in 2013.[1]

16.8% of persons aged 15 years and over (25.0% of males and 9.0% of females) in NSW consumed more than 2 standard alcoholic drinks on average in the last week.

Interpretation

This indicator provides an estimate of the proportion of adults in NSW who consume more than two standard drinks on a day when they consume alcohol, with a large enough sample size in each LHD to provide robust estimates. However, the exact sample size varies depending on the number of health administrative areas, which may influence the robustness of the result. The data reported use actual estimates (not smoothed estimates) from the Health Statistics NSW website.

Interventions that may affect the indicator

The NSW Ministry of Health are the lead agency for the implementation and evaluation of a comprehensive approach to reduce the harms associated with alcohol use.

References

Breast screening indicators

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Biennial breast screening participation rate for NSW women aged 50–69</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent of the indicator</strong></td>
<td>The biennial participation rate measures the number of individual women screened, aged 50–69 years, residing in the service catchment area (local health district (LHD), Primary Health Network (PHN), or Local Government Area (LGA)), screened by any service provider in the BreastScreen NSW Program (the Program). This indicator ensures the Program is implemented in such a way that significant reductions in morbidity and mortality attributable to breast cancer can be achieved.</td>
</tr>
<tr>
<td><strong>Target population and setting</strong></td>
<td>The target population is women aged 50–69 years residing in the relevant service catchment area, and screened by any service provider in the Program. If a woman has been screened more than once in a 24-month period, only the last screening episode is to be counted.</td>
</tr>
<tr>
<td><strong>Feasibility/value assessment</strong></td>
<td>Mammography screening is proven to reduce mortality and morbidity attributable to breast cancer, by detecting early-stage breast cancer.[2] BreastScreen NSW provides a two-yearly mammographic screening service to women in NSW, and specifically targets those in the 50–69 year age group. The Program also monitors the screening service provided to women aged 40–49 and 70+ years.[2] Monitoring the participation rate can allow strategic planning in marketing and recruitment to promote the BreastScreen Program. This will improve early detection of breast cancer in women at an early stage, increase treatment options and improve the survival rate.[3]</td>
</tr>
</tbody>
</table>
| **Operational definition**     | **Numerator**: Number of individual women aged 50–69 years residing in the relevant service catchment area, and screened by any service provider in the Program in NSW who have had at least one breast screening during the 24-month reporting period for screening purposes.  
**Denominator**: Population is the average of the projected population for women aged 50–69 years for the two reporting years, as at 30 June.  
**Sources**:  
• Screening data: BreastScreen NSW.  
• Projected population data: Epidemiology and Surveillance Branch, NSW Ministry of Health.  
**Notes**:  
• Women who have had more than one screening episode in the 24-month reporting period are to be counted once only.  
• No attempt has been made to adjust the population for women who have previously had breast cancer.[1] |
| **Evidence to support the indicator** | This indicator includes women who have had breast screening at least once during the 24-month reporting period. It counts women once for those who may have two rounds of screening when those women returned to screening before the 24-month routine to rescreen period. This may therefore lead to an underestimate of the number of women participating.  
It is evident that by improving the participation rate in mammography screening, the Program can increase the detection of breast cancer at an early stage and reduce mortality and morbidity in women.[3] The measurement and monitoring of the participation rate is aimed to assess the accessibility, efficiency and effectiveness of the BreastScreen Program. An increased participation rate will demonstrate a substantial reduction in mortality from breast cancer; therefore, BreastScreen Australia recommends women to have a routine rescreen every two years. For some women, such as those with a previous diagnosis of breast cancer and those who have a family history of breast cancer, annual screening is available.[5] |
| **Interpretation**             | This indicator only captures women screened by the BreastScreen NSW program. The overall screening rate of NSW women is likely to be higher due to the use of private radiology services and the possibility of ostensibly diagnostic mammography being used for screening. |
| **Interventions that may affect the indicator** | Marketing campaigns and strategies used in promoting BreastScreen to improve recruitment may have an effect on increasing the participation rate. |
## Indicator name

| Biennial breast screening participation rate for NSW culturally and linguistically diverse (CALD) women aged 50–69 |

### Intent of the indicator

The biennial participation rate measures the number of individual CALD women, aged 50–69 years, residing in the catchment area (Local Health District (LHD), Primary Health Network (PHN) or Local Government Area (LGA)) screened by any service provider in the BreastScreen NSW Program (the Program).

This indicator ensures the Program is implemented in such a way that significant reductions in morbidity and mortality attributable to breast cancer can be achieved.

### Target population and setting

The target population is women aged 50–69 years residing in the relevant service catchment area, and screened by any service provider in the Program. If a CALD woman has been screened more than once in a 24-month period, only the last screening episode is to be counted.

### Feasibility/value assessment

Mammography screening is proven to reduce mortality and morbidity attributable to breast cancer, by detecting early-stage breast cancer.[5] BreastScreen NSW provides a two-yearly mammographic screening service to CALD women in NSW, and specifically targets those aged 50–69 years. The Program also monitors the proportion of CALD women aged 40–49 and 70+ years who are screened.[2]

Monitoring the participation rate can allow strategic planning in marketing and recruitment to promote the BreastScreen Program. This will improve the detection of breast cancer in CALD women at an early stage, increase treatment options and improve the survival rate.[3]

### Operational definition

#### Numerator:

Number of individual CALD women aged 50–69 residing in the relevant service catchment area, and screened by any service provider in the Program in NSW who have had at least one breast screening episode during the 24-month reporting period.

#### Denominator:

Population is the Census population for women aged 50–69 years with languages other than English spoken at home for the two reporting years, as at 30 June.

### Sources:

- Screening data: BreastScreen NSW Program.

### Notes:

- Women who have had more than one screening episode in the 24-month reporting period are to be counted once only.
- Women for whom language spoken at home is not stated or missing are excluded from the numerator.
- No attempt has been made to adjust the population for women who have previously had breast cancer.[1]

### Evidence to support the indicator

This indicator includes CALD women who have had breast screening at least once during the 24-month reporting period. It counts women once for those who may have two rounds of screening when those women returned to screening before the 24-month routine to rescreen period. This may therefore lead to an underestimate of the number of CALD women participating.

It is evident that by improving the participation rate in mammography screening, the Program can increase the detection of breast cancer at an early stage and reduce mortality and morbidity in women. [3] The measurement and monitoring of participation rate is aimed to assess the accessibility and equity, efficiency and effectiveness of the BreastScreen Program. An increased participation rate will demonstrate a substantial reduction in mortality from breast cancer; therefore, BreastScreen Australia recommends women have a routine rescreen every two years. For some women, such as those with a previous diagnosis of breast cancer and those who have a family history of breast cancer, annual screening is available.[5]

### Interpretation

This indicator only captures women screened by the BreastScreen NSW program. The overall screening rate of NSW women is likely to be higher due to the use of private radiology services and the possibility of ostensibly diagnostic mammography being used for screening.

### Interventions that may affect the indicator

Marketing campaigns and strategies used in promoting BreastScreen to improve recruitment may have an effect on increasing the participation rate.
### Indicator name
Biennial breast screening participation rate for NSW Aboriginal women aged 50–69

### Intent of the indicator
This indicator measures the number of Aboriginal women screened, aged 50–69 years, residing in the catchment area (local health district (LHD), Primary Health Network (PHN) or Local Government Area (LGA)), screened by any service provider in the BreastScreen NSW Program (the Program).

This indicator ensures the Program is implemented in such a way that significant reductions in morbidity and mortality attributable to breast cancer can be achieved.

### Target population and setting
The target population is women aged 50–69 years residing in the relevant service catchment area, and screened by any service provider in the Program. If an Aboriginal woman has been screened more than once in a 24-month period, only the last screening episode is to be counted.

### Feasibility/value assessment
Mammography screening is proven to reduce mortality and morbidity attributable to breast cancer, by detecting early-stage breast cancer. BreastScreen NSW provides a two-yearly mammographic screening service to Aboriginal women in NSW, and specifically targets those aged 50–69 years. The Program also monitors the screening service provided to Aboriginal women aged 40–49 and 70+ years screened. Monitoring the participation rate can allow strategic planning in marketing and recruitment to promote the BreastScreen Program. This will improve early detection of breast cancer in Aboriginal women at an early stage, increase treatment options and improve the survival rate.

### Operational definition
**Numerator:** Number of individual Aboriginal women aged 50–69 years residing in the relevant service catchment area, and screened by any service provider in the Program who have had at least one breast screening episode during the 24-month reporting period for screening purposes.

**Denominator:** Population is the Census population for Aboriginal women aged 50–69 years, for the two reporting years, as at 30 June.

**Sources:**
- Screening data: BreastScreen NSW.

**Notes:**
- Women who have had more than one screening in the 24-month reporting period are to be counted once only.
- Women for whom Aboriginal status is not stated or missing are excluded from the numerator.
- No attempt has been made to adjust the population for women who have previously had breast cancer.

### Evidence to support the indicator
This indicator includes Aboriginal women who have had breast screening at least once during the 24-month reporting period. It counts women once for those who may have two rounds of screening when those women returned to screening before the 24-month routine rescreen period. This may therefore lead to an underestimate of the number of Aboriginal women participating.

It is evident that by improving the participation rate in mammography screening, the program can increase the detection of breast cancer at an early stage and reduce mortality and morbidity in women. The measurement and monitoring of the participation rate is aimed to assess the accessibility, efficiency and effectiveness of the BreastScreen Program. According to the AIHW, it is evident that Aboriginal women have a low participation rate compared with non-Aboriginal women. Further, the current BreastScreen NSW participation rate for Aboriginal women is substantially lower than the general participation rate.

An increased participation rate will demonstrate a substantial reduction in mortality from breast cancer, especially for Aboriginal women when breast cancer is the mostly commonly diagnosed cancer. Therefore, BreastScreen Australia recommends women have a routine rescreen every two years. For some women, such as those with a previous diagnosis of breast cancer and those who have a family history of breast cancer, annual screening is available.
**Interpretation**

This indicator only captures women screened by the BreastScreen NSW program. The overall screening rate of NSW women is likely to be higher due to the use of private radiology services and the possibility of ostensibly diagnostic mammography being used for screening.

**Interventions that may affect the indicator**

Marketing campaigns and strategies used in promoting BreastScreen to improve recruitment may have an effect in increasing the participation rate.

**References**


**Indicator name**

Proportion of BreastScreen NSW clients 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

**Intent of the indicator**

The rate measures the number of individual women aged 50–69 years, as at 31 December of each year, ever screened since the start of the BreastScreen NSW Program (further categorised as screened in the last 24 months, and screened but not in the last 24 months) or have never been screened by any service provider in the BreastScreen NSW Program (the Program).

The indicator shows the gap between the proportion of women who screen regularly, and those who have screened in the past but have not rescreened on time.

