National Hospital Cost Data Collection

Private Sector Report 2023–24

June 2026

IHACPA

National Hospital Cost Data Collection Private Sector Report 2023–24 — June 2026

Contents

Tables and Figures

List of Tables

List of Figures

1. Executive summary

The National Hospital Cost Data Collection (NHCDC) Private Sector is a voluntary collection that produces a range of hospital cost and activity information by Australian Refined Diagnosis Related Groups (AR-DRG). This report includes the findings from the NHCDC 2023–24, for admitted acute care provided by 139 in-scope overnight private hospitals and represents 74.9% of private hospital activity.

Participation

A total of 139 in-scope overnight private hospitals participated in 2023–24. Analysis of the data confirmed that the volume of separations from participating hospitals (74.9% of total population separations) was sufficient for the Independent Health and Aged Care Pricing Authority (IHACPA) to publish this report. Full details can be found in Table 1.

Key findings

The 2023–24 dataset included 2,692,313 separations, representing 74.9% of the population separations (3,594,953) as per the Private Hospital Data Bureau (PHDB). This participation rate has increased from 74.7% in 2022–23 and follows a steady increase in participation rate over the 5 years prior.

2,692,313
Sample separations included in analysis

↑ 2.2%
Separations in 2023-24 (vs 2022-23)

Total cost has increased by 5.9% since 2022–23 which is driven by a combined increase in volume of activity submitted and increase in average cost per separation. The total population-weighted cost in 2023–24 has increased by 5.6% since 2022–23[1]. This is comprised of a 1.9% increase due to growth in activity and a 3.7% increase due to growth in average cost per separation (after standardising for differences in case mix). There was also a small reduction (less than 0.1%) due to a change in case mix.

Analysis by Major Diagnostic Category and AR-DRG

Considering the commercial sensitivities in publishing detailed cost information, the analysis in this report focuses on cost weights which consider differences in cost relativities across a number of dimensions. This analysis has been completed by Major Diagnostic Category (MDC) and the top 10 AR-DRGs across a range of metrics. MDC is a broad grouping based on a single organ system or cause and are in general aligned to medical specialties.

[1] The population-weighted cost for 2022–23 was calculated using an updated market share adjustment, which is explained further in Section 3. Unless otherwise noted, all figures for 2022–23 are calculated on the updated market share basis.

Notable observations in 2023–24 at the MDC level, and compared to 2022–23, include:

Highest weighted separations

644,972

MDC 06 - *Diseases and disorders of the digestive system* (17.9% of total)

Decrease in weighted separations since 2022–23

10%

MDC14 - *Pregnancy, childbirth and the puerperium*

Highest cost-weighted separations

1,001,940

MDC 08 - *Diseases and disorders of the musculoskeletal system* (27.9% of total)

Highest percentage increase in weighted separations since 2022–23

24%

MDC 20 - *Alcohol/drug use and alcohol/drug induced organic mental health conditions*

Overall, the analysis of the top 10 AR-DRGs showed a high level of consistency with the prior year, with most AR-DRGs in the top 10 not changing. Similarly, the AR-DRGs having the highest cost-weighted separations, highest cost weight, and most population-adjusted separations are unchanged from 2022–23:

Highest cost weighted separations

I04B - *Knee replacement, minor complexity*

I33B - *Hip replacement, minor complexity*.

Highest cost weight

A13A - *Ventilation >= 336hours, major complexity*

Most population-adjusted separations

R63Z - *Pharmacotherapy for neoplastic disorders*

Analysis was also undertaken at a cost bucket level to understand drivers of changes in total costs. The combined cost buckets of operating room and specialist procedure suites, and prostheses have 47.6% of total cost in 2023–24, increasing from 46.1% in 2022–23.

The critical care cost bucket made up 5.3% of total cost in 2023–24, remaining similar in proportion to total cost compared to previous years. Critical care is highly concentrated within certain AR-DRGs, leading to volatility in the proportion of total cost.

47.6%

of total costs from Operating Room, Specialist Procedure Suites and Prosthesis (2023-24)

Methodology

In the NHCDC 2023–24, private hospitals were invited to submit costed data of in-scope activity. This included activity in the admitted acute, subacute and mental health streams. This report combines data from the admitted acute and mental health streams due to insufficient participation and hence volume of data to enable separate reporting.

Submitted data was validated by IHACPA in accordance with the data request specifications (DRS) that IHACPA prepared and distributed to participants. IHACPA performed numerous quality assurance (QA) checks at critical points of the annual data collection to ensure accuracy and suitability of the data submission.

The validated data was then used to produce the *NHCDC Private Sector Report 2023–24*, and individualised reports including cost weight tables for each participating hospital group.

The methodology for applying the market share and population adjustment has changed since the previous report, with further detail available in Section 3. Unless otherwise noted, values from 2022–23 have been restated on this new basis to ensure they are comparable with 2023–24 figures.

Considerations

The following factors can have a material impact on the reported costs and cost weights, and should be considered when interpreting the information in this report:

- Application of the Australian Hospital Patient Costing Standards (AHPCS) Version 4.2.
- Mapping of general ledger to the appropriate and consistent cost buckets.
- Allocation of cost centres to care areas.
- Whether costs are allocated using patient level data or service weights.
- The hospitals contributing data each year (sample hospitals) may differ which should therefore be taken into consideration when performing year-on-year comparisons.

2. Introduction

Purpose of this report

The purpose of this report is to provide an overview of hospital cost and activity information voluntarily reported to the National Hospital Cost Data Collection (NHCDC) Private Sector 2023–24.

The information is grouped by Australian Refined Diagnosis Related Groups (AR-DRGs), a classification system that provides a clinically meaningful way to relate the number and type of patients treated in a hospital to the resources required by the hospital[2]. The AR-DRG is derived from a range of data collected on admitted patients, including diagnosis and procedure information, classified using International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM[3]).

This report documents the data, processes, methodology and results for admitted acute care provided by overnight private hospitals. The results of the collection are expressed as national cost weights by AR-DRG Version 12.0. Cost weight tables are provided for AR-DRG Versions 12.0, 11.0, 10.0 and 9.0 in the appendices.

History of the NHCDC Private Sector

The first year the NHCDC Private Sector was conducted was 1996–97 with 23 hospitals and 240,000 episodes being represented. The collection has grown steadily since that time, although no publication was released for years 2003–04, 2004–05 and 2009–10 due to low participation rates. No collections were carried out for years 2005–06, 2010–11 and 2014–15.

Table 1. Summary of private hospital participation, 2018–19 to 2023–24

Summary	2018–19	2019–20	2020–21	2021–22	2022–23	2022–23*	2023–24
Number of hospitals	108	103	103	103	133	139	139
Sample separations	2,234,143	2,067,714	2,277,973	2,244,974	2,634,502	2,634,688	2,692,313
Participation rate^ (%)	65.1%	64.9%	65.3%	65.4%	74.7%	74.7%	74.9%
AR-DRG version	10.0	10.0	10.0	11.0	11.0	11.0	12.0

* 2022–23 participation restated to be consistent with the updated in-scope hospital and activity definition used in 2023–24 (see Section 3) where hospitals with less than 200 separations are no longer excluded from the scope of the private sector.
^ Participation rate refers to the percentage of sample separations compared to the population separations.

Private hospital statistics for 2023–24

There were 617 private hospitals in the Private Hospital Data Bureau (PHDB) in 2023–24, submitting 5.1 million patient separations in 2023–24. Table 2 shows that 287 (47%) hospitals were

[2] Independent Health and Aged Care Pricing Authority, AR-DRGs classification system
[3] Australian Institute of Health and Welfare, Data Dictionary, METeOR ID: 729904

overnight hospitals, submitting 4.0 million (78%) separations. Of those, 267 were in-scope overnight hospitals with admitted acute separations.

Table 2. Summary of private hospital statistics for overnight hospitals

Summary	2022–23	2023–24	Change	Change
Number of overnight hospitals reporting to PHDB	288	287	-1.0	-0.3%
Total separations (million)	3.9	4.0	0.1	3.0%
Sameday separations (million)	2.6	2.7	0.1	3.8%
Acute, Newborn and Mental Health Care separations (million)	3.2	3.3	0.1	2.2%
Total patient days of care (million)	9.2	9.4	0.1	1.5%
Average length of stay (day)	2.4	2.3	-0.1	-4.2%

Public and private sector differences

This report does not compare the public and private sectors as the scope of costs between the two sectors is different.

Many of the cost items present in the public sector such as medical specialist costs, including doctors' fees, pathology and imaging are not represented in private hospital general ledgers. These costs are generally not reported for the private sector as they are funded through arrangements between patients and medical professionals.

Additionally, some private hospitals outsource their pharmacy function to external vendors. This results in variations in whether Pharmaceutical Benefits Scheme (PBS) rebates are received by the hospitals, and whether pharmacy costs are reported including or excluding the PBS rebate.

Confidentiality of data

Due to the commercial nature of the sector, all participating hospitals in 2023–24 are required to sign a confidentiality agreement before any reports are released.

In this report, cost weight information will not be presented (masked) if there is insufficient volume. If a cost weight for an AR-DRG is based on fewer than 5 separations and/or fewer than 3 hospitals contributing to a particular AR-DRG, the figures for this cost weight have been replaced by asterisks (*****). Of the 811 AR-DRGs[4], 46 (6%) have had all their information masked, and a further 107 (13%) have had only their same-day and overnight cost weights masked due to insufficient volume.

[4] Based on AR-DRG Version 12.0

3. Scope and methodology

Scope

The scope of the National Hospital Cost Data Collection (NHCDC) Private Sector 2023–24 includes acute patients admitted to overnight private hospitals in Australia who were discharged in the 2023–24 financial year. This includes patients that were admitted to a hospital, were classified under the Australian Refined Diagnosis Related Group (AR-DRG) and had a care type of admitted acute, qualified newborn[5], mental health or other admitted patient care (see 'In-scope care types' below). Any references to admitted acute in this report relate to these care types unless stated otherwise.

In 2022–23 and prior reports, the scope of the Private Sector was limited to overnight hospitals that performed at least 200 admitted acute separations in the relevant year. For this report, all overnight hospitals with admitted acute separations recorded in the 2023–24 year are considered in-scope.

In-scope care types

Separations for admitted acute care and newborn care with qualified care days are in-scope and are included in the calculation of the AR-DRG cost weights. The costs associated with unqualified neonate separations[6] have been included in the costs of the maternal separations (as described below for the neonatal adjustment).

Admitted acute care type 1.0 is care in which the clinical intent or treatment goal is to:

- manage labour (obstetric)
- cure illness or provide definitive treatment of injury
- perform surgery
- relieve symptoms of illness or injury (excluding palliative care)
- reduce severity of an illness or injury
- protect against exacerbation and/or complication of an illness and/or injury which could threaten life or normal function
- perform diagnostic or therapeutic procedures[7].

Newborn care type 7.0 is initiated when the patient is born in hospital or is nine days old or less at the time of admission. Newborn care continues until the care type changes or the patient is separated:

- Patients who turn 10 days of age and do not require clinical care are separated and, if they remain in the hospital, are designated as boarders.
- Patients who turn 10 days of age and require clinical care continue in a newborn episode of care until separated.

[5] Australian Institute of Health and Welfare, Data Dictionary, METeOR ID: 327254
[6] These are separations with care type 7.0 (newborn care), with zero qualified days in the neonate AR-DRGs (Major Diagnostic Category 15 newborns and other neonates)

[7] Australian Institute of Health and Welfare, Data Dictionary, METeOR ID: 711010

- Patients aged less than 10 days and not admitted at birth (for example, transferred from another hospital) are admitted with newborn care type.
- Patients aged greater than 9 days not previously admitted (for example, transferred from another hospital) are either boarders or admitted with an acute care type.
- Within a newborn episode of care, until the baby turns 10 days of age, each day is either a qualified or unqualified day.
- A newborn is qualified when it meets at least one of the criteria detailed in newborn qualification status.

Within a newborn episode of care, each day after the baby turns 10 days of age is counted as a qualified patient day. Newborn qualified days are equivalent to acute days and may be denoted as such.[8]

Mental health care type 11.0[9] is care in which the primary clinical purpose or treatment goal is improvement in the symptoms and/or psychosocial, environmental, and physical functioning related to a patient's mental disorder. Mental health care:

- is delivered under the management of, or regularly informed by, a clinician with specialised expertise in mental health
- is evidenced by an individualised formal mental health assessment and the implementation of a documented mental health plan
- may include significant psychosocial components, including family and carer support.

Other admitted patient care (care type 88[10]) is care that does not meet the definitions for other care types but is deemed in-scope for this report.

Subacute and mental health data

Participants were invited to submit subacute data again in 2023–24, but analysis of subacute data has not been included due to insufficient participation. This remains unchanged from the previous four financial years, as its inclusion would lead to potentially inappropriate or biased representation of the cost profile for subacute activity in the population.

The NHCDC 2018–19 was the first year in which some hospital groups began submitting admitted mental health episodes under care type 11.0, and in 2019–20 hospitals were also invited to submit phase-level mental health data. Prior to the introduction of care type 11.0, admitted mental health episodes were classified as admitted acute. In the past 5 years, mental health activity has been combined with other admitted acute activity due to insufficient volume, that is, in this report 'acute' activity refers to the total of mental health (care type 11.0) and all other admitted acute activity, as shown in Figure 1 below. As all 5 years include mental health, it enables like-for-like comparisons to be made between the years.

[8] Australian Institute of Health and Welfare, Data Dictionary, METeOR ID: 711010
[9] Australian Institute of Health and Welfare, Data Dictionary, METeOR ID: 711010
[10] Australian Institute of Health and Welfare, Data Dictionary, METeOR ID: 711010

Figure 1. Care type groupings

Care Type		
1	Acute	Grouped as **Acute** for analysis
11	Mental health	
7	Newborn	
88	Other admitted	
2	Rehabilitation	Grouped as **Subacute**, but excluded from analysis due to insufficient participation
3	Palliative	
4	Geriatric evaluation and management	
5	Psychogeriatric	
6	Maintenance	

IHACPA will consider whether subacute and mental health data should be collected in future years so that these streams can be reported separately.

Reporting requirements

The Australian Hospital Patient Costing Standards Version 4.2[11] (AHPCS) guide the hospitals with costing processes for their NHCDC submissions to ensure a consistent treatment of costs between hospitals nationally. Version 4.2 of the AHPCS was released in August 2023 and has been used in the NHCDC Private Sector report since 2022–23.

The AHPCS prescribes the set of line items and cost centres used for mapping hospital costs in the costing process. These costs are then allocated to, and reported under, the NHCDC-defined 'cost buckets' (see Appendix H: Cost bucket matrix). Cost buckets represent different combinations of the NHCDC line items and cost centres and can be considered as cost pools within the hospital.

Work in progress patients

A work in progress (WIP) episode is a patient who was discharged within the reporting period for 2023–24, but who was admitted prior to the reporting period. Patients who have not been discharged in 2023–24 and patients admitted 2 financial years (or more) prior to the current reporting year are out of scope.

In 2023–24, all WIP patients that were admitted in 2022–23 and discharged in 2023–24 are in scope, and they have been included in the results.

Data adjustments

The following adjustments were applied to the dataset during the NHCDC process.

[11] Independent Health and Aged Care Pricing Authority, Australian Hospital Patient Costing Standards Version 4.2

Neonate adjustment

The costs for newborn infants with zero qualified days in respect of care type 7.0 (newborn care) were allocated to the delivery episodes of mothers at the same hospital.

The days when a newborn baby is less than 10 days old are classified as unqualified days according to the National Health Data Dictionary[12] unless the newborn is a second or subsequent live born infant or if intensive care is required. The adjustment for unqualified days for this financial year was conducted in a similar way to the previous financial year.

Market share adjustment process

To ensure appropriate representation in the report, market share was determined for each hospital group. This was calculated as the relevant group's share of the Private Hospital Data Bureau (PHDB) separations amongst all participating hospital groups. Sample weights were applied to the submitted activity so that each hospital group's share of the weighted NHCDC sample (which was used for subsequent analysis) was equal to their market share. This year, IHACPA has worked with participating hospitals to further refine this adjustment, and as such there has been a change in methodology:

- Previously, the weights varied by hospital group only
- This year, in addition to hospital group, the weights also varied by several key hospital and patient characteristics, to better represent case mix.

Population adjustment process

To ensure the results reflect the full range of Australia's private hospitals, an estimation process was undertaken to create representative national costing and activity figures from sample data. The estimation process produces population data by estimating "strata weights" based on admitted acute separations. These are applied to the sample data so that the admitted acute separations equal the total population figures.

Similarly to the market share adjustment, the methodology for calculating population adjustment weights has been updated for 2023–24 NHCDC:

- Previously, weighting occurred only at a hospital group level, while in this report, weighting factors also consider several key hospital and patient characteristics such as hospital size, hospital remoteness, separation type – same-day vs overnight, patient age and sex.
- The entire NHCDC sample (rather than only smaller hospital groups) is used to infer the costs for non-participating hospital groups.
- Weighting factors are also capped to prevent over-reliance on small data segments.

The total population was defined as the total number of private acute separations in the PHDB data in 2023–24. All private acute hospitals in Australia (excluding private day hospital facilities) with admitted acute separations during the financial year were included. In prior reports, only hospitals

[12] Australian Institute of Health and Welfare, Data Dictionary, METeOR ID: 327254

with more than 200 admitted acute separations were included. The number of in-scope hospitals in the population file for 2023–24 is 267.

