**National Hospital Cost Data**

**Collection**

**Private Hospital Report 2020-21**

National Hospital Cost Data Collection Private Hospital Report 2020-21 — July 2023

© Independent Health and Aged Care Pricing Authority 2023

This publication is available for your use under a Creative Commons BY Attribution 3.0 Australia licence, with the exception of the Independent Health and Aged Care Pricing Authority logo, photographs, images, signatures and where otherwise stated. The full licence terms are available from the Creative Commons website.



Use of Independent Health and Aged Care Pricing Authority material under a Creative Commons BY Attribution 3.0 Australia licence requires you to attribute the work (but not in any way that suggests that the Independent Health and Aged Care Pricing Authority endorses you or your use of the work).

Independent Health and Aged Care Pricing Authority material used 'as supplied'.

Provided you have not modified or transformed Independent Health and Aged Care Pricing Authority material in any way including, for example, by changing Independent Health and Aged Care Pricing Authority text – then the Independent Health and Aged Care Pricing Authority prefers the following attribution:

Source: The Independent Health and Aged Care Pricing Authority

Contents

[1. Executive Summary 6](#_Toc129701348)

[2. Introduction 9](#_Toc129701353)

[3. Scope and methodology 11](#_Toc129701360)

[4. Results 15](#_Toc129701371)

[5. COVID-19 39](#_Toc129701383)

[Appendix A: Methodology 42](#_Toc129701388)

[Appendix B: Private sector costing approaches 44](#_Toc129701397)

[Appendix C: Standard error range for the 2020-21 private sector NHCDC 46](#_Toc129701404)

[Appendix D: Cost weight tables by AR‑DRG Version 10.0 47](#_Toc129701405)

[Appendix E: Cost weight tables by AR‑DRG Version 9.0 48](#_Toc129701406)

[Appendix F: Cost weight tables by AR‑DRG Version 8.0 49](#_Toc129701407)

[Appendix G: Cost bucket matrix 50](#_Toc129701413)

# Tables and Figures

### List of Tables

[Table 1. Summary of private hospital participation, 2015-16 to 2020-21 9](#_Toc139881774)

[Table 2. Summary of private hospital statistics for overnight hospitals 10](#_Toc139881775)

[Table 3. Comparison of separations and hospitals, 2015-16 to 2020-21 17](#_Toc139881776)

[Table 4. Breakdown by MDC 19](#_Toc139881777)

[Table 5. Top 10 AR-DRGs ranked by highest cost weight, 2020-21 compared to 2019-20 25](#_Toc139881778)

[Table 6. Top 10 AR-DRGs ranked by highest volume of population-adjusted separations 28](#_Toc139881779)

[Table 7. Top 10 AR-DRGs ranked by highest cost weighted separations 32](#_Toc139881780)

[Table 8. Top 10 AR-DRGs for costs allocated to the operating room and specialist procedures suites cost bucket 35](#_Toc139881781)

[Table 9. Top 10 AR-DRGs for costs allocated to the critical care cost bucket 36](#_Toc139881782)

[Table 10. Top 10 AR-DRGs for costs allocated to the prostheses cost bucket 37](#_Toc139881783)

[Table 11. Number of AR-DRGs by standard error range 46](#_Toc139881784)

[Table 12. 2020-21 national consolidation cost weight tables - version 10.0 47](#_Toc139881785)

[Table 13. 2020-21 national consolidation cost weight tables - version 9.0 48](#_Toc139881786)

[Table 14. 2020-21 national consolidation cost weight tables - version 8.0 49](#_Toc139881787)

### List of Figures

[Figure 1. Participating hospitals in the NHCDC 15](#_Toc129263240)

[Figure 2. Total private hospital separations and participation rate 15](#_Toc129263241)

[Figure 3. Participation rate over 2015-16 to 2020-21 16](#_Toc129263242)

[Figure 4. Average Length of Stay 16](#_Toc129263243)

[Figure 5. Separations and Cost for MDC 06: Diseases and Disorders of the Digestive System 20](#_Toc129263244)

[Figure 6. Separations and Cost for MDC 04: Diseases and Disorders of the Respiratory System 21](#_Toc129263245)

[Figure 7. Separations and Cost for MDC 19: Mental Diseases and Disorders 21](#_Toc129263246)

[Figure 8. Average cost weight and ALOS for top 10 AR-DRGs 23](#_Toc129263247)

[Figure 9. Comparison to top 10 AR-DRGs ranked by highest cost weight, 2018-19 to 2020-21 23](#_Toc129263248)

[Figure 10. Total Weighted Separations and ALOS 26](#_Toc129263249)

[Figure 11. Comparison of top 10 AR-DRGs by highest volume of population-adjusted separations, 2018-19 to 2020-21 27](#_Toc129263250)

[Figure 12. Total Cost Weighted Separations and Average Cost Weight 30](#_Toc129263251)

[Figure 13. Comparison of top 10 AR-DRGs by highest cost-weighted separations, 2018-19 to 2020-21 30](#_Toc129263252)

[Figure 14. Breakdown of costs by cost bucket group 33](#_Toc129263253)

[Figure 15. Ward nursing costs from 2015-16 to 2020-21 38](#_Toc129263254)

[Figure 16. Total separations by jurisdiction 40](#_Toc129263255)

[Figure 17. Separations by month for intervention episodes 41](#_Toc129263256)

[Figure 18. Separations by month for medical episodes 41](#_Toc129263257)

[Figure 19. Cost bucket matrix 5](#_Toc129263258)0

# Executive Summary

The private sector National Hospital Cost Data Collection (NHCDC) 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 2020-21 NHCDC, for admitted acute care provided by 103 in-scope overnight private hospitals and represents 65.3 per cent of private hospital activity.

The COVID-19 global pandemic impacted Australia from March 2020 onwards, resulting in national lockdowns and restrictions on elective surgeries. This impacted hospital operations (both public and private) and had impacts that are reflected in the activity volumes and cost profiles of the data collection.

## Participation

Twelve hospital groups nationally participated in 2020-21, an increase from 2019-20. The number of participating hospitals was the same across both years. Analysis of the data confirmed that the volume of participating hospitals 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 2020-21 dataset included 2,277,973 separations, an increase of 210,259 (10.2 per cent) compared to 2019-20. This increase in volume was driven by easing in COVID-19 and elective surgery restrictions. A notable impact was observed for private hospitals within Victoria, reflecting the longer lockdowns and elective surgery restrictions in the first quarter of 2020-21.

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 done by Major Diagnostic Category (MDC) and the top 10   
AR-DRGs across a range of metrics. MDC is a less granular category than AR-DRG and enables analyses by medical specialties.

At the MDC level:

* + The Digestive and Orthopaedic MDCs were responsible for most of the private sector separations (31.1 per cent). In 2020-21, both separations and total cost for these MDCs increased, driven by the easing of COVID-19 restrictions on elective surgeries.
  + Within the Respiratory MDC, separations decreased in 2019-20 and have remained at this level in 2020-21. This trend indicates there is less respiratory support being accessed through private hospitals with the decrease consistent across most AR-DRGs within this MDC.
  + The Mental Health MDC also saw a decrease in separations in 2019-20 and 2020-21, while average costs increased over the two years.

Analyses across the top 10 AR-DRGs:

* + AR-DRGs with the highest cost weights are typically high in cost and low in volume, with all top 10 listed AR-DRGs relating to some form of ventilation. The AR-DRG with the highest cost weight remained the same as the prior year (A13A: Ventilation >=336hours, Major Complexity).
  + AR-DRGs with the highest population-adjusted separations are generally high-volume, sameday separations. Each of the top 10 AR‑DRGs have grown in volume since the prior year. The AR-DRG with the most population-adjusted separations remained the same (R63Z: Chemotherapy).
  + AR-DRGs with the highest cost weighted separations tend to be common procedures in the private sector. Each of the top 10 AR-DRGs grew in cost weighted volume since the prior year. The top two AR-DRGs (I04B: Knee Replacement, Minor Complexity and   
    I33B: Hip Replacement, Minor Complexity) both saw substantial increases in the number of cost weighted separations (23.7 and 17.3 per cent respectively).

Overall, the analysis of top 10 AR-DRGs showed a high level of consistency with the prior year, with most AR‑DRGs in the top 10 not changing.

Analysis was also undertaken at a cost bucket level:

* + Both operating room and specialist procedure suites (combined cost bucket) and prostheses have been increasing in their proportion of total cost. Together, these cost buckets made up 47.5 per cent of total cost in 2020-21 compared to 44.9 per cent in 2019-20 and 46.1 per cent in 2018-19.
  + The critical care cost bucket made up 5.6 per cent of total cost in 2020-21, 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. Of the top 10 AR‑DRGs with the highest critical care cost, over half of the total cost was in critical care.

## Methodology

In the 2020-21 NHCDC, 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 quality assurance (QA) checks to ensure accuracy and suitability of the data submission.

The validated data was then used to produce the *NHCDC Private Hospital Report 2020-21*, and individualised reports including cost weight tables for each participating hospital group. There were no adjustments made for the impact of COVID-19 in the national costed dataset or private sector reports.