The never screened rate measures the number of individual women aged 50–69 years, as at 31 December each year, who have never attended breast screening. It assists in interpreting trends in overall BreastScreen participation, providing clarification of whether the participation rate is substantially lower than total program coverage due to late and lapsed screeners, or whether the biennial participation rate is a good approximation of the total coverage of the program.

**Target population and setting**

The target population is women aged 50–69 years residing in the relevant service catchment area (local health district (LHD), Primary Health Network (PHN)), and screened by any service provider in the Program. If a woman has been screened more than once in a 24 month period, only the last screening episode is to be counted in the 24-month calculation.

**Feasibility/value assessment**

Achieving and maintaining a high screening coverage is important to increase the likelihood of breast cancers being detected early and facilitating early treatment, which is associated with better treatment outcomes.[1]

**Operational definition**

**Numerator for ‘Never screened’**: Population projection of the current number of women aged 50–69 years residing in NSW, on 31 December of each year, less the number of individual women aged 50–69 years on 31 December 2015 who have ever had a screening mammogram with BreastScreen NSW.

**Numerator for ‘Screened in last 24 months’**: Number of women aged 50–69 years, as at 31 December of each year who were screened in the last 24 months. Please note that this is different from the 24-month participation rate indicator, which counts women aged 50–69 years at the time of their screen. The different methodology is adopted here so as to be comparable to the ‘Never screened’ rate in this indicator.

**Numerator for ‘Screened but not in last 24 months’**: The difference between the number of individual women aged 50–69 years on 31 December of each year who have ever had a screening mammogram with BreastScreen NSW, and the number of women aged 50–69 years as at 31 December of each year, who were screened in the last 24 months.

**Denominator**: Population is the average of the projected population for women aged 50–69 years in each year in NSW.
Operational definition (cont.)

Sources:
- Screening data: BreastScreen NSW.
- Projected population data: Epidemiology and Surveillance Branch, NSW Ministry of Health.

Notes:
- Women who have had more than one screening episode since the start of the BreastScreen NSW program are to be counted only once, taking their most recent screening episode.
- No attempt has been made to adjust the population for women who have previously had breast cancer and are therefore not eligible for breast cancer screening through BreastScreen Australia.[1]

Evidence to support the indicator

Reductions in the ‘Never screened’ rate would reflect an improvement in program coverage. Achieving and maintaining a high screening coverage improves the probability of early detection of breast cancers and pre-cancerous lesions, facilitating access to treatment and better treatment outcomes.

Interpretation

This indicator is an estimate, using population projections. It is not derived from a matching of individual Census records with individual patient records. As such, the indicator is influenced by assumptions made in determining projections and by the quality of the data upon which these projections are based. The indicator will overestimate the ‘Never screened’ rate, as not all women residents in NSW are eligible for BreastScreen. The BreastScreen service is limited to those women who are eligible for Medicare. However, the difference between the number of resident women and the number of resident women who are eligible for Medicare is assumed to be small, and therefore the magnitude of the overestimate is likely to be minimal.

Interventions that may affect the indicator

Marketing campaigns and strategies used in promoting BreastScreen to improve recruitment may have an effect on increasing the participation rate. Any changes to policies and initiatives in recruiting new women for screening will impact on this indicator.

References
Indicator name | Use of Medicare Benefits Schedule (MBS) for asymptomatic bilateral mammography for NSW women aged 50–69, by LHD (ranked), 2007–2008
--- | ---
**Intent of the indicator** | The biennial participation rate measures the proportion of women screened, aged 50–69 years, residing in the service catchment area (local health district (LHD), Primary Health Network (PHN)), screened by private radiology services and funded through the Medicare Benefits Scheme. This indicator provides information about the proportion of women who are not captured in BreastScreen NSW participation rate calculations, but are still accessing breast screening services.

**Target population and setting** | The target population is women aged 50–69 years residing in the relevant service catchment area, who have undergone bilateral mammography with no additional referred diagnostic services (with the exception of ultrasounds performed on the same day) at any private radiology service that is funded through Medicare, and who have not also screened through BreastScreen NSW.

**Feasibility/value assessment** | The participation rate is an estimate based on 50 to 69-year-old women from the 45 & Up study sample, weighted up to the NSW population. The 45 & Up study is a sample of approximately 10 per cent of the NSW population aged 45 and over.

**Operational definition** | **Numerator:** Population-weighted number of women aged 50–69 residing in the service catchment area, who have undergone bilateral mammography with no additional referred diagnostic services (with the exception of ultrasounds performed on the same day), that is not a follow-up surveillance after surgery or a prior diagnosis, at any private radiology service who have had at least one breast screen during the 24-month reporting period for screening purposes, and have not had a BreastScreen NSW episode.

**Denominator:** Population is the average of the projected population for women aged 50–69 years for the two reporting years, as at 30 June.

**Sources:**
- Screening data: Data from the 45 & Up study, linked to BreastScreen NSW, the Medicare Benefits Scheme data set, NSW Clinical Cancer Registry, NSW Admitted Patient Data Collection and the NSW Registry of Births, Deaths and Marriages.
- Projected population data: Epidemiology and Surveillance Branch, NSW Ministry of Health.

**Notes:**
- Women who have had more than one screening episode in the 24-month reporting period are counted once only.
- No attempt has been made to adjust the population for women who have previously had breast cancer.[1]

**Evidence to support the indicator** | It is evident that by improving the participation rate in mammography screening, the Program can increase the detection of breast cancer at an early stage and reduce mortality and morbidity in women. [3] The measurement and monitoring of the participation rate aims to assess accessibility, efficiency and effectiveness of the BreastScreen Program. An increased participation rate will demonstrate a substantial reduction in mortality from breast cancer; therefore, BreastScreen Australia recommends women to have a routine rescreen every two years. For some women, such as those with a previous diagnosis of breast cancer and those who have a family history of breast cancer, annual screening is available.[5]

**Interpretation** | This indicator only captures women screened by private practices and may inadvertently include diagnostic mammography that is indistinguishable from screening mammography in some instances.

Screening through private practices where the Medicare rebate is not claimed (i.e. fully self-funded screening) is not included in this indicator; however, this is known to be low.

**Interventions that may affect the indicator** | Marketing campaigns and strategies used in promoting BreastScreen to improve recruitment may have an effect on increasing the participation rate.

**References**
Cervical screening indicators

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Biennial cervical screening participation rate for NSW women aged 20–69</th>
</tr>
</thead>
</table>

**Intent of the indicator**
The biennial participation rate measures the proportion of individual women aged 20–69 years residing in the catchment area who are screened by any screening provider in the NSW Cervical Screening Program (CSP or the Program). This indicator demonstrates the effectiveness of the Program at ensuring women’s compliance with its guidelines for screening. The indicator helps identify locations for implementation of interventions so that a significant reduction in incidence and mortality is achieved for cervical cancer.

**Target population and setting**
The target population is women aged 20–69 years residing in the catchment area (local health district (LHD), Primary Health Network (PHN) or Local Government Area (LGA)), and screened by any screening provider in the Program. If a woman has been screened more than once in a 24-month period, only the last screening episode is counted. Interstate clients are not counted. Clients that have opted-off the Pap Test Register (PTR) are not counted.

**Feasibility/value assessment**
Regular Pap tests every two years can prevent up to 90 per cent of the most common forms of cervical cancer.[1] Pap tests can detect abnormal cervical cells before they become cancerous. This early detection provides women with a better chance of successful treatment. Population screening through regular Pap tests contributes to a significant reduction in cervical cancer incidence and mortality.[2] The most useful indicator demonstrating the Program’s reach and effectiveness is the cervical screening participation rate as it reports compliance with the Program’s policy.

**Operational definition**
The biennial screening rate was calculated by the NSW CSP from the number of women aged 20–69 years who had a Pap test at least once during a two-year reporting period, as a percentage of the target population of eligible NSW women residents aged 20–69 years (based on geocoded address at time of test). The target population was derived from the Estimated Resident Female Population (ERP) of NSW, by taking an average of the populations across all age groups in the two-year period. Populations were obtained from the Australian Bureau of Statistics (ABS), and adjusted for the proportion of women estimated to have undergone a hysterectomy.

**Numerator**: Number of women aged 20-69 years residing in the relevant catchment area, and screened during a 24-month reporting period.

**Denominator**: ABS ERP aged 20–69 years, adjusted for proportion of women who have had a hysterectomy.

The geographical boundary populations for identifying LHD, PHN and LGA are based on calculations by the NSW Ministry of Health.

**Sources**
- Data: Screening information from the NSW Pap Test Register, Cancer Institute NSW.
- Population: Secure Analytics for Population Health Research and Intelligence (SAPHARI) projected population data for the designated years.
- Hysterectomy fractions: NSW Health Survey, NSW Ministry of Health.

**Evidence to support the indicator**
A population screening program using the Pap test as a primary screening test has been shown to result in lower incidence and mortality from cervical cancer in the population.[2] Regular Pap smears every two years can help prevent up to 90 per cent of the most common types of cervical cancer.[1] A Pap test is very effective in detecting precancerous lesions in the cervix and regular two-yearly testing with appropriate follow-up treatment can prevent these from developing cervical cancer in most cases.

This results in both a reduction in cancer incidence and mortality rates.

**Interpretation**
Duplication may arise when existing screeners do not inform the NSW Pap Test Register (PTR) of any changes to their personal information, such as changes to name or address. This may result in new records being created for them by the PTR during the matching process for subsequent tests, thereby resulting in over-estimation of the participation rate. Records are de-duplicated at regular intervals but there may be duplicates if a measurement is taken prior to the de-duplication activities.

Pap tests for women residing on the NSW border that are sent to laboratories in other states for processing could result in underestimation of the NSW biennial participation rate.

**References**
## Indicator name
Five-year cervical screening participation rate for NSW women aged 20–69

### Intent of the indicator
The five-year participation rate measures the proportion of individual women aged 20–69 years residing in the catchment area who are screened by any screening provider in the NSW Cervical Screening Program (CSP or the Program). This indicator provides an indication of future participation in the renewed program from 1 May 2017 when the interval changes from two to five years.

### Target population and setting
The target population is women aged 20–69 years residing in the relevant catchment area (local health district (LHD), Primary Health Network (PHN) or Local Government Area (LGA)), and screened by any screening provider in the Program. If a woman has been screened more than once in a 60-month period, only the last screening episode is counted. Interstate clients are not counted. Clients that have opted-off the Pap Test Register (PTR) are not counted.

### Feasibility/value assessment
From 1 May 2017 a renewed cervical screening program will be implemented. Primary HPV screening will be used instead of the Pap test at five-yearly intervals, between the ages of 25 and 74. This indicator provides an estimation of likely participation rates once the interval changes from two-yearly to five-yearly.