AR-DRG flipping adjustment process

The dataset was reviewed for AR-DRG flipping. This occurs when the cost weight of a lower complexity AR-DRG within the related adjacent AR-DRG is greater than the one with higher complexity. For example, AR-DRG flipping would occur if the cost weight for the lower complexity AR-DRG E40B - *Respiratory System Disorders with Ventilator Support, Minor Complexity* was greater than the cost weight of the higher complexity AR-DRG E40A - *Respiratory System Disorders with Ventilator Support, Major Complexity*.

A small number of instances of AR-DRG flipping were identified in 2023–24. Each instance was analysed and investigated to ensure the appropriate treatment had been applied. This included reviewing NHCDC unit record cost data to check for missing costs or data issues. The Adjacent DRGs (ADRGs) where flipping was observed were:

- B42 - *Nervous system disorders with ventilatory support*
- C12 - *Other corneal, scleral and conjunctival interventions*
- D03 - *Surgical repair for cleft lip and palate disorders*
- P65 - *Neonate, admission weight 1500-1999g without significant General Intervention or ventilatory support 96 hours or more*
- X40 - *Injuries, poisoning and toxic effects of drugs with ventilatory support*.

We note that all of the flipped AR-DRGs had low volumes of separations, including some which would have already been masked to ensure confidentiality of data (i.e. fewer than 5 separations and/or fewer than 3 hospitals). No adjustments were made to the data as a result of this investigation.

IHACPA will work with hospital groups to better understand the causes of AR-DRG flipping in future collections.

Additional data considerations for PBS rebates for this collection

For some AR-DRGs, significant differences were observed by hospital group for the pharmacy cost bucket. In 2021–22, a detailed analysis was carried out to understand the differences and develop an approach to align the hospital groups.

Investigations conducted with the hospital groups have uncovered that the variance is primarily driven by whether the pharmacy function is outsourced to an external vendor and the subsequent treatment of the Pharmaceutical Benefits Scheme (PBS) rebate. For those that do outsource, the hospital group does not receive the PBS rebate and so the pharmacy cost reported in the NHCDC reflects the amount charged to the hospital, resulting in the cost net of the PBS rebate. For those with an internal pharmacy function, the PBS rebate is received and recorded as revenue (in line with the AHPCS Version 4.2 costing standards) and the pharmacy cost is reported as the gross amount.

For 2023–24, no adjustment has been made in this report. The reader should be aware of these variations when interpreting the results in this report.

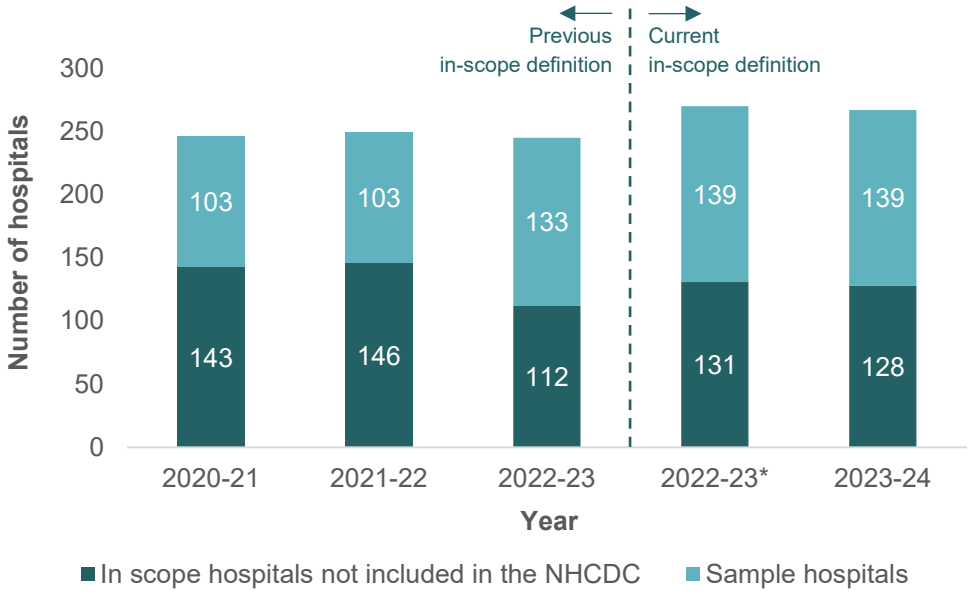
IHACPA will work with hospital groups on an approach to better align the costing process for future collections.

4. Participation

The participation of the National Hospital Cost Data Collection (NHCDC) Private Sector has changed over time, with hospital groups entering and exiting the collection, as well as individual hospitals changing hospital groups or ceasing to operate. The following figures illustrate how the participation has changed over the last 4 years.

An **additional 6 hospitals** that have submitted data in both 2022-23 and 2023-24 are **now in-scope due to a scope definition change,** compared to figures reported last year.

Figure 2. Participating hospitals in the NHCDC

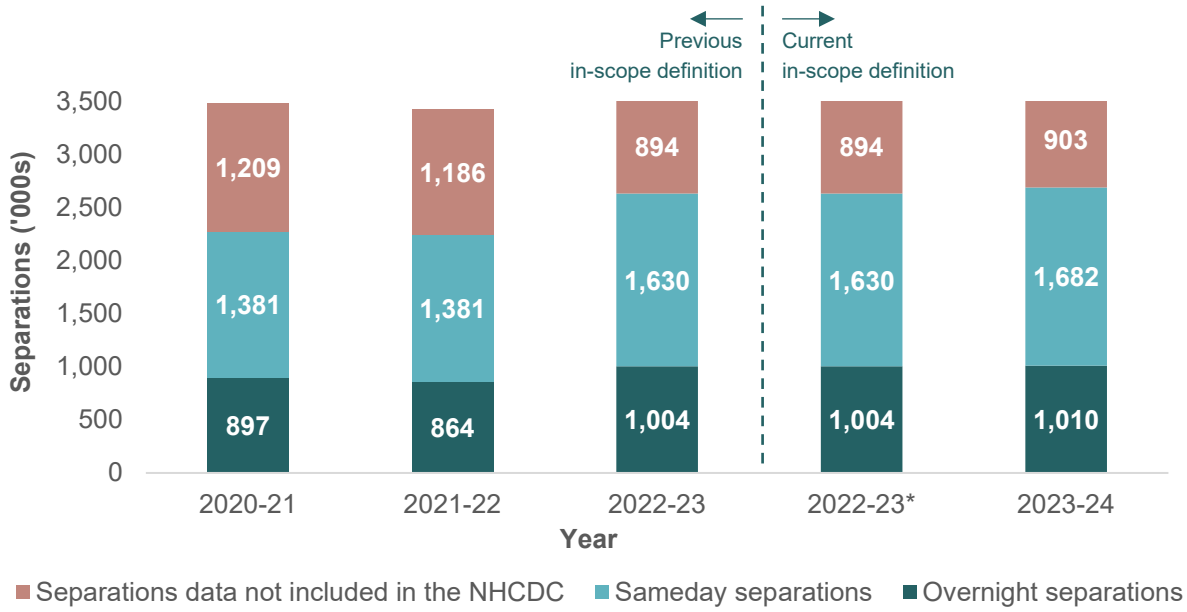


* 2022–23 participation restated with updated in-scope hospital and activity definition – an additional 6 hospitals are now in-scope due to no longer excluding hospitals with fewer than 200 separations.

In 2023–24, 139 hospitals participated in the NHCDC Private Sector. This is the same as the number of in-scope hospitals that participated in 2022–23 (using this year's in-scope definition), however represents an increase of 6 hospitals over the in-scope figure reported last year under the previous definition. These 6 hospitals have submitted fewer than 200 separations, and were previously excluded.

The population of separations in 2023–24 is defined as all private admitted acute separations performed at 267 in-scope overnight private hospitals in 2023–24, totalling 3,594,953 separations.

Figure 3. Total private hospital separations and NHCDC participation rate

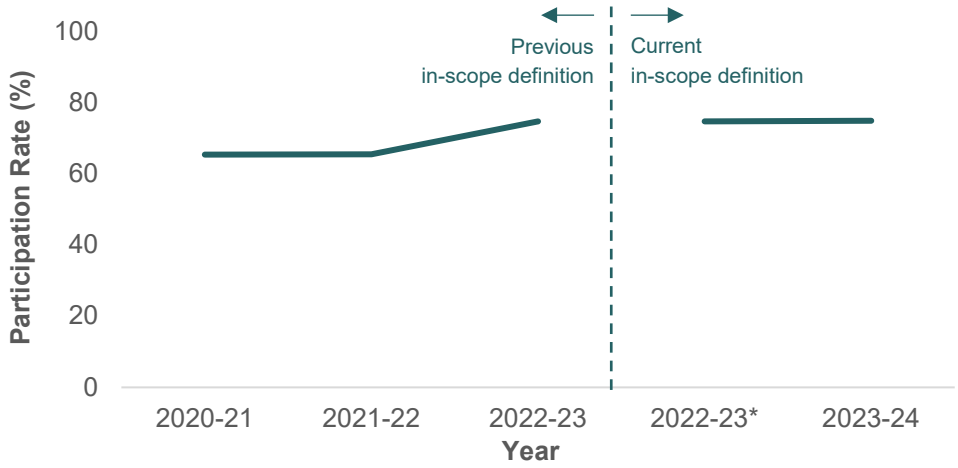


* 2022–23 participation restated with updated in-scope hospital and activity definition.

There were 2,692,313 separations submitted to the NHCDC (referred to as sample separations) in 2023–24, a 2.2% increase compared to 2022–23. By comparison, the increase in separations observed for the total population was 1.9%.

The participation rate is calculated as the number of sample separations submitted to the NHCDC as a proportion of the total population separations reported to the Private Hospital Data Bureau (PHDB).

Figure 4. Participation rate over 2020–21 to 2023–24



* 2022–23 participation restated with updated in-scope hospital and activity definition.

In 2023–24, the participation rate was 74.9% of separations, compared to 74.7% of separations in 2022–23 (an increase of 0.2%).

5. Key results

Activity overview

Table 3 shows a summary of the key statistics relating to the National Hospital Cost Data Collection (NHCDC) Private Sector over the past five years. A percentage change represents a comparison to the previous NHCDC year.

Table 3. Key statistics of NHCDC Private Sector, 2019–20 to 2023–24

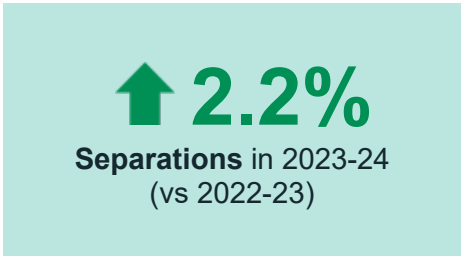
Summary	2019–20	2020–21	2021–22	2022–23	2022–23*	2023–24
Sample separations	2,067,714	2,277,973	2,244,974	2,634,502	2,634,688	2,692,313
Change in separations (%)	-7.4%	10.2%	-1.4%	17.4%	17.4%	2.2%
Sameday separations^	1,240,161	1,381,333	1,381,173	1,630,319	1,630,331	1,682,146
Change in sameday separations (%)	-7.0%	11.4%	0.0%	18.0%	18.0%	3.2%
Population separations	3,184,312	3,487,127	3,431,160	3,528,381	3,529,019	3,594,953
Participation rate (%)	64.9%	65.3%	65.4%	74.7%	74.7%	74.9%
Sample hospitals	103	103	103	133	139	139
Change in sample hospitals (%)	-4.6%	0.0%	0.0%	29.1%	35.0%	0.0%
Population hospitals	255	246	249	245	270	267
Sample hospitals to population hospitals (%)	40.4%	41.9%	41.4%	54.3%	51.5%	52.1%
Average sample separations per hospital	20,075	22,116	21,796	19,808	18,955	19,369
Average population separations per hospital	12,487	14,175	13,780	14,402	13,070	13,464
Average length of stay	2.3	2.2	2.2	2.2	2.1	2.1
Overnight average length of stay	4.3	4.1	4.2	4.2	4.2	4.2

* 2022–23 participation restated with updated in-scope hospital and activity definition.
^ Sameday separations are a subset of sample separations.
** Figures may not reconcile due to rounding.

Number of separations

As noted in Section 4, the number of sample separations (2,692,313) has increased by 2.2% since 2022–23, with the growth in separations occurring within the same set of sample hospitals.

The overall population of separations (3,594,953) has increased by 1.9% since 2022–23.



Average length of stay

The average length of stay (ALOS) for 2023–24 (2.1 days) has remained stable compared to 2022–23. For overnight episodes only, the ALOS has also remained stable (at 4.2 days).

Total costs

The total cost over 2023–24 has increased by 5.9% since 2022–23. This is driven by a combined increase in volume of activity submitted (2.2%) and average cost per separation (3.6%).

↑5.9%
Total cost in 2023-24
(vs 2022-23)

The total population-weighted cost in 2023–24 has increased by 5.6% since 2022–23. This increase can be attributed to three key components:

- An increase of 1.9% due to growth in activity (i.e. higher volume of population separations)
- A marginal reduction (less than 0.1%) due to change in case mix (i.e. there are relatively less separations associated with higher cost AR-DRGs in 2023–24)
- An increase of 3.7% due to growth in average cost per separation after standardising for differences in case mix.

Analysis by Major Diagnosis Category

The 2023–24 NHCDC submission has been analysed by Major Diagnosis Category (MDC), a summarised categorisation in the Australian Refined Diagnosis Related Groups (AR-DRG) classification broadly aligned to the specialty of provider care. Episodes are assigned to an MDC based on their principal diagnosis. This section of the report provides a breakdown by MDC to highlight trends and drivers of cost in different medical specialties. Cost weights, separations, and ALOS for each MDC can be found in Table 4.

Table 4. NHCDC Private Sector summary by Major Diagnostic Category (AR-DRG v12)

MDC	MDC description	Cost weight (a)	No. of weighted seps (b)	Cost weighted seps (c)=(a)x(b)	Number of days (d)	ALOS (days) (e)=(d)/(b)
00	Pre MDC	25.96	777	20,171	24,281	31.2
01	Diseases and disorders of the nervous system	1.13	104,600	118,198	312,352	3.0
02	Diseases and disorders of the eye	0.53	83,774	44,400	87,039	1.0
03	Diseases and disorders of the ear, nose, mouth and throat	0.73	240,398	175,491	279,521	1.2
04	Diseases and disorders of the respiratory system	1.16	105,923	122,871	385,799	3.6
05	Diseases and disorders of the circulatory system	2.27	210,536	477,917	656,194	3.1
06	Diseases and disorders of the digestive system	0.59	644,972	380,533	963,622	1.5
07	Diseases and disorders of the hepatobiliary system and pancreas	1.42	45,080	64,014	130,403	2.9
08	Diseases and disorders of the musculoskeletal system and connective tissue	2.04	491,147	1,001,940	1,327,177	2.7
09	Diseases and disorders of the skin, subcutaneous tissue and breast	0.99	177,506	175,731	350,001	2.0
10	Endocrine, nutritional and metabolic diseases and disorders	1.21	88,101	106,602	174,247	2.0
11	Diseases and disorders of the kidney and urinary tract	0.48	311,825	149,676	474,423	1.5
12	Diseases and disorders of the male reproductive system	0.92	85,984	79,105	123,966	1.4
13	Diseases and disorders of the female reproductive system	0.82	158,984	130,367	215,416	1.4
14	Pregnancy, childbirth and the puerperium	1.71	92,795	158,679	326,301	3.5
15	Newborns and other neonates	3.62	6,261	22,665	49,790	8.0
16	Diseases and disorders of the blood and blood forming organs and immunological disorders	0.39	59,477	23,196	92,951	1.6
17	Neoplastic disorders (haematological and solid)	0.26	312,995	81,379	371,891	1.2
18	Infectious and parasitic diseases	2.06	16,348	33,677	116,363	7.1
19	Mental, behavioural and neurodevelopmental disorders	0.81	130,972	106,087	593,418	4.5
20	Alcohol/drug use and alcohol/drug induced organic mental disorders	0.74	29,564	21,877	131,796	4.5
21	Injuries, poisoning and toxic effects of drugs	1.22	25,856	31,544	85,864	3.3
22	Burns	1.41	167	235	687	4.1
23	Factors influencing health status and other contacts with health services	0.35	167,050	58,468	212,545	1.3
80	AR-DRGs operational room procedure unrelated to PD	3.15	2,714	8,549	19,855	7.3
96	Error AR-DRGs	0.15	1,146	172	1,177	1.0
All MDCs		**1.00**	**3,594,953**	**3,594,953**	**7,507,078**	**2.1**

Key findings observed from the analysis by MDC are summarised in Table 5 below.