The COVID-19 pandemic continued to impact Australia in 2020-21, resulting in jurisdictional lockdowns and varying levels of restrictions on elective surgeries. This impacted hospital operations (both public and private) and had financial impacts that are reflected in the activity volumes and cost profiles of the data collection. IHACPA released a set of guidance documents for costing and pricing for COVID‑19 and recognises thatthere may be variations in the approach to costing for 2020-21. The results in this cost report should be reviewed with this context in mind.

## 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 4.1
  + 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 impact of COVID-19 on private hospital activity and cost profile.

Further investigations into the 2020-21 NHCDC submission identified variations in cost profiles, specifically the pharmacy costs, driven by whether a hospital’s pharmacy function is outsourced to an external vendor. Readers of this report should consider this when interpreting the results of this report, particularly for AR-DRGs that have a high proportion of Pharmaceutical Benefits Scheme (PBS) costs.

# 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 2020-21 private sector NHCDC.

The information is grouped by 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[[1]](#footnote-2). The AR-DRG is derived from a range of data collected on admitted patients, including diagnosis and procedure information, classified using ICD-10-AM[[2]](#footnote-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 10.0. Cost weight tables are provided for AR-DRG Versions 10.0, 9.0 and 8.0 in the appendices.

## History of the private sector NHCDC

The first year the private sector NHCDC 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 sets out the participation rate for 2020-21 and the last five years.

Table 1. Summary of private hospital participation, 2015-16 to 2020-21

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Summary** | **2015-16** | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** |
| Number of hospitals | 91 | 105 | 112 | 108 | 103 | 103 |
| Sample separations | 1,781,699 | 1,923,310 | 2,173,847 | 2,234,143 | 2,067,714 | 2,277,973 |
| Participation rate\* (%) | 58.4 | 59.3 | 65.9 | 65.1 | 64.9 | 65.3 |
| AR-DRG version | 8.0 | 9.0 | 9.0 | 10.0 | 10.0 | 10.0 |

\* Participation rate refers to the percentage of sample separations compared to the population separations.

## Private Hospital statistics for 2020-21

593 private hospitals reported to the Private Hospital Data Bureau (PHDB) in 2020‑21, submitting 4.8 million patient separations in 2020‑21. Of this total, 280 (47 per cent) were overnight hospitals submitting 3.8 million (80 per cent) separations.

Table 2 sets out private hospital statistics for overnight hospitals only.

Table 2. Summary of private hospital statistics for overnight hospitals

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Summary** | **2019-20** | **2020-21** | **Change** | **Change (%)** |
| Number of overnight hospitals reporting to PHDB | 293 | 280 | -13 | -4.4% |
| Total separations (million) | 3.5 | 3.8 | 0.3 | 8.6% |
| Sameday separations (million) | 2.3 | 2.5 | 0.2 | 8.7% |
| Acute, Newborn and Mental Health Care separations (million) | 3.1 | 3.4 | 0.3 | 10.7% |
| Total patient days of care (million) | 8.7 | 9.1 | 0.4 | 4.6% |
| Average Length of Stay (day) | 2.5 | 2.4 | -0.1 | -4.0% |

## COVID-19 and the NHCDC

The COVID-19 global pandemic impacted Australia from March 2020 onwards, resulting in national lockdowns and jurisdictional restrictions on elective surgeries. This impacted hospital operations (both public and private) and had financial impacts that were reflected in the activity volumes and cost profiles of the data collection. The pandemic continued into 2020-21, though the impact on the private sector activity and costs differed to the impact in 2019-20 due to varying public health responses across the country. Section 5 of this report provides further background information, outlining the costing approaches utilised for COVID-19 and shows analyses on the activity volumes in the private sector.

## Public and private sector differences

This report does not compare the average cost per separation between 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 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 2020-21 are requested to sign a confidentiality agreement before any final 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 five separations and/or fewer than three hospitals contributing to a particular AR-DRG, the figures for this cost weight have been replaced by asterisks (\*\*\*\*\*).

# Scope and methodology

## Scope

The scope of the 2020-21 private sector NHCDC includes acute patients admitted to overnight private hospitals in Australia who were discharged in the 2020-21 financial year. This includes patients that were admitted to a hospital, were classified under the AR-DRG and had a care type of admitted acute, qualified newborn[[3]](#footnote-4), 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.

For this report, an overnight hospital was considered in-scope if it performed at least 200 admitted acute separations in the relevant year.

Participants were invited to submit subacute data again in 2020‑21, but analysis of subacute data has not been included due to insufficient participation. This remains unchanged from the previous two financial years, as its inclusion would lead to potentially inappropriate or biased representation of the cost profile for subacute activity in the population.

The 2018-19 NHCDC was the first year in which some hospital groups began submitting admitted mental health episodes under care type 11.0. Prior to the introduction of care type 11.0, admitted mental health episodes were classified as admitted acute. In the past three years, mental health activity has been combined with other admitted acute activity due to insufficient volume. As all three years include mental health, it enables like-for-like comparisons to be made between the years.

Similar to the previous financial year, participants were invited to submit phase-level data for both subacute and mental health activity in 2020-21. The results of the analysis using this data were not included in this report due to insufficient participation.

IHACPA will continue to work with the sector to improve the data collection so that the subacute and mental health streams can be reported separately in future years.

### 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[[4]](#footnote-5) 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[[5]](#footnote-6).

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.
  + Patients aged less than 10 days and not admitted at birth (e.g., transferred from another hospital) are admitted with newborn care type.
  + Patients aged greater than 9 days not previously admitted (e.g., 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.[[6]](#footnote-7)

Mental health care type 11.0[[7]](#footnote-8) 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[[8]](#footnote-9)) is care that does not meet the definitions for other care types but is deemed in-scope for this report.

### Reporting requirements

The Australian Hospital Patient Costing Standards Version 4.1[[9]](#footnote-10) (AHPCS) guide the hospitals with costing processes for their NHCDC submissions to ensure a consistent treatment of costs between hospitals nationally. Version 4.1 of the AHPCS was released in August 2021 and applied for the first time in the 2020-21 NHCDC.

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 G: 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 2020‑21, but who was admitted prior to the reporting period. Patients who have not been discharged in 2020-21 are out of scope.

In 2020-21, all WIP patients were admitted in 2019-20 and discharged in 2020‑21. These records 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.

### 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 definition of unqualified days in the National Health Data Dictionary[[10]](#footnote-11) relates to the first nine days of a newborn’s life 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 PHDB separations amongst all participating hospital groups. The market share was then compared to the submitted data to determine if any hospital groups submitted more separations than their market share would warrant, and if so, whether this would lead to an inappropriate representation. An adjustment was made for the 2020-21 NHCDC to better align the share for hospital groups in the NHCDC to their market share.

### 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. The weights are calculated based on the number of separations in each hospital group in the submitted data and nationally, as per the total population in PHDB.

The total population was defined as the total number of private acute separations in the PHDB data in 2020-21. All private acute hospitals in Australia (excluding private day hospital facilities) with more than 200 admitted acute separations during the financial year were included. The number of in-scope hospitals in the population file for 2020-21 is 246, down from the 280 hospitals submitted as 34 were found to not be in-scope.

### 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 W Ventilator Support, Minor Complexity was greater than the cost weight of the higher complexity AR-DRG E40A: Respiratory System Disorders W Ventilator Support, Major Complexity.

A small number of instances of AR-DRG flipping were identified in 2020-21. Each instance was analysed and investigated by the key stakeholders to ensure the appropriate treatment had been applied. This included reviewing patient data. It was determined that no adjustments were required for these occurrences.

### 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. For 2020-21, 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 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 4.1 costing standards) and the pharmacy cost is reported as the gross amount.

This variation is most notable in AR-DRGs that attract pharmaceuticals with PBS rebates, such as R63Z: Chemotherapy.

For 2020-21, 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.

# Results

## Participation

The participation of the private sector NHCDC 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 six years.

Figure 1. Participating hospitals in the NHCDC

This is a column graph which shows the number of participating hospitals in the NHCDC between 2015-16 and 2020-21.

The population of separations in 2020‑21 is defined as all private admitted acute separations performed at 246 in-scope overnight private hospitals in 2020‑21, totalling 3,487,127 separations.

Figure 2. Total private hospital separations and NHCDC participation rate

Total private hospital separations and NHCDC participation rate 

This is a column graph which shows total private hospital separations (breakdown down by sameday separations, overnight separations, and separations not included in the NHCDC). The NHCDC participation rate is shown as a line graph on the secondary axis. The graph shows the period between 2015-16 and 2020-21.

The number of sample separations (that is, separations submitted to the NHCDC) in 2020‑21 was 2,277,973, representing a 10.2 per cent increase in the sample separations compared to 2019-20. This increase in separations is also observed in the population overall, potentially reflecting the increase in activity due to the relaxing of COVID-19 restrictions.

The participation rate is calculated as the number of sample separations submitted to the NHCDC as a proportion of the total population separations. Figure 3 shows the participation rate in the NHCDC from 2015‑16 to 2020‑21.

Figure 3. Participation rate over 2015-16 to 2020-21

This line graph shows the participation rate (%) between 2015-16 and 2020-21.

In 2020‑21, the participation rate was 65.3 per cent of separations, compared to 64.9 per cent of separations in 2019‑20 (a marginal increase of 0.6 per cent).

Figure 4. Average Length of Stay

This line graph shows the average length of stay for the period between 2015-16 and 2020-21.