### Operational definition
The five-year participation rate was calculated by the NSW CSP from the number of women aged 20–69 years had a Pap test at least once during a five-year reporting period, as a percentage of the target population of eligible NSW women residents aged 20–69 years (based on geocoded address at time of test). The target population was derived from the Estimated Resident Female Population (ERP) of NSW, by taking an average of the populations across all age groups in the five-year period. Populations were obtained from the Australian Bureau of Statistics (ABS), and adjusted for the proportion of women estimated to have undergone a hysterectomy.

**Numerator:** Number of women aged 20–69 years residing in the relevant catchment area, and screened during a 60-month reporting period.

**Denominator:** ABS ERP aged 20–69 years adjusted for proportion of women who have had a hysterectomy.

The geographical boundary populations for identifying LHD, PHN and LGA are based on calculations by the NSW Ministry of Health.

### Sources
- Data: Screening information from the NSW Pap Test Register, Cancer Institute NSW.
- Population: Secure Analytics for Population Health Research and Intelligence (SAPHARI) projected population data for the designated years.
- Hysterectomy fractions: NSW Health Survey, NSW Ministry of Health.

### Evidence to support the indicator
Following a comprehensive review of the current evidence for cervical screening, the Medical Services Advisory Committee (MSAC) has recommended that a HPV test every five years is more effective at protecting against cervical cancer than is the current two-yearly Pap test program. A HPV test detects human papillomavirus; the virus that can cause pre-cancerous abnormalities while the Pap test detects abnormal cell changes. The HPV test is more effective as it can detect the virus that causes the abnormal cell changes.

### Interpretation
Duplication may arise when existing screeners do not inform the NSW Pap Test Register (PTR) of any changes to their personal information, such as changes to name or address. This may result in new records being created for them by the PTR during the matching process for subsequent tests; thereby resulting in an over-estimation of the participation rate. Records are de-duplicated at regular intervals but there may be duplicates if a measurement is taken prior to the de-duplication activities.

Pap tests for women residing on the NSW border that are sent to laboratories in other states for processing could result in underestimation of the NSW five-year participation rate.

### References
**Indicator name**

Cervical screening activity for NSW women aged 20–69, by provider type

**Intent of the indicator**

This indicator measures the proportion of individual women aged 20–69 years residing in the catchment area who are screened by the defined types of screening providers in the NSW Cervical Screening Program (CSP or the Program). This indicator demonstrates the level of engagement/participation of screening providers in delivering the cervical screening service for the target population. It helps identify areas for implementation of interventions so that cervical screening is equitable, accessible and appropriate to NSW women.

**Target population and setting**

The target population is women aged 20–69 years residing in the relevant catchment area (local health district (LHD), Primary Health Network (PHN) or Local Government Area (LGA)), and screened by any service provider in the Program. Interstate clients are not counted. Clients that have opted-off the Pap Test Register (PTR) are not counted.

**Feasibility/value assessment**

Regular Pap tests every two years can prevent up to 90 per cent of the most common forms of cervical cancer.[1] Pap tests can detect abnormal cervical cells before they become cancerous. This early detection provides women with a better chance of successful treatment. Population screening through regular Pap tests contributes to a significant reduction in cervical cancer incidence and mortality.[2]

To improve cervical screening services, the NSW CSP funds the cervical screening training of GPs and nurses, undertaken by Family Planning NSW, to increase their knowledge and upskill cervical screening techniques.

**Operational definition**

The proportion rates for the four provider types were derived by the NSW CSP from the number of tests for women aged 20–69 years who had a Pap test in the catchment area during 2015, as a percentage of total tests for women aged 20–69 years (based on geocoded address at time of test).

- Women health nurses (VHN)
- Gynaecologists
- General practitioners (GP)
- Other: provider numbers created by the NSW CSP for specific follow-up or reminder purposes.

**Sources:**

- Data: Screening information from the NSW Pap Test Register, Cancer Institute NSW.
- Population: Secure Analytics for Population Health Research and Intelligence (SAPHARI) projected population data for the designated years.
- Hysterectomy fractions: NSW Health Survey, NSW Ministry of Health.

**Evidence to support the indicator**

In NSW, general practitioners (GPs) are the primary sources in delivering the cervical screening service to the target population. The NSW CSP also funds the WHNs to provide screening services in local communities.

**Interpretation**

The PTR receives updates to the provider information from the Health Insurance Commission on a monthly basis. It also carries out routine quality assurance activities to maintain accurate and up-to-date provider information so that a quality follow-up and reminder service is achieved for the Program.

In Australia, Pap tests performed by practice nurses are reported using the Medicare provider number of the GP supervising the practice.[3] Therefore, not all GP-reported Pap tests were performed by a GP.

There are a number of women in NSW that are under screened or never screened. Barriers to screening are complex and include ease of access to providers, cost of visiting providers and gender of provider.

**References**

### Bowel screening indicators

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Annual bowel screening participation rate for NSW people aged 50–74</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent of the indicator</strong></td>
<td>Participation data from the National Bowel Cancer Screening Program (NBCSP or the Program) measure the number of persons participating in the screening test (faecal occult blood test (FOBT)). Therefore, the participation rate is the proportion of the eligible population invited who return a completed FOBT, by eligible age groups residing in the relevant catchment area (local health district (LHD), Primary Health Network (PHN) or Local Government Area (LGA)). This indicator demonstrates the degree to which the Program is achieving its primary objective to reduce bowel cancer incidence, morbidity and mortality. The indicator helps to identify relevant locations for implementation of interventions so that a significant reduction in incidence and mortality is achieved.</td>
</tr>
<tr>
<td><strong>Target population and setting</strong></td>
<td>The eligible population are persons aged 50, 55, 60 or 65 years registered with the Medicare program, or registered with a Department of Veterans Affairs gold card.</td>
</tr>
<tr>
<td><strong>Feasibility/value assessment</strong></td>
<td>Bowel cancer can develop without any early warning signs or symptoms. FOBTs can detect evidence of non-visible blood in the stool, a common sign of a bowel abnormality, such as adenoma or cancer. Biennial screening using FOBTs aims to identify individuals with signs of potential bowel abnormality, allowing earlier investigation by colonoscopy and earlier treatment for cancer or pre-cancerous lesion/s. The most useful indicator demonstrating the Program’s reach and effectiveness is the Program participation data.</td>
</tr>
<tr>
<td><strong>Operational definition</strong></td>
<td><strong>Numerator</strong>: Number of persons residing in the relevant catchment area who returned at least one screening test for analysis in the 24-month period reporting period. <strong>Denominator</strong>: Number of persons invited to screen through the NBCSP within the specified geographical boundaries. <strong>Sources</strong>: All bowel cancer screening data are provided by the NBCSP. <strong>Note</strong>: Participation data are calculated on the percentage of people invited to screen through the NBCSP in a 24-month period who returned at least one screening test for analysis.</td>
</tr>
<tr>
<td><strong>Evidence to support the indicator</strong></td>
<td>Refer to feasibility/value assessment.</td>
</tr>
<tr>
<td><strong>Interpretation</strong></td>
<td>All bowel cancer screening data are provided by the NBCSP. The following should also be noted: • All kits returned are analysed and processed by the Program. Invitees who are outside the target ages or did not live in Australia at the time of invitation are excluded from reported participation data. • Persons are counted only once in the reporting period. • The NBCSP is unable to exclude persons from the denominator who are unlikely to require screening, such as those with a previous diagnosis of bowel cancer, those who have had a colonoscopy in the past five years, or those who have completed a FOBT within the past two years, as they cannot reliably be identified. • Persons in the eligible population who had opted off the NBCSP (due to reasons such as having regular colonoscopies) or suspended their participation are included in participation data as many have progressed through the screening pathway before opting-off or suspending participation.</td>
</tr>
<tr>
<td>Indicator name</td>
<td>Proportion of positive FOBT results for NSW people aged 50–74, by follow-up status</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Intent of the indicator</strong></td>
<td>GP follow-up data from the National Bowel Cancer Screening Program (NBCSP or the Program) measure the proportion of participants in the Program who undertook the screening test (faecal occult blood test (FOBT)) returning a positive result and went on to have a follow up with a GP that was recorded by the register, against the total number who returned a positive result. The appropriate movement of people from participation to diagnostic assessment is a key indicator of the efficiency and impact of the program in reducing morbidity and mortality from colorectal cancer. While not all participants with a positive screen will necessarily undergo assessment, according to the Population Based Screening Framework (AHMAC 2008), systems should be in place to ensure timely follow-up to diagnostic assessment for individuals with a positive screening test. Assessment services should be managed in a way that provides equity of access to the relevant assessment services, regardless of geographic location, ethnicity or socioeconomic status. Annual monitoring of the diagnostic assessment rate by various stratifications may reveal emerging positive or negative trends that need to be investigated and rectified if necessary. To reduce the effect of any time lag between invitation, positive screen and diagnostic assessment, this indicator includes all those with a positive screen in the defined period, not all those invited in the defined period. This indicator demonstrates the degree to which the Program is achieving its primary objective to reduce bowel cancer incidence, morbidity and mortality. The indicator helps to identify relevant locations for implementation of interventions which increase adherence to the screening pathway through having a timely follow-up and diagnostic assessment.</td>
</tr>
<tr>
<td><strong>Target population and setting</strong></td>
<td>The eligible population are persons aged 50, 55, 60, 65, 70 or 74 years, registered with the Medicare program, or registered with a Department of Veterans Affairs gold card.</td>
</tr>
<tr>
<td><strong>Operational definition</strong></td>
<td><strong>Numerator</strong>: Number of persons residing in the catchment area (LHD, LGA or PHN) who in the 12-month reporting period had a GP follow-up visit recorded for a positive FOBT result from participating in the NBCSP. <strong>Denominator</strong>: Number of persons invited to screen through the NBCSP within the specified geographical boundaries (LHD, LGA or PHN) who returned a positive FOBT within the 12-month reporting period. <strong>Sources</strong>: All bowel cancer screening data are provided by the NBCSP.</td>
</tr>
<tr>
<td><strong>Interpretation</strong></td>
<td>• The NBCSP is unable to link a positive test result for a single person to their actual follow-up, which may occur in different reporting periods, so the number of positive screens in the reporting period are reported and the number of instances of a GP follow-up of a positive screen result are reported. • Reporting of follow-up by GPs is not mandatory so follow-up rates may be underestimated.</td>
</tr>
</tbody>
</table>
## Cancer treatment and service delivery indicators

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Self-assessed symptom scores for outpatients undergoing active treatment</th>
</tr>
</thead>
</table>

### Intent of the indicator
This indicator provides symptom profiles of people with cancer after visiting a public cancer outpatient clinic for active treatment.