Table 5. NHCDC Private Sector key observations by Major Diagnostic Category (AR-DRG v12)

Key feature	MDC details
Highest volume of separations	MDC 06 (Digestive system) has the highest volume of episodes (644,972 weighted separations and 17.9% of total). Procedures such as endoscopy and colonoscopy make up a large volume of the activity, driving the low cost weight (0.58) and short ALOS (1.5).
Highest cost weight and ALOS	MDC 00 (Pre MDC) consists of episodes that relate to critical care and life support and as such has the highest cost weight (25.96) and ALOS (31.2). Apart from MDC 00, MDC 15 (Newborns and other neonates) and MDC 18 (Infectious and parasitic diseases) have the next longest ALOS of 8.0 and 7.1 days respectively
Highest volume of cost weighted separations	MDC 08 (Musculoskeletal system and connective tissue) has the highest number of cost weighted separations (1,001,940), comprising 27.9% of total cost weighted separations. Procedures such as knee and hip replacements make up a significant proportion of activity, driving the relatively high cost weight (2.04).
Largest percentage increases in weighted separations	MDC 20 (Alcohol/drug use and alcohol/drug induced organic mental disorder) and have had the largest percentage increases in weighted separations since 2022–23 of 24%. However, cost weights have reduced by 22%, a partial reversal of the increase seen between 2021–22 and 2022–23. The overall impact on cost weighted separations is a 4% decrease.
Continued activity decline	MDC 14 (Pregnancy, childbirth and the puerperium) and MDC 15 (Newborns and other neonates) have had reduced activity compared to 2022–23, in a continuation of a longer-term trend.

A number of these observations have been investigated further in Section 6 when reviewing long-term trends and insights.

6. Trends and insights

This section provides a further discussion of the broader trends observed in costs and activity in the private sector in 2023–24. The emphasis in this section is on areas where there are material changes since last year, as well as new developing trends.

The key findings discussed further in this section are:

- A brief review of **long-term trends** that were examined in detail in the 2022–23 report. These long-term trends consider AR-DRG's where there has been consistent year-on-year growth (or in some cases declines) over several years.
- A deep-dive on **robotics-assisted procedures**, in response to the significant growth in robotics usage
- A decline in activity for **bariatric surgery and interventions** – Adjacent DRGs (ADRGs) K10, K11, and K12
- An increase in total costs from **MDC 11 - *Diseases and disorders of the kidney and urinary tract***.

All figures mentioned in this section are based on the National Hospital Cost Data Collection (NHCDC) sample separations. Figures that display trends over time are based on hospitals that have submitted consistently[13] in the past five years ("consistently submitting hospitals"). This is to capture genuine private hospital activity and cost trends separate from changes arising from new hospitals submitting data to the NHCDC and changes in sample weighting over time.

Long-term trends

The 2022–23 report analysed long-term trends in activity and costs. These have largely persisted into 2023–24, with key long-term trends including:

- Consistent **growth in digestive procedures** (MDC 06) activity, stemming from an increase in diagnostic procedures. In 2023–24, the increasing trend has continued with the total cost for consistently submitting hospitals increasing by 15% since 2022–23, out-stripping the 5% growth in separations over the same period.
- Significant **growth in certain elective surgeries** such as I04 - *Knee replacement* and I33 - *Hip replacement for nontraumatic condition*, which partly reflected a backlog clearing effect as COVID restrictions eased. This trend has continued in 2023–24 with the number of separations in I04 and I33 increasing by 7% and 5% respectively – though this growth rate is less than that observed in the 2022–23 year.
- **Declining activity in pregnancy** (MDC 14), and an increase in average costs driven by increased nursing costs. These trends continued in 2023–24, with separations in MDC 14 for consistently submitting hospitals declining a further 2% while total costs increased by 5%.

[13] When determining which hospitals consistently submitted, we exclude:
(a) Hospitals that did not submit data in any one of the past five years, and
(b) Hospitals that had very large fluctuations (50% or more) in the proportion of separations submitted.

- Significant **growth in respiratory diseases** (MDC 04) in terms of both activity and total cost, driven by E62 – *Respiratory infections and inflammations* and T63 – *Viral illness*. These trends have continued in 2023–24, with MDC 04 activity and cost increasing by 7% and 12% respectively.
- A divergence between activity and costs for **MDC 19 – *Mental, behavioural and neurodevelopmental disorders***, with activity reducing but total cost increasing over time. In 2023–24, the number of separations has continued to decrease (by 11%), while total costs have increased by 2% since 2022–23.
- **Volatility in alcohol and other drug disorders** (MDC 20), with significant fluctuations in activity and average costs seen from year to year. In 2023–24, there has been a partial reversal of the change observed in the previous year, with separations increasing by 41% while total costs have continued to increase (by 5%) over 2022–23 to 2023–24.

Robotics assisted procedures

Overview

There has been significant growth in the use of robotics assistance in hospitals across the private sector. This includes the use of robotics platforms for surgeries, consumables, prosthetics and implants. These tools offer several potential advantages to surgeons and other treating doctors, including greater precision in surgery, potentially lower rates of complications and reduced length of hospitalisations.[14] In this section we discuss trends in the usage and costs of robotics assisted procedures across the private sector.

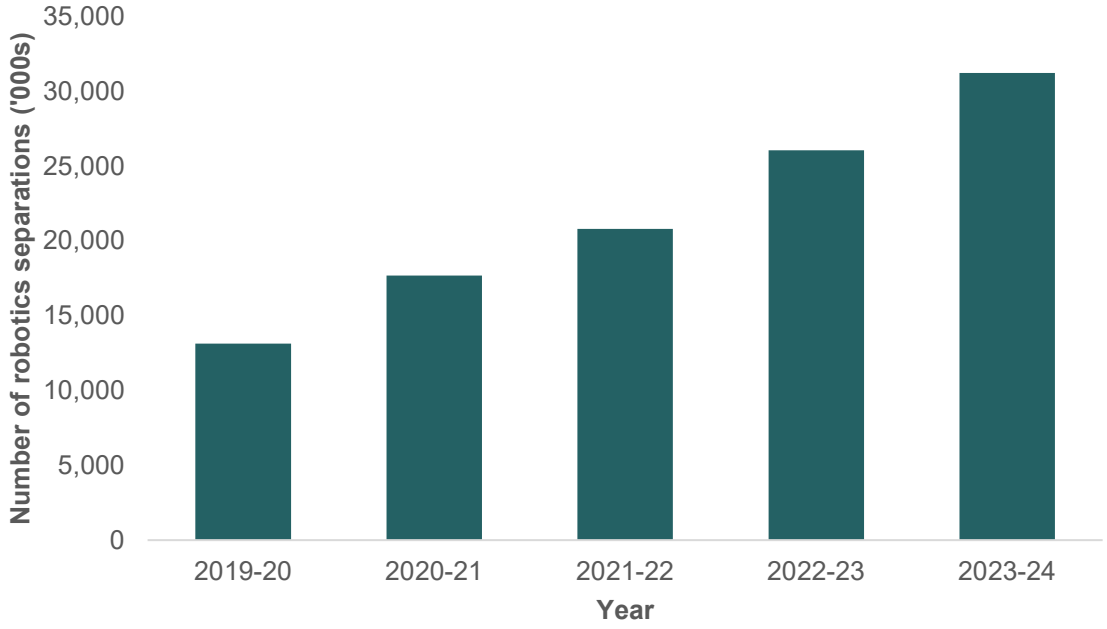
1.4%
of 2023-24 sample separations are robotics-assisted, accounting for
$477M
in costs in 2023-24

Robotics assistance was identified by the presence of the procedure code 96233-xx *Robotic-assisted intervention* recorded alongside the primary procedure code, per *ICD-10-AM/ACHI Twelfth Edition* coding standards.

Robotics assisted separations have become increasingly prevalent over time, and now make up 1.4% of all separations in the 2023–24 Private Sector NHCDC and account for $477M of costs. Figure 5 shows that the number of total robotics assisted separations in the NHCDC has more than doubled since 2019–20.

[14] Tan et al, "Robotic Surgery: Disruptive Innovation or Unfulfilled Promise? A Systematic Review and Meta-Analysis of the First 30 Years."

Figure 5. Robotics assisted separations from 2019–20 to 2023–24*



*Amongst hospitals that have consistently submitted data in each year since 2019–20.

Top Adjacent DRGs

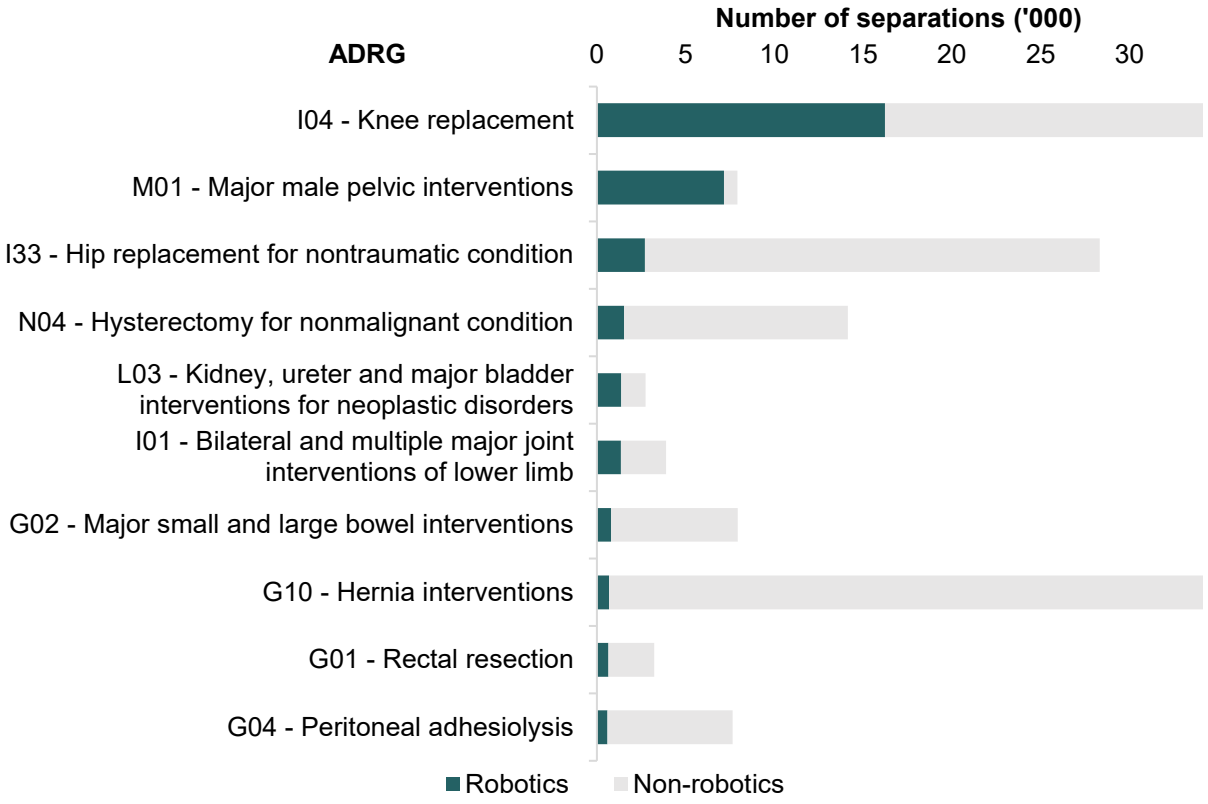
The use of robotics assisted procedures remains concentrated in a relatively small subset of AR-DRGs. The vast majority of all robotics assisted separations (88%) are from only 10 ADRGs, as shown in Figure 6. Furthermore, analysis of prior years' data has shown that this distribution has not changed substantially over time.

Highest **volume** of robotics separations

I04

Knee replacement

Figure 6. Top 10 ADRGs by volume of robotics assisted separations (2023–24)



The two highest volume robotics assisted ADRGs are:

- I04 - *Knee replacement,* which is responsible for 43% of all robotics assisted separations, and in which 39% of separations are robotics assisted
- M01 - *Major male pelvic interventions,* which is responsible for 19% of all robotics assisted separations, and in which 91% of separations are robotics assisted.

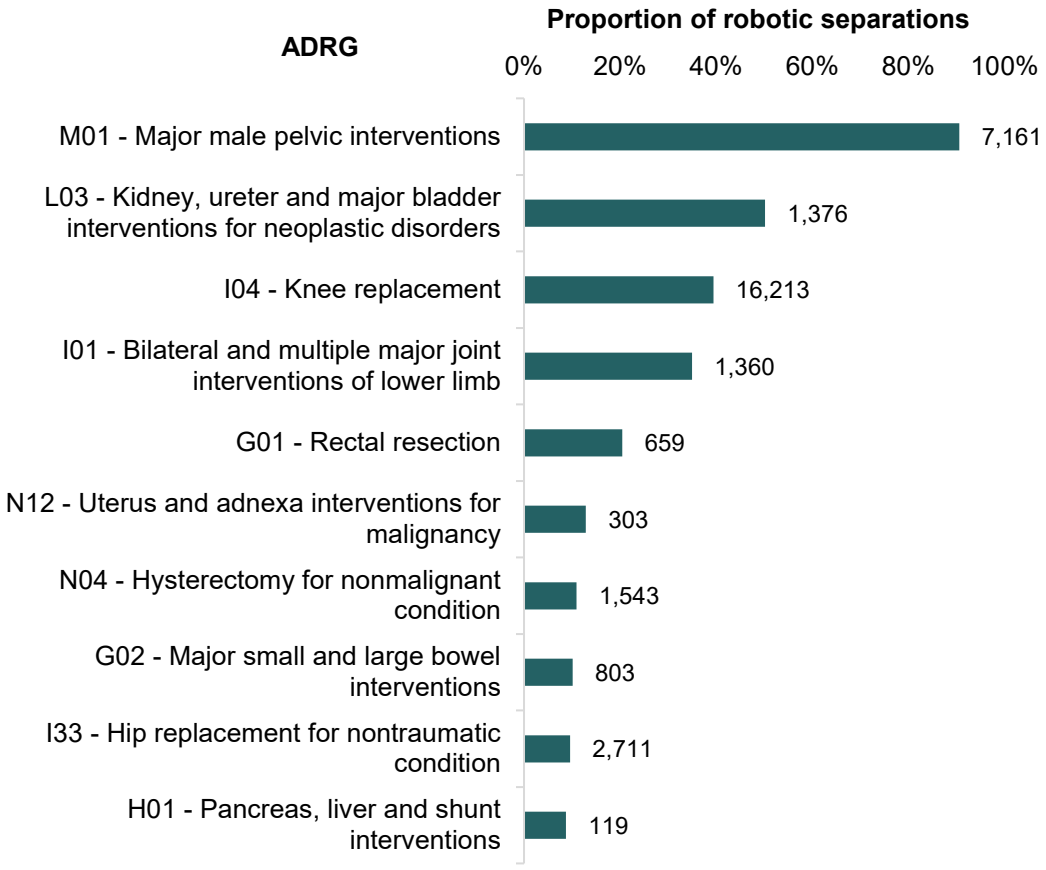
Figure 7 shows that the top 10 ADRGs with the highest proportion of robotics assisted separations are very similar to those with the highest outright volume of robotics assisted separations (Figure 6).

Highest **rate** of robotics use

M01

Major male pelvic interventions

Figure 7. Top 10 ADRGs by proportion of robotics assisted separations (2023–24)



* Excluding ADRGs where there are less than 50 robotics separations.

This list also includes less common ADRGs with lower levels of activity, that have a high proportion of robotics assistance but insufficient volume of separations to appear in Figure 6. These are:

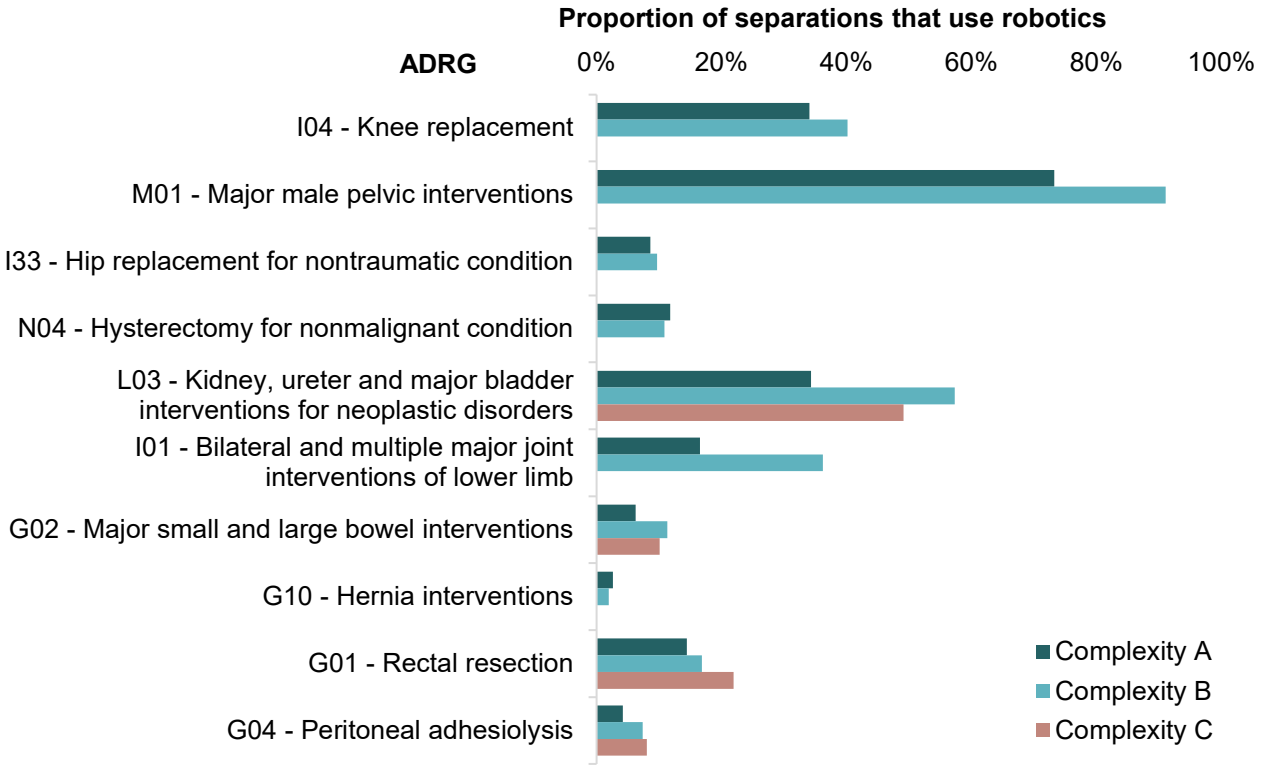
- N12 - *Uterus and adnexa interventions for malignancy*
- H01 - *Pancreas, liver and shunt interventions.*

Complexity mix

In this section, we analyse robotics activity by AR-DRG complexity[15], that is, how robotics activity varies amongst the individual AR-DRGs within each ADRG.

