**Australian Government**
**Australian Institute of**
**Health and Welfare**

# Health system spending on disease and injury in Australia, 2020-21

**Web report**  |  Last updated: **29 Nov 2023**  |  Topic: Health & welfare expenditure

## About

Health system spending on disease and injury in Australia 2020–21 analyses Australia's national health spending to provide additional detail about the people receiving care and the conditions and diseases being treated.

In this report, 2020–21 data is presented using Australian Burden of Disease Study (ABDS) conditions including COVID–19, with spending reported by health care sector, type of condition, age group, sex and state. Information is presented on the web pages using interactive visualisations. Downloadable Microsoft Excel workbooks are available for 2020–21 and for 2011–12 to 2019–20 inclusive for historical comparisons. For a more detailed analysis of COVID–19 spending, refer to Health system spending on the response to COVID–19 in Australia 2019–20 to 2021–22.

**Cat. no:** HWE 95

**Findings from this report:**

- Musculoskeletal disorders accounted for the highest spending of all disease groups with $14.7 billion spent in 2020–21

- Cancer and other neoplasms ($14.6 billion) and Cardiovascular diseases ($14.3 billion) ranked 2nd and 3rd highest

- In 2020-21, Injuries ranked 4th highest in terms of spending, while Mental and substance use disorders ranked 5th

- Highest spending of specific conditions for dental caries, $5.3 billion followed by injuries from falls, $4.7 billion

# Summary

In 2020–21, $150 billion (71.6% of recurrent health spending) could be attributed to specific disease groups.

## Key findings in 2020–21

### Spending by disease group and specific conditions

- Musculoskeletal disorders, such as back pain and osteoarthritis, accounted for the highest health spending among all disease groups, totalling $14.7 billion (9.8%).
- Cancer and other neoplasms ranked as the second-highest disease group with spending of $14.6 billion.
- Cardiovascular diseases ranked third in terms of health spending, with a total of $14.3 billion.
- Injuries ranked fourth-highest in terms of spending ($11 billion), while Mental and substance use disorders followed closely ($10.8 billion).
- Among specific conditions, dental caries incurred the highest spending of $5.3 billion, followed by falls-related injuries with an expenditure of $4.7 billion.

### Spending by sex and age group

- For females, Reproductive and maternal conditions, including spending on pregnancy and birth, had the highest spending ($9.0 billion), while for males Cardiovascular diseases ranked the highest ($8.0 billion).
- The bulk of spending tends to occur later in life with a peak for both males and females in the age group 70 to 74. While for females spending between the ages of 20 to 44 was substantially higher than males, largely due to spending on Reproductive and maternal conditions.

### Spending by area of expenditure

General practitioner services:

- The highest spending on general practitioner services was for infectious diseases, amounting to $1.5 billion.
- Mental and substance disorders followed closely, with spending of $1.2 billion.

Admitted Public hospitals:

- Among people admitted to public hospitals, cardiovascular diseases accounted for the highest spending, at $5.4 billion.
- Injury ranked second with a spending of $4.9 billion.
  Gastrointestinal disorders followed, with a total expenditure of $4.5 billion.

Private hospitals:

- In private hospitals, the disease group with the highest spending was musculoskeletal disorders, amounting to $5.5 billion.
- Cardiovascular diseases ranked second with a spending of $2.8 billion.
  Cancer and other neoplasms accounted for $2.7 billion in spending.

Pharmaceutical Benefits Scheme (PBS):

- Expenditure on medicines under the PBS was highest for cancer and other neoplasms, totalling $4.1 billion (24.1% of all PBS spending).
- Cardiovascular diseases accounted for $2.0 billion (12.0%).
- Musculoskeletal disorders followed with $1.7 billion (10.2%).

Pathology services:

- Infectious diseases was the disease group with the highest spending on pathology services (MBS pathology claims) at $1.0 billion (27.8% of all pathology spending).

### Spending on COVID-19

In 2020–21, $2.6 billion was spent on COVID-19. The highest COVID-19 expenditure areas were public hospital outpatient services with $1.7 billion, pathology services with $649 million (65% of pathology spending for all infectious diseases), and general practitioner services with $201 million.