### Target population and setting
Adults undergoing active cancer treatment, who visited a public outpatient cancer clinic during February and March 2015, and responded to the Bureau of Health Information’s (BHI’s) Outpatient Cancer Clinics Survey.[1]

### Feasibility/ value assessment
People with cancer visiting outpatient clinics during active treatment may experience physical and emotional symptoms that can interfere with their quality of life.[2] Symptom control is an important aspect of cancer care, so understanding symptom severity and variations across NSW can help to target improvement efforts.

### Operational definition
The Edmonton Symptom Assessment System (ESAS) is a tool for self-reporting symptom intensity, and was initially developed for palliative care patients with cancer. It consists of numerical rating scales for common symptoms of cancer and cancer treatments.°3° The ESAS represents ratings of respondents’ nine common symptoms on a 10-point rating scale of severity (i.e. ‘no pain’ to ‘worst possible pain’).

**Source:** Outpatient Cancer Clinics Survey, BHI, 2015. Results reproduced with permission from BHI. For more information about the survey sample, methodology and analyses, please visit BHI’s website: www.bhi.nsw.gov.au/

### Evidence to support the indicator
The ESAS has been successfully used with people with cancer across a wide range of settings and countries[4] and has been shown to be a valid and reliable instrument.[5]

### Interpretation
The scores on the ESAS were ratings of how a respondent was feeling at the time of completing the survey—approximately three months after their outpatient visit. Lower scores indicate better rating.

Local health districts (LHDs) are determined as significantly higher or lower, or no different to the NSW average. LHDs that are significantly different to the NSW average may warrant further attention.

### Interventions that may affect the indicator
Any interventions aimed at improving symptoms associated with a person’s cancer(s) and or treatment(s). Several studies have demonstrated that if a system assessment scale is used in routine care, more symptoms will be identified and addressed, resulting in improved outcomes for people with cancer.[6]

### References
### Indicator name
**Shared decision-making among patients that received chemotherapy, radiotherapy or surgery**

### Intent of the indicator
This indicator measures and reports on patients’ ratings of shared decision-making.

### Target population and setting
The results included in this indicator were from two survey samples of patients that received chemotherapy, radiotherapy or surgery:

1. Adults undergoing active cancer treatment who visited a public outpatient cancer clinic during February and March 2015 and responded to the Bureau of Health Information's (BHI’s) Cancer Outpatient Cancer Clinics Survey.[1]
2. Adults who were discharged from a public hospital following an inpatient admission between January 2014 and June 2014 (inclusive) and responded to BHI’s Adult Admitted Patient Survey.[2]

### Feasibility/value assessment
Shared decision-making is an important part of treatment and care. It is a collaborative process that allows patients and health professionals to explore different options for treatment and care together, taking into consideration patients’ values and preferences, along with available evidence.[3]

### Operational definition
**Outpatients shared decision-making survey items:**
- Were you involved, as much as you wanted to be, in decisions about your care and treatment?
- Do you have a care plan for your cancer treatment (a care plan is a document that sets out your needs and goals for the treatment and management of your cancer)?
- Were you asked for your ideas and preferences when developing this plan?

**Source:** Outpatient Cancer Clinics Survey, BHI, 2015.
Results reproduced with permission from BHI. For more information about the survey sample, methodology and analyses, please visit the BHI’s website: www.bhi.nsw.gov.au/

**Inpatient shared decision-making survey items:**
- Were you involved, as much as you wanted to be, in decisions about your care and treatment?

**Source:** Adult Admitted Patient Survey, BHI, 2014.
Results reproduced with permission from BHI. For more information about the survey sample, methodology and analyses, please visit BHI’s website: www.bhi.nsw.gov.au/
Results for the Adult Admitted Patient Survey were weighted by facility, cancer flag, admission type (overnight/same day) and age group.

### Evidence to support the indicator
Most people with cancer want to be involved in decision-making about their treatment and care.[4] Davidson and colleagues identified the facilitation of shared decision-making as a key enabler to effective treatment.[5] Evidence also suggests that consumer participation can lead to better quality of care and improved health outcomes for patients.[6]

### Interpretation
Relative to other themes, people with cancer were less positive when asked about shared decision-making. Local health districts (LHDs) are determined as significantly higher or lower, or no different to the NSW average. LHDs that are significantly different to the NSW average may warrant further attention.

### Interventions that may affect the indicator
Interventions aimed to promote and facilitate shared decision-making in NSW cancer care.

### References
<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Information to support patients that received chemotherapy, radiotherapy or surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent of the indicator</strong></td>
<td>This indicator measures and reports on patients’ ratings of information provided to them during the course of their treatment.</td>
</tr>
</tbody>
</table>
| **Target population and setting** | The results included in this indicator were from two survey samples of patients that received chemotherapy, radiotherapy or surgery:  
1. Adults undergoing active cancer treatment who visited a public outpatient cancer clinic during February and March 2015 and responded to the Bureau of Health Information’s (BHI’s) Cancer Outpatient Cancer Clinics Survey.[1]  
2. Adults who were discharged from a public hospital following an inpatient admission between January 2014 and June 2014 (inclusive) and responded to BHI’s Adult Admitted Patient Survey.[2] |
| **Feasibility/value assessment** | High quality cancer care ensures that a wide range of information is given to patients. Information provision can help a patient to better engage with their care and treatment. People with cancer want to be informed about their condition and treatment in an understandable way.[3] However, this is not always achieved.[4] |
| **Operational definition** | **Outpatients information provision survey items:**  
• Did the health professionals explain things in a way you could understand?  
• Did a health professional at the clinic tell you about medication side effects to watch for?  
• Were you given enough information about how to manage the side effects of any other treatment you received during this visit?  
**Source:** Outpatient Cancer Clinics Survey, BHI, 2015.  
Results reproduced with permission from BHI. For more information about the survey sample, methodology and analyses, please visit BHI’s website: www.bhi.nsw.gov.au/  
**Inpatient information provision items:**  
• Did health professionals explain things in a way you could understand?  
• [For those who were given or prescribed any new medication to take home] Did a health professional in the hospital tell you about medication side effects to watch for?  
**Source:** Adult Admitted Patient Survey, BHI, 2014.  
Results reproduced with permission from BHI. For more information about the survey sample, methodology and analyses, please visit BHI’s website: www.bhi.nsw.gov.au/  
Results for the Adult Admitted Patient Survey were weighted by facility, cancer flag, admission type (overnight/same day) and age group. |
| **Evidence to support the indicator** | Appropriate information provided at the required time has been recognised as a key factor in enabling patients to cope with a diagnosis of cancer[5], and the associated symptoms and treatment. In a cohort of cancer survivors, higher levels of information satisfaction have been associated with fewer consequences of disease and illness concern, and positive associations with global health.[6] |
| **Interpretation** | Local health districts (LHDs) are determined as significantly higher or lower, or no different to the NSW average. LHDs that are significantly different to the NSW average may warrant further attention. |
| **Interventions that may affect the indicator** | Initiatives to improve the quality of information provided to people with cancer across the care continuum. |
Indicator name: Self-efficacy scores for outpatients undergoing active treatment

**Intent of the indicator**
This indicator provides the levels of self-efficacy of adults with cancer after visiting a public cancer outpatient clinic for active treatment, during February and March 2015.

**Target population and setting**
Adults undergoing active cancer treatment that visited a public outpatient cancer clinic during February and March 2015 and responded to the Bureau of Health Information’s (BHI’s) Cancer Outpatient Cancer Clinics Survey.[1]

**Feasibility/value assessment**
Self-efficacy has been identified as an important determinant of health behaviour, change and maintenance.[2]

**Operational definition**
The Communication and Self-Efficacy Scale for cancer (CASE-cancer) was developed as a tool to gauge patient’ self-efficacy.[3] The CASE-cancer tool assesses three dimensions: maintaining a positive attitude; understanding and participating in care; and seeking and obtaining information. The CASE-cancer has a four-scale response option: ‘strongly disagree’, ‘slightly disagree’, ‘slightly agree’ and ‘strongly agree’. 

Source: Outpatient Cancer Clinics Survey, BHI; 2015.
Results reproduced with permission from BHI. For more information about the survey sample, methodology and analyses, please visit BHI’s website: www.bhi.nsw.gov.au.

**Evidence to support the indicator**
Greater self-efficacy for coping with cancer has been associated with improved patient outcomes.[4]

**Interpretation**
To compare results across local health districts (LHDs) and hospitals, the CASE-cancer statements were aggregated into three themes and results translated into scores. Higher scores indicate better ratings. LHDs are determined as significantly higher or lower, or no different to the NSW average. LHDs that are significantly different to the NSW average may warrant further attention.

**Interventions that may affect the indicator**
Interventions or information that aims to enhance self-efficacy in people with cancer.

**References**

Indicator name: Public and private hospital inflows and outflows (for breast and colon cancer)

**Intent of the indicator**
To summarise the flow of people for cancer surgery between local health districts (LHDs), and the public and private health systems.

**Target population and setting**
All people undergoing cancer surgery for breast and colon cancer in NSW and ACT public and private hospitals, and NSW residents undergoing surgery in interstate hospitals.

**Feasibility/value assessment**
Formal system performance analysis for cancer surgery is a continuous process.

**Operational definition**
**Inflow**: The number of resections of the specified cancer in public hospitals in an LHD on residents of another LHD.

**Outflow**: The number of resections of the specified cancer for residents of an LHD in public or private hospitals outside that LHD. Interstate hospital data for NSW residents undergoing surgery are available up to (and including) the 2013/14 financial year. The estimates for the 2014/15 financial year interstate hospital data are provided by the Ministry of Health and are based on the 2013/14 data.

Source: Combined Admitted Patient Epidemiology Data (CAPED); Secure Analytics for Population Health Research and Intelligence (SAPHaRI), Centre for Epidemiology and Evidence, NSW Ministry of Health. Refer to Appendix 4.3 for surgical resection and cancer codes.
Appendices

Indicator name: Proportion of breast cancer resections with sentinel lymph node biopsy and axillary node dissection

**Intent of the indicator**
Sentinel lymph node biopsy (SLNB) is recommended for women with early-stage breast cancer with clinically negative nodes to determine if axillary lymph node dissection (AND) is necessary.[1] This indicator measures the proportion of women who have had surgery for invasive breast cancer that have undergone SLNB and/or AND.

**Target population and setting**
The target population is women undergoing resection for invasive breast cancer who have not previously had breast resection surgery in NSW public and private hospitals. Resections at Albury Base Hospital have not been included in this report as this hospital reports services to the Victorian Department of Health.

**Feasibility/value assessment**
An evaluation of the implementation of SLNB in Australia found that best practice guidelines were widely adopted.[2] There was, however, evidence of variation in the use of SLNB for women with early-stage breast cancer. There is the potential to increase the use of SLNB, which could decrease morbidity associated with the management of axillary lymph nodes for women with breast cancer.