The average length of stay for 2020-21 has decreased by 0.08 days compared to 2019-20 (-3.4 per cent). The overnight average length of stay for 2020-21 has also decreased by 0.14 days compared to 2019-20 (-3.4 per cent).

Table 3. Comparison of separations and hospitals, 2015-16 to 2020-21

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Summary** | **2015-16** | **2016-17** | **2017-18** | **2018-19** | **2019-20** | **2020-21** |
| Sample separations | 1,781,699 | 1,923,310 | 2,173,847 | 2,234,143 | 2,067,714 | 2,277,973 |
| Change in separations (%) | 5.0 | 7.9 | 13.0 | 2.8 | -7.4 | 10.2 |
| Sameday separations^ | 1,021,254 | 1,145,180 | 1,276,764 | 1,333,671 | 1,240,161 | 1,381,333 |
| Change in sameday separations (%) | n/a | 12.1 | 11.5 | 4.5 | -7.0 | 11.4 |
| Population separations | 3,051,681 | 3,242,411 | 3,297,288 | 3,430,288 | 3,184,312 | 3,487,127 |
| Participation rate (%) | 58.4 | 59.3 | 65.9 | 65.1 | 64.9 | 65.3 |
| Sample hospitals | 91 | 105 | 112 | 108 | 103 | 103 |
| Change in sample hospitals (%) | -5.2 | 15.4 | 6.7 | -3.6 | -4.6 | 0.0 |
| Population hospitals | 246 | 251 | 260 | 262 | 255 | 246 |
| Sample hospitals to population hospitals (%) | 37.0 | 41.8 | 43.1 | 41.2 | 40.4 | 41.9 |
| Average sample separations per hospital | 19,579 | 18,317 | 19,409 | 20,687 | 20,075 | 22,116 |
| Average population separations per hospital | 12,405 | 12,918 | 12,682 | 13,093 | 12,487 | 14,175 |
| Average Length of Stay | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 |
| Change in Average Length of Stay (%) | -4.6 | -3.2 | 0.9 | 1.4 | -0.2 | -3.4 |
| Overnight Average Length of Stay | 4.2 | 4.1 | 4.1 | 4.3 | 4.3 | 4.1 |

\* Figures may not reconcile due to rounding.

^ Sameday separations are a subset of sample separations.

In Table 3, percentage change represents a comparison to the previous NHCDC year. There was a 10.2 per cent increase in sample separations between 2019-20 and 2020-21. The number of participating hospitals was unchanged, with the increase in separations driven by a higher average number of separations per hospital. It is likely that both population growth and the recovery from the impact of COVID-19 contributed to this increase. In addition, there were hospitals entering and leaving the sample which may have contributed to the variation.

## Analysis by MDC

The 2020-21 NHCDC submission has been analysed by Major Diagnosis Category (MDC) a summarised categorisation in the 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 specialities.

#### Key findings

Table 4 captures data for each MDC and the key findings are:

* + MDC 00 (Pre MDC) consists of episodes that relate to critical care and life support and as such has the highest cost weight (25.27) and average length of stay (30.9).
  + MDC 06 (Digestive System) has the highest volume of episodes (595,745 weighted separations or 17.1 per cent). Minor elective procedures such as endoscopy and colonoscopy make up a large volume of the activity, which drives the low cost weight (0.59) and short average length of stay (1.7).
  + MDC 08 (Musculoskeletal System and Connective Tissue) has the next highest volume of episodes (489,758 weighted separations or 14.0 per cent). Within the private sector, orthopaedic elective surgery is common, however it does attract a higher cost weight (2.05) and length of stay (2.9). As such it is the MDC with the highest number of cost weighted separations (1,004,004).
  + MDC 18 (Infectious and Parasitic Diseases) and MDC 15 (Newborns and Other Neonates) have the next longest average lengths of stay (after MDC 00) of 7.6 and 7.3 days respectively.
  + MDC 02 (Eye) and MDC 03 (Ear, Nose, Mouth and Throat) have the lowest average lengths of stay with 1.1 and 1.2 respectively. This reflects the sameday nature of these MDCs.

Table 4. Breakdown by MDC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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 | 00: Pre MDC | 25.27 | 1,055 | 26,660 | 32,584 | 30.9 |
| 01 | 01: Diseases and Disorders of the Nervous System | 1.16 | 107,686 | 124,916 | 347,736 | 3.2 |
| 02 | 02: Diseases and Disorders of the Eye | 0.48 | 78,586 | 37,721 | 82,735 | 1.1 |
| 03 | 03: Diseases and Disorders of the Ear, Nose, Mouth and Throat | 0.70 | 198,394 | 138,876 | 238,133 | 1.2 |
| 04 | 04: Diseases and Disorders of the Respiratory System | 1.06 | 102,844 | 109,015 | 368,785 | 3.6 |
| 05 | 05: Diseases and Disorders of the Circulatory System | 2.21 | 225,694 | 498,784 | 759,005 | 3.4 |
| 06 | 06: Diseases and Disorders of the Digestive System | 0.59 | 595,745 | 351,490 | 989,297 | 1.7 |
| 07 | 07: Diseases and Disorders of the Hepatobiliary System and Pancreas | 1.36 | 46,756 | 63,588 | 138,673 | 3.0 |
| 08 | 08: Diseases and Disorders of the Musculoskeletal System and Connective Tissue | 2.05 | 489,758 | 1,004,004 | 1,433,387 | 2.9 |
| 09 | 09: Diseases and Disorders of the Skin, Subcutaneous Tissue and Breast | 1.01 | 159,623 | 161,219 | 353,873 | 2.2 |
| 10 | 10: Endocrine, Nutritional and Metabolic Diseases and Disorders | 1.32 | 92,020 | 121,466 | 200,611 | 2.2 |
| 11 | 11: Diseases and Disorders of the Kidney and Urinary Tract | 0.44 | 297,832 | 131,046 | 470,656 | 1.6 |
| 12 | 12: Diseases and Disorders of the Male Reproductive System | 0.87 | 82,011 | 71,350 | 125,114 | 1.5 |
| 13 | 13: Diseases and Disorders of the Female Reproductive System | 0.79 | 160,594 | 126,869 | 238,385 | 1.5 |
| 14 | 14: Pregnancy, Childbirth and the Puerperium | 1.39 | 116,032 | 161,284 | 421,300 | 3.6 |
| 15 | 15: Newborns and Other Neonates | 2.76 | 10,616 | 29,300 | 77,464 | 7.3 |
| 16 | 16: Diseases and Disorders of the Blood and Blood Forming Organs and Immunological Disorders | 0.40 | 59,320 | 23,728 | 103,812 | 1.8 |
| 17 | 17: Neoplastic Disorders (Haematological and Solid Neoplasms) | 0.30 | 311,704 | 93,511 | 400,740 | 1.3 |
| 18 | 18: Infectious and Parasitic Diseases | 1.99 | 16,915 | 33,661 | 128,068 | 7.6 |
| 19 | 19: Mental Diseases and Disorders | 0.65 | 110,527 | 71,843 | 456,452 | 4.1 |
| 20 | 20: Alcohol /Drug Use and Alcohol /Drug Induced Organic Mental Disorder | 0.64 | 14,003 | 8,962 | 62,600 | 4.5 |
| 21 | 21A: Injuries, Poisoning and Toxic Effects of Drugs: Multiple Trauma | 1.08 | 31,317 | 33,822 | 104,515 | 3.3 |
| 22 | 22: Burns | 1.10 | 250 | 275 | 885 | 3.5 |
| 23 | 23: Factors Influencing Health Status and Other Contacts with Health Services | 0.32 | 170,553 | 54,577 | 216,272 | 1.3 |
| 80 | 80: DRGs operational room procedure unrelated to PD | 2.86 | 3,803 | 10,877 | 27,414 | 7.2 |
| 96 | 96: Error DRGs | 0.90 | 3,489 | 3,140 | 5,134 | 1.5 |
| **All MDCs** |  | **1.00** | **3,487,127** | **3,491,983** | **7,783,631** | **2.2** |

#### Comparison with previous years

This section of the report analyses three MDCs and looks at how their sample separations and totals costs for 2020-21 compare with 2019-20 and 2018-19. The MDCs that have been selected are:

* + MDC 06 (Digestive System), shown in Figure 5, has the highest number of sample separations.
  + MDC 04 (Respiratory System), shown in Figure 6, has been included to observe if there have been any impacts resulting from COVID-19 on respiratory AR-DRGs.
  + MDC 19 (Mental Diseases and Disorders), shown in Figure 7, has seen a large decrease in activity from 2019‑20.

Figure 5. Separations and Cost for MDC 06: Diseases and Disorders of the Digestive System

Separations and Cost for MDC 06: Diseases and Disorders of the Digestive System

This is a combined column and line graph. The column graph shows sample separations for MDC 06 over the period between 2018-19 and 2020-21. The line graph on the secondary axis shows the total cost for MDC 06 over the period between 2018-19 and 2020-21.

Total costs in MDC 06 have increased over the three-year period from 2018‑19 to 2020‑21. In 2019‑20, there was a slight decrease in separations despite the total costs increasing. This decrease occurred over both intervention and medical type episodes, with intervention episodes comprising the majority of MDC 06 (around 85 per cent).