When looking at spending by sex and age, females aged 30–34 had the highest expenditure of $126.5 million, while for males the highest expenditure was for those aged 35–39 with $112.2 million.

During 2020–21 treatment for COVID-19 was mostly undertaken in the hospital setting. There was an absence of PBS expenditure for the treatment of COVID-19 during 2020–21 as there were no therapeutics approved by Therapeutics Goods Administration, or available for consideration by the Pharmaceutical Benefits Advisory Committee, for the treatment of mild-moderate COVID-19.

## Key comparisons over time

Estimated spending by disease increased by $11.7 billion (in current prices) to $150.1 billion in 2020–21, up from $138.4 billion in 2019–20. This was an overall growth of 8.5% in nominal terms (current prices).

## Overall rank of disease groups

- Musculoskeletal disorders, Cardiovascular diseases and Cancers and other neoplasms were the top 3 disease groups in terms of spending throughout the decade from 2011–12 to 2020–21, accounting for just under one-third of all disease spending each year.
- Spending on Cancer and other neoplasms doubled from $7.3 billion in 2011–12 to $14.6 billion in 2020–21 (moved from rank 3 to rank 2 in terms of spending).
- Musculoskeletal disorders ranked the highest in terms of spending for 4 of the past 5 years, the exception was in 2019–20.
- In 2016-17 Infectious diseases was the fourth highest disease group, primarily due to a large increase in spending on PBS medications for Infectious diseases in that year.

## Spending by sex and age group

- Across the decade from 2011–12 to 2020–21 spending peaked for both males and females in the 65–74 age groups.
- For Infectious diseases, since 2018–19, the 1–4 year age group had the highest share of spending for both males and females.
- Within the hospital setting spending on cancers peaked between 60–74 year old males and females with clear increases in spending starting from around age 30–34 years onwards.

## Spending by area of expenditure

Spending on Infectious diseases across the decade from 2011–12 to 2020–21 has shown the most variation. The impact of COVID–19, resulted in an increase in spending in 2019-20 and 2020-21 particularly in the areas of pathology and non-admitted services in public hospitals. Earlier in the decade, in 2016-17, there was an increase in spending of medicines on the PBS used to treat infectious diseases in that year, namely the inclusion of ledipasvir+sofosbuvir, which is primarily used to treat hepatitis C.

| Musculoskeletal disorders had the highest estimated spending ($14.7 billion) |  |  | Over one-third of all disease spending was related to musculoskeletal disorders, cancers, cardiovascular diseases and injuries |
| --- | --- | --- | --- |
| $5.3 billion was spent on Dental caries and $4.7 billion was spent on injuries where the external cause was Falls |  |  | For people admitted to public hospitals, cardiovascular diseases accounts for the highest spending, followed by injury and gastrointestinal disorders |

# Introduction

In this report, data is taken from Australia's National Health Accounts data in order to understand more about the people receiving care and the diseases and conditions being managed. Estimates are presented for the following areas of spending:

- Public hospital admitted patients
- Public hospital emergency departments
- Public hospital outpatients
- Primary health care (general practitioner services, allied health and other services, pharmaceutical benefits scheme and dental expenditure)
- Referred medical services (specialist services, pathology and medical imaging).

Estimates of spending on COVID-19 in the hospital setting as well as through Medicare have been included in this report. For a more detailed analysis of the response to COVID-19, refer to Health system spending on the response to COVID-19 in Australia 2019-20 to 2021-22.

All sources of funding, including patient co-payments, are included in spending estimates.

The data in this report are based on hospital admissions, emergency department records, outpatient records, MBS and PBS records. For each of these data sources, patients' sex was recorded as male, female or other, not reported or unknown.

This may be based on what the patient selected, or how staff completed the record. It may also be based on an existing record for the patient, which may no longer reflect how they identify.

It is important to note that it is not known if the people completing these records interpreted sex to mean sex at birth or gender identity.

This report uses the terms 'male' and 'female', but it should be noted that some participants may not identify with these terms. Where sex was reported as other, not reported or unknown, the data has been included as part of the spending for 'Total Persons'.