**Operational definition**
**Numerator:**
1. Number of women who have SLNB (Australian Classification of Health Interventions [ACHI] procedure code 30300-00) without AND (ACHI 30335-00, 30336-00).
2. Number of women who have SLNB with AND in the breast resection episode.
3. Number of women who have SLNB with AND in a subsequent episode within three months of the breast resection episode.
4. Number of women who have AND at the time of resection or within three months without SLNB.

**Denominator:** Number of women undergoing breast resection (ACHI codes 31518-00, 31518-01, 31524-00, 31524-01, 31500-00, 31515-00) for primary invasive breast cancer (ICD-10-AM C50) who have not previously undergone breast resection surgery.

**Source:** Admitted Patient, Emergency Department Attendance and Deaths Register (APEDDR); Secure Analytics for Population Health Research and Intelligence (SAPHaRI), Centre for Epidemiology and Evidence, NSW Ministry of Health. Record linkage was carried out by the Centre for Health Record Linkage: CHReL.org.au

**Evidence to support the indicator**
Randomised clinical trials comparing SLNB, followed by axillary lymph node dissection if sentinel nodes were positive, have reported reduced arm morbidity and improved quality of life compared with axillary lymph node dissection.[3,4]

**Interpretation**
Not all women are eligible for SLNB. SLNB should be offered as an alternative to AND for women with unifocal tumours ≤3cm with clinically negative nodes.[1] SLNB is not recommended for women with clinically or pathologically positive nodes, and there is limited evidence on SLNB use for tumours >3cm and multifocal tumours.

**Interventions that may affect the indicator**
SLNB should be performed by an appropriately trained surgeon with access to the full range of multidisciplinary services.[1] The availability of an experienced sentinel node biopsy team, and access to nuclear medicine facilities at a hospital, may affect the proportion of women receiving SLNB.

**References**
<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Mastectomy as a proportion of breast cancer resections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent of the indicator</td>
<td>Early, localised invasive breast cancer can be treated with either mastectomy or breast-conserving surgery and radiotherapy with equivalent survival outcomes in many instances. Breast-conserving surgery can provide better cosmetic results and has shown quality of life benefits. This indicator measures variation in the proportion of women undergoing mastectomy for invasive breast cancer.</td>
</tr>
<tr>
<td>Target population and setting</td>
<td>The target population is women undergoing resection for invasive breast cancer who have not previously had breast resection surgery in NSW public and private hospitals. Resections at Albury Base Hospital have not been included in this report as this hospital reports services to the Victorian Department of Health.</td>
</tr>
<tr>
<td>Feasibility/value assessment</td>
<td>Recent estimates indicate that the majority of women with invasive breast cancer in Australia are treated with breast-conserving surgery (61%) rather than mastectomy. Treatment by mastectomy varied by remoteness of residence and by surgeon caseload, with women in more remote areas of Australia and those with a lower caseload surgeon more likely to have a mastectomy. This suggests variation in access to breast-conserving surgery among eligible women. Certain clinical characteristics, such as multifocal or advanced disease, diffuse micro-calcifications, and prior radiotherapy, indicate use of mastectomy rather than breast-conserving surgery.</td>
</tr>
</tbody>
</table>
| Operational definition | **Numerator:** Number of women who have a mastectomy (Australian Classification of Health Interventions [ACHI] procedure codes 31518-00, 31518-01, 31524-00, 31524-01).  
**Denominator:** Number of women undergoing breast resection (mastectomy codes above and breast-conserving surgery ACHI codes 31500-00, 31515-00) for primary invasive breast cancer (ICD-10-AM C50) who have not previously undergone breast resection surgery.  
**Source:** Admitted Patient, Emergency Department Attendance and Deaths Register (APEDDR); Secure Analytics for Population Health Research and Intelligence (SAPHaRI), Centre for Epidemiology and Evidence, NSW Ministry of Health. Record linkage was carried out by the Centre for Health Record Linkage: www.CHeReL.org.au |
<p>| Evidence to support the indicator | Equivalent long-term survival outcomes for early invasive breast cancer treated by mastectomy and breast-conserving surgery with radiotherapy have been demonstrated by randomised controlled trials and observational studies. Better quality of life and greater satisfaction with treatment have been demonstrated following breast-conserving surgery. However, there is evidence that breast-conserving surgery has a higher risk of local recurrence of breast cancer. |
| Interpretation | Variation in the proportion of women with invasive breast cancer treated by mastectomy may indicate inequality of access to breast-conserving surgery and adjuvant radiotherapy. It may also arise due to variation in the distribution of clinical characteristics that indicate mastectomy. Additionally, this indicator may be affected by patient preference with a proportion of women eligible for breast-conserving surgery choosing mastectomy. |
| Interventions that may affect the indicator | Increases in breast screening rates, changes in the population screened, and the sensitivity of screening tools could affect the stage at which breast cancers are detected. Earlier detection may reduce initial treatment by mastectomy. |</p>
<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Proportion of early-stage breast cancer patients receiving standard or hypofractionated regimens of external beam radiotherapy (EBRT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent of the indicator</td>
<td>An Australian clinical practice guideline states that hypofractionated EBRT can be offered as a suitable alternative to conventionally fractionated EBRT for women aged 50 years and over with stage T1-2 N0 M0, low to intermediate grade breast cancer who have undergone breast conserving-surgery with clear surgical margins.[2] This indicator measures variation in hypofractionated EBRT for early breast cancer.</td>
</tr>
<tr>
<td>Target population and setting</td>
<td>All women undergoing EBRT for early-stage breast cancer in the NSW public health system.</td>
</tr>
<tr>
<td>Feasibility/value assessment</td>
<td>Hypofractionated EBRT has equal or better efficacy and safety as conventionally fractionated EBRT for the treatment of early-stage breast cancer. Internationally, evidence shows that on average &lt;40% of eligible women receive hypofractionated EBRT.[3-6] The cost of EBRT delivery is 22–40% lower for hypofractionated regimens compared with conventional regimens. More people could be treated with existing EBRT resources if all eligible people received hypofractionated regimens rather than conventional regimens.[4-5, 13-15] Increased uptake of hypofractionated RT among eligible people could reduce healthcare costs and enable more people to be treated with existing RT resources.</td>
</tr>
</tbody>
</table>
| Operational definition | This indicator measures the use of hypofractionated radiotherapy at an LHD level, as well as variation by median age and caseload, for first courses of EBRT, between 2008 and 2012, for women diagnosed between 2007 and 2012.  
**Numerator**: Number of women with early-stage* breast cancer who received EBRT with dose per fraction of 1.8–2.0 Gy (“standard fractionation” regimen), or greater than 2.0 Gy (“hypofractionated” regimen).  
**Denominator**: Number of women with early-stage* breast cancer who received EBRT with dose per fraction of 1.8 Gy or more.  
**Source**: NSW Clinical Cancer Registry.  
*Early-stage breast cancer is defined as ICD-O-3 C50 and TNM stage I or IIA. Cases may include node positive early-stage breast cancer as information on lymph node involvement was incomplete. |
| Evidence to support the indicator | Recent publications confirm that hypofractionated radiotherapy has equal or better efficacy, as measured by survival, mortality and recurrence rates, as conventionally fractionated EBRT for women with early-stage breast cancer.[7-12] Women who received hypofractionated EBRT experienced similar late toxicity rates and, in some cases, fewer breast symptoms, as women who received conventional RT regimens.[7, 10-11] |
| Interpretation | Not all women are eligible for hypofractionated EBRT. Hypofractionation can be offered as a suitable alternative to conventionally fractionated EBRT for women aged 50 years and over with stage T1-2 N0 M0, low to intermediate grade breast cancer who have undergone breast-conserving surgery with clear surgical margins.[2] |
References


## Indicator name
Proportion of patients with bone metastases receiving single or multiple fraction regimens of external beam radiotherapy with palliative treatment intent

### Intent of the indicator
External beam radiotherapy (EBRT) is the recommended treatment for uncomplicated painful bone metastases. There is evidence that demonstrates single fraction regimens result in good pain management, but multiple fraction regimens lead to lower incidence of re-treatment due to pain and pathological fracture.[1,2]

This indicator measures variation in single and multiple fraction regimens for bone metastases.

### Target population and setting
All people undergoing radiation for bone metastases of any origin in the NSW public health system.

### Feasibility/value assessment
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.[3,4] Factors including location of centre and centre type were independently predictive of the use of single fraction radiotherapy.[3] This suggests variation in access to single fraction radiotherapy for eligible patients. There is potential to increase the use of single fraction radiotherapy, resulting in more convenient treatment for people and increased cost-effectiveness for radiotherapy departments.

### Operational definition
This indicator measures the proportion of patients receiving single and multiple radiation fractions for bone metastases at a local health district (LHD) level, as well as variation by median age and caseload.

**Numerator:** Number of people treated with palliative EBRT for bone metastases with a single fraction; between two and five fractions; and greater than five fractions.

**Denominator:** Number of people treated with palliative EBRT for bone metastases.

**Source:** Enhanced Radiation Oncology Data (EROD).

Public facilities included in EROD data extraction:
- Central Coast Cancer Centre
- Crown Princess Mary Cancer Centre
- Illawarra Cancer Care Centre
- Liverpool Cancer Therapy Centre
- Macarthur Cancer Therapy Centre
- Nepean Cancer Care Centre
- Northern Sydney Cancer Centre
- Prince of Wales Hospital
- Shoalhaven Cancer Care Centre
- Sydney Cancer Centre

### Evidence to support the indicator
Both single and multiple fraction regimens provide equivalent pain relief in the treatment of bone metastases. Single fraction regimens can be beneficial to the patient and healthcare system by providing more convenient treatment and being more cost effective; however, higher re-treatment rates occur in those who receive single fractions.[2]

### Interpretation
Variation in the proportion of patients with bone metastases treated by more than five radiation fractions may indicate inequality of access to evidence-based care, variation in the distribution of clinical characteristics that indicate the use of this treatment and patient preference.

### References
**Research: Clinical trials indicators**

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Number of recruiting cancer clinical trials, by trial category</th>
</tr>
</thead>
</table>

**Intent of the indicator**

This indicator is intended to quantify the number of recruiting cancer clinical trials conducted within a local health district (LHD) and the proportion of recruiting trials by trial category.

**Target population and setting**

All clinical trial units conducting cancer clinical trials within the LHD. Current data collection includes those units in receipt of any proportion of Cancer Institute NSW Cancer Trial Staff Grant funding. The Program is encouraging LHDs to include data collection from all units within an LHD conducting cancer clinical trials irrespective of any Institute funding. Improved data coverage will lead to a NSW census of cancer clinical trial activity.

**Feasibility/value assessment**

The indicator seeks to report the number of trials and trial categories to describe the availability of trials for their patient population.

The indicator is feasible and has been collected and reported annually by LHDs and trial units as part of the NSW Clinical Trials Program since 2004.