The following three intervention type AR‑DRGs alone comprise almost 70 per cent of MDC 06:

* + G46B: Complex Endoscopy, Minor Complexity
  + G47C: Gastroscopy, Minor Complexity
  + G48B: Colonoscopy, Minor Complexity

Separations increased by 15 per cent between 2019-20 and 2020-21 as COVID-19 restrictions eased. This increase in separations in 2020-21 is primarily driven by the three AR-DRGs above.

Figure 6. Separations and Cost for MDC 04: Diseases and Disorders of the Respiratory System

Separations and costs for MDC 04: Diseases and Disorders of the Respiratory System

This is a combined column and line graph. The column graph shows sample separations for MDC 04 over the period between 2018-19 and 2020-21. The line graph on the secondary axis shows the total cost for MDC 04 over the period between 2018-19 and 2020-21.

Total costs and sample separations have decreased in MDC 04 between 2018-19 and 2020-21. This was driven by decreases in medical type episodes which comprise over 70 per cent of MDC 04. In 2019‑20, there was a large decrease in separations. Total cost remained similar in 2019-20 despite the decrease in separations.

The lower volume of separations persisted into 2020-21. This trend indicates there is less respiratory support being accessed through private hospitals with the decrease consistent across most AR-DRGs within this MDC.

MDC 04 was examined to understand whether COVID‑19 had any impact on respiratory admissions in the private sector. There were only a small number of episodes in the 2020‑21 NHCDC submission with a COVID-19 diagnosis code. These episodes were more commonly assigned to MDC 23: Factors Influencing Health Status and Other Contacts with Health Services.

Figure 7. Separations and Cost for MDC 19: Mental Diseases and Disorders

Separations and costs for MDC 19: Mental diseases and disorders

This is a combined column and line graph. The column graph shows sample separations for MDC 19 over the period between 2018-19 and 2020-21. The line graph on the secondary axis shows the total cost for MDC 19 over the period between 2018-19 and 2020-21.

Total costs in MDC 19 increased in 2019-20, while sample separations have decreased across the three-year period.

The decrease in separations in 2020-21 is primarily driven by the two AR-DRGs with the largest volume of separations:

* + U60Z: Mental Health Treatment W/O ECT, Sameday
  + U63B: Major Affective Disorders, Minor Complexity

Both AR-DRGs have maintained a similar level of total cost despite the decrease in separations. As evidenced in the chart, the decrease in separations occurred in 2019-20 and continued into 2020‑21.

## Analysis of Top 10 AR-DRGs

Analysing the top 10 AR-DRGs provides insight into the consistency between years, facilitates the identification of trends and highlights the AR-DRGs that are driving costs. 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.

### Top 10 AR-DRGs ranked by highest cost weight

#### Key findings

As shown in Figure 9 below, the highest cost weight AR-DRG was A13A: Ventilation >=336hours, Major Complexity. This was also the AR-DRG with the highest cost weight in the previous year and has had the highest cost weight since 2015-16. Of the ten highest cost weight AR-DRGs, seven belong to the MDC 00 (Pre MDC). This reflects the high-cost nature of the ventilation related AR‑DRGs that make up this MDC.

The AR-DRGs in Table 5were high-cost but low-volume, representing only 0.04 per cent of the total population-adjusted separations. Despite this low volume they accounted for 0.98 per cent of the total population cost weighted separations.

The ALOS for these top 10 AR-DRGs is 29.9 days compared to the population average of 2.2 days, reflecting the high complexity of these AR-DRGs. The ALOS for 2020‑21 has decreased in comparison to 2019-20, when it was 33.8 days (-11.5 per cent). This decrease in ALOS was primarily driven by the top 3 AR-DRGs, which are all closely related to ventilation support.

#### Comparison with previous years

Figure 8 captures the change in average cost weight and ALOS for the top 10 AR-DRGs for the period from 2018-19 to 2020-21. The cost weight dropped in 2019-20 but has since increased, while the ALOS decreased across both years. Given the low-volume, high-cost profile of these AR-DRGs, variability between years is to be expected.

Figure 8. Average cost weight and ALOS for top 10 AR-DRGs

Average cost weight and ALOS for top 10 AR-DRGs

There are two line graphs in this chart: one shows the average cost weight between 2018-19 and 2020-21, and the other one line shows the ALOS over the same period.

Figure 9. Comparison to top 10 AR-DRGs ranked by highest cost weight, 2018-19 to 2020-21



There were three new AR-DRGs in the top 10 list for 2020-21:

* + A40Z: Extracorporeal membrane oxygenation (ECMO)
  + A14C: Ventilation >= 96 hours & < 336 hours, Minor Complexity
  + F07A: Other Cardiothoracic/Vascular Interventions W CPB Pump, Major Complexity.

A40Z is an advanced form of life support, which only had 17 separations during 2020-21 and has the fourth highest ranked cost weight (previously rank 47). The other two AR-DRGs were slightly outside the top 10 in the previous year, at rank 11 (F07A) and 12 (A14C). This suggests they are consistently high cost weight AR-DRGs.

Table 5. Top 10 AR-DRGs ranked by highest cost weight, 2020-21 compared to 2019-20

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **2020-21** | | | | | | | | **2019-20** | | |
| **Top 10 2019-20** | **Rank 2020-21** | **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** | **Rank** | **No. of weighted seps** |
| Yes | 1 | A13A | Ventilation >= 336 hours, Major Complexity | **50.54** | 74 | 3,740 | 4,275 | 57.6 | 3.57 | 0.00% | 0.11% | 52.56 | 1 | 89 |
| Yes | 2 | A13B | Ventilation >= 336 hours, Minor Complexity | **38.11** | 83 | 3,163 | 3,168 | 38.1 | 1.90 | 0.00% | 0.09% | 38.68 | 2 | 119 |
| Yes | 3 | A14A | Ventilation >= 96 hours & < 336 hours, Major Complexity | **30.82** | 248 | 7,643 | 10,006 | 40.3 | 2.01 | 0.01% | 0.22% | 30.88 | 3 | 174 |
| No | 4 | A40Z | ECMO | **30.27** | 17 | 515 | 328 | 19.5 | 6.65 | 0.00% | 0.01% | 8.91 | 47 | 14 |
| Yes | 5 | A15A | Tracheostomy, Major Complexity | **22.49** | 21 | 472 | 690 | 32.3 | 3.76 | 0.00% | 0.01% | 17.25 | 7 | 25 |
| Yes | 6 | A14B | Ventilation >= 96 hours & < 336 hours, Intermediate Complexity | **21.33** | 325 | 6,932 | 8,988 | 27.7 | 1.24 | 0.01% | 0.20% | 21.75 | 4 | 312 |
| Yes | 7 | P03B | Neonate, AdmWt 1000-1499g W Significant GI/Vent >= 96 hrs, Minor Complexity | **20.04** | 37 | 741 | 1,511 | 41.1 | 2.07 | 0.00% | 0.02% | 18.80 | 6 | 42 |
| Yes | 8 | F04A | Cardiac Valve Interventions W CPB Pump W/O Invasive Cardiac Invest, Major Comp | **17.48** | 373 | 6,520 | 8,189 | 21.9 | 0.51 | 0.01% | 0.19% | 16.88 | 8 | 301 |
| No | 9 | F07A | Other Cardiothoracic/Vascular Interventions W CPB Pump, Major Complexity | **17.32** | 52 | 901 | 1,262 | 24.2 | 1.55 | 0.00% | 0.03% | 15.62 | 11 | 63 |
| No | 10 | A14C | Ventilation >= 96 hours & < 336 hours, Minor Complexity | **16.77** | 178 | 2,985 | 3,639 | 20.4 | 0.95 | 0.01% | 0.09% | 15.35 | 12 | 186 |
| 7 in  top 10 | **Sub-total, top 10 highest cost weight** | | | **23.87** | **1,408** | **33,613** | **42,054** | **29.9** |  | 0.04% | 0.96% |  |  |  |
| **All AR-DRGs** | | | **1.00** | **3,487,127** | **3,487,127** | **7,783,631** | **2.2** |  | 100% | 100% |  |  |  |
| **Top 10 highest cost weight, % of all AR-DRGs** | | |  | **0.0%** | **1.0%** | **0.5%** |  |  |  |  |  |  |  |

**Notes**

* + 1. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 10.0
    2. Separations shown are strata weighted
    3. ALOS means Average Length of Stay

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

#### Key findings

Table 6 and Figure 11show the AR-DRGs with the highest population-adjusted separations for 2020-21. This is a measure of the volume of separations in the entire overnight private hospital population (the separations in the 2020-21 sample, adjusted using weights to reflect the whole population).

Table 6 shows that for 2020-21, R63Z: Chemotherapy was ranked as having the most population-adjusted separations, consistent with its ranking in the previous year. This is expected given the high-frequency, sameday nature of treatments required for R63Z. Table 6 also shows that the top 10 AR-DRGs represented 44.4 per cent of the total population-adjusted separations (1,548,039 population-adjusted separations out of 3,487,127 total separations). However, these AR-DRGs represented only 18.9 per cent (660,001) of the total population cost weighted separations. This indicates that these AR-DRGs were high-volume and low-cost.

The ALOS for the top 10 AR-DRGs is 1.2 days compared to the population average of 2.2 days, as the majority of these AR-DRGs were sameday procedures.