## How do we measure disease costs?

The cost of disease is not just financial: being unwell or suffering from a health condition has other effects on quality of life, affecting people's ability to work or do the activities they enjoy. The spending estimates do not include direct costs from outside of the health care sector or estimates of the indirect costs due to illness.

How much is spent on treating, managing, or preventing conditions in financial terms can be influenced by a range of factors such as the cost and availability of effective treatments, and disease prevalence. As such, the disease expenditure estimates in this report do not necessarily reflect the incidence or prevalence of those conditions, or the full 'burden', or human cost. The Australian Institute of Health and Welfare (AIHW) has produced separate estimates of disease burden in _Australian Burden of Disease Study_.

It is not feasible (or appropriate) to allocate some forms of health spending to specific diseases. For example, administration expenditure and capital expenditure are generally unable to be attributed to any particular condition. In addition, most community and public health programs, which support the treatment and prevention of many conditions, do not have sufficient data to allocate to conditions. Therefore, the disease expenditure estimates in this publication are not directly comparable with estimates published in the AIHW's _Health expenditure Australia_ reports (which cover all health spending). Refer to Figure 2 in Area of spending to see how the expenditure from Health expenditure Australia 2021-22 for 2020-21 relates to expenditure reported in this report. Also refer to Table 2.2 in _Health system spending of disease and injury in Australia: Overview of analysis and methodology 2020-21_ for more detailed information on the inclusions and exclusions.

For details on the estimation methods, scope of data included, and comparability to previous studies, readers are directed to _Health system spending on disease and injury in Australia: Overview of analysis and methodology 2020-21._

Health spending in Australia is generally managed through particular funding programs such as the National Health Reform Agreement or the Medicare Benefits Schedule (MBS). Often the relationship under these schemes between the spending, the particular diseases or conditions being managed, and the demographic characteristics of the people whose care the spending is for, is complex. It can be difficult, for example, to precisely identify for a hospital stay involving someone suffering from a number of ailments and including a range of procedures and treatments, which expenses were related to which conditions. Health spending is also often associated with the management of symptoms and issues for which there is no specific diagnosis (for example, someone attending to an Emergency Department (ED) with abdominal pain for which no specific cause can be identified).

The aim of this report is to use a range of modelling techniques to apportion health spending to population groups based on age, sex, and to disease expenditure groups using the International Statistical Classification of Diseases and Related Health Problems (ICD) and the AIHW's Australian Burden of Disease Study (ABDS) conditions as far as is possible. Due to data availability, allocated spending is skewed towards activity in hospitals, and estimates should be interpreted with this in mind.

Whilst findings in this report are based on estimates (rather than direct observations) these data provide important insights into the nature and drivers of health spending, such as how an ageing population affects health spending.

This current disease expenditure study largely draws upon previously published methods. The key changes that have been made in the 2020–21 study compared with the 2019-20 study related to MBS mapping, PBS mapping, ED analysis, NAP analysis and the way COVID–19 cases were identified. Refer to the Technical notes and the accompanying methods report *Health system spending on disease and injury in Australia: Overview of analysis and methodology for further information 2020–21.*

# Area of spending

The areas of spending in the disease expenditure analysis include:

- hospital services $94.0 billion (public and private admitted patient services, public hospital emergency departments, and public hospital outpatient clinics)
- primary health care services $41.4 billion (general practitioner services, allied health services, pharmaceuticals and dental)
- referred medical services $14.7 billion (specialist services, medical imaging, and pathology).

The following interactive data visualisation (Figure 1) shows disease spending by broad area of expenditure for Australia and for each state and territory. Data used to create the visualisation is available to download from the data tables.

## Figure 1: Disease Expenditure by broad area of expenditure, 2020-21

This stacked bar chart shows a breakdown of the expenditure that can be reported by disease group across each area of expenditure.