**Operational definition**

**Recruiting cancer clinical trials**: Number of interventional cancer clinical trials open to recruitment within the LHD in the reporting period.

**Open to recruitment**: An interventional cancer clinical trial at a site within the LHD that has a recruitment open date less than the last day of the report period and no recruitment closed date or a recruitment closed date greater than the first day of the report period.

**Recruitment open date**: The date that a unit has received site authorisation and (if applicable) a site initiation visit for that trial.

**Recruitment closed date**: The last day that a site is able to enrol new patients based on direct advice from a sponsor, or due to reaching their target accrual.

If the trial is open at multiple sites within the LHD, the trial will be counted only once based on at least one of the sites being open to recruitment for the period.

Only interventional cancer clinical trials are included.

Trial categories include:

- **Portfolio-compliant**
- **Non-portfolio (non-industry)**
- **Non-portfolio (industry)**

Portfolio-compliant trials are those to which Cancer Institute NSW Cancer Trial Staff Grant funded resources can be directed. They are high quality, industry independent trials that comply with a defined set of principles and criteria. The criteria were originally developed and approved in March 2012* in consultation with the Cancer Institute NSW-facilitated Clinical Researchers Leaders Group.

The Portfolio criteria are divided into three categories:

**Category 1**: Prospective, interventional controlled cancer clinical trials. Criteria include:

1. The trial is prospective, interventional and controlled.
2. The trial has been peer reviewed.
3. The trial has scientific and ethical approval.
4. The trial data are owned by the industry-independent sponsor for analysis and dissemination.
5. The industry-independent sponsor intends to publish the results of the trial in peer-reviewed literature.
6. The trial will contribute new knowledge which will influence clinical practice.
7. The trial is listed on a recognised clinical trials register prior to the enrolment of participants.

**Category 2**: Prospective, interventional, non-controlled, cancer clinical trials that meet all the Category 1 criteria (2–7), and are either Phase 2 or 3 and have a cooperative group sponsor.

**Category 3**: Palliative care mixed patient population trials that meet all of Category 1 criteria and have planned inclusion of >80% people with cancer.


Non-portfolio trials are those that are not compliant with the defined Portfolio criteria and are subsequently categorised as either industry or non-industry sponsored.

**Source**: NSW Clinical Trials Portal.

*These criteria have been updated in 2016.
Evidence to support the indicator

While the purpose of conducting clinical trials is building an evidence base and contributing knowledge to improve future treatments and clinical approaches, there is increasing evidence that patients participating in clinical trials have improved outcomes over those who do not participate in trials. This has been demonstrated in breast cancer[1], testicular cancer[2], non-small cell lung cancer[3], colorectal cancer[4] and childhood leukaemia.[5]

The National Health and Medical Research Council (NHMRC) guidelines for the prevention, early detection and management of colorectal cancer note that patients enrolled on clinical trials may have improved outcomes over those not included in such trials and recommends that eligible patients are encouraged to participate in appropriate clinical trials.[6]

Interpretation

A range of suitable trials open within a given time period will indicate better patient access. This indicator should be interpreted as a broad guide to clinical trial access in the relevant area for particular patient groups. Some caution should be exercised in interpreting this directly as an indication of patient access to clinical trials as:

• trials may have very specific eligibility and exclusion requirements within a tumour grouping
• patient access will require both patient and clinician awareness of trials, which is not measured within this indicator.

Additionally, clinical trial availability is often cyclical, suggesting that trends over multiple report periods will provide the most meaningful measure of trial activity rather than focusing on one period alone. The comparisons between tumour groups and areas should take into account the relative differences in cancer burden as indicated by cancer incidence and mortality statistics.

Interventions that may affect the indicator

The ability to open new trials for recruitment is determined by a number of internal factors including: clinician involvement in clinical trials and clinical trial cooperative research groups; dedicated clinical trial workforce; availability of facilities and equipment; ethics and research governance processes and timelines.

Additionally, a number of external factors will impact this indicator including, but not limited to, economic factors and the relative cost of conducting trials in NSW; and the availability of new drugs/molecules for particular indications.

References


Indicator name

Ratio of newly-enrolled participants to cancer incidence (per 100 cases)

<table>
<thead>
<tr>
<th>Intent of the indicator</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• To monitor the proportional participation of patients in cancer clinical trials relative to incidence within the local health districts (LHDs).</td>
<td></td>
</tr>
<tr>
<td>• Enable the detection of trends within an LHD/Clinical Trial Unit with regards to patient population participation by clinical group.</td>
<td></td>
</tr>
<tr>
<td>• Identify under-represented clinical groups.</td>
<td></td>
</tr>
</tbody>
</table>

Target population and setting

All Clinical Trial Units within an LHD in receipt of any funding through the Cancer Institute NSW Cancer Trial Staff Grant Program currently report data to the Institute. Activity data reported against this indicator may not include all cancer clinical trial activity within an LHD. The target would be for all Clinical Trials Units within an LHD to report data irrespective of funding, leading to a more comprehensive statewide data set.
Feasibility/value assessment

The indicator seeks to encourage LHDs to embrace cancer clinical trials as an important part of quality cancer care. By reporting across tumour and trial categories it will enable the LHD to strategically assess the availability of trials for their patient population and better plan clinical trial workload.

The indicator is feasible. Ideally, this indicator would take into account actual patient load within the LHD and provide an overview of patient participation in clinical trials. Accurate estimates of patient load are not available at this time at an LHD level.

Other jurisdictions, such as the UK, have used similar indicators based on cancer incidence as a proxy for patient participation.

Operational definition

Numerator: Number of new enrolments across Clinical Trial Units within the LHD for the report period.

Denominator: Number of incident cancer cases for the LHD for that report period (if available, otherwise most recently published incidence data will be used—currently 2012).

Sources:

• NSW Clinical Trials Portal.
• NSW Cancer Registry.

Evidence to support the indicator

While the purpose of conducting clinical trials is in building an evidence base and contributing knowledge to improve future treatments, there is increasing evidence that patients participating in clinical trials have improved outcomes over those who do not participate in trials. This has been demonstrated in breast cancer[1], testicular cancer[2], non-small cell lung cancer[3], colorectal cancer[4], and childhood leukaemia. [5]

The National Health and Medical Research Council (NHMRC) guidelines for the prevention, early detection and management of colorectal cancer note that patients enrolled on clinical trials may have improved outcomes over those not included in such trials and recommends that eligible patients are encouraged to participate in appropriate clinical trials.[6]

Having widespread representation of the population is also important in ensuring that new drugs, treatments and interventions are safe and effective for the entire population. There have been demonstrated correlations between low representation in clinical trials in some population groups and lower improvements in survival within these groups over time.[7]

Interpretation

- Comparing the percentage of patients enrolled in clinical trials across an LHD could highlight an opportunity for enhanced efforts in encouraging clinical trial participation.
- It provides the opportunity to identify variations across LHDs and across tumour streams.
- Data are not available to calculate the actual clinical trial participation or accrual rate for all people with cancer. It is therefore an accepted proxy performance indicator of trial activity using the availability of incidence data.
- This indicator takes into account the place of residence of incident cancer cases, not the place of treatment. Consideration will need to be given to patient infl ow and outfl ow from the LHD in order to assess how reasonable this is as a proxy for the patient population. For some types of cancer with smaller incidence and/or specialised treatment, it may be reasonable and/or preferable to refer patients to other centres outside of the LHD to participate in clinical trials.

Interventions that may affect the indicator

Performance against this indicator is reliant on the availability of trials suitable for the population within the area. Strategic selection of appropriate and feasible trials will aid recruitment. Additionally, trial participation will be dependent on internal factors such as clinician involvement and awareness of clinical trials, clinical trial cooperative research groups, and a dedicated clinical trial workforce.

External barriers will include factors such as patient perceptions and awareness of clinical trials and restrictive eligibility criteria imposed by trial sponsors.

References

## Indicator name: Median calendar days from Research Governance Office (RGO) submission to RGO authorisation

### Intent of the indicator
- To monitor the time taken to receive RGO authorisation across LHDs, and to identify instances of excessive delay between RGO submission and RGO authorisation.
- To highlight variations in authorisation timeframes across LHDs.

### Target population and setting
All Clinical Trial Units within an LHD in receipt of any funding through the Cancer Institute NSW Cancer Trial Staff Grant Program currently report data to the Institute. Activity data reported against this indicator may not include all cancer clinical trial activity within an LHD. The target would be for all Clinical Trials Units within a LHD to report data irrespective of funding, leading to a more comprehensive statewide data set.

### Feasibility/value assessment
RGO authorisation and submission dates have only been reported to the Cancer Institute NSW since 2013. Calculation of calendar days between submission and authorisation is only possible for trials that received authorisation in this period. For all trials where an authorisation date was recorded, a submission date must also be retrospectively entered.

This measure does not take into account ‘business days’ or days in which clarification may have been sought from the applicant. However, it does provide a useful overview of the variations between LHDs in the timeliness of this process.

### Operational definition
- Median calendar days for the LHD of RGO authorisation date to RGO submission date for all trial instances with RGO authorisation dates entered into the Clinical Trial Portal within the report period.
- Only interventional cancer clinical trials are included. Trials that target non-cancer populations or non-malignant cancers are excluded.
- Trial instances are used rather than unique recruiting cancer clinical trials, as RGO authorisation must occur at every site and not once for the LHD. One trial may be open at multiple sites within the LHD.

**Source:** NSW Clinical Trials Portal.

### Evidence to support the indicator
Median number of days to approval is a standard measure used by ethics committees to monitor timeliness of review. Site Specific Assessments (SSA) must occur in all public sites within NSW in addition to seeking ethical approval for the trial. The SSA process ensures the site has appropriate staff, facilities, legal, contractual and other governance requirements in place in order to carry out the trial.

This process is essential in maintaining good research governance, but it can also delay the start of a trial if not carried out efficiently and in a timely manner.

### Interpretation
This indicator is based only on trials that were reported as gaining RGO authorisation in the report period.

For some LHDs this may include only a small number of trials. A degree of caution should be taken in interpreting this indicator for a small number of trials.