#### Comparison with previous years

Figure 10. Total Weighted Separations and ALOS

Total weighted separations and ALOS

This is a combined column and line chart. The column graph shows the number of total weighted separations between 2018-19 and 2020-21. The line graph shows the ALOS over the same period.

Figure 10 shows the change in total population-adjusted separations and ALOS for the top 10 AR‑DRGs in the period from 2018-19 to 2020-21. The change in ALOS has been minimal over the years, since these AR‑DRGs are generally high-volume, sameday separations. For total cost weighted separations, the increase in 2020-21 (compared to 2019-20) reflects the increase in activity as COVID-19 restrictions were lifted.

Figure 11. Comparison of top 10 AR-DRGs by highest volume of population-adjusted separations, 2018-19 to 2020-21



There have been minor movements in individual ranks within the top 10 AR-DRGs with the highest population-adjusted separations, however there were no changes to the composition. Each of the AR-DRGs has seen an increased number of separations in 2020-21.

Table 6. Top 10 AR-DRGs ranked by highest volume of population-adjusted separations

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **2020-21** | | | | | | | | **2019-20** | | | |
| **Top 10 2019-20** | **Rank 2020-21** | **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** | **Rank** | **No. of weighted seps** | **Cost weight** |
| Yes | 1 | R63Z | Chemotherapy | 0.20 | **275,269** | 55,054 | 275,284 | 1.0 | 0.001 | 7.89% | 1.6% | 263,801 | 1 | 0.20 | Yes |
| Yes | 2 | G48B | Colonoscopy, Minor Complexity | 0.30 | **171,739** | 51,522 | 177,747 | 1.0 | 0.001 | 4.92% | 1.5% | 155,803 | 2 | 0.32 | Yes |
| Yes | 3 | L61Z | Haemodialysis | 0.11 | **140,690** | 15,476 | 140,692 | 1.0 | 0.000 | 4.03% | 0.4% | 135,126 | 3 | 0.10 | Yes |
| Yes | 4 | G46B | Complex Endoscopy, Minor Complexity | 0.35 | **123,236** | 43,133 | 130,387 | 1.1 | 0.001 | 3.53% | 1.2% | 99,888 | 4 | 0.38 | Yes |
| Yes | 5 | G47C | Gastroscopy, Minor Complexity | 0.22 | **87,435** | 19,236 | 92,748 | 1.1 | 0.001 | 2.51% | 0.6% | 72,820 | 7 | 0.23 | Yes |
| Yes | 6 | Z40Z | Other Contacts W Health Services W Endoscopy | 0.25 | **87,119** | 21,780 | 89,298 | 1.0 | 0.001 | 2.50% | 0.6% | 82,864 | 6 | 0.28 | Yes |
| Yes | 7 | U60Z | Mental Health Treatment W/O ECT, Sameday | 0.10 | **85,985** | 8,599 | 85,985 | 1.0 | 0.000 | 2.47% | 0.2% | 83,814 | 5 | 0.10 | Yes |
| Yes | 8 | D40Z | Dental Extractions and Restorations | 0.43 | **73,591** | 31,644 | 73,928 | 1.0 | 0.001 | 2.11% | 0.9% | 59,153 | 9 | 0.42 | Yes |
| Yes | 9 | Z64B | Other Factors Influencing Health Status, Minor Complexity | 0.15 | **62,195** | 9,329 | 64,826 | 1.0 | 0.002 | 1.78% | 0.3% | 60,445 | 8 | 0.18 | Yes |
| Yes | 10 | C16Z | Lens Interventions | 0.44 | **50,548** | 22,241 | 50,668 | 1.0 | 0.001 | 1.45% | 0.6% | 41,653 | 10 | 0.46 | Yes |
| 10 in  top 10 | **Sub-total, top 10 highest volume of population-adjusted separations** | | | **0.24** | **1,157,807** | **278,012** | **1,181,563** | **1.0** |  | 33.20% | 8.0% |  |  |  |  |
| **All AR-DRGs** | | | **1.00** | **3,487,127** | **3,487,127** | **7,783,631** | **2.2** |  | 100% | 100% |  |  |  |  |
| **Top 10 highest volume of population-adjusted separations, % of all AR-DRGs** | | |  | **33.2%** | **8.0%** | **15.2%** |  |  |  |  |  |  |  |  |

**Notes**

1. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 10.0
2. Separations shown are strata weighted
3. ALOS means Average Length of Stay

### Top 10 AR-DRGs ranked by highest cost weighted separations

#### Key findings

Table 7 and Figure 13 present 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.

Figure 13 shows that the highest cost weight AR-DRG was I04B: Knee Replacement, Minor Complexity, and is consistent with its ranking in the previous year. This procedure is a common procedure within the private sector, and it is frequently ranked amongst the highest cost weighted AR-DRGs.

Table 7 sets out the top 10 AR-DRGs by highest cost weighted separations. These 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 6).

The top 10 AR-DRGs by cost weighted separations represented 20.9 per cent of the total population cost weighted separations (729,223 cost weighted separations out of 3,487,127 total separations). These AR-DRGs represented 19.2 per cent of the total population-adjusted separations, reflecting the combination of high-volume and high-cost AR-DRGs.

Table 7 shows that the top four AR-DRGs by cost weighted separations had the same ranks in 2019-20. The top three AR-DRGs (I04B: Knee Replacement, Minor Complexity, I33B: Hip Replacement for Non-Trauma, Minor Complexity and I09C: Spinal Fusion, Minor Complexity) were orthopaedic procedures with a high volume of separations, above average cost weight, above average length of stay and involve high-cost prostheses.

#### Comparison with previous years

Figure 12. Total Cost Weighted Separations and Average Cost Weight

Total cost weighted separations and average cost weight

This is a combined column and line chart. The column graph shows the number of total cost weighted separations over 2018-19 to 2020-21 and the line graph shows the average cost weight over the same period.

Figure 12 captures the change in total cost weighted separations and average cost weight for the top 10 AR-DRGs from 2018-19 to 2020-21. The average cost weight has seen minimal change since 2019-20 for the top 10 AR-DRGs, while the volume of cost weighted separations has increased in 2020-21. This is likely driven by an increase in the volume of weighted separations due to the impacts of COVID-19.

Figure 13. Comparison of top 10 AR-DRGs by highest cost weighted separations, 2018-19 to 2020-21



Table 7 shows there has been minimal movement in the rank of individual AR-DRGs, with no new AR-DRGs entering the top 10 list in 2020-21. Both I04B: Knee Replacement, Minor Complexity and I33B: Hip Replacement for Non-Trauma, Minor Complexity have seen a large increase in cost weighted separations of 23.7 per cent and 17.3 per cent respectively.

One AR-DRG (K11B: Major Laparoscopic Bariatric Interventions, Minor Complexity) shifted from rank 10 to rank 6 in 2020-21 and experienced a 25.2 per cent increase in cost weighted separations. This movement is a result of an increase in the volume of population weighted separations, while the cost weight experienced minimal change.

Table 7. Top 10 AR-DRGs ranked by highest cost weighted separations

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **2020-21** | | | | | | | | **2019-20** | | | |
| **Top 10 2019-20** | **Rank 2020-21** | **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** | **Rank** | **No. of weighted seps** | **Cost weight** |
| Yes | 1 | I04B | Knee Replacement, Minor Complexity | 3.77 | 41,821 | **157,665** | 183,166 | 4.4 | 0.01 | 1.20% | 4.5% | 127,470 | 1 | 33,369 | 3.82 |
| Yes | 2 | I33B | Hip Replacement for Non-Trauma, Minor Complexity | 4.18 | 29,648 | **123,929** | 120,134 | 4.1 | 0.01 | 0.85% | 3.6% | 105,648 | 2 | 24,800 | 4.26 |
| Yes | 3 | I09C | Spinal Fusion, Minor Complexity | 6.39 | 10,728 | **68,552** | 51,664 | 4.8 | 0.04 | 0.31% | 2.0% | 65,070 | 3 | 10,215 | 6.37 |
| Yes | 4 | F24B | Interventional Coronary Procs, Not Adm for AMI, Minor Comp | 2.46 | 26,209 | **64,474** | 39,930 | 1.5 | 0.01 | 0.75% | 1.8% | 54,205 | 4 | 23,264 | 2.33 |
| Yes | 5 | R63Z | Chemotherapy | 0.20 | 275,269 | **55,054** | 275,284 | 1.0 | 0.00 | 7.89% | 1.6% | 52,760 | 6 | 263,801 | 0.20 |
| Yes | 6 | K11B | Major Laparoscopic Bariatric Interventions, Minor Complexity | 2.08 | 26,120 | **54,330** | 54,053 | 2.1 | 0.00 | 0.75% | 1.6% | 43,384 | 10 | 20,464 | 2.12 |
| Yes | 7 | O01C | Caesarean Delivery, Minor Complexity | 1.95 | 27,718 | **54,050** | 123,398 | 4.5 | 0.00 | 0.79% | 1.5% | 52,813 | 5 | 26,539 | 1.99 |
| Yes | 8 | G48B | Colonoscopy, Minor Complexity | 0.30 | 171,739 | **51,522** | 177,747 | 1.0 | 0.00 | 4.92% | 1.5% | 49,857 | 7 | 155,803 | 0.32 |
| Yes | 9 | I16Z | Other Shoulder Interventions | 1.34 | 37,802 | **50,655** | 44,482 | 1.2 | 0.00 | 1.08% | 1.5% | 45,071 | 9 | 33,888 | 1.33 |
| Yes | 10 | I10B | Other Back and Neck Interventions, Minor Complexity | 2.33 | 21,027 | **48,993** | 63,821 | 3.0 | 0.02 | 0.60% | 1.4% | 46,209 | 8 | 20,091 | 2.30 |
| 10 in  top 10 | **Sub-total, top 10 highest cost weighted separations** | | | **1.09** | **668,081** | **729,223** | **1,133,679** | **1.7** |  | 19.16% | 20.9% |  |  |  |  |
| **All AR-DRGs** | | | **1.00** | **3,487,127** | **3,487,127** | **7,783,631** | **2.2** |  | 100% | 100% |  |  |  |  |
| **Top 10 highest cost weighted separations, % of all AR-DRGs** | | |  | **19.2%** | **20.9%** | **14.6%** |  |  |  |  |  |  |  |  |