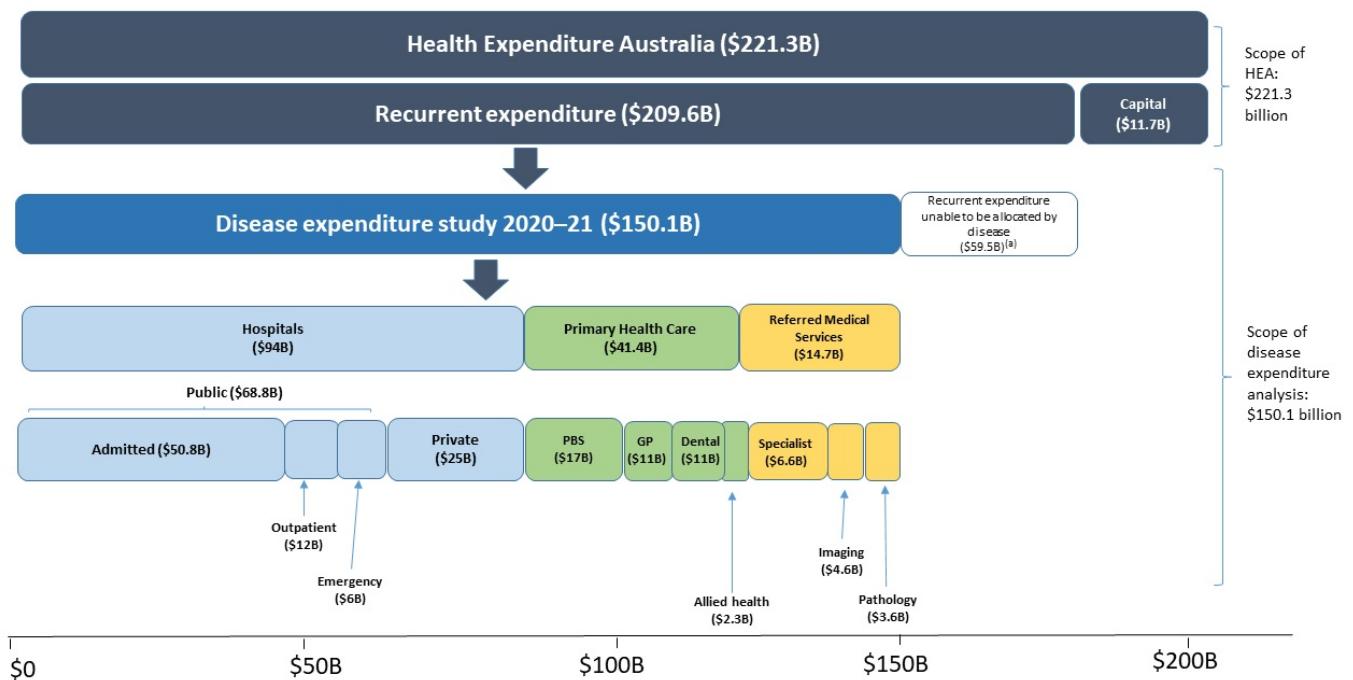

Select State/Territory:
Australia
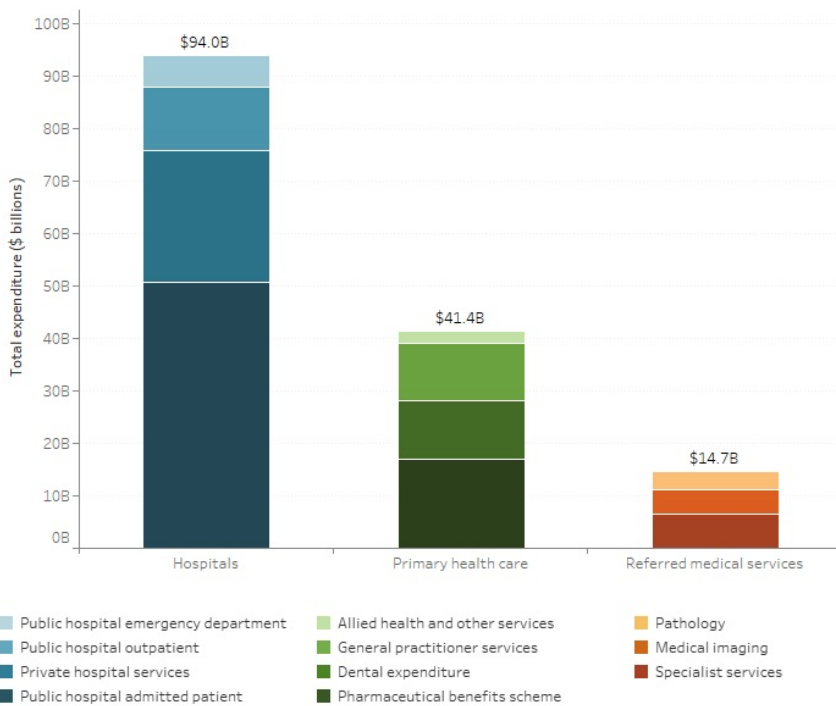
Notes:
(a) Pharmaceutical expenditure includes benefits and patient contributions for over and under-copayment prescriptions
(b) Dental expenditure does not contain age or sex disaggregation
(c) This figure excludes expenditure on Research.
Totals refer to recurrent spending attributed to specific diseases and injuries
Source: AIHW Disease Expenditure database
http://www.aihw.gov.au

