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 wellbeing 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


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*

<table>
<thead>
<tr>
<th>Decision</th>
<th>Inpatient</th>
<th>Outpatient</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Definitely' involved in decisions about care and treatment (R=61–80)</td>
<td>69</td>
<td>72</td>
</tr>
<tr>
<td>'Definitely' asked for ideas and preferences when developing cancer care plan (R=26–58)</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>'Definitely' involved in decisions about care and treatment (R=63–83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had a care plan in place for cancer treatment (R=52–72)</td>
<td></td>
<td>63</td>
</tr>
</tbody>
</table>

Range of LHD responses (%).

LHD significantly higher than NSW

NSW

LHD significantly lower than NSW

LHD not significantly different to NSW

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 'definitely involved in decisions about care and treatment'.
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=74–92)</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>

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.
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 speciality 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

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

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Extent of Disease (%)</th>
<th>Localised</th>
<th>Regional</th>
<th>Metastatic</th>
<th>Unknown</th>
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</thead>
<tbody>
<tr>
<td>NSW (N=5,002)</td>
<td>50</td>
<td>37</td>
<td>7</td>
<td>6</td>
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<tr>
<td>Murrumbidgee LHD (N=204)</td>
<td>57</td>
<td>28</td>
<td>5</td>
<td>10</td>
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<tr>
<td>Mid North Coast LHD (N=184)</td>
<td>56</td>
<td>35</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Illawarra Shoalhaven LHD (N=295)</td>
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<td>34</td>
<td>8</td>
<td>2</td>
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<tr>
<td>Western NSW LHD (N=192)</td>
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<td>Hunter New England LHD (N=623)</td>
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<td>30</td>
<td>11</td>
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<tr>
<td>Northern Sydney LHD (N=710)</td>
<td>52</td>
<td>36</td>
<td>4</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD (N=267)</td>
<td>52</td>
<td>40</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Central Coast LHD (N=267)</td>
<td>50</td>
<td>38</td>
<td>4</td>
<td>8</td>
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<tr>
<td>Northern NSW LHD (N=238)</td>
<td>48</td>
<td>43</td>
<td>3</td>
<td>6</td>
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<tr>
<td>Southern NSW LHD (N=143)</td>
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<td>South Eastern Sydney LHD (N=599)</td>
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<tr>
<td>Sydney LHD (N=340)</td>
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<td>6</td>
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<td>Western Sydney LHD (N=464)</td>
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<td>40</td>
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<tr>
<td>South Western Sydney LHD (N=506)</td>
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<td>45</td>
<td>8</td>
<td>4</td>
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<tr>
<td>Far West LHD (N=29)</td>
<td>38</td>
<td>38</td>
<td>10</td>
<td>14</td>
<td></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, 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.
Five most common cancers by extent of disease at diagnosis, by LHD (ranked), 2012

### 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>
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<td>14</td>
<td>4</td>
<td>27</td>
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<tr>
<td>Sydney LHD (N=430)</td>
<td>69</td>
<td>10</td>
<td>4</td>
<td>17</td>
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<tr>
<td>Illawarra Shoalhaven LHD (N=379)</td>
<td>68</td>
<td>11</td>
<td>6</td>
<td>15</td>
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<td>South Western Sydney LHD (N=713)</td>
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<td>13</td>
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<td>South Eastern Sydney LHD (N=949)</td>
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<td>Western NSW LHD (N=307)</td>
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<td>5</td>
<td>27</td>
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<tr>
<td>Nepean Blue Mountains LHD (N=338)</td>
<td>56</td>
<td>13</td>
<td>4</td>
<td>28</td>
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<td>Northern NSW LHD (N=337)</td>
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<tr>
<td>Northern Sydney LHD (N=888)</td>
<td>54</td>
<td>19</td>
<td>3</td>
<td>24</td>
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<tr>
<td>Central Coast LHD (N=323)</td>
<td>54</td>
<td>11</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>Western Sydney LHD (N=677)</td>
<td>49</td>
<td>16</td>
<td>3</td>
<td>32</td>
</tr>
<tr>
<td>Murrumbidgee LHD (N=405)</td>
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<td>2</td>
<td>39</td>
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<tr>
<td>Mid North Coast LHD (N=303)</td>
<td>43</td>
<td>10</td>
<td>2</td>
<td>45</td>
</tr>
<tr>
<td>Southern NSW LHD (N=239)</td>
<td>39</td>
<td>17</td>
<td>5</td>
<td>39</td>
</tr>
<tr>
<td>Far West LHD (N=28)</td>
<td>14</td>
<td>14</td>
<td>71</td>
<td></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, 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 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 control in NSW: 2016

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.