**Notes**

1. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 10.0
2. Separations shown are strata weighted
3. ALOS means Average Length of Stay

## Analysis of cost buckets

Analysis of the cost buckets (operating room and specialist procedure suites, critical care, prostheses and miscellaneous) has been undertaken to identify the top 10 AR-DRGs by proportion of cost for each of these buckets. The private sector NHCDC analysis has reported on the following cost buckets since 2012-13:

* + operating room and specialist procedure suites (OR and SPS)
  + critical care
  + prostheses
  + miscellaneous (representing the remainder of the cost buckets – see Appendix B for the list of cost buckets).

The same cost buckets have been considered for 2020-21, with additional analysis on the ward nursing cost bucket presented in this year’s report.

#### Comparison with previous years

Figure 14. Breakdown of costs by cost bucket group

Breakdown of costs by cost bucket group

This is a column graph which shows the proportion of costs allocated to each cost bucket over the past six years.

Figure 14 illustrates the differences in the cost bucket proportion over the last six years. The distribution of costs across the four cost buckets has remained reasonably consistent, despite the changes to the volume of activity and costs incurred by the private sector as result of the COVID-19 pandemic and restrictions to elective surgeries. The following changes are observed:

* + The proportion of costs allocated to operating rooms and specialist procedure suites in 2020-21 has increased by 1.2 per cent to 28.9 per cent in comparison to 2019‑20. The proportion of costs allocated to this cost bucket in 2020-21 is the highest it has been for the past six years.
  + The proportion of costs allocated to critical care has remained reasonably stable in   
    2020-21 at 5.6 per cent. This cost bucket consistently makes up the smallest proportion of total costs.
  + The proportion of costs allocated to prostheses in 2020-21 has increased by 1.4 per cent to 18.6 per cent in comparison to 2019‑20. This is the highest it has been since 2017-18.
  + Costs allocated to the miscellaneous cost bucket in 2020-21 has decreased by 2.4 per cent to 46.9 per cent in comparison to 2019-20. This is the lowest it has been for the last six reported years.

Changes in cost buckets may be due to:

* + improvements in the accuracy of cost allocations through quality improvement of the participant’s feeder data and/or allocation statistics
  + changes in service weights
  + increases in sameday theatre related separations
  + changes in casemix.

### Operating room and specialist procedure suites cost bucket

#### Key findings

Table 8 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 W ECT, Sameday (69.4 per cent). This percentage has increased compared to 2019-20 (58.5 per cent), while the OR and SPS cost weight (0.16) has decreased compared to 2019-20 (0.22). For the remaining nine AR-DRGs in Table 8, the OR and SPS cost weights have been relatively stable over the last three years. All top 10 AR-DRGs have had increases to the proportion of total cost allocated to the OR and SPS cost bucket over the last three years.

For the AR-DRGs in Table 8, the overall cost weight (0.42) is lower than the population average (1.00) despite more than 60 per cent of their total cost allocated to the OR and SPS cost bucket in 2020‑21. 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.

Table 8. Top 10 AR-DRGs for costs allocated to the operating room and specialist procedures suites cost bucket

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **OR and SPS Cost Weight** | | | **% of AR-DRG total cost** | | | | |
| **Rank 2020-21** | **AR-DRG** | **AR-DRG Description** | **No. of weighted seps** | **Overall cost weight** | **2018-19** | **2019-20** | **2020-21** | **2018-19** | | **2019-20** | | **2020-21** |
| 1 | U40Z | Mental Health Treatment W ECT, Sameday | 4,639 | 0.23 | 0.10 | 0.22 | 0.16 | 54.4% | | 58.5% | | **69.4%** |
| 2 | M05Z | Circumcision | 6,087 | 0.47 | 0.30 | 0.31 | 0.32 | 66.2% | | 64.8% | | **68.1%** |
| 3 | M63Z | Male Sterilisation Interventions | 5,873 | 0.34 | 0.25 | 0.23 | 0.23 | 67.2% | | 63.4% | | **67.6%** |
| 4 | B05Z | Carpal Tunnel Release | 18,792 | 0.37 | 0.25 | 0.25 | 0.25 | 65.5% | | 65.9% | | **67.5%** |
| 5 | C11Z | Eyelid Interventions | 6,399 | 0.69 | 0.44 | 0.45 | 0.46 | 66.6% | | 65.8% | | **67.2%** |
| 6 | J10B | Plastic GIs for Skin, Subcutaneous Tissue and Breast Disorders, Minor Comp | 17,352 | 0.72 | 0.44 | 0.42 | 0.48 | 64.5% | | 64.4% | | **67.0%** |
| 7 | N07B | Other Uterus and Adnexa Interventions for Non-Malignancy, Minor Complexity | 35,930 | 0.41 | 0.27 | 0.27 | 0.27 | 64.8% | | 64.8% | | **66.2%** |
| 8 | N10Z | Diagnostic Curettage and Diagnostic Hysteroscopy | 25,836 | 0.31 | 0.20 | 0.20 | 0.21 | 64.6% | | 64.3% | | **66.0%** |
| 9 | N09B | Other Vagina, Cervix and Vulva Interventions, Minor Complexity | 13,896 | 0.36 | 0.24 | 0.23 | 0.24 | 64.1% | | 63.4% | | **66.0%** |
| 10 | J11B | Other Skin, Subcutaneous Tissue and Breast Interventions, Minor Complexity | 25,885 | 0.40 | 0.24 | 0.26 | 0.26 | 61.5% | | 63.2% | | **65.7%** |
| **Sub-total, top 10 highest OR and SPS cost weight %** | | | **160,689** | **0.42** | 0.27 | 0.27 | 0.28 | 64.3% | | 64.2% | | **66.6%** |
| **All OR and SPS AR-DRGs** | | | **3,482,872** |  | 0.28 | 0.28 | 0.29 | 28.0% | | 27.7% | | **28.9%** |
| **Top 10 highest OR and SPS cost weights proportion (% of all OR and SPS AR-DRGs)** | | | **4.6%** |  |  |  | |  |  | |  |  |

**Notes**

1. Separations shown are strata weighted
2. The overall cost weight represents the cost weight across all cost buckets (total cost) of the strata weighted separations.
3. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 10.0

### Critical care cost bucket

#### Key findings

Table 9 shows that the AR-DRG with the highest percentage of its total cost belonging to the critical care bucket was F40A: Circulatory Disorder W Ventilator Support, Major Complexity (68.2 per cent). All AR-DRGs in this table are related to ventilator support, which indicates the intensive care nature of these separations. The proportion of critical care costs for these AR-DRGs’ has increased over the last three years. The overall cost weight for these AR-DRGs (18.42) is much higher than the population average (1.00), with more than half (10.16) of this cost weight relating to the critical care cost bucket.

A comparison of the critical care cost weights for the top 10 AR-DRGs in Table 9 shows that there is high variance in the cost weights over the past three years. Given the low number of separations (0.04 per cent of all AR-DRGs) and high cost weights, such volatility is not unexpected.