Data table

Figure 2 below shows how total health spending for 2020-21 as reported in Health expenditure Australia 2021–22 relates to spending in this disease expenditure study.

## Figure 2: Areas of health spending included in the disease expenditure study 2020-21

**Health Expenditure Australia ($221.3B)**

Scope of HEA: $221.3 billion

**Recurrent expenditure ($209.6B)**

**Capital ($11.7B)**

**Disease expenditure study 2020–21 ($150.1B)**

Recurrent expenditure unable to be allocated by disease ($59.5B)[a]

Scope of disease expenditure analysis: $150.1 billion

**Hospitals ($94B)**

**Primary Health Care ($41.4B)**

**Referred Medical Services ($14.7B)**

Public ($68.8B)

**Admitted ($50.8B)**

**Private ($25B)**

**PBS ($17B)**

**GP ($11B)**

**Dental ($11B)**

**Specialist ($6.6B)**

Outpatient ($12B)

Emergency ($6B)

Imaging ($4.6B)

Allied health ($2.3B)

Pathology ($3.6B)

$0     $50B     $100B     $150B     $200B

(a) Recurrent spending unable to be allocated by disease includes for example, administration expenditure, and most community and public health programs.

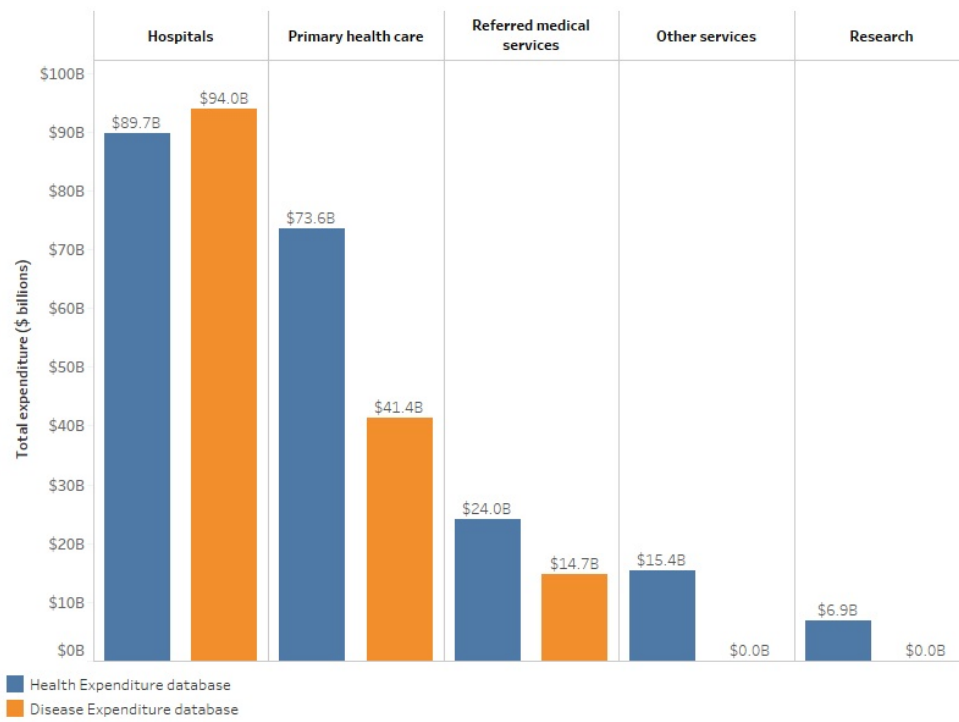Source: AIHW Disease expenditure database and AIHW Health expenditure database.