Within each of the ADRGs identified as having a high volume of robotics assistance, the rate at which robotics assistance is used is found to vary based on the separation's AR-DRG complexity. Figure 8 shows the proportion of separations that use robotics assistance for each AR-DRG within the Top 10 ADRGs by volume (i.e. those in Figure 6), and shows that decreasing complexity is generally associated with a higher rate of robotics assistance usage.

Figure 8. Proportion of separations that use robotics, Top 10 ADRGs by volume (2023–24)



The I01 - *Bilateral and multiple major joint interventions of lower limb* ADRG shows the greatest difference in robotics assistance between complexity levels within a single ADRG, with the minor complexity I01B being twice as likely (36% of separations) to utilise robotics assistance compared to the major complexity I01A (17% of separations).

The increase in robotics assistance rates associated with lower complexity could be driven by a number of factors including:

[15] Most ADRGs contain multiple AR-DRGs where each represents a different level of complexity for a similar type of activity. The complexity is denoted by the 4th letter of the AR-DRG code, with earlier letters of the alphabet being more complex. For example, both AR-DRGs I04A and I04B relate to knee replacements, but I04A contains separations classified as 'major complexity' whereas I04B contains those classified as 'minor complexity'.

- Case selection bias – Where robotics assistance is more likely to be utilised for lower-risk patients such as those with fewer comorbidities and younger patients.[16]
- Lower postoperative complication rates – Robotics assistance may reduce postoperative complication rates for complications such as blood loss and infection. This creates a structural shift towards lower complexity AR-DRGs for robotics assisted separations. Evidence of lower postoperative complication rates exists for some procedures, but not for all robotics assistance.[17]

While robotics assistance is more common in lower complexity AR-DRGs, these lower complexity AR-DRGs also have a significantly higher volume of separations. As a result, 92% of robotics assisted separations within the Top 10 ADRGs are complexity B or lower.

Impact of robotics on length of stay and ICU hours

Robotics assistance is associated with **reduced average length of stay**, in comparison to procedures of a similar complexity that do not use robotics. The average length of stay for robotics assisted procedures is generally lower by around 5% to 30% across most AR-DRGs. This effect is observed for the most common robotics assisted procedures across all years in the NHCDC sample, as shown in Figure 9 for the top 10 robotics AR-DRGs by volume.

Robotics assisted activity

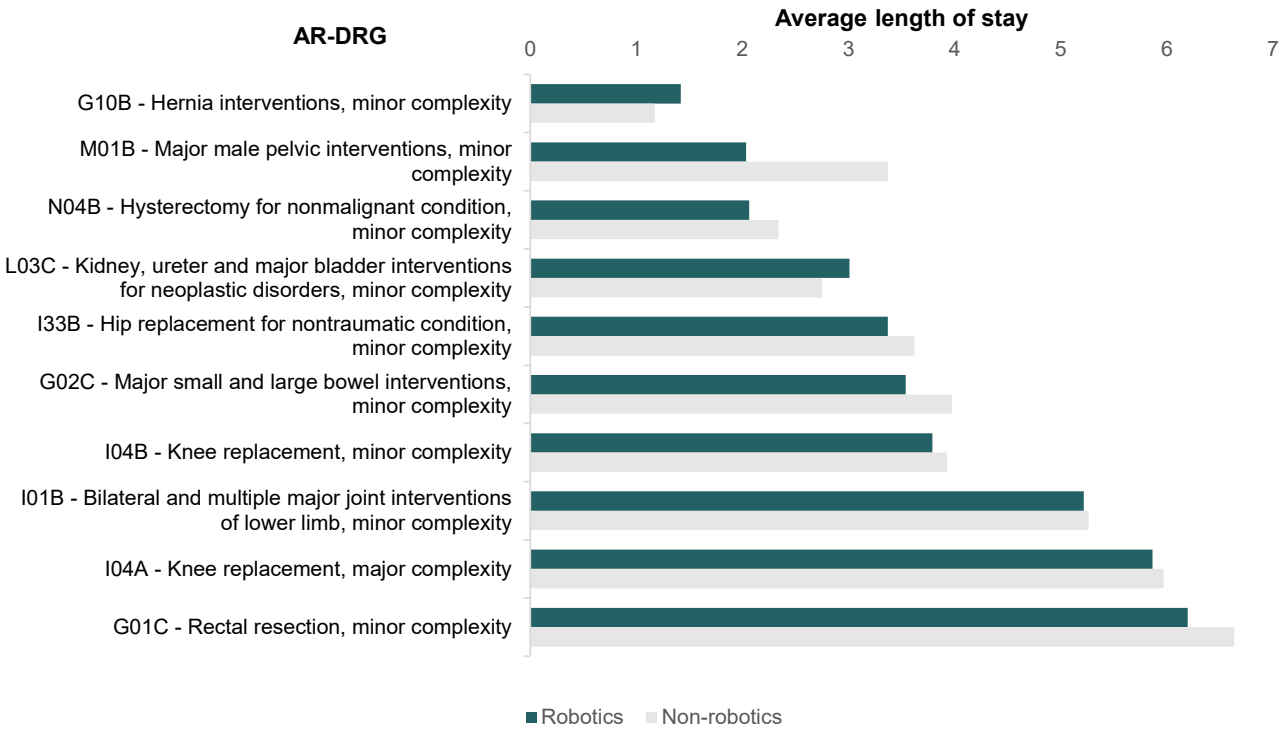
Lower **average length of stay** by

5-30%

than non-robotics assisted activity in the same DRG

[16] Juo et al, "Diffusion of Robotic-Assisted Laparoscopic Technology Across Specialties: A National Study From 2008 to 2013."
[17] Wang et al., "The Severity of Postoperative Complications After Robotic Versus Laparoscopic Surgery for Rectal Cancer: A Systematic Review, Meta-Analysis and Meta-Regression".

Figure 9. Average length of stay by robotics assistance, Top 10 AR-DRGs by volume (2023–24)



The lower length of stay for robotics assisted procedures is also related to the mix of cost buckets associated to these procedures. Compared to their non-assisted counterparts, there is a lower proportion of costs in cost buckets which typically increase with bed days (e.g. nursing). The cost bucket distribution of robotics assisted procedures is discussed in more detail in a subsequent section – *Cost bucket distribution*.

Figure 10 shows that within the top 10 robotics ADRGs by volume, the average number of **ICU hours** is generally lower (by around 10-20%) for robotics assisted separations compared to non-robotics separations.

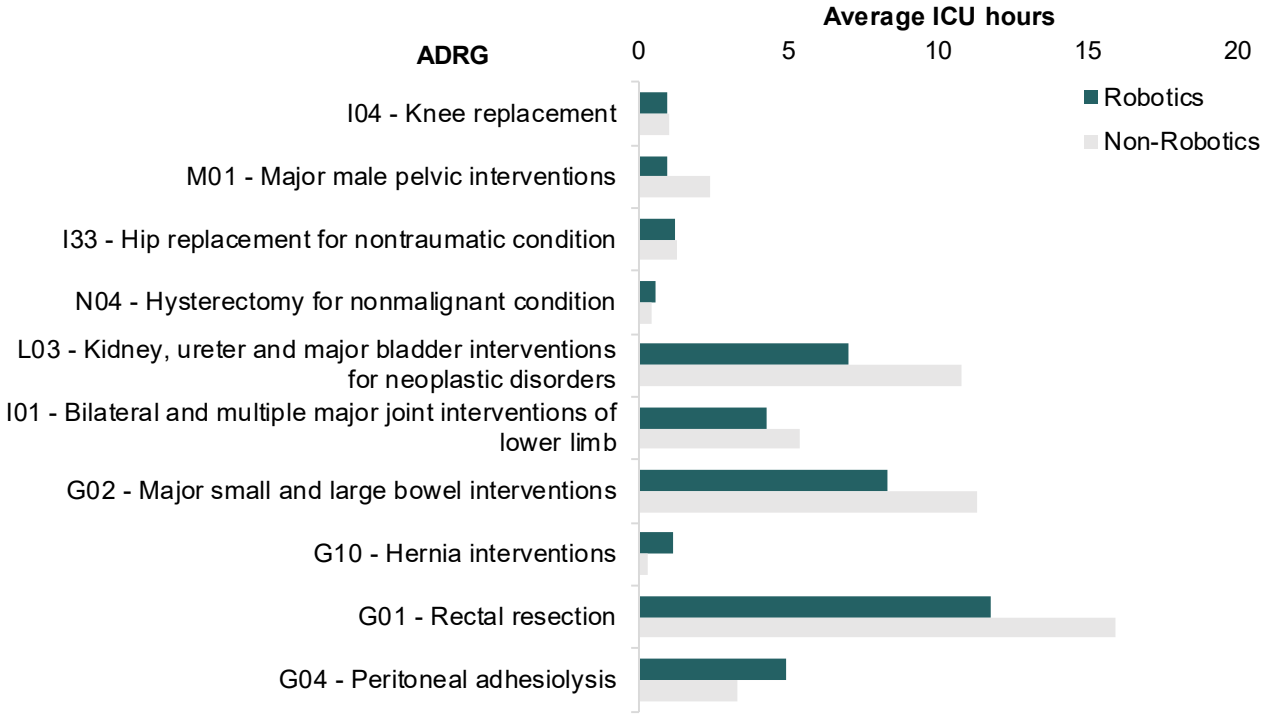
Robotics assisted activity

Lower **ICU hours** by

10-20%

than non-robotics assisted activity in the same AR-DRG

Figure 10. Average ICU hours for robotics vs non-robotics separations, Top 10 ADRGs by volume (2023–24)



Average ICU hours were observed to be lower except for the following ADRGs:

- G04 – *Peritoneal adhesiolysis*
- G10 – *Hernia interventions*
- N04 – *Hysterectomy for nonmalignant condition*.

Impact of robotics on costs

Robotics assistance is generally associated with **higher costs per procedure** compared to similar procedures that do not use robotics assistance. Of the 43 AR-DRGs with at least 50 robotics separations, 35 (81%) have a higher average cost for robotics-assisted separations compared to non-robotics separations, with the difference generally ranging from approximately 20% to 60% higher[18].

Robotics assisted activity

Average cost is higher in

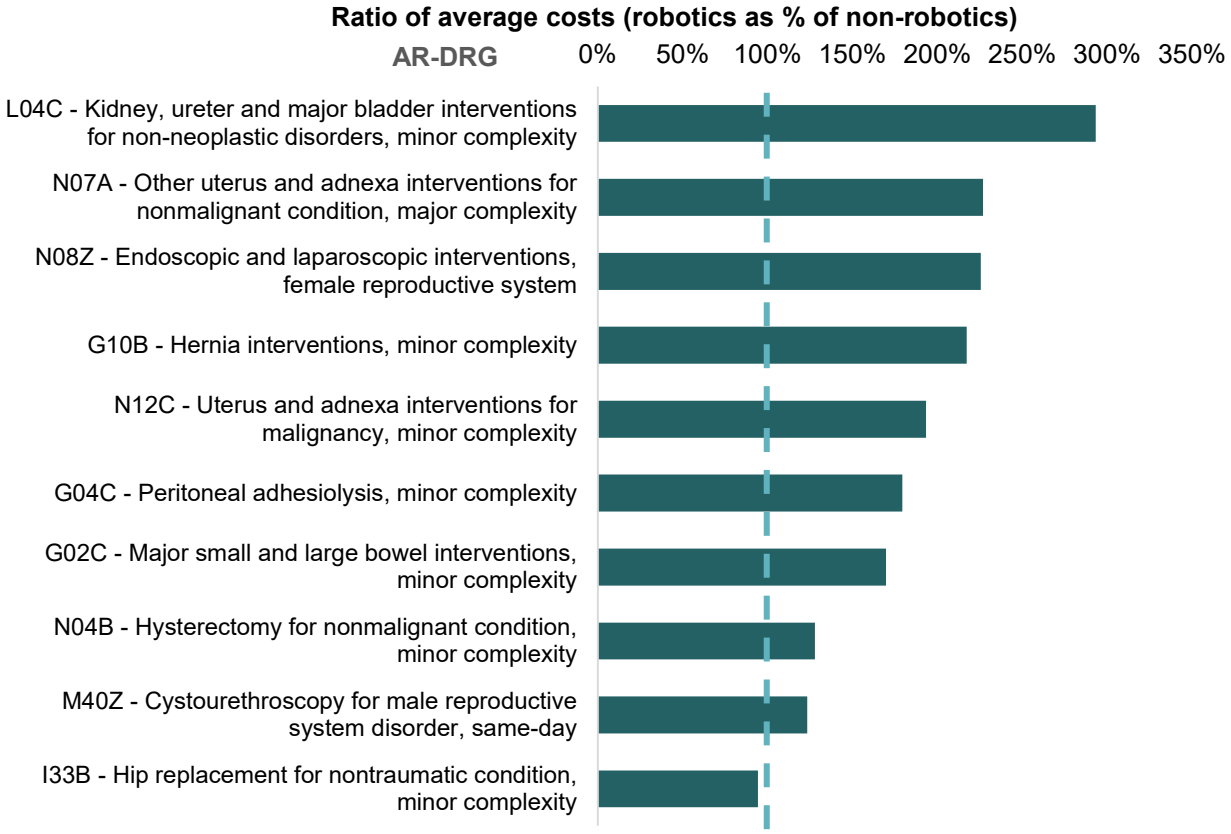
81%

of AR-DRGs with at least 50 robotics separations

[18] For this comparison, the costs for non-robotics procedures are calculated for hospitals that do not perform any robotics procedures, whereas the costs for robotics procedures are calculated across all hospitals which offer them. This is to remove the potential effect of some costing practices, where the cost of technology may be distributed across all activity within the particular cost centre, rather than passed on to robotics-assisted activity only, and allows for a clearer comparison.

Figure 11 below shows the ratio of average costs for robotics assisted procedures versus non-assisted procedures, for the top 10 AR-DRGs by volume amongst those with a statistically significant difference in cost.

Figure 11. Ratio of average costs (robotics assisted vs non-assisted), Top 10 AR-DRGs by volume amongst AR-DRGs with a statistically significant difference in cost*



* For top 10 AR-DRG by volume amongst those with a statistically significant difference cost, and having at least 50 robotics and non-robotics separations in 2023–24. Costs for non-robotics procedures are calculated for hospitals that do not perform any robotics procedures, whereas the costs for robotics procedures are calculated across all hospitals which offer them.

Figure 11 shows that of the top 10 AR-DRGs shown above, most have higher average costs when robotics assistance is used compared to when they are not used (i.e. a ratio of more than 100%). This may in part be explained by the higher capital costs of robotics equipment, including prostheses and other consumables. There is also a 'learning curve' associated with robotics assistance in surgeries, which may result in longer operating times (and hence costs), at least initially.[19]

The findings above are consistent with broader evidence on the impact of robotics assistance on procedure costs and hospitalisation length. For example, one recent systematic review found that procedures involving robotics have, on average:[20]

[19] Lai et al., "Clinical Effectiveness of Robotic Versus Laparoscopic and Open Surgery: An Overview of Systematic Reviews".
[20] Steffens et al, "Surgical outcomes and cost analysis of a multi-specialty robotic-assisted surgery caseload in the Australian public health system" (2023).