*A treatment schedule in which the total dose of radiation is divided into large doses and treatments are given once a day or less often. Hypofractionated radiation therapy is given over a shorter period of time (fewer days or weeks) than standard radiation therapy (https://www.cancer.gov/publications/dictionaries/cancer-terms?cdrid=558902).
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


- 2014–2015 90% of resections in hospitals >= 18
- 2011–2012 88% of resections in hospitals >= 18

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.
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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 \textbf{92\%} of resections in hospitals \(\geq 36\)

2011–2012 \textbf{93\%} of resections in hospitals \(\geq 36\)

* 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

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

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

* 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

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 armpit.
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

* 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.
4. Hospitals shown here without a proportion bar did not perform any mastectomies in the reporting period.
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

N= Number of patients.
* Early-stage breast cancer is defined as TNM Stage I or IIA (unknown degree of spread excluded).
** ‘NSW public’ excludes the following LHDs: Far West, Murrumbidgee, Southern NSW and Western NSW. The scope of the NSW Clinical Cancer Registry data source excluded these areas.

Notes:
1. Data source: NSW Clinical Cancer Registry (excludes private facilities and the following LHDs: Far West, Murrumbidgee, Southern NSW and Western NSW).
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


* 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.

- Recommendation based on analysis of NSW data and hospital-level distribution of complex ovarian cancer surgery in NSW.
- 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.
- Data source: Combined Admitted Patient Epidemiology Data (sourced from SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health).
- 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

<table>
<thead>
<tr>
<th>LHD of residence</th>
<th>Had surgery in LHD of residence</th>
<th>Had surgery outside LHD of residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid North Coast LHD</td>
<td>68</td>
<td>26</td>
</tr>
<tr>
<td>Hunter New England LHD</td>
<td>57</td>
<td>36</td>
</tr>
<tr>
<td>Northern NSW LHD</td>
<td>70</td>
<td>22</td>
</tr>
<tr>
<td>Central Coast LHD</td>
<td>51</td>
<td>39</td>
</tr>
<tr>
<td>Illawarra Shoalhaven LHD</td>
<td>68</td>
<td>21</td>
</tr>
<tr>
<td>South Eastern Sydney LHD</td>
<td>42</td>
<td>47</td>
</tr>
<tr>
<td>Northern Sydney LHD</td>
<td>27</td>
<td>59</td>
</tr>
<tr>
<td>Western NSW LHD</td>
<td>67</td>
<td>17</td>
</tr>
<tr>
<td>Nepean Blue Mountains LHD</td>
<td>64</td>
<td>13</td>
</tr>
<tr>
<td>South Western Sydney LHD</td>
<td>61</td>
<td>15</td>
</tr>
<tr>
<td>Murrumbidgee LHD</td>
<td>39</td>
<td>32</td>
</tr>
<tr>
<td>Sydney LHD</td>
<td>62</td>
<td>9</td>
</tr>
<tr>
<td>Western Sydney LHD</td>
<td>44</td>
<td>24</td>
</tr>
<tr>
<td>Far West LHD</td>
<td>61</td>
<td>39</td>
</tr>
<tr>
<td>Southern NSW LHD</td>
<td>53</td>
<td>35</td>
</tr>
</tbody>
</table>

Notes:
1. Data source: Admitted Patient, Emergency Department Attendance and Deaths Register (sourced from SAPHaRJ, 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

* 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.
Rectal cancer


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

* 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.
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.

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


2014–2015 84% of resections in hospitals >= 6
2011–2012 89% 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 SAPHAR, 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


2014–2015 88% of resections in hospitals >= 12
2011–2012 85% 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.

2014–2015 84% of resections in hospitals >= 12
2011–2012 86% 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 liver cancer resections during the reporting period appear on this chart.

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


* 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.

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 SAPHRi, 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

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