Some components of recurrent spending are allocated differently between the health expenditure Australia database, and the disease expenditure study. This approach was taken to reflect patterns of healthcare use for particular conditions, which is the focus of this body of work, rather than health funding arrangements. For example:

- Public hospitals spending is further reported as emergency department, admitted patient, and outpatient clinic spending in this study.
- This study includes $1.6 billion of highly specialised PBS drugs dispensed in hospitals as PBS spending, which is a component of primary health care, while the health expenditure database reports this as hospital spending.
- In this disease expenditure study, $7.1 billion of MBS services provided in hospitals as part of an admission are allocated to public and private hospitals, while the majority of this spending is counted in referred medical services in the health expenditure database.
- In this study, health research has not been included as part of the disease expenditure database but there is a separate research section in this report that reflects on National Health and Medical Research Council (NHMRC) expenditure for disease, research and health areas presented according to the International Classification of Disease.

The visualisation below (Figure 3) shows spending for the broad areas of expenditure in this disease expenditure study compared to recurrent health spending for 2020-21 reported in Health expenditure Australia. Data used to create the visualisation is available to download from the data tables. For further information on methods used to derive the expenditure reported, please refer to Technical notes in this web report and the *Health system spending on disease and injury in Australia: Overview of analysis and methodology 2020-21* report.

**Figure 3: Disease expenditure and recurrent expenditure by broad area of expenditure, 2020-21**

This bar chart shows a comparison of 2020–21 Health vs. Disease Expenditure Database spending.
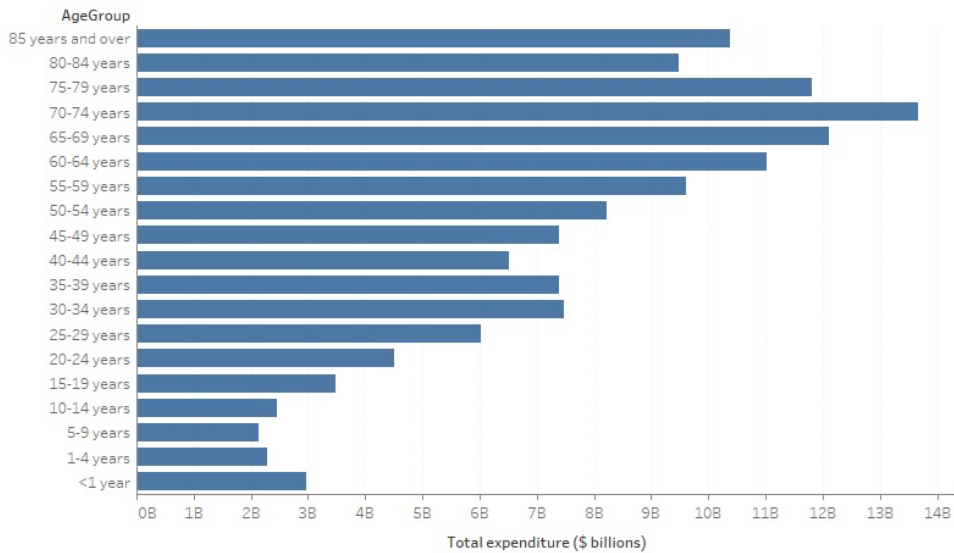
Data table

**Figure 4: Allocated disease expenditure by sex and age group, 2020-21**

Two charts, first a butterfly chart with expenditure by age group and sex. The second a bar chart with spending by area, sex and age group.