Table 9. Top 10 AR-DRGs for costs allocated to the critical care cost bucket

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **Critical Care Cost Weight** | | | **% of AR-DRG total cost** | | | | |
| **Rank 2020-21** | **AR-DRG** | **AR-DRG Description** | **No. of weighted seps** | **Overall cost weight** | **2018-19** | **2019-20** | **2020-21** | **2018-19** | | **2019-20** | | **2020-21** |
| 1 | F40A | Circulatory Disorders W Ventilator Support, Major Complexity | 20 | 6.96 | 4.78 | 5.96 | 4.75 | 46.2% | | 57.0% | | **68.2%** |
| 2 | A13A | Ventilation >= 336 hours, Major Complexity | 74 | 50.54 | 32.04 | 30.99 | 32.55 | 60.4% | | 58.9% | | **64.4%** |
| 3 | A13B | Ventilation >= 336 hours, Minor Complexity | 83 | 38.11 | 26.23 | 26.04 | 22.76 | 66.8% | | 67.3% | | **59.7%** |
| 4 | T40Z | Infectious and Parasitic Diseases W Ventilator Support | 26 | 10.39 | 3.79 | 5.80 | 6.11 | 48.2% | | 51.4% | | **58.8%** |
| 5 | P03B | Neonate, AdmWt 1000-1499g W Significant GI/Vent >= 96 hrs, Minor Complexity | 37 | 20.04 | 5.93 | 10.20 | 10.87 | 27.0% | | 54.2% | | **54.3%** |
| 6 | E40A | Respiratory System Disorders W Ventilator Support, Major Complexity | 38 | 15.23 | 7.12 | 5.70 | 8.15 | 58.9% | | 53.7% | | **53.5%** |
| 7 | A14C | Ventilation >= 96 hours & < 336 hours, Minor Complexity | 178 | 16.77 | 7.64 | 8.89 | 8.96 | 48.9% | | 57.9% | | **53.5%** |
| 8 | A14A | Ventilation >= 96 hours & < 336 hours, Major Complexity | 248 | 30.82 | 14.70 | 14.61 | 16.39 | 47.8% | | 47.3% | | **53.2%** |
| 9 | A14B | Ventilation >= 96 hours & < 336 hours, Intermediate Complexity | 325 | 21.33 | 9.93 | 11.18 | 11.32 | 52.1% | | 51.4% | | **53.1%** |
| 10 | E41B | Respiratory System Disorders W Non-Invasive Ventilation, Minor Complexity | 515 | 4.34 | 2.03 | 1.81 | 2.10 | 46.8% | | 43.6% | | **48.4%** |
| **Sub-total, top 10 critical care cost weight %** | | | **1,544** | **18.42** | 8.54 | 8.69 | 10.16 | 53.0% | | 54.2% | | **55.2%** |
| **All critical care AR-DRGs** | | | **3,458,079** |  | 0.06 | 0.06 | 0.06 | 5.6% | | 5.8% | | **5.6%** |
| **Top 10 highest critical care cost weights proportion (% of all critical care AR-DRGs)** | | | **0.04%** |  |  |  | |  |  | |  |  |

**Notes**

1. Separations shown are strata weighted
2. The overall cost weight represents the cost weight across all cost buckets (total cost) of the strata weighted separations.
3. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 10.0

### Prostheses cost bucket

#### Key findings

Table 10 shows that the AR-DRG with the highest proportion of their total cost belonging to the prostheses cost bucket was F10B: Implantation and Replacement of AICD, Total System, Minor Complexity (84.8 per cent). The cost weight and prostheses cost allocation has been relatively stable for this AR-DRG over the past three years. The overall cost weight for the AR-DRGs in Table 10 (5.76) is higher than the population average (1.00), with 65.8 per cent (3.79) 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 three years for these   
AR-DRGs, although this varied more for some AR-DRGs with lower separation volumes.

Although the proportion of costs in the prostheses cost bucket has remained relatively stable, a comparison of the prostheses cost weights for the top 10 AR‑DRGs in Table 10, shows that the cost weights have generally decreased between 2018-19 and 2020-21.

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

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | **Prostheses Cost Weight** | | | **% of AR-DRG total cost** | | | |
| **Rank 2020-21** | **AR-DRG** | **AR-DRG Description** | **No. of weighted seps** | **Overall cost weight** | **2018-19** | **2019-20** | **2020-21** | **2018-19** | **2019-20** | | **2020-21** |
| 1 | F01B | Implantation and Replacement of AICD, Total System, Minor Complexity | 2,560 | 11.28 | 10.14 | 9.12 | 9.57 | 85.5% | 83.4% | | **84.8%** |
| 2 | D01Z | Cochlear Implant | 918 | 7.88 | 6.20 | 6.18 | 6.37 | 79.6% | 79.8% | | **80.8%** |
| 3 | F17B | Insertion and Replacement of Pacemaker Generator, Minor Complexity | 3,395 | 3.27 | 2.64 | 2.39 | 2.52 | 76.8% | 74.0% | | **76.9%** |
| 4 | F01A | Implantation and Replacement of AICD, Total System, Major Complexity | 289 | 15.49 | 11.35 | 9.32 | 10.40 | 68.0% | 65.4% | | **67.2%** |
| 5 | I11Z | Limb Lengthening Interventions | 139 | 6.87 | 4.83 | 4.04 | 4.56 | 66.6% | 60.2% | | **66.4%** |
| 6 | F12B | Implantation and Replacement of Pacemaker, Total System, Minor Complexity | 8,322 | 4.11 | 2.85 | 2.53 | 2.64 | 65.6% | 63.0% | | **64.1%** |
| 7 | I17A | Maxillo-Facial Surgery, Major Complexity | 312 | 4.19 | 1.60 | 1.34 | 2.51 | 51.8% | 46.5% | | **60.0%** |
| 8 | F17A | Insertion and Replacement of Pacemaker Generator, Major Complexity | 266 | 4.16 | 2.87 | 2.32 | 2.47 | 65.3% | 49.8% | | **59.6%** |
| 9 | F19B | Trans-Vascular Percutaneous Cardiac Intervention, Minor Complexity | 1,127 | 3.36 | 2.00 | 1.88 | 1.89 | 55.3% | 55.8% | | **56.2%** |
| 10 | I09C | Spinal Fusion, Minor Complexity | 10,728 | 6.39 | 3.74 | 3.50 | 3.58 | 56.0% | 54.9% | | **56.0%** |
| **Sub-total, top 10 highest prostheses cost weight %** | | | **28,055** | **5.76** | 4.14 | 3.66 | 3.79 | 66.2% | | 64.1% | **65.8%** |
| **All Prostheses AR-DRGs** | | | **3,481,232** |  | 0.18 | 0.17 | 0.19 | 18.1% | | 17.2% | **18.6%** |
| **Top 10 highest prostheses cost weights proportion (% of all Prostheses AR-DRGs)** | | | **0.81%** |  |  |  |  |  | |  |  |

**Notes**

1. For cost weight (cost bucket specific) calculations please refer to Appendix D: Cost weight tables by AR-DRG Version 10.0
2. Separations shown are strata weighted
3. The overall cost weight represents the cost weight across all cost buckets (total cost) of the strata weighted separations.

### Ward nursing cost bucket

Of the remaining costs that are grouped into the miscellaneous cost bucket, ward nursing comprises a significant component. These costs make up 14 per cent of total costs in 2020‑21 and have been analysed separately below.

Figure 15 shows the total costs and average costs per separation in the ward nursing cost bucket from 2015‑16 to 2020‑21. There has generally been an increase in total ward nursing costs over the last six years, with the exception being 2019-20. This growth in costs has been observed in both the overhead and direct cost components. There has been a similar trend in average ward nursing costs, with average costs generally growing each year.

The 2019‑20 year was an exception to the growth observed in prior years as both total and average ward nursing costs fell. This was driven by direct ward nursing costs, as activity levels fell during the national COVID‑19 lockdown. Both total and average costs increased in 2020‑21 as elective surgery restrictions eased and activity recovered in most Australian states, increasing by 15.2 and 4.6 per cent respectively between 2019-20 and 2020-21.

The observed increase in total ward nursing costs is expected with the natural growth of private sector activity. The general increase in average ward nursing costs is also expected with economic inflation and annual increases in award wage rates. The COVID‑19 pandemic has placed additional cost pressures on the health industry, as staffing difficulties and the use of agency nurses to replace furloughed staff have added additional costs. The private sector continued to face these cost pressures through 2020‑21 while activity levels recovered, placing upward pressure on both total and average costs.

Figure 15. Ward nursing costs from 2015-16 to 2020-21

Ward nursing costs from 2015-16 to 2020-21

This is a combined column and line chart. The column graph shows total ward nursing costs over the past six years and the line graph shows average ward nursing costs over the same period.

# COVID-19

## Background

The COVID‑19 pandemic affected the healthcare system within Australia, causing systemic impacts that directly and indirectly affected the private hospital sector. Actions from governments as part of the COVID-19 response impacted hospital activity and hence expenditure submitted to the private sector NHCDC, which had financial implications that are reflected in this report.

At the beginning of the pandemic in March 2020, national lockdowns impacted non-essential activities, pausing or reducing activities under the ‘stay at home’ orders. This had the following impact on public hospital activities:

* + Elective surgeries were suspended, except for category 1 and urgent category 2.
  + Emergency department presentations were reduced.
  + Hospitals incurred additional costs related to preparedness activities.

In April 2020, some category 2 and 3 elective surgeries were resumed, and by May 2020 a 3‑stage plan to resume elective surgeries was announced. These events directly impacted the level of activity in hospitals across the country.

Following these initial national lockdowns, government responses to the pandemic varied across states. Jurisdictions had different restrictions imposed during 2020‑21, which meant the impact of COVID‑19 on activity and costs varied between jurisdictions and individual facilities within hospital groups.

## Costing Approach to COVID-19

In June 2020, IHACPA released the *COVID-19 Response - Costing and pricing guidelines*[[11]](#footnote-12) for the costing and pricing of activity for the COVID‑19 response. This relates to the National Partnership on COVID-19 Response (NPCR) entered into by the Commonwealth Government and state and territory governments. This document was also a reference for private sector hospitals undertaking costing in the COVID-19 period.

Although provided with the guidelines by IHACPA, due to the timing and uncertainty of the pandemic response, the participating hospital groups undertook different approaches to costing for 2020‑21. Some utilised COVID-19 cost centres to capture the pandemic related costs and others excluded these costs from their NHCDC submission. These differences in costing approach resulted in variations in how costs were spread across time periods and episodes.