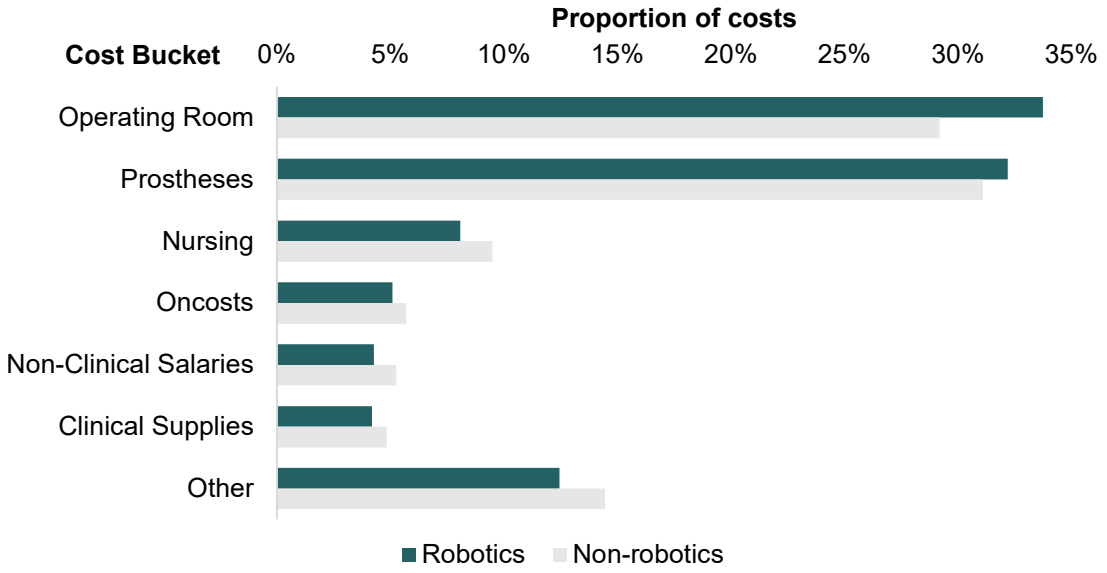
- Higher overall costs (per procedure)
- Higher proportion of costs in operating room and specialist procedure suites
- Moderately lower hospitalisation costs and reduced length of stay.

However, we note that AR-DRG I33B is an exception, where the average cost is lower for robotics separations than for non-robotics separations. This AR-DRG is amongst the highest in terms of the volume of separations that use robotics (2,441 separations – the 3rd highest AR-DRG).

Cost bucket distribution

Separations with robotics assistance face a different set of costs to those without. While overall costs increase, the distribution of costs across cost buckets differs. Figure 12 shows that **Operating Room and Prosthesis costs** make up a greater proportion of costs for robotics assisted separations than for non-robotics assisted separations for the top 10 robotics ADRGs by volume.

Figure 12. Proportion of costs in each cost bucket, Top 10 ADRGs by volume (2023–24)



Operating Room cost proportion increases from 29% to 34%, while Prosthesis costs proportion increase from 31% to 32%, when robotics assistance is used. This results in all other cost buckets making up a reduced proportion of costs for robotics assisted separations, reducing from 40% to 34% of total costs.

This reduction reflects both a general reduction in average cost for these cost buckets (which may be associated with a reduction in length of stay) as well as a shift in cost bucket distribution towards the higher Operating Room and Prosthesis costs.

Key ADRGs with significantly higher Operating Room costs for robotics separations include:

- G02 - *Major small and large bowel interventions* (42% vs 27%)
- G04 - *Peritoneal adhesiolysis* (53% vs 38%)
- M01 - *Major male pelvic interventions (*61% vs 47%)
- L03 - *Kidney, ureter and major bladder interventions for neoplastic disorders* (46% vs 33%).

Key ADRGs with significantly higher Prosthesis costs for robotics separations include:

- I01 - *Bilateral and multiple major joint interventions of lower limb* (49% vs 46%)
- L03 - *Kidney, ureter and major bladder interventions for neoplastic disorders* (9% vs 6%).

Increases in the Operating Room cost bucket for robotics assisted separations are likely related to the high capital and ongoing cost of robotic systems and operating theatre consumables.

Decreases in many of the remaining cost buckets relate to the shorter length of stay observed for robotics assisted separations. This shorter stay results in cost savings in nursing, non-clinical salaries and clinical supplies.

Going forward, IHACPA will be exploring the viability of collecting operating room minutes associated with robotics, to ensure the allocation of robotics costs (and associated costs and overheads) are more accurately spread across the patients that attribute to these new technological advancements. This field of medicine is expected to expand over time.

Bariatric surgery and interventions

⬇14%
Bariatric surgery separations
in 2023-24,
compared to 2022-23

Bariatric surgery and interventions are procedures designed to assist people with clinically severe obesity when non-surgical treatments have not been effective. These interventions aim to reduce excess body weight and improve obesity-related comorbidities such as type 2 diabetes, hypertension, sleep apnoea, and cardiovascular risk by altering the digestive system to limit food intake, absorption, or appetite. Bariatric interventions often achieve sustained weight loss and consequently reduce later costs associated with obesity and related comorbidities.[21]

In the 2023–24 Private Sector NHCDC bariatric interventions activity has decreased, with 14% fewer separations in 2023–24 compared to 2022–23.

The reduction in activity for bariatric interventions may be related to the increased uptake of GLP-1 medication as an anti-obesity measure. Higher uptake of these drugs may reduce bariatric intervention rates, with correlational evidence from the USA suggesting this effect is observed overseas.[22]

Within this report, bariatric interventions are defined as activity classified under the following ADRGs, all of which are categorised under MDC 10 – *Endocrine, nutritional and metabolic diseases and disorders*:

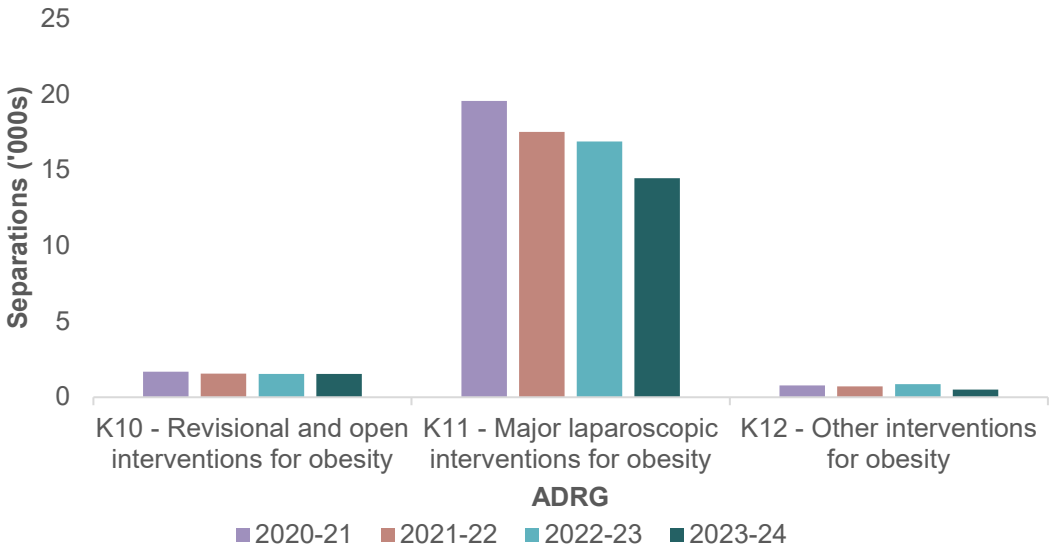
- K10 - *Revisional and open interventions for obesity*
- K11 - *Major laparoscopic interventions for obesity*
- K12 - *Other interventions for obesity.*

[21] Xia et al, “Economic Impact of Bariatric Surgery in Australia, 16-Year Results From the 45 and up Study With Linked Health Data.”
[22] Lin, Mehrota, and Tsai, “Metabolic Bariatric Surgery in the Era of GLP-1 Receptor Agonists for Obesity Management”.

Bariatric interventions comprise 30% of MDC 10 separations and 52% of MDC 10 total costs in 2023–24.

Figure 13 shows that consistently submitting private hospitals have experienced decreases in activity in all of the bariatric intervention ADRGs from 2022–23 to 2023–24. K11 - *Major laparoscopic interventions for obesity* is the largest driver of the decreased activity, with 2,417 fewer separations compared to 2022–23. However, K12 - *Other interventions for obesity* has the largest proportional decrease, with 41% fewer separations compared to 2022–23.

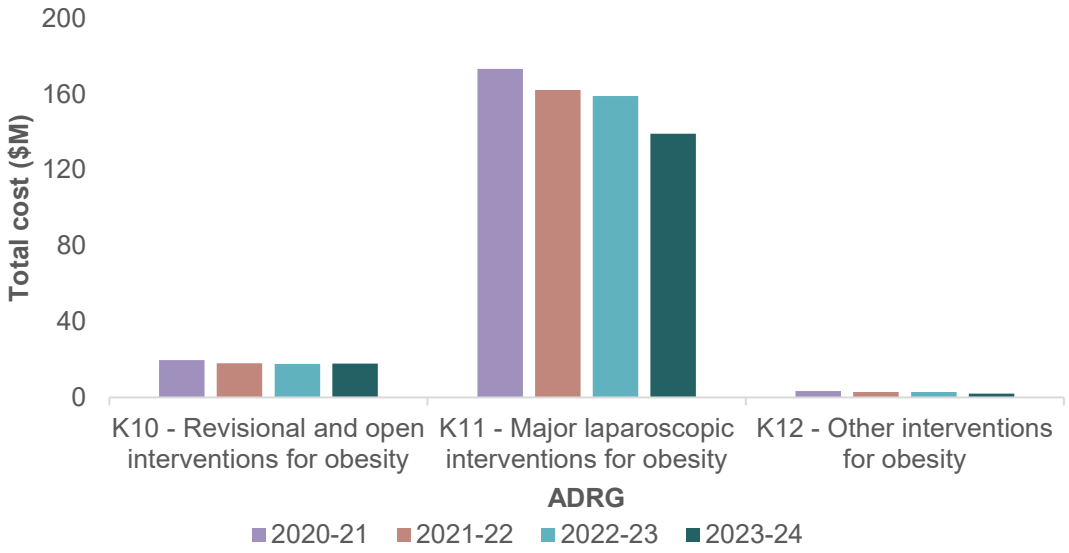
Figure 13. Separations for bariatric intervention ADRGs K10 (revisional and open), K11 (laparoscopic), and K12 (other)*



* Amongst hospitals that have consistently submitted data in each year since 2019–20.

Figure 14 shows that private hospitals that have consistently submitted data from 2019–20 have also experienced an overall decrease in costs from bariatric intervention ADRGs from 2022–23 to 2023–24. Within Figure 14, K11 - *Major laparoscopic interventions for obesity* is the largest driver of the decreased costs. K12 - *Other interventions for obesity* has the largest proportional decrease, with 32% lower total cost compared to 2022–23.

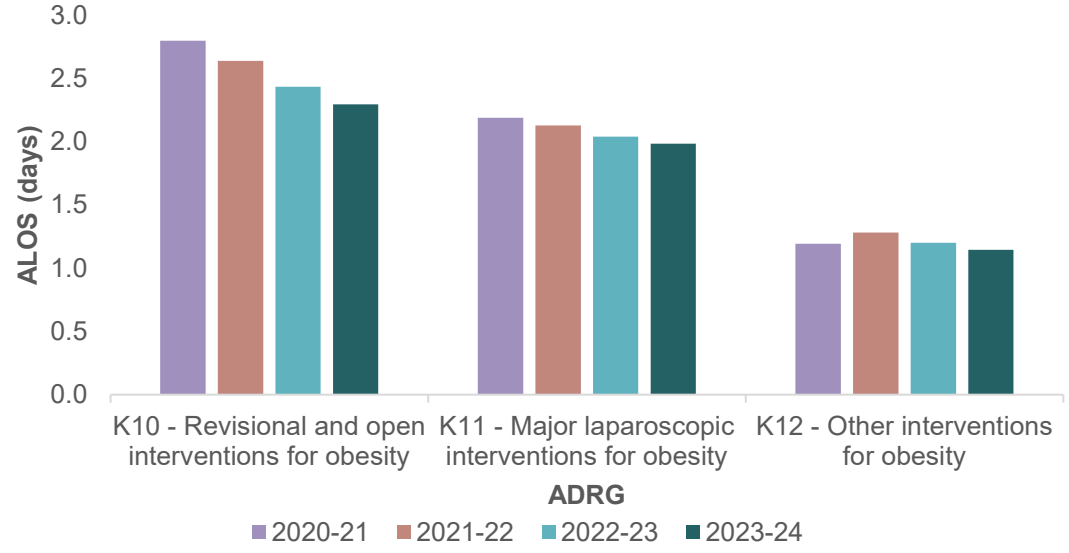
Figure 14. Total cost for bariatric intervention ADRGs K10 (revisional and open), K11 (laparoscopic), and K12 (other)*



*Amongst hospitals that have consistently submitted data in each year since 2019–20.

Figure 15 shows that private hospitals that have consistently submitted data from 2019–20 have also experienced an overall decrease in average length of stay within bariatric intervention ADRGs from 2022–23 to 2023–24. Within Figure 15, K10 – *Revisional and open interventions for obesity* has experienced a 6% decrease in average length of stay from 2022–23 to 2023–24 and a cumulative 18% decrease in average length of stay from 2020–21 to 2023–24.

Figure 15. Average length of stay (ALOS) for bariatric intervention ADRGs K10 (revisional and open), K11 (laparoscopic), and K12 (other)*



*Amongst hospitals that have consistently submitted data in each year since 2019–20.

Diseases and disorders of the kidney and urinary tract

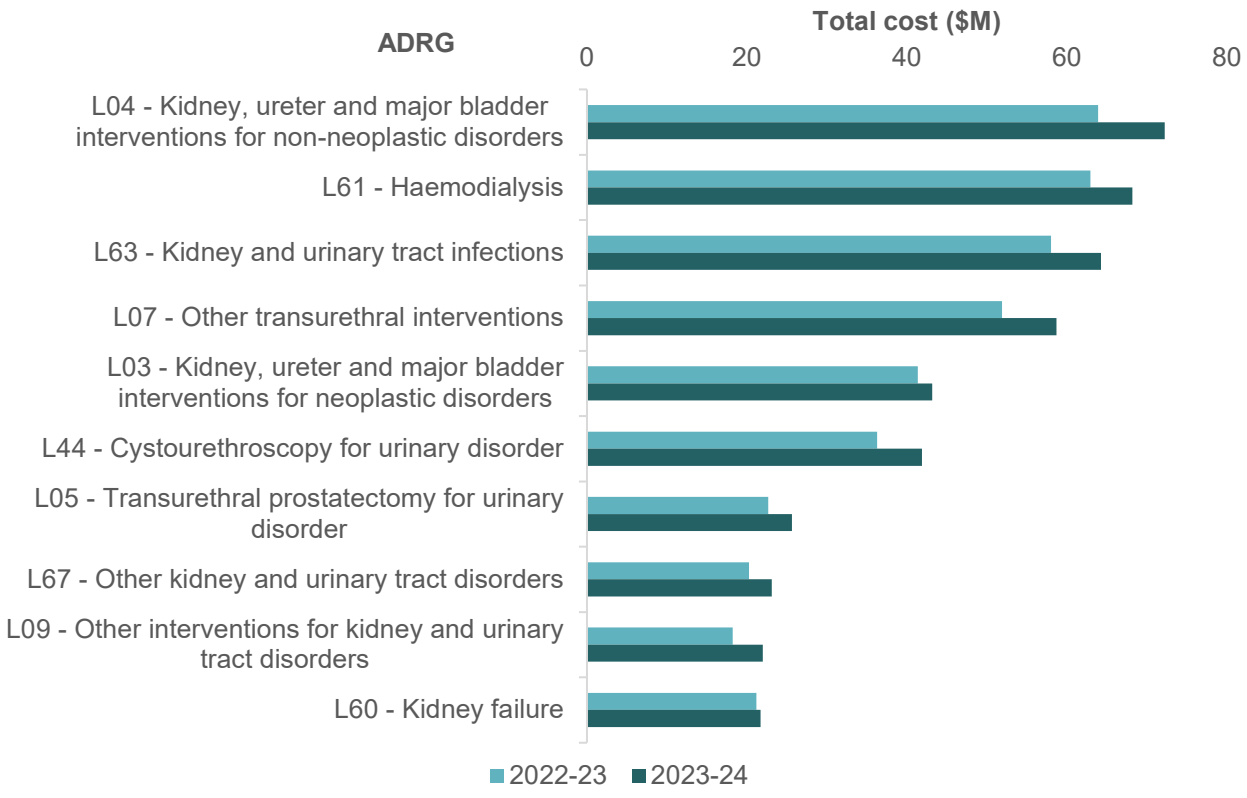
The total cost for MDC 11 – *Kidney and urinary tract* has increased significantly across the private sector in 2023–24 compared to 2022–23. Total cost has increased by 11% in MDC 11, which was higher than the increase in activity of 3%.

↑11%
MDC 11 costs in 2023-24 compared to 2022-23

While the increase in total cost is significantly greater than the increase in activity for MDC 11, the cost increase is not driven by increases in average length of stay. The average length of stay for MDC 11 separations has remained constant at 1.6 days from 2022–23 to 2023–24.