**AgeGroup**



Total expenditure ($ billions)

Total expenditure ($)

■ Hospitals    ■ Primary health care    ■ Referred medical services

*Notes:*
(a) Pharmaceutical expenditure includes benefits and patient contributions for over and under-copayment prescriptions
(b) Dental expenditure does not contain age or sex disaggregation
Totals refer to recurrent spending attributed to specific diseases and injuries
*Source:* AIHW Disease Expenditure database http://www.aihw.gov.au

Data table

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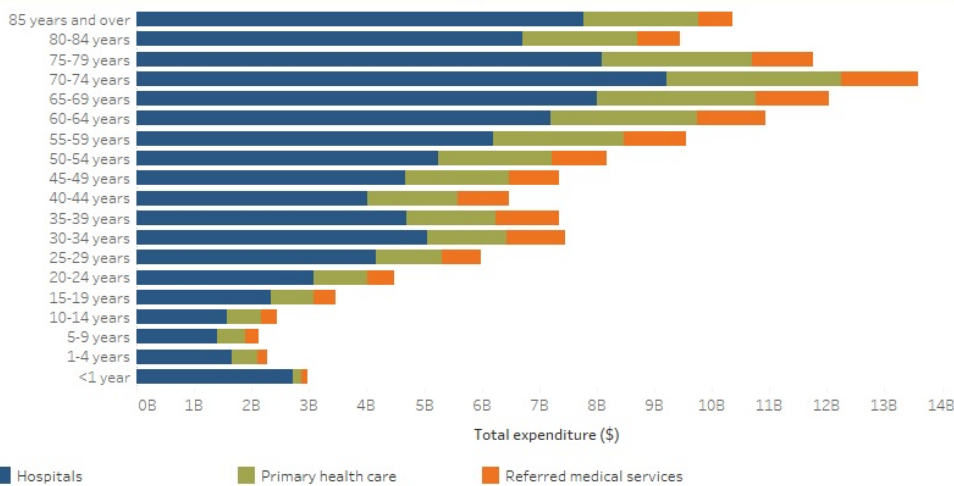
# Australian Burden of Disease groups

The Australian Burden of Disease Study (ABDS) condition list contains over 200 conditions in 17 groups. In this disease hierarchy, each disease is allocated to a disease group. The burden of disease groups contains related diseases or conditions – such as cardiovascular diseases, gastrointestinal disorders, or injuries – and one alternative reporting disease group (nature of injury instead of injury by external cause). These groups are listed in the figures below.

Not all health spending is directly related to a burden of disease condition or group. Some expenditure relates to interactions for purposes such as health maintenance (such as yearly health or dental checks) or investigation of potential health problems, which remain undiagnosed. These services are reported as signs and symptoms, interventions, examination and observation, and physical, behavioural social problems not elsewhere classified.

- The condition groups with the highest spending were Musculoskeletal disorders followed by Cancer and other neoplasms, and Cardiovascular diseases.
- The disease groups with the highest spending for admitted patients in public hospitals were Cardiovascular diseases, Injury and Gastrointestinal disorders. In private hospitals, these were Musculoskeletal disorders, Cardiovascular diseases and Cancer and other neoplasms.
- Spending on general practitioner services was highest for Infectious diseases, Mental and substance use disorders, followed by Musculoskeletal disorders and Cardiovascular diseases.
- Almost half of spending for allied health and other health practitioners related to Mental and substance use disorders, with a quarter relating to Hearing and vision disorders.
- The condition with the highest spending in the Infectious disease group was COVID–19, accounting for close to one-third of the spending within the group. It was followed by Other infections and Lower respiratory infections, together representing over half of the expenses in the Infectious Disease Group.

The following interactive data visualisation (Figure 5) can be used to display health spending for each disease group by area of expenditure, for each state and territory and Australia as a whole. Data used to create the visualisation is available to download from the data tables.
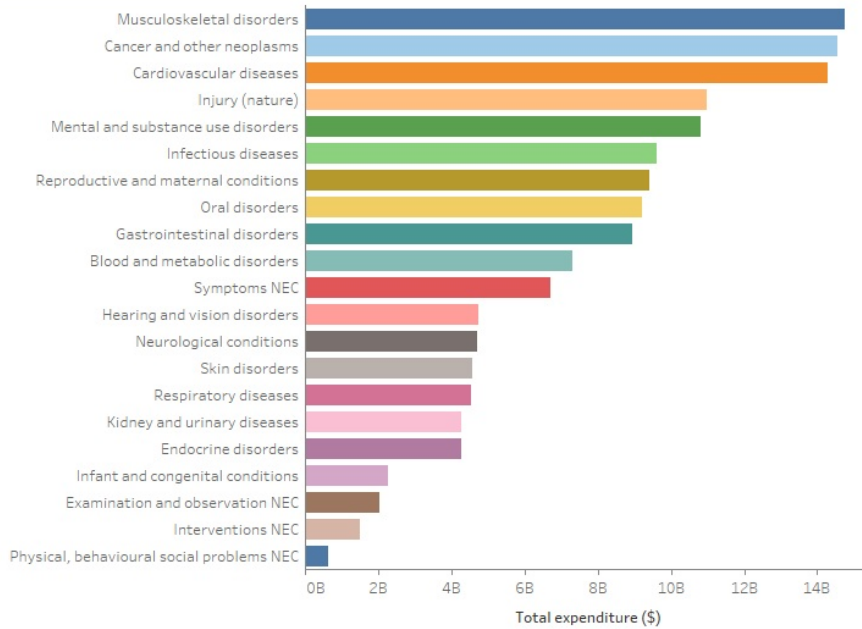
## Figure 5: Expenditure by Burden of Disease groups, 2020-21