A controlled clinical trial is one defined as a clinical trial that includes an active comparator (control) group. The comparator group receives a placebo, another treatment/intervention or no treatment/intervention at all.
Appendix 3:  
Cancer prevention data

Proportion of women who smoked during pregnancy, by LHD, 2010 and 2014

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>All women</th>
<th></th>
<th>Non-Aboriginal women</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
<td>2010</td>
<td>2014</td>
<td>2010</td>
</tr>
<tr>
<td>Central Coast LHD</td>
<td>12.7</td>
<td>16.0</td>
<td>11.2</td>
<td>15.0</td>
</tr>
<tr>
<td>Far West LHD</td>
<td>33.9</td>
<td>28.0</td>
<td>25</td>
<td>21.5</td>
</tr>
<tr>
<td>Hunter New England LHD</td>
<td>16.2</td>
<td>17.8</td>
<td>13.5</td>
<td>15.2</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD</td>
<td>13.6</td>
<td>12.5</td>
<td>12.1</td>
<td>11.3</td>
</tr>
<tr>
<td>Mid North Coast LHD</td>
<td>18.0</td>
<td>19.5</td>
<td>14.4</td>
<td>15.7</td>
</tr>
<tr>
<td>Murrumbidgee LHD</td>
<td>17.1</td>
<td>18.2</td>
<td>14.3</td>
<td>16.4</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD</td>
<td>12.7</td>
<td>14.1</td>
<td>11.7</td>
<td>13.3</td>
</tr>
<tr>
<td>Northern NSW LHD</td>
<td>14.6</td>
<td>17.6</td>
<td>11.6</td>
<td>15.2</td>
</tr>
<tr>
<td>Northern Sydney LHD</td>
<td>1.5</td>
<td>1.7</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>South Eastern Sydney LHD</td>
<td>2.9</td>
<td>3.3</td>
<td>2.6</td>
<td>3.1</td>
</tr>
<tr>
<td>Southern NSW LHD</td>
<td>21.1</td>
<td>21.0</td>
<td>18.8</td>
<td>19.3</td>
</tr>
<tr>
<td>South Western Sydney LHD</td>
<td>8.7</td>
<td>15.3</td>
<td>8.2</td>
<td>14.8</td>
</tr>
<tr>
<td>Sydney LHD</td>
<td>3.1</td>
<td>7.9</td>
<td>2.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Western NSW LHD</td>
<td>22.1</td>
<td>22.3</td>
<td>17</td>
<td>17.6</td>
</tr>
<tr>
<td>Western Sydney LHD</td>
<td>7.2</td>
<td>7.3</td>
<td>6.3</td>
<td>6.6</td>
</tr>
<tr>
<td><strong>NSW</strong></td>
<td><strong>9.3</strong></td>
<td><strong>11.2</strong></td>
<td><strong>7.8</strong></td>
<td><strong>10.0</strong></td>
</tr>
</tbody>
</table>

Notes:
1. Differences between 2014 and 2010 adult smoking rates should not be interpreted as a change in trend. Data between years may be subject to random variation.
2. 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.
3. Actual estimates are shown in this table.
Current smoking prevalence in young people*, by LHD (ranked), 2014

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Proportion</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunter New England LHD</td>
<td>2.8</td>
<td>0.9–4.8</td>
</tr>
<tr>
<td>Murrumbidgee LHD</td>
<td>4.9</td>
<td>1.2–8.5</td>
</tr>
<tr>
<td>Southern NSW LHD</td>
<td>4.9</td>
<td>1.2–8.5</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD</td>
<td>5.4</td>
<td>2.8–7.9</td>
</tr>
<tr>
<td>Western Sydney LHD</td>
<td>5.4</td>
<td>2.8–7.9</td>
</tr>
<tr>
<td>Far West LHD</td>
<td>5.8</td>
<td>1.8–9.8</td>
</tr>
<tr>
<td>Western NSW LHD</td>
<td>5.8</td>
<td>1.8–9.8</td>
</tr>
<tr>
<td>Central Coast LHD</td>
<td>6.0</td>
<td>3.3–8.7</td>
</tr>
<tr>
<td>Northern Sydney LHD</td>
<td>6.0</td>
<td>3.3–8.7</td>
</tr>
<tr>
<td>South Western Sydney LHD</td>
<td>8.0</td>
<td>4.5–11.6</td>
</tr>
<tr>
<td>Mid North Coast LHD</td>
<td>9.6</td>
<td>4.0–15.3</td>
</tr>
<tr>
<td>Northern NSW LHD</td>
<td>9.6</td>
<td>4.0–15.3</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD</td>
<td>10.7</td>
<td>7.0–14.3</td>
</tr>
<tr>
<td>South Eastern Sydney LHD</td>
<td>10.7</td>
<td>7.0–14.3</td>
</tr>
<tr>
<td>Sydney LHD</td>
<td>10.7</td>
<td>7.0–14.3</td>
</tr>
<tr>
<td><strong>NSW</strong></td>
<td><strong>6.7</strong></td>
<td><strong>5.5–7.9</strong></td>
</tr>
</tbody>
</table>

* Persons aged 12 to 17 years.

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. Actual estimates are shown in this table.
3. As a result of survey design, some LHDs were grouped for data collection and reporting. These LHDs are shown separately on the table above but the same (grouped) result is reported.
## 4.1 Hospitals sampled in the Admitted Patient Survey (conducted by BHI)

<table>
<thead>
<tr>
<th>Central Coast</th>
<th>Murrumbidgee</th>
<th>South Western Sydney</th>
</tr>
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<tbody>
<tr>
<td>• Gosford Hospital</td>
<td>• Deniliquin Health Service</td>
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<tr>
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<tr>
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<td></td>
<td></td>
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<tr>
<td>• Tamworth Base Hospital</td>
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<td></td>
</tr>
<tr>
<td>• Royal Hospital for Women</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• St George Hospital</td>
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<td></td>
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<tr>
<td>• Sutherland Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Sydney/Sydney Eye Hospital</td>
<td></td>
<td></td>
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<td>• Westmead Hospital</td>
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# 4.2 Patient-reported measures data

### Self-assessed symptom scores* for outpatients undergoing active cancer treatment in NSW public hospitals at time of survey, by LHD, 2015

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Anxiety</th>
<th>Poor appetite</th>
<th>Breathlessness</th>
<th>Depression</th>
<th>Drowsiness</th>
<th>Poor wellbeing</th>
<th>Nausea</th>
<th>Pain</th>
<th>Tiredness</th>
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<td>2.2</td>
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<tr>
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<td>4.0</td>
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<td></td>
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<td></td>
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<tr>
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<td>2.2</td>
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<td>1.4</td>
<td>2.2</td>
<td>4.4</td>
</tr>
</tbody>
</table>


**Notes:**
1. Data source: Outpatient Cancer Clinic Survey, 2015 (pre-release data supplied by Bureau of Health Information).
2. ESAS results (scores) are strongly influenced by patient case mix, patient demographics, cancer type and stage of cancer journey. The 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’).
3. Outpatient level data were not available at the time of sampling for the following LHDs: Far West, Murrumbidgee, Southern NSW and Hunter New England.
4. The number of respondents for Western NSW LHD was too small to report, but results were included in NSW figures.
5. Lower scores reflect better patient outcomes. Illawarra Shoalhaven, Mid North Coast, Northern Sydney and Western Sydney LHDs were significantly lower than NSW for outpatients in at least one of the nine symptoms assessed.
Shared decision-making among patients that received chemotherapy, radiotherapy or surgery in NSW public hospitals, by LHD, 2015*

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Inpatient</th>
<th>Outpatient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'Definitely' involved in decisions about care and treatment</td>
<td>'Definitely' asked for ideas and preferences when developing cancer care plan</td>
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<td>Central Coast LHD</td>
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<td>Hunter New England LHD</td>
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<td>Southern NSW LHD</td>
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<td></td>
</tr>
<tr>
<td>St Vincent's Health Network</td>
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<td></td>
</tr>
<tr>
<td>Sydney LHD</td>
<td>69</td>
<td>58</td>
</tr>
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</table>

* Outpatient survey data are based on 2015; inpatient survey data are based on 2014.

Notes:
2. Outpatient exclusions: Far West, Murrumbidgee, Southern NSW and Hunter New England LHDs (data were not available at the time of sampling) and LHDs where the number of respondents was too small to report (but results were included in NSW figures).
3. Inpatient exclusions: The number of respondents for Far West LHD was too small to report, but results were included in NSW figures.
4. Southern NSW LHD was significantly higher than NSW for inpatients that were 'definitely involved in decisions about care and treatment'.
## Information to support patients that received chemotherapy, radiotherapy or surgery in NSW public hospitals, by LHD, 2015*

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Inpatient</th>
<th></th>
<th>Outpatient</th>
<th></th>
<th></th>
<th>Health professionals 'always' explained things in an understandable way</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>'Completely' enough information about medication side effects</td>
<td>Health professionals 'always' explained things in an understandable way</td>
<td>'Completely' informed about medication side effects</td>
<td>'Completely' informed about other treatment side effects</td>
<td>Health professionals 'always' explained things in an understandable way</td>
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<td><strong>80</strong></td>
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</table>

* Outpatient survey data are based on 2015; inpatient survey data are based on 2014.

Notes:
2. Outpatient exclusions: Far West, Murrumbidgee, Southern NSW and Hunter New England LHDs (data were not available at the time of sampling) and LHDs where the number of respondents was too small to report (but results were included in NSW figures).
3. Inpatient exclusions: The number of respondents for Far West LHD was too small to report, but results were included in NSW figures.
4. Southern NSW LHD was significantly higher than NSW for inpatients who had 'completely enough information about medication side effects.'
### Self-efficacy scores* for outpatients undergoing active cancer treatment in NSW public hospitals at time of survey, by LHD, 2015

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>Maintaining a positive attitude</th>
<th>Seeking and locating information</th>
<th>Understanding of and participation in care</th>
</tr>
</thead>
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---


**Notes:**
1. Data source: Outpatient Cancer Clinic Survey, 2015 (pre-release data supplied by Bureau of Health Information).
2. CASE results (scores) are strongly influenced by patient case mix, patient demographics, cancer type and stage of cancer journey.
3. Outpatient level data were not available at the time of sampling for the following LHDs: Far West, Murrumbidgee, Southern NSW and Hunter New England LHD.
4. The number of respondents for Western NSW LHD was too small to report, but results were included in NSW figures.
5. Mid North Coast, Nepean Blue Mountains and Northern NSW LHDs were significantly higher than NSW for outpatients in at least one of the three CASE measures.
### 4.3 Procedure codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>31500-00</td>
<td>Excision of lesion of breast</td>
<td>30329-00</td>
<td>Excision of lymph node of groin</td>
</tr>
<tr>
<td>31515-00</td>
<td>Re-excision of lesion of breast</td>
<td>30329-01</td>
<td>Regional excision of lymph nodes of groin</td>
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<td>31518-00</td>
<td>Simple mastectomy, unilateral</td>
<td>30330-00</td>
<td>Radical excision of lymph nodes of groin</td>
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<tr>
<td>31518-01</td>
<td>Simple mastectomy, bilateral</td>
<td>30392-00</td>
<td>Debulking of intra-abdominal lesion</td>
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<td>31524-00</td>
<td>Subcutaneous mastectomy, unilateral</td>
<td>35536-00</td>
<td>Hemivulvectomy</td>
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<td>31524-01</td>
<td>Subcutaneous mastectomy, bilateral</td>
<td>35536-01</td>
<td>Vulvectomy, unilateral</td>
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<td>35536-02</td>
<td>Vulvectomy, bilateral</td>
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<td>35548-00</td>
<td>Radical vulvectomy</td>
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<td>35551-00</td>
<td>Radical excision of pelvic lymph nodes via laparoscopy for gynaecological malignancy</td>
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<td>Radical excision of pelvic lymph nodes for gynaecological malignancy</td>
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<td>35664-00</td>
<td>Radical abdominal hysterectomy with radical excision of pelvic lymph nodes</td>
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<td>Radical vaginal hysterectomy with radical excision of pelvic lymph nodes</td>
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<td>35667-00</td>
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<td>Abdominal hysterectomy with radical excision of pelvic lymph nodes</td>
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<td>35723-00</td>
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### Colorectal (C18 C19 C20 C21)