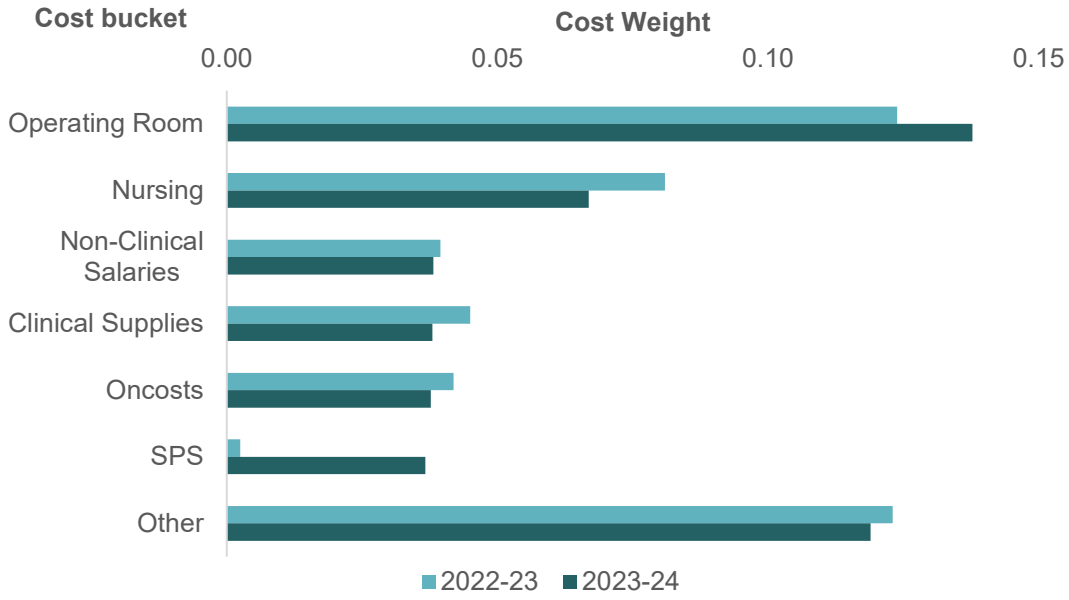
Cost increases are spread across a wide range of ADRGs within MDC 11, with Figure 16 below showing cost increases across the top 10 ADRGs for MDC 11. The ADRG with the largest increase in total cost within MDC 11 is L04 - *Kidney, ureter and major bladder interventions for non-neoplastic disorders* which has increased in total cost by $8M (from $64M to $72M) from 2022–23 to 2023–24. The ADRG with the largest proportional increase in total cost within MDC 11 is L62 - *Kidney and urinary tract neoplastic disorders* which has increased in cost by 23% from 2022–23 to 2023–24.

Figure 16. Total cost of top 10 MDC 11 ADRGs



The increase in costs across MDC 11 was driven by increasing Operating Room and Specialist Procedure Suite (SPS) costs, as seen in Figure 17 below. The MDC 11 Operating Room cost weight has increased from 0.12 to 0.14 from 2022–23 to 2023–24, while the total cost weight for MDC 11 has increased from 0.45 to 0.47 (4.5% increase).

Figure 17. Proportion of costs by cost bucket in MDC 11



7. AR-DRG analysis

Analysing the top 10 Australian Refined Diagnosis Related Groups (AR-DRGs) helps to highlight the AR-DRGs that are driving costs and provides insight into the consistency between years and/or the presence of trends. This section of the report provides an analysis of the top 10 AR-DRGs by the following categories:

- cost weight
- number of population-adjusted separations
- cost weighted separations
- growth in cost weight
- reduction in cost weight.

Top 10 AR-DRGs ranked by highest cost weighted separations

Table 6 presents the top 10 AR-DRGs ranked by highest cost weighted separations. A cost weighted separation refers to the number of population-adjusted separations multiplied by the cost weight for that AR-DRG. It measures the total cost, or resource utilisation, associated with that AR-DRG.

The highest cost-weighted AR-DRGs predominantly fall into two groups: procedures requiring high-cost prostheses (such as orthopaedic or cardiac procedures) and high-volume procedures (such as colonoscopy or chemotherapy, which are also in Table 8).

Table 6 shows that the top 10 AR-DRGs by cost weighted separations represented 20.7% of the total population cost weighted separations (745,540 cost weighted separations out of 3,594,953 total separations). These AR-DRGs represented 22.8% of the total population-adjusted separations, reflecting the combination of high-volume and high-cost AR-DRGs.

Top 10 AR-DRGs
by cost weighted separations
make up

20.7%

of total cost weighted separations

Table 6. Top 10 AR-DRGs ranked by highest cost weighted separations

				2023–24								2022–23			
Top 10 2022–23	**Rank 2023–24**	**AR-DRG**	**AR-DRG description**	**Cost weight (a)**	**No. of weighted seps (b)**	**Cost weighted seps (c)=(a)x(b)**	**Number of days (d)**	**ALOS (days) (e)=(d)/(b)**	**Std error**	**% of total seps**	**% of CW seps**	**Cost weighted seps 2022–23**	**Rank 2022–23**	**No. of weighted seps 2022–23**	**Cost weight 2022–23**
Yes	1	I04B	Knee replacement, minor complexity	3.69	44,215	**163,153**	171,424	3.9	0.00	1.23%	4.5%	161,766	1	42,347	3.82
Yes	2	I33B	Hip replacement for nontraumatic condition, minor complexity	3.99	30,412	**121,344**	109,427	3.6	0.01	0.85%	3.4%	123,225	2	29,909	4.12
Yes	3	G48B	Colonoscopy, minor complexity	0.34	196,079	**66,667**	199,379	1.0	0.00	5.45%	1.9%	60,200	3	188,126	0.32
Yes	4	F24B	Interventional coronary procedures, not admitted for AMI, minor complexity	2.44	26,716	**65,187**	38,436	1.4	0.01	0.74%	1.8%	58,172	5	23,939	2.43
Yes	5	G46B	Complex endoscopy, minor complexity	0.39	157,374	**61,376**	163,184	1.0	0.00	4.38%	1.7%	54,800	6	148,108	0.37
Yes	6	I09C	Spinal fusion, minor complexity	6.57	9,028	**59,314**	40,430	4.5	0.04	0.25%	1.6%	52,870	8	8,035	6.58
Yes	7	O01C	Caesarean delivery, minor complexity	2.30	25,370	**58,351**	110,107	4.3	0.01	0.71%	1.6%	59,101	4	26,267	2.25
Yes	8	R63Z	Pharmacotherapy for neoplastic disorders	0.19	278,086	**52,836**	278,104	1.0	0.00	7.74%	1.5%	53,222	7	266,108	0.20
No	9	I10B	Other back and neck interventions, minor complexity	2.48	20,226	**50,160**	54,931	2.7	0.02	0.56%	1.4%	47,771	11	18,882	2.53
Yes	10	I16Z	Other shoulder interventions	1.49	31,645	**47,151**	36,206	1.1	0.00	0.88%	1.3%	48,123	10	32,961	1.46
	Sub-total, top 10 highest cost weighted separations			**0.91**	**819,152**	**745,540**	**1,201,628**	**1.5**		22.79%	20.7%				
9 in Top 10	**All AR-DRGs**			**1.00**	**3,594,953**	**3,594,953**	**7,507,078**	**2.1**		100%	100%				
	Top 10 highest cost weighted separations, % of all AR-DRGs				**22.8%**	**20.7%**	**16.0%**								

Notes

i. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 12.0
ii. Separations shown are strata weighted
iii. ALOS means Average Length of Stay

Table 6 shows that the AR-DRG with the highest cost weighted separations was I04B - *Knee replacement, minor complexity*. This is consistent with its ranking in the previous four years. This procedure is a common procedure within the private sector, and it is frequently ranked amongst the highest cost weighted AR-DRGs.

Table 6 also shows there has been minimal movement in the rank of individual AR-DRGs, with only one new AR-DRGs entering the top 10 list in 2023–24, I10B – *Other back and neck interventions, minor complexity*. The following AR-DRGs have experienced large increases in cost weighted separations in comparison to 2022–23:

- G48B - *Colonoscopy, minor complexity* (10.7% increase)
- F24B - *Interventional coronary procedures, not admitted for AMI, minor complexity* (12.1% increase)
- G46B - *Complex endoscopy, minor complexity* (12.0% increase)
- I09C - *Spinal fusion, minor complexity* (12.2% increase).

Figure 18. Comparison of top 10 AR-DRGs by highest cost weighted separations, 2020–21 to 2023–24

Top 10 AR-DRGs ranked by highest cost weight

The AR-DRGs in Table 7 have been ranked by highest cost weight in 2023–24. They represent only 0.02% of the total population-adjusted separations, but account for 0.61% of the total population cost weighted separations. This indicates that these AR-DRGs were predominantly high-cost and low-volume.

Furthermore, of the ten highest cost weight AR-DRGs, 6 belong to MDC 00 - *Pre MDC*. This indicates the high-cost nature of this MDC.

Table 7. Top 10 AR-DRGs ranked by highest cost weight, 2023–24 compared to 2022–23

				2023–24								2022–23		
Top 10 2022–23	**Rank 2023–24**	**AR-DRG**	**AR-DRG description**	**Cost weight (a)**	**No. of weighted seps (b)**	**Cost weighted seps (c)=(a)x(b)**	**Number of days (d)**	**ALOS (days) (e)=(d)/(b)**	**Std error**	**% of total seps**	**% of CW seps**	**Cost weight 2022–23**	**Rank 2022–23**	**No. of weighted seps 2022–23**
Yes	1	A13A	Ventilatory support 336 hours or more, major complexity	**69.55**	51	3,547	3,918	76.7	7.50	0.00%	0.10%	58.78	1	27
Yes	2	A13B	Ventilatory support 336 hours or more, minor complexity	**41.56**	56	2,327	2,524	45.4	3.77	0.00%	0.06%	44.86	2	58
Yes	3	A14A	Ventilatory support 96 hours or more, but less than 336 hours, major complexity	**33.67**	102	3,434	4,785	47.0	2.13	0.00%	0.10%	35.52	3	187
Yes	4	A14B	Ventilatory support 96 hours or more, but less than 336 hours, intermediate complexity	**24.79**	211	5,231	6,295	29.8	1.14	0.01%	0.15%	24.02	5	230
Yes	5	A15A	Tracheostomy, major complexity	**24.51**	16	392	550	33.6	5.08	0.00%	0.01%	22.95	6	17
No	6	P03B	Neonate, admission weight 1000-1499g with significant General Intervention or ventilatory support 96 hours or more, minor complexity	**18.90**	17	321	506	29.3	3.75	0.00%	0.01%	12.52	28	17
Yes	7	F03A	Cardiac valve interventions with CPB pump with invasive cardiac investigation, major complexity	**17.84**	77	1,374	1,849	24.1	0.76	0.00%	0.04%	21.22	8	70
No	8	P64A	Neonate, admission weight 1250-1499g without significant General Intervention or ventilatory support 96 hours or more, major complexity	**17.40**	8	139	326	38.7	2.75	0.00%	0.00%	16.75	13	14
No	9	A14C	Ventilatory support 96 hours or more, but less than 336 hours, minor complexity	**17.11**	229	3,918	4,650	20.3	0.75	0.01%	0.11%	17.55	12	173
Yes	10	I02A	Microvascular tissue transfers or skin grafts, excluding hand, major complexity	**16.57**	79	1,309	3,132	39.7	1.89	0.00%	0.04%	19.70	9	51
7 in top 10	**Sub-total, top 10 highest cost weight**			**25.98**	**847**	**21,993**	**28,536**	**33.7**		0.02%	0.61%			
	All AR-DRGs			**1.00**	**3,594,953**	**3,594,953**	**7,507,078**	**2.1**		100%	100%			
	Top 10 highest cost weight, % of all AR-DRGs				**0.02%**	**0.61%**	**0.4%**							

Notes

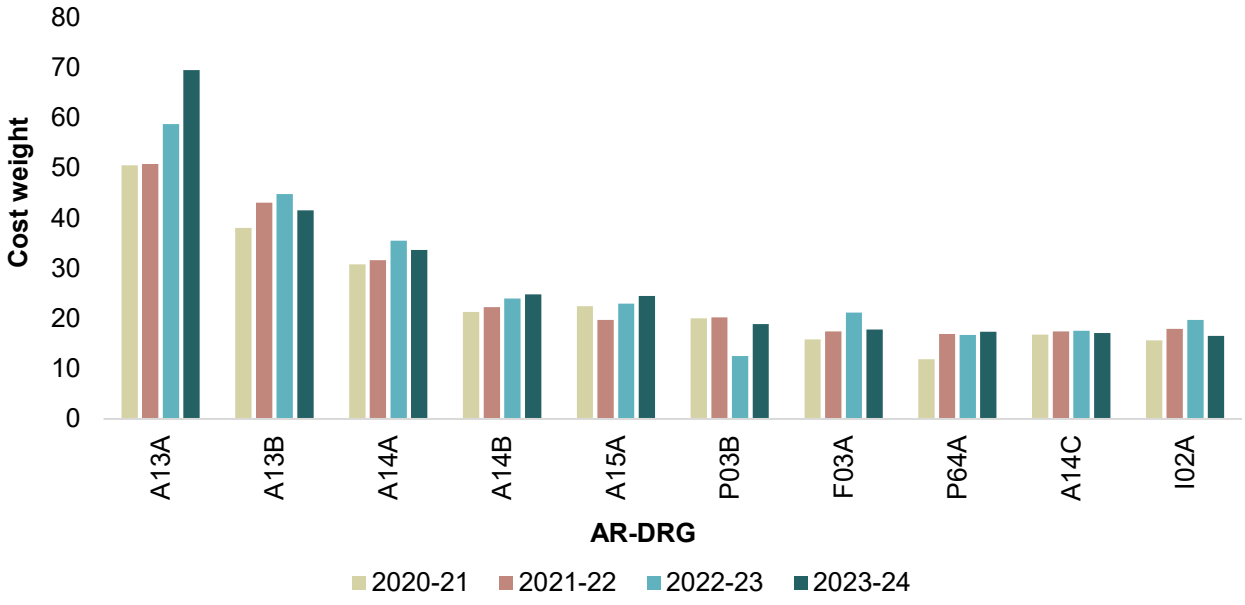
i. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 12.0
ii. Separations shown are strata weighted
iii. ALOS means Average Length of Stay

As shown in Figure 19 below, the highest cost weight AR-DRG was A13A - *Ventilation >= 336hours, major complexity*. This was also the AR-DRG with the highest cost weight over the last four years.

Small numbers of separations in these AR-DRGs mean that variation in cost weights between years is expected. In 2023–24, there were 3 AR-DRGs in the top 10 list that were not in the 2022–23 list:

- P03B - *Neonate, admission weight 1000-1499g with significant General Intervention or ventilatory support 96 hours or more, minor complexity*
- P64A - *Neonate, admission weight 1250-1499g without significant General Intervention or ventilatory support 96 hours or more, major complexity*
- A14C - *Ventilatory support 96 hours or more, but less than 336 hours, minor complexity.*

Figure 19. Comparison of top 10 AR-DRGs ranked by highest cost weight, 2020–21 to 2023–24



Top 10 AR-DRGs ranked by highest volume of population-adjusted separations

The AR-DRGs in Table 8 have been ranked by highest volume of population-adjusted separations, comparing 2023–24 to 2022–23. This is a measure of the volume of separations in the entire overnight private hospital population (i.e. the separations in the 2023–24 sample, adjusted using weights to reflect the whole population).

Table 8 shows that the top 10 AR-DRGs represented 35.2% of the total population-adjusted separations (1,264,733 population-adjusted separations out of 3,594,953 total separations). However, these AR-DRGs represented only 10.2% (365,874) of the total population cost weighted separations. This indicates that these AR-DRGs were predominantly high-volume and low-cost.