This interactive bar chart with disease expenditure by area of expenditure for each state and territory and Australia.

Select broad area of expenditure
All areas

Select State/Territory:
Australia



NEC: Not elsewhere classified
*Notes:*
The Injuries Burden of Disease group can be disaggregated according to the cause of injury, or nature of injury, the latter of which is reported here.
*Source:* AIHW Disease Expenditure database
http://www.aihw.gov.au

Data table

The proportion of total spending related to condition groups varies substantially according to age group, sex, and area of expenditure.

- Within the *Infectious diseases* group, spending was highest within the 1–4 and 85+ age groups.
- While spending on *Mental and substance use disorders* peaked in the 35–39 age group with similar spending for males and females, spending was high for all age groups between 15 and 54.
- Spending on chronic conditions such as *Cancer and other neoplasms* and C*ardiovascular diseases* was highest for age groups from around age 55 onwards for males and females.

The following interactive data visualisation (Figure 6) can be used to display spending on disease groups by sex, age group, for each area of expenditure. Data can be displayed as total expenditure or as a proportion of total expenditure. Data used to create the visualisation is available to download from the data tables.
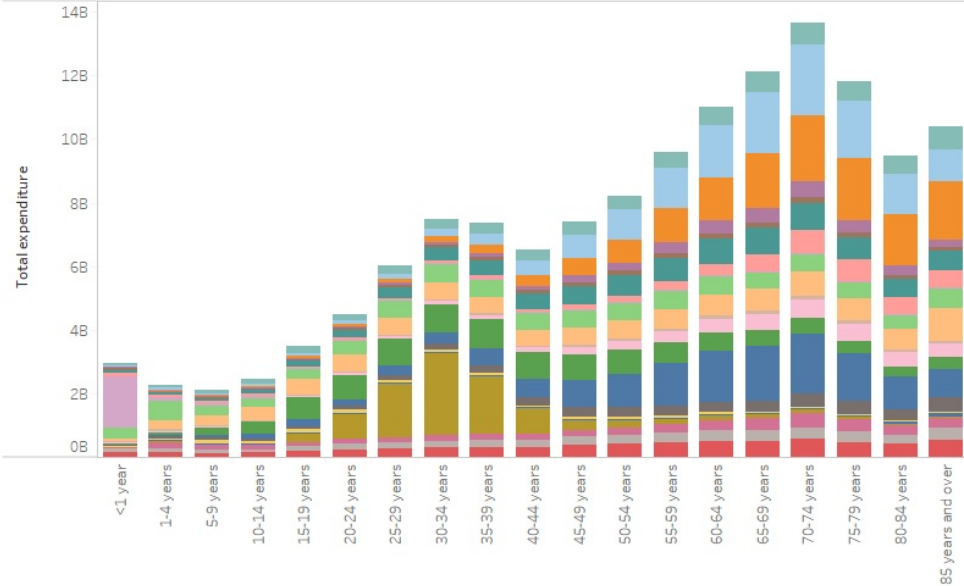
**Figure 6: Disease expenditure by detailed area of expenditure, sex, age group and disease or injury group, 2020-21**
This interactive stacked vertical bar chart with spending by disease group, area