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<td>Limited excision of large intestine with formation of stoma</td>
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<td>32000-01</td>
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<tr>
<td>32000-02</td>
<td>Laparoscopic limited excision of large intestine with formation of stoma</td>
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<td>Laparoscopic right hemicolectomy with formation of stoma</td>
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<tr>
<td>32003-00</td>
<td>Limited excision of large intestine with anastomosis</td>
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<tr>
<td>32003-01</td>
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<td>Laparoscopic limited excision of large intestine with anastomosis</td>
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<td>Laparoscopic right hemicolectomy with anastomosis</td>
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<td>32004-00</td>
<td>Subtotal colectomy with formation of stoma</td>
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<tr>
<td>32004-01</td>
<td>Extended right hemicolectomy with formation of stoma</td>
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<tr>
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<td>Laparoscopic subtotal colectomy with formation of stoma</td>
</tr>
<tr>
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<td>Laparoscopic extended right hemicolectomy with formation of stoma</td>
</tr>
<tr>
<td>32005-00</td>
<td>Subtotal colectomy with anastomosis</td>
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<tr>
<td>32005-01</td>
<td>Extended right hemicolectomy with anastomosis</td>
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<td>Laparoscopic subtotal colectomy with anastomosis</td>
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<td>Laparoscopic extended right hemicolectomy with anastomosis</td>
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<td>Laparoscopic left hemicolectomy with anastomosis</td>
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<td>Ultra low anterior resection of rectum with hand sutured coloanal anastomosis</td>
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<td>Perineal rectosigmoidectomy</td>
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### Gastric (C16)

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<td>30521-00</td>
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<td>30523-00</td>
<td>Subtotal gastrectomy</td>
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### Appendices

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<tr>
<td>30272-00</td>
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<td>30294-01</td>
<td>Laryngopharyngectomy and plastic reconstruction</td>
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<td>Radical excision of lymph nodes of neck</td>
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<td>Total excision of tongue</td>
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<td>41785-00</td>
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<td>Partial pharyngectomy with total glossectomy</td>
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<td>41837-00</td>
<td>Hemilaryngectomy</td>
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<tr>
<td>45602-01</td>
<td>Subtotal resection of maxilla</td>
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<td>45605-00</td>
<td>Partial resection of mandible</td>
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<td>45605-01</td>
<td>Partial resection of maxilla</td>
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<td>45611-00</td>
<td>Mandibular condylectomy</td>
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<td>Ostectomy of maxilla, unilateral</td>
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<tr>
<td>45723-00</td>
<td>Osteotomy of mandible with internal fixation, unilateral</td>
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<tr>
<td>45723-01</td>
<td>Osteotomy of maxilla with internal fixation, unilateral</td>
</tr>
<tr>
<td>45723-02</td>
<td>Osteotomy of mandible with internal fixation, unilateral</td>
</tr>
<tr>
<td>45723-03</td>
<td>Osteotomy of maxilla with internal fixation, unilateral</td>
</tr>
<tr>
<td>45726-00</td>
<td>Osteotomy of mandible, bilateral</td>
</tr>
<tr>
<td>45726-01</td>
<td>Osteotomy of maxilla, bilateral</td>
</tr>
<tr>
<td>45726-02</td>
<td>Ostectomy of mandible, bilateral</td>
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<tr>
<td>45726-03</td>
<td>Ostectomy of maxilla, bilateral</td>
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<td>Osteotomy of mandible with internal fixation, bilateral</td>
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<tr>
<td>45729-01</td>
<td>Osteotomy of maxilla with internal fixation, bilateral</td>
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<tr>
<td>45729-02</td>
<td>Osteotomy of mandible with internal fixation, bilateral</td>
</tr>
<tr>
<td>45729-03</td>
<td>Osteotomy of maxilla with internal fixation, bilateral</td>
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<tr>
<td>45732-00</td>
<td>Osteotomies or ostectomies of mandible, &lt;= 3 procedures, with internal fixation</td>
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<td>Osteotomies or ostectomies of maxilla, &lt;= 3 procedures, with internal fixation</td>
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<td>45738-00</td>
<td>Osteotomies or ostectomies of mandible and maxilla, 4 procedures, with internal fixation</td>
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<td>45744-00</td>
<td>Osteotomies or ostectomies of mandible and maxilla, 5 procedures, with internal fixation</td>
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<td>45752-00</td>
<td>Osteotomies or ostectomies of mandible or maxilla, &gt;= 6 procedures, with internal fixation</td>
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<td>45753-00</td>
<td>Midfacial osteotomies</td>
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<td>45754-00</td>
<td>Midfacial osteotomies with internal fixation</td>
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<td>45755-00</td>
<td>Temporomandibular meniscectomy</td>
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<td>45869-00</td>
<td>Exploration of the temporomandibular joint with meniscus or capsular surgery</td>
</tr>
<tr>
<td>45871-00</td>
<td>Exploration of the temporomandibular joint with meniscus, capsular and condylar surgery</td>
</tr>
<tr>
<td>45873-00</td>
<td>Exploration of the temporomandibular joint with meniscus, capsular and condylar surgery using tissue flaps, cartilage gr</td>
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<tr>
<td>52120-00</td>
<td>Partial resection of mandible with condylectomy</td>
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<tr>
<td>90679-00</td>
<td>Osteotomy of zygoma, unilateral</td>
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<td>Osteotomy of zygoma, bilateral</td>
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<td>90680-00</td>
<td>Osteotomy of zygoma with internal fixation, unilateral</td>
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## Oesophagus (C15 C16.0)

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<tbody>
<tr>
<td>30535-00</td>
<td>Oesophagectomy by abdominal and transhiatal mobilisation, with thoracic oesophagogastric anastomosis</td>
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<tr>
<td>30536-00</td>
<td>Oesophagectomy by abdominal and transhiatal mobilisation, with cervical oesophagogastric anastomosis</td>
</tr>
<tr>
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<td>Oesophagectomy by abdominal and transhiatal mobilisation, with cervical oesophagostomy</td>
</tr>
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<td>30541-00</td>
<td>Trans-hiatal oesophagectomy by abdominal and cervical mobilisation, with oesophagogastric anastomosis</td>
</tr>
<tr>
<td>30541-01</td>
<td>Trans-hiatal oesophagectomy by abdominal and cervical mobilisation, with oesophagojejunostomy</td>
</tr>
<tr>
<td>30545-00</td>
<td>Oesophagectomy by abdominal and thoracic mobilisation with thoracic anastomosis and large intestine interposition and anastomosis</td>
</tr>
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<td>Oesophagectomy by abdominal and thoracic mobilisation with thoracic anastomosis using Roux-en-Y reconstruction</td>
</tr>
<tr>
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<td>Oesophagectomy by abdominal and thoracic mobilisation with cervical anastomosis, large intestine interposition and anastomosis</td>
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<td>Oesophagectomy by abdominal and thoracic mobilisation with cervical anastomosis using Roux-en-Y reconstruction</td>
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## Pancreatic (C25 C24 C17.0)

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<td>30533-00</td>
<td>Distal pancreatectomy</td>
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<td>30584-00</td>
<td>Pancreaticoduodenectomy with formation of stoma</td>
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<td>30593-00</td>
<td>Pancreatectomy</td>
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<td>Pancreatectomy with splenectomy</td>
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### 4.4 NSW local health districts (LHDs) and hospital networks

The following LHDs, hospital networks and hospitals performed the resections for all cancers detailed in this report.

#### Metropolitan NSW local health districts:
- Central Coast LHD
- Illawarra Shoalhaven LHD
- Nepean Blue Mountains LHD
- Northern Sydney LHD
- South Eastern Sydney LHD
- South Western Sydney LHD
- St Vincent’s Health Network
- Sydney LHD
- Western Sydney LHD

#### Rural and Regional NSW local health districts:
- Far West LHD
- Hunter New England LHD
- Mid North Coast LHD
- Murrumbidgee LHD
- Northern NSW LHD
- Southern NSW LHD
- Western NSW LHD

#### Major
- Auburn Hospital
- Blacktown Hospital
- Campbelltown Hospital
- Canterbury Hospital
- Coffs Harbour Base Hospital
- Dubbo Base Hospital
- Fairfield Hospital
- Hornsby and Ku-Ring-Gai Hospital
- Lismore Base Hospital
- Maitland Hospital
- Manly District Hospital
- Manning Base Hospital
- Mona Vale and District Hospital
- Orange Health Service
- Port Macquarie Base Hospital
- Shoalhaven and District Memorial Hospital
- Sutherland Hospital
- Tamworth Base Hospital
- The Tweed Hospital
- Wagga Wagga Base Hospital
- Wyong Hospital

#### District group 1
- Armidale and New England Hospital
- Bathurst Base Hospital
- Bega District Hospital
- Belmont Hospital
- Bownral and District Hospital
- Broken Hill Base Hospital
- Goulburn Base Hospital
- Grafton Base Hospital
- Griffith Base Hospital
- Mount Druitt Hospital
- Ryde Hospital
- Shellharbour Hospital

#### District group 2
- Ballina District Hospital
- Blue Mountains District Anzac Memorial Hospital
- Casino and District Memorial Hospital
- Cessnock District Hospital
- Cooma Health Service
- Cowra District Hospital
- Forbes District Hospital
- Kempsey Hospital
- Lithgow Health Service
- Moree District Hospital
- Moruya District Hospital
- Mudgee District Hospital
- Parkes District Hospital
- Singleton District Hospital
- Young Health Service

#### Principal referral
- Bankstown/Lidcombe Hospital
- Concord Hospital
- Gosford Hospital
- John Hunter Hospital
- Liverpool Hospital
- Nepean Hospital
- Prince of Wales Hospital
- Royal North Shore Hospital
- Royal Prince Alfred Hospital
- St George Hospital
- St Vincent’s Hospital Darlinghurst
- Westmead Hospital
- Wollongong Hospital

#### District group 3

#### Public contract
- Hawkesbury District Health Service

#### Ungrouped acute
- Calvary Mater Newcastle
- Royal Hospital for Women
- Sydney/Sydney Eye Hospital