Top 10 AR-DRGs
by volume of populated
adjusted separations make up

10.2%

of total cost weighted
separations, but

35.2%

of total population-adjusted
separations

Table 8. Top 10 AR-DRGs ranked by highest volume of population-adjusted separations

				2023–24								2022–23		
Top 10 2022–23	**Rank 2023–24**	**AR-DRG**	**AR-DRG description**	**Cost weight (a)**	**No. of weighted seps (b)**	**Cost weighted seps (c)=(a)x(b)**	**Number of days (d)**	**ALOS (days) (e)=(d)/(b)**	**Std error**	**% of total seps**	**% of CW seps**	**No. of weighted seps 2022–23**	**Rank 2022–23**	**Cost weight 2022–23**
Yes	1	R63Z	Pharmacotherapy for neoplastic disorders	0.19	**278,086**	52,836	278,104	1.0	0.001	7.74%	1.5%	266,108	1	0.20
Yes	2	G48B	Colonoscopy, minor complexity	0.34	**196,079**	66,667	199,379	1.0	0.001	5.45%	1.9%	188,126	2	0.32
Yes	3	G46B	Complex endoscopy, minor complexity	0.39	**157,374**	61,376	163,184	1.0	0.001	4.38%	1.7%	148,108	4	0.37
Yes	4	L61Z	Haemodialysis	0.15	**151,690**	22,754	151,764	1.0	0.000	4.22%	0.6%	150,440	3	0.14
Yes	5	U60Z	Mental health treatment without ECT, same-day	0.11	**100,356**	11,039	100,356	1.0	0.000	2.79%	0.3%	106,913	5	0.11
Yes	6	G47C	Gastroscopy, minor complexity	0.26	**89,871**	23,366	93,005	1.0	0.001	2.50%	0.6%	90,726	6	0.24
Yes	7	Z40Z	Other contacts with health services with endoscopy	0.29	**87,264**	25,307	88,539	1.0	0.001	2.43%	0.7%	88,149	7	0.27
Yes	8	D40Z	Dental extractions and restorations	0.48	**87,057**	41,787	87,296	1.0	0.001	2.42%	1.2%	84,559	8	0.46
Yes	9	C16Z	Lens interventions	0.49	**59,718**	29,262	59,816	1.0	0.001	1.66%	0.8%	56,669	9	0.48
Yes	10	I68B	Nonsurgical spinal disorders, minor complexity	0.55	**57,237**	31,480	95,321	1.7	0.003	1.59%	0.9%	52,891	10	0.54
10 in top 10	**Sub-total, top 10 highest volume of population-adjusted separations**			**0.29**	**1,264,733**	**365,874**	**1,316,764**	**1.0**		35.18%	10.2%			
	All AR-DRGs			**1.00**	**3,594,953**	**3,594,953**	**7,507,078**	**2.1**		100%	100%			
	Top 10 highest volume of population-adjusted separations, % of all AR-DRGs				**35.2%**	**10.2%**	**17.5%**							

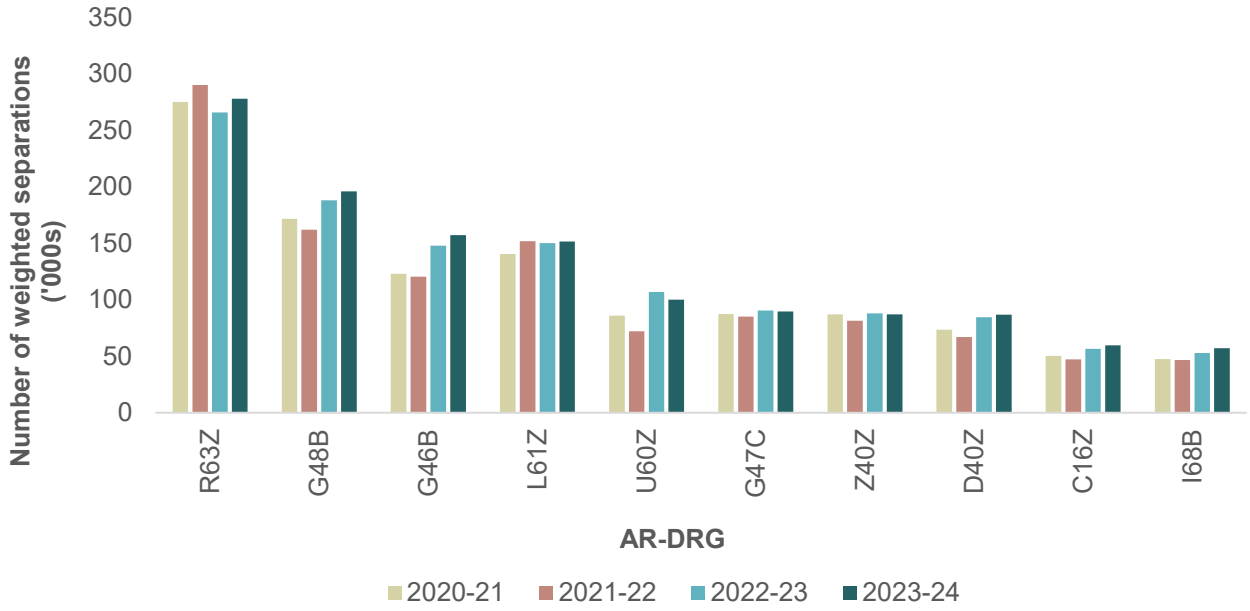
Notes

i. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 12.0
ii. Separations shown are strata weighted
iii. ALOS means Average Length of Stay

These AR-DRGs are generally high-volume, sameday separations and have therefore experienced minimal change in average length of stay (ALOS) over the years. Table 8 shows the ALOS for the top 10 AR-DRGs is 1.0 days compared to the population average of 2.1 days, indicating the majority of these AR-DRGs were sameday procedures.

Figure 20 shows that for 2023–24, AR-DRG R63Z - *Pharmacotherapy for neoplastic disorders,* was ranked as having the most population-adjusted separations, consistent with its ranking in the previous four years. This is expected given the high-frequency, sameday nature of treatments required for AR-DRG R63Z. All 10 of these AR-DRGs were also within the top 10 AR-DRGs by volume in 2022–23, although there have been some minor movements in individual ranks.

Figure 20. Comparison of top 10 AR-DRGs by highest volume of population-adjusted separations, 2020–21 to 2023–24



Top 10 AR-DRGs ranked by highest growth in cost weights

We have examined AR-DRG's with significant growth in cost weights for 2023–24. Table 9 shows the AR-DRGs with the highest proportional increase in their cost weight relative to 2022–23. The AR-DRGs with the highest proportional increase in their cost weights are spread across a range of MDCs and include a range of average length of stay from sameday to 19 days. For non sameday AR-DRGs, growth in cost weight is often associated with increased length of stay compared to 2022–23.

Table 9. Top 10 AR-DRGs ranked by highest growth in cost weights

			2023–24							2022–23	
Rank 2023–24	AR-DRG	AR-DRG description	Cost weight (a)	No. of weighted seps (b)	Cost weighted seps (c)=(a)x(b)	Number of days (d)	ALOS (days) (e)=(d)/(b)	Growth in cost weight	Std error	Cost weight 2022–23	ALOS 2022–23
1	Y03A	Other General Intervention for other burns, major complexity	5.78	9	52.02	112	12	**444%**	2.413	1.06	2
2	K63A	Inborn errors of metabolism, major complexity	4.5	34	153	394	12	**193%**	0.899	1.54	5
3	Z65Z	Congenital malformations, chromosomal abnormalities and problems arising in the neonatal period	1.52	11	16.72	46	4	**171%**	0.529	0.56	1
4	M06A	Other male reproductive system General Intervention, major complexity	3.92	74	290.08	715	10	**111%**	0.477	1.86	4
5	C03B	Retinal interventions, minor complexity	0.71	2511	1,783	2539	1	**105%**	0.008	0.34	1
6	I80Z	Femoral fractures, transferred to acute facility in less than 2 days	0.37	31	11	31	1	**93%**	0.066	0.19	1
7	I69B	Bone diseases and arthropathies, minor complexity	0.94	7281	6,844	13031	2	**88%**	0.020	0.5	2
8	G13Z	Peritonectomy for gastrointestinal disorders	8.8	22	193.6	270	12	**66%**	1.815	5.29	8
9	P67A	Neonate, admission weight 2500g or more without significant General Intervention or ventilatory support 96 hours or more, less than 37 completed weeks gestation, extreme complexity	7.53	144	1084.32	2724	19	**59%**	0.487	4.74	14
10	C14A	Other eye interventions, major complexity	0.84	27	22.68	51	2	**58%**	0.192	0.53	1
Sub-total, top 10 highest cost weight growth			**1.03**	**10,144**	**10,451**	**19,913**	**2.0**				
All AR-DRGs			**1.00**	**3,594,953**	**3,594,953**	**7,507,078**	**2.1**				
Top 10 highest cost weight growth, % of all AR-DRGs				**0.28%**	**0.29%**	**0.3%**					

Notes

i. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 12.0
ii. Separations shown are strata weighted
iii. ALOS means Average Length of Stay

Top 10 AR-DRGs ranked by highest reduction in cost weights

We have also examined AR-DRG's with significant reduction in cost weights for 2023–24. Table 10 shows the AR-DRGs with the highest proportional reduction in their cost weight relative to 2022–23. The AR-DRGs with the highest proportional reduction in their cost weights are spread across a range of MDCs and include a range of average length of stays from sameday to 18 days. For non sameday AR-DRGs, reduction in cost weight is often associated with reduced length of stay compared to 2022–23.

Table 10. Top 10 AR-DRGs ranked by highest reduction in cost weights

			2023–24							2022–23	
Rank 2023–24	AR-DRG	AR-DRG description	Cost weight (a)	No. of weighted seps (b)	Cost weighted seps (c)=(a)x(b)	Number of days (d)	ALOS (days) (e)=(d)/(b)	Reduction in cost weight	Std error	Cost weight 2022–23	ALOS 2022–23
1	961Z	Unacceptable principal diagnosis	0.14	1136	159.04	1159	1	**88%**	0.008	1.23	2
2	I02B	Microvascular tissue transfers or skin grafts, excluding hand, intermediate complexity	4.14	318	1316.52	2845	9	**58%**	0.320	9.76	19
3	C63B	Other disorders of the eye, minor complexity	0.17	3882	659.94	4127	1	**53%**	0.005	0.36	1
4	H60B	Cirrhosis and alcoholic hepatitis, intermediate complexity	1.77	210	371.7	1544	7	**51%**	0.093	3.61	13
5	Y02B	Skin grafts for other burns, intermediate complexity	2.08	9	19	53	6	**49%**	0.613	4.04	13
6	H60A	Cirrhosis and alcoholic hepatitis, major complexity	4.76	79	376	1437	18	**41%**	0.475	8.13	27
7	L60A	Kidney failure, major complexity	3.49	893	3,117	11072	12	**41%**	0.128	5.93	18
8	D64A	Laryngotracheitis and epiglottitis, major complexity	0.84	5	4.2	16	3	**41%**	0.396	1.41	4
9	I60Z	Femoral shaft fractures	2.02	31	62.62	221	7	**39%**	0.440	3.33	13
10	D02A	Head and neck interventions, major complexity	5.6	145	812	1131	8	**39%**	0.378	9.17	8
Sub-total, top 10 highest cost weight growth			**1.03**	**6,708**	**6,897**	**23,607**	**3.5**				
All AR-DRGs			**1.00**	**3,594,953**	**3,594,953**	**7,507,078**	**2.1**				
Top 10 highest cost weight growth, % of all AR-DRGs				**0.19%**	**0.19%**	**0.3%**					

Notes

i. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 12.0
ii. Separations shown are strata weighted
iii. ALOS means Average Length of Stay

8. Cost bucket analysis

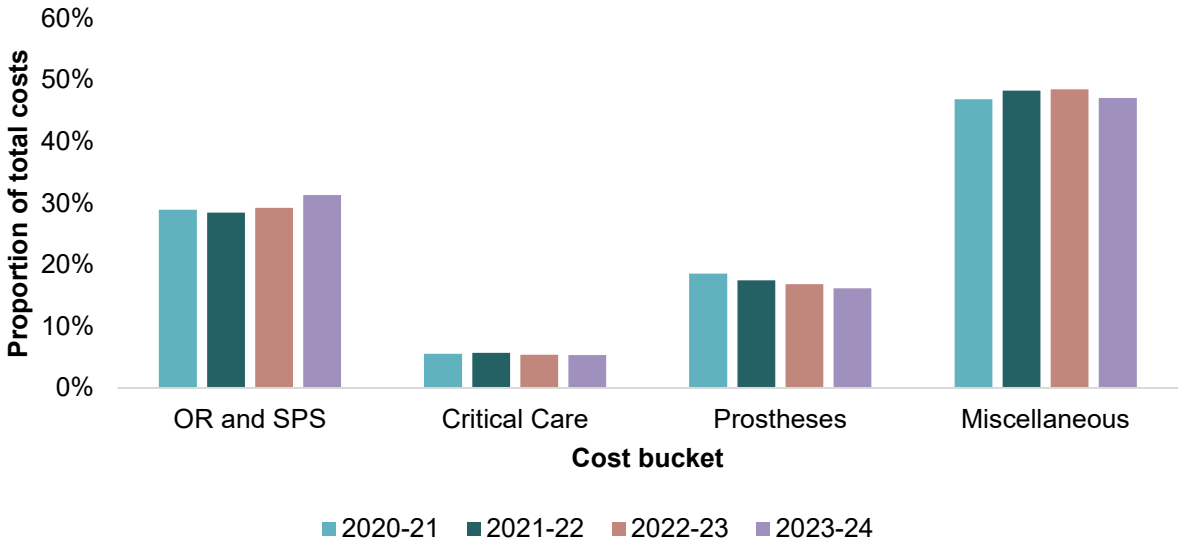
This section analyses several key cost buckets[23] to identify the top 10 Australian Refined Diagnosis Related Groups (AR-DRGs) that contribute to their costs. These cost buckets are:

- operating room and specialist procedure suites (OR and SPS)
- critical care
- prostheses.

Together, these cost buckets make up 52.9% of costs in 2023–24.

Figure 21 illustrates the differences in the cost bucket proportion over the last 4 years. The proportion of OR and SPS costs has increased in over the last three years, with corresponding decreases in the proportion of Prostheses and Miscellaneous cost buckets.

Figure 21. Breakdown of costs by cost bucket group



The following changes are observed:

- The proportion of costs allocated to operating rooms and specialist procedure suites in 2023–24 has increased by 2.1% to 31.3% in comparison to 2022–23.
- The proportion of costs allocated to critical care in 2023–24 has remained steady relative to 2022–23 at 5.3%.
- The proportion of costs allocated to prostheses in 2023–24 has decreased by 0.6% to 16.2% in comparison to 2022–23.
- The proportion of costs allocated to miscellaneous cost buckets in 2023–24 has decreased by 1.4% in comparison to 2022–23.

[23] See *Appendix B: Private sector costing approaches* for the list of cost buckets

- Oncosts have decreased from 8.6% to 7.2% of total costs. This is the largest change across all the grouped cost buckets.

Changes in cost buckets may be due to:

- improvements in the accuracy of cost allocations through improvement of the participant's feeder data and/or allocation statistics
- changes in service weights
- increases in sameday theatre related separations
- changes in case mix.

Operating room and specialist procedure suites cost bucket

Table 11 shows that the AR-DRG with the highest proportion of their total cost belonging to the OR and SPS bucket is U40Z – *Mental health treatment with ECT, same-day* (71.0%). This percentage has increased compared to 2022–23 (62.4%), while the OR and SPS cost weight (0.20) has increased slightly compared to 2022–23 (0.19). For the remaining nine AR-DRGs in Table 11, most OR and SPS cost weights have also experienced a small increase in the last 3 years.

For the AR-DRGs in Table 11, the overall cost weight (0.50) is lower than the population average (1.00) despite more than 60% of their total cost being allocated to the OR and SPS cost bucket in 2023–24. The AR-DRGs listed are all minor complexity procedures that would require minimal time and resources to perform, with the operating room being the biggest contributor to cost weight. The procedures also tend to be same-day, with an ALOS of 1 day across the top 10 AR-DRGs.

Table 11. Top 10 AR-DRGs for costs allocated to the operating room and specialist procedures suites cost bucket

Rank 2023–24	AR-DRG	AR-DRG description	No. of weighted seps	Overall cost weight	OR and SPS cost weight			% of AR-DRG total cost		
					2021–22	2022–23	2023–24	2021–22	2022–23	2023–24
1	U40Z	Mental health treatment with ECT, same-day	6,219	0.28	0.14	0.19	0.20	66.3%	62.4%	**71.0%**
2	C11Z	Eyelid interventions	6,834	0.68	0.46	0.46	0.47	66.1%	67.2%	**68.8%**
3	M63Z	Male sterilisation interventions	5,415	0.43	0.24	0.23	0.29	68.4%	61.0%	**68.2%**
4	B05Z	Carpal tunnel release	21,783	0.45	0.26	0.28	0.30	66.8%	66.6%	**67.9%**
5	M05Z	Circumcision	6,203	0.55	0.32	0.35	0.37	67.4%	66.4%	**67.4%**
6	N10Z	Diagnostic curettage and diagnostic hysteroscopy	30,125	0.40	0.21	0.21	0.27	66.0%	63.7%	**67.0%**
7	D40Z	Dental extractions and restorations	87,057	0.48	0.28	0.30	0.32	66.6%	65.4%	**67.0%**
8	M04B	Testes interventions, minor complexity	6,090	0.68	0.41	0.41	0.45	66.1%	64.8%	**66.5%**
9	N09B	Other vagina, cervix and vulva interventions, minor complexity	12,797	0.45	0.25	0.25	0.30	66.0%	63.4%	**66.5%**
10	J10B	Plastic General Intervention for skin, subcutaneous tissue and breast disorders, minor complexity	21,690	0.73	0.48	0.48	0.48	67.5%	65.3%	**66.5%**
Sub-total, top 10 highest OR and SPS cost weight %			**204,214**	**0.50**	0.29	0.31	0.33	66.7%	65.1%	67.1%
All OR and SPS AR-DRGs			**315,392**	**1.00**	0.28	0.29	0.31	28.5%	29.2%	31.3%
Top 10 highest OR and SPS cost weights proportion (% of all ORS and SPS AR-DRGs)			**64.7%**							

Notes

i. Separations shown are strata weighted
ii. The overall cost weight represents the cost weight across all cost buckets (total cost) of the strata weighted separations
iii. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 12.0

Critical care cost bucket

Table 12 shows that the AR-DRG with the highest percentage of its total cost belonging to the critical care bucket was P64A - *Neonate, admission weight 1250-1499g without significant General Intervention or ventilatory support 96 hours or more, major complexity* (70.2%). All AR-DRGs in this table are related to low birth weight neonates or ventilator support, which indicates the intensive care nature of these separations. The proportion of critical care costs for most of these AR-DRGs has generally increased over the last 3 years, from 51.5% in 2021–22 to 64.6% in 2023–24. The overall cost weight for these AR-DRGs (29.71) is much higher than the population average (1.00).

A comparison of the critical care cost weights for the top 10 AR-DRGs in Table 12 shows that there is high variance in the cost weights over the past 3 years. Given the low number of separations (0.01% of all AR-DRGs), such volatility is not unexpected.