## Impacts by jurisdiction

Following the nation-wide lockdown in the last quarter of 2019-20, state governments varied in their public health orders and restrictions on activity throughout 2020-21. Figure 16 below shows the number of sample separations by jurisdiction across years 2018-19, 2019-20 and 2020-21.

The jurisdictional data is based on the location of private sector facilities. The three states comprising the most private sector activity in the NHCDC (Victoria, New South Wales and Queensland) are shown separately. The remaining states and territories are grouped under the ‘other’ jurisdiction.

Victorian hospitals submitted the highest volume of separations to the NHCDC sample. As a result, the 2020-21 NHCDC continues to be impacted by COVID-19, as Victoria had the most restrictions on elective surgeries and lockdowns due to their higher volume of COVID-19 cases.

Figure 16. Total separations by jurisdiction

Total separations by jurisdiction

This is a column graph which shows the total number of separations by jurisdiction over 2018-19 to 2020-21.

Around one-third of private sector activity reported to the 2020-21 NHCDC were from hospitals based in Victoria. Queensland reported around 25 per cent, followed by NSW reporting around 20 per cent.

All jurisdictions experienced a reduction in the volume of separations in 2019-20, with variations ranging from -1.9 per cent in Queensland to -9.4 per cent in New South Wales. These reductions in activity were followed by increases in activity for all jurisdictions in 2020-21. New South Wales experienced the largest reduction in the volume of separations in 2019-20 as well as the largest recovery in 2020‑21. The total volume of separations for Victoria in 2020-21 remains below 2018-19 levels.

## Impact on intervention type activity

Through 2020‑21, state governments imposed COVID‑19 elective surgery restrictions which were eased in jurisdictions at different points in time. Analyses of intervention type AR-DRG activity (as a proxy for surgery or other procedures) was undertaken to understand how the restrictions may have impacted surgical hospital activity in the private sector.

Approximately 60 per cent of separations were classified as intervention type activities based on the grouping in the AR-DRG Version 10.0 classification.

The number of intervention and medical episodes both fell in 2019‑20, driven by a fall in activity levels following the outbreak of the COVID-19 pandemic. Figure 17 and Figure 18 show the separations by month for intervention and medical episodes.

Figure 17. Separations by month for intervention episodes

This line graph shows the total number of separations by month for intervention episodes over the past three years.

Figure 18. Separations by month for medical episodes

This line graph shows the number of separations by month for medical episodes, over the past three years.

Both intervention and medical episodes saw a lower volume of activity in the last quarter of 2020. Intervention type episodes in particular had significantly lower levels of activity in April and May 2020 (54.2 and 31.6 per cent lower than April and May 2019 respectively). This compares to 23.0 and 21.0 per cent decreases for medical episodes. These reductions were driven by the COVID-19 responses for New South Wales and Victoria who had tougher elective surgery restrictions.

# Appendix A: Methodology

There are eight stages of the private sector NHCDC process.

## Stage 1: Stakeholder engagement

IHACPA sought costed data directly from private hospitals for the private sector NHCDC. Participants were requested to provide a methodology that outlined their costing processes.

## Stage 2: Data collection

At the commencement of the data collection phase, a data request specification (DRS) for the 2020‑21 private sector NHCDC was prepared and distributed to all participants.

Participants performed their own data collection.

## Stage 3: Data preparation

Participants performed their own quality assurance checks on their data to verify that they were appropriate to 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. Hospitals submitted at least 90 per cent of the establishment’s total in-scope activity.

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 AR-DRG flipping[[12]](#footnote-13).

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 2020-21.

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. An adjustment was made to the activity data in 2020-21 to align the cost profile of each hospital group more closely in the NHCDC to that of the population activity. Population activity is defined as all in-scope private hospital episodes that take place within the financial year.

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.

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 adjustment for AR-DRG flipping was made for 2020-21.

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 Hospital Report 2020-21 and the associated cost weight tables.

# Appendix B: Private sector costing approaches

## 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 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 AR-DRG (in the case of admitted acute care).

## 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 etc.) 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.

## 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. Ward Medical 2. Ward Nursing 3. Non-clinical Salaries 4. Pathology 5. Imaging 6. Allied Health | 1. Pharmacy 2. Critical Care 3. Operating Rooms 4. Supplies 5. Specialist Procedure Suites | 1. On-costs 2. Prostheses 3. Hotel 4. Depreciation 5. Patient Travel |

Please note that the emergency department cost bucket is excluded for the private sector NHCDC 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 103 participating hospitals in 2020‑21 submitted data costed in AR-DRG Version 10.0.

## 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 casemix of a patient or hospital.

## Costing standards

Costing was performed in compliance with the AHPCS Version 4.1.

# Appendix C: Standard error range for the 2020-21 private sector NHCDC

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 the Analysis of Top 10 AR-DRGs and Appendix D: Cost weight tables by AR-DRG Version 10.0.

Table 11 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 11. 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** | 270 | 3,150,671 | 35.6% | 90.4% |
| **0.040 - 0.099** | 171 | 236,633 | 22.6% | 6.8% |
| **0.100 - 0.149** | 82 | 47,408 | 10.8% | 1.4% |
| **0.150 - 0.199** | 47 | 17,014 | 6.2% | 0.5% |
| **0.200 - 0.399** | 89 | 24,061 | 11.7% | 0.7% |
| **0.400 +** | 99 | 11,201 | 13.1% | 0.3% |
| **Total**\* | 758 | 3,486,988 | 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 above show that 58.2 per cent (35.6 per cent + 22.6 per cent) of AR-DRGs have cost weight estimates with a standard error of less than 0.1. Approximately 97.1 per cent (90.4 per cent + 6.8 per cent) 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 10.0

Table 12. 2020-21 national consolidation cost weight tables - version 10.0

Please refer to Excel file for details.

Intentionally left blank.

# Appendix E: Cost weight tables by AR‑DRG Version 9.0

Table 13. 2020-21 national consolidation cost weight tables - version 9.0

Please refer to Excel file for details.

Intentionally left blank.

# Appendix F: Cost weight tables by AR‑DRG Version 8.0

Table 14. 2020-21 national consolidation cost weight tables - version 8.0

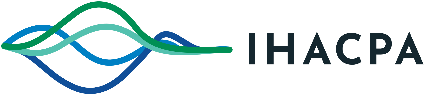
Please refer to Excel file for details.

Intentionally left blank.

# Appendix G: Cost bucket matrix

Figure 19. Cost bucket matrix

Cost bucket matrix



Independent Health and Aged Care Pricing Authority

Level 12, 1 Oxford Street  
Sydney NSW 2000

Phone 02 8215 1100  
Email [enquiries@ihacpa.gov.au](mailto:enquiries.ihpa@ihpa.gov.au)  
Twitter @IHACPAnews

www.ihacpa.gov.au

1. Independent Health and Aged Care Pricing Authority, [Australian Refined Diagnosis Related Groups](https://www.ihpa.gov.au/what-we-do/ar-drg-classification), date viewed 8 February 2023 [↑](#footnote-ref-2)
2. Australian Institute of Health and Welfare, [Data Dictionary, METeOR ID: 729904](https://meteor.aihw.gov.au/content/729904), date viewed 8 February 2023 [↑](#footnote-ref-3)
3. Australian Institute of Health and Welfare, [Data Dictionary, METeOR ID: 327254](https://meteor.aihw.gov.au/content/index.phtml/itemId/327254), date viewed 8 February 2023 [↑](#footnote-ref-4)
4. 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) [↑](#footnote-ref-5)
5. Australian Institute of Health and Welfare, [Data Dictionary, METeOR ID: 711010](https://meteor.aihw.gov.au/content/711010), date viewed 8 February 2023 [↑](#footnote-ref-6)
6. Australian Institute of Health and Welfare, [Data Dictionary, METeOR ID: 711010](https://meteor.aihw.gov.au/content/711010), date viewed 8 February 2023 [↑](#footnote-ref-7)
7. Australian Institute of Health and Welfare, [Data Dictionary, METeOR ID: 711010](https://meteor.aihw.gov.au/content/index.phtml/itemId/711010), date viewed 8 February 2023 [↑](#footnote-ref-8)
8. Australian Institute of Health and Welfare, [Data Dictionary, METeOR ID: 711010](https://meteor.aihw.gov.au/content/711010), date viewed 8 February 2023 [↑](#footnote-ref-9)
9. Independent Health and Aged Care Pricing Authority, [Australian Hospital Patient Costing Standards Version 4.1,](https://www.ihacpa.gov.au/resources/australian-hospital-patient-costing-standards-version-41) viewed 8 February 2023 [↑](#footnote-ref-10)
10. Australian Institute of Health and Welfare, [Data Dictionary, METeOR ID: 327254,](https://meteor.aihw.gov.au/content/index.phtml/itemId/327254) viewed 8 February 2023 [↑](#footnote-ref-11)
11. Independent Health and Aged Care Pricing Authority, [COVID-19 Response - Costing and pricing guidelines](https://www.ihpa.gov.au/publications/covid-19-response-costing-and-pricing-guidelines), viewed 8 February 2023 [↑](#footnote-ref-12)
12. 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. [↑](#footnote-ref-13)