Table 12. Top 10 AR-DRGs for costs allocated to the critical care cost bucket

Rank 2022–23	AR-DRG	AR-DRG description	No. of weighted seps	Overall cost weight	Critical care cost weight			% of AR-DRG total cost		
					2021–22	2022–23	2023–24	2021–22	2022–23	2023–24
1	P64A	Neonate, admission weight 1250-1499g without significant General Intervention or ventilatory support 96 hours or more, major complexity	8	17.40	4.43	10.58	12.21	26.2%	63.2%	**70.2%**
2	P03B	Neonate, admission weight 1000-1499g with significant General Intervention or ventilatory support 96 hours or more, minor complexity	17	18.90	8.16	8.81	12.91	40.4%	70.4%	**68.3%**
3	F40B	Circulatory disorders with ventilatory support, minor complexity	16	5.63	3.66	3.42	3.83	67.7%	67.8%	**68.0%**
4	A13B	Ventilatory support 336 hours or more, minor complexity	56	41.56	24.53	27.53	27.43	56.9%	61.4%	**66.0%**
5	A13A	Ventilatory support 336 hours or more, major complexity	51	69.55	30.32	37.32	44.42	59.7%	63.5%	**63.9%**
6	P05B	Neonate, admission weight 2000-2499g with significant General Intervention or ventilatory support 96 hours or more, minor complexity	16	15.89	5.49	5.56	10.11	41.7%	65.4%	**63.6%**
7	E40B	Respiratory system disorders with ventilatory support, minor complexity	44	7.62	4.24	5.41	4.83	63.3%	65.9%	**63.5%**
8	F40A	Circulatory disorders with ventilatory support, major complexity	10	16.12	4.85	7.36	10.06	55.4%	65.7%	**62.4%**
9	E40A	Respiratory system disorders with ventilatory support, major complexity	21	9.53	6.28	6.15	5.91	63.8%	53.9%	**62.0%**
10	P65A	Neonate, admission weight 1500-1999g without significant General Intervention or ventilatory support 96 hours or more, extreme complexity	18	15.50	2.49	5.54	9.20	17.3%	50.0%	**59.4%**
Sub-total, top 10 critical care cost weight %			**258**	**29.71**	11.11	14.66	19.19	51.5%	62.1%	64.6%
All critical care AR-DRGs			**1,729**	**1.00**	0.06	0.05	0.05	0.06	5.4%	5.3%
Top 10 highest critical care cost weights proportion (% of all critical care AR-DRGs)			**14.92%**							

Notes

i. Separations shown are strata weighted
ii. The overall cost weight represents the cost weight across all cost buckets (total cost) of the strata weighted separations
iii. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 12.0

Prostheses cost bucket

Table 13 shows that the AR-DRG with the highest proportion of their total cost belonging to the prostheses cost bucket was F01B - *Implantation and replacement of aicd, total system, minor complexity* (83.4%). This AR-DRG also had the highest proportion of costs in the prostheses cost bucket in 2022–23. The cost weights have been relatively stable for these AR-DRGs over the past 3 years. The overall cost weight for the AR-DRGs in Table 13 (5.40) is higher than the population average (1.00), with 67.4% (3.64) of this relating to the prostheses cost bucket. Overall, the proportion of costs allocated to the prostheses cost bucket was relatively stable over the last 3 years for these AR-DRGs, although this varied more for some AR-DRGs with lower separation volumes.

Table 13. Top 10 AR-DRGs for costs allocated to the prostheses cost bucket

Rank 2022–23	AR-DRG	AR-DRG description	No. of weighted seps	Overall cost weight	Prostheses cost weight			% of AR-DRG total cost		
					2021–22	2022–23	2023–24	2021–22	2022–23	2023–24
1	F01B	Implantation and replacement of AICD, total system, minor complexity	2,197	9.48	9.04	8.98	7.90	84.2%	85.1%	**83.4%**
2	D01Z	Cochlear implant	999	7.19	5.77	5.87	5.57	79.5%	78.5%	**77.5%**
3	F17B	Insertion and replacement of pacemaker generator, minor complexity	3,203	3.19	2.40	2.53	2.38	76.0%	76.5%	**74.6%**
4	F25B	Percutaneous heart valve replacement with bioprosthesis, minor complexity	2,249	8.63	5.61	5.92	5.84	64.9%	67.1%	**67.7%**
5	F01A	Implantation and replacement of AICD, total system, major complexity	366	13.38	9.74	10.12	8.93	66.6%	62.6%	**66.8%**
6	F17A	Insertion and replacement of pacemaker generator, major complexity	277	4.02	2.29	2.87	2.50	54.8%	64.6%	**62.2%**
7	F12B	Implantation and replacement of pacemaker, total system, minor complexity	7,845	3.94	2.54	2.62	2.35	63.2%	62.8%	**59.6%**
8	I06Z	Spinal fusion for deformity	887	14.25	7.71	8.05	8.09	58.1%	57.3%	**56.7%**
9	F19B	Trans-vascular percutaneous cardiac intervention, minor complexity	1,041	3.52	1.88	2.08	1.93	56.5%	57.4%	**55.0%**
10	L09C	Other interventions for kidney and urinary tract disorders, minor complexity	2,264	1.95	0.86	0.86	1.07	49.0%	50.7%	**54.8%**
Sub-total, top 10 highest prostheses cost weight %			**21,329**	**5.40**	3.83	4.01	3.64	68.8%	69.3%	67.4%
All Prostheses AR-DRGs			**49,029**	**1.00**	0.17	0.17	0.16	17.5%	16.9%	16.2%
Top 10 highest prostheses cost weights proportion (% of all Prostheses AR-DRGs)			**43.50%**							

Notes

i. Separations shown are strata weighted
ii. The overall cost weight represents the cost weight across all cost buckets (total cost) of the strata weighted separations
iii. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 12.0

Appendix A: Methodology

There are 8 stages of the National Hospital Cost Data Collection (NHCDC) Private Sector process.

Stage 1: Develop data specifications

At the commencement of the data collection phase, a data request specification (DRS) for the NHCDC Private Sector 2023–24 was prepared by IHACPA and distributed to all participating hospitals.

Stage 2: Stakeholder engagement

IHACPA confirm the number of participants and sought costed data directly from private hospitals for the NHCDC Private Sector. Participants were requested to provide a methodology that outlined their costing processes.

Stage 3: Data preparation and collection

Participants were responsible for collecting their own data and conducting quality assurance checks to ensure its suitability for use in their costing processes.

Stage 4: Costing

The costing phase involved participants performing episode-level and phase-level (where available) costing using commercial costing software.

Stage 5: Data submission

IHACPA required that the participating hospital groups submit data in accordance with the DRS, along with a data quality checklist that set out the hospital costing process. The various costing methodologies used by private sector hospitals are outlined in Appendix B Private Sector costing approaches. Participants were informed of the timeframes for the costed data collection and provided access to a secure data portal to upload and submit their data.

Stage 6: Data validation and quality assurance

Participants were required to submit their costed data as csv files, which passed data checks documented in the DRS. IHACPA accepted data with zero critical errors.

Where the costed data did not meet the DRS requirements, participants were asked to review the files and make the necessary changes before resubmitting the data.

Once the data was validated, quality assurance (QA) reports were produced to assist participants in confirming the accuracy and suitability of their data submission. These included checks in areas with potential to have a material impact on results, such as zero or negative cost buckets, extreme

high or low-cost separations and the Australian Refined Diagnosis Related Groups (AR-DRG) flipping[24].

If the QA reports identified unexpected variation in the submitted data, the participant was asked to investigate and either adjust the data or justify the variation. Once all unexpected variation was understood, the participant confirmed their data was final. On finalisation of the valid costed data submission, participants were required to submit a data quality statement. The data quality statements informed IHACPA of the key issues that may impact each participant's data submission and provided assurance that the data was fit for purpose.

IHACPA then consolidated the data submission into a national costed dataset.

Stage 7: Data analysis (including adjustments)

The national costed dataset was reviewed to ensure that the separations were in scope. PHDB data was used to develop a national estimate of both the number of in-scope private hospitals and the number of in-scope separations in 2023–24.

The data was also analysed by hospital group and compared against PHDB data, to ensure that no hospital group was over-represented in the dataset in a way that would potentially bias the analysis. The sample data was scaled using weights that adjust for differences between hospital groups' share of the raw NHCDC sample and their market share.

An overall participation rate was calculated relative to population activity. Hospital groups were consulted to ensure they were satisfied with the level of participation throughout the year. The separations in the submitted data were then scaled up using estimated weights to be reflective of the population activity.

A change has been made to the scaling (for both market share and population) in the 2023–24 report to scale on the basis of hospital and patient factors as well as hospital groups. This ensures the final dataset better reflects the case-mix of the data.

The national costed dataset was then reviewed to identify whether there were any instances of AR-DRG flipping (where the cost weight of a lower complexity AR-DRG within the related adjacent AR-DRG is higher than the one with greater complexity). No data adjustments were made following this review.

Based on the adjustments described above, the cost weight tables were produced, verified and compared to results from the previous financial year.

Stage 8: Reporting

The national costed dataset was then used to produce the NHCDC Private Sector Report 2023–24 and the associated cost weight tables.

Each participating hospital receives an individual participant pack, which consists of a benchmarking report, cost tables by AR-DRG and cost bucket, and a de-identified, episode level dataset.

[24] AR-DRG flipping occurs when the cost weight of a lower complexity AR-DRG within the related adjacent AR-DRG is higher than the one with greater complexity.

Appendix B: Private sector costing approaches

Data sources

The following categories of patient level data components are utilised during the costing process:

Financial data: This includes the general ledger cost centres and account codes, along with the mapping of those cost centres to patient care areas and standardised line items. This dataset excludes revenue cost centres and/or account codes.

Activity data: This includes the encounter level data (such as patient ID, encounter ID, date of birth) and transfer information identifying the patient's pathway through the hospital via transfers between areas such as operating rooms and wards.

Feeder data: This includes data that identifies patient consumption of hospital products or services within a patient care area. For example, a prostheses feeder might list the prosthetic items received by a patient and the cost of each. This feeder data is used to allocate costs in the general ledger as it identifies how much of the prosthesis products each encounter consumes.

Where no feeder data is available, patient care area costs are allocated using service weights.

Costing methodologies

Hospital costing is the process of identifying the resources and inputs used during an episode and applying the costs of those inputs to the different types of clinical procedures and treatments provided to each patient in a hospital.

From 2015-16, the participating hospitals have been required to undertake their own costing and during 2015-16 and 2016-17 they were asked to provide a summary of their costing methodology process as well as the process they used to submit the costing data. During 2020–21, participating hospitals were asked to indicate which of the costing methodologies (outlined below) they used.

IHACPA also released the *COVID-19 Response - Costing and pricing guidelines* to guide costing practitioners on the steps to capturing end-to-end COVID-19 activity and expenses.

There are two main methods adopted by participants for hospital cost allocations: cost modelling or patient costing. In recent years of the National Hospital Cost Data Collection (NHCDC), hospital groups have moved away from cost modelling to patient costing approaches, although some hospital groups continue to use cost modelling for specific cost buckets.

Patient costing (also known as bottom-up costing) uses activity feeder systems to provide actual resource consumption. For example, a prostheses system within a hospital will record what type of prostheses has been implanted into a patient and the cost of the implant. This data is used to allocate costs to patients from the prostheses patient care area.

Patient level costing yields results that are closer to the true cost of an encounter within a hospital, however due to the dependency on feeder systems, perfect patient level costing can be difficult to achieve.

Cost modelling (also known as top-down costing) takes the total admitted acute costs for patient areas (such as wards) and allocates costs to encounters based on an assumed level of consumption using service weights. Service weights are the relative costs of a service for each type of patient care product. Service weights are applied to apportion costs to patient groups defined by their Australian Refined Diagnosis Related Groups (AR-DRG), in the case of admitted acute care.

Cost bucket or cost components

The cost of a separation of admitted acute care is reported by allocating patient level costs to a set of pre-defined cost buckets/cost components. The cost buckets are listed as follows:

1. Medical
2. Nursing
3. Non-clinical Salaries
4. Pathology
5. Imaging
6. Allied Health
7. Pharmacy
8. Critical Care
9. Operating Rooms
10. Clinical Supplies
11. Specialist Procedure Suites
12. On-costs
13. Prostheses
14. Hotel
15. Depreciation
16. Patient Transport

Please note that the emergency department cost bucket is excluded for the NHCDC private sector cost buckets, as this collection is for admitted acute only.

Once each of the cost buckets is calculated for an individual patient, the patient's total cost of care is derived as the sum of the above components.

AR-DRG grouping

All 139 participating hospitals in 2023–24 submitted data costed in AR-DRG Version 12.0.

Cost weights

A cost weight for a selected AR-DRG is calculated as the average cost for that AR-DRG, expressed as a weight relative to the overall average cost across all AR-DRGs. The national cost weight across all AR-DRGs is equal to 1.00, with higher cost AR-DRGs having a cost weight higher than 1.00. The weight is an indicator of the complexity of the care of the patient and thus the resourcing intensity required. This is often referred to as the case mix of a patient or hospital.

Costing standards

Costing was performed in compliance with the Australian Hospital Patient Costing Standards (AHPCS) Version 4.2.

Appendix C: Standard error range for the NHCDC Private Sector 2023–24

The variability of the costs by AR-DRG has been measured by analysing the standard error of cost weights in the NHCDC sample. An AR-DRG with a lower standard error has lower variability and thus is more reliable in estimating the AR-DRG's true costs. These standard errors are included in Appendix D: Cost weight tables by AR-DRG Version 12.0.

Table 15 summarises the reliability of AR-DRG cost weights by grouping the standard errors into several ranges. The number of AR-DRGs and separations falling into standard error ranges provides insight into the estimation error of the cost weights.

Table 14. Number of AR-DRGs by standard error range

Standard error range	Number of AR-DRGs	Separations	Percentage of AR-DRGs (%)	Percentage of total separations (%)
0.000 - 0.039	248	3,257,549	32.4%	90.6%
0.040 - 0.099	183	244,452	23.9%	6.8%
0.100 - 0.149	81	43,963	10.6%	1.2%
0.150 - 0.199	51	16,486	6.7%	0.5%
0.200 - 0.399	93	22,823	12.2%	0.6%
0.400 +	109	9,510	14.2%	0.3%
Total*	765	3,594,783	100.0%	100.0%

* The standard error for some AR-DRGs cannot be estimated due to low separation counts in the sample.Total may not add to the sum of the rows due to rounding.

The results in Table 15 show that 56.3% (32.4% + 23.9%) of AR-DRGs have cost weight estimates with a standard error of less than 0.1. Approximately 97.4% (90.6% + 6.8%) of separations are within the subset of AR-DRGs that have a standard error of less than 0.1.

Appendix D: Cost weight tables by AR-DRG Version 12.0

Table 15. 2023–24 national consolidation cost weight tables - version 12.0

Please refer to the Excel file for details.

Intentionally left blank.

Appendix E: Cost weight tables by AR-DRG Version 11.0

Table 16. 2023–24 national consolidation cost weight tables - version 11.0

Please refer to the Excel file for details.

Intentionally left blank.

Appendix F: Cost weight tables by AR-DRG Version 10.0

Table 17. 2023–24 national consolidation cost weight tables - version 10.0

Please refer to the Excel file for details.

Intentionally left blank.

Appendix G: Cost weight tables by AR-DRG Version 9.0

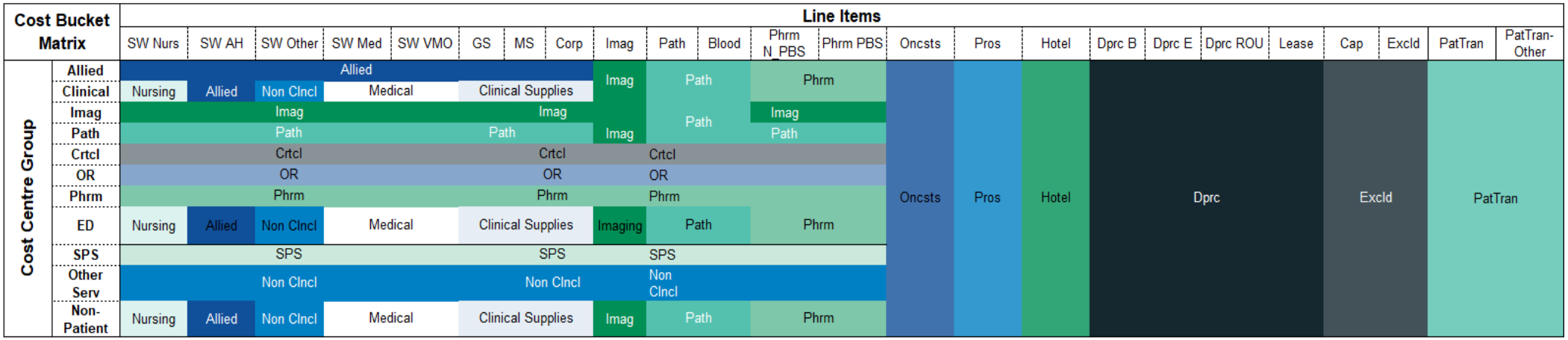
Table 18. 2023–24 national consolidation cost weight tables - version 9.0

Please refer to the Excel file for details.

Intentionally left blank.

Appendix H: Cost bucket matrix

Figure 22. Cost bucket matrix



IHACPA

Independent Health and Aged Care Pricing Authority

Eora Nation, Level 12, 1 Oxford Street
Sydney NSW 2000

Phone 02 8215 1100
Email enquiries.ihacpa@ihacpa.gov.au

www.ihacpa.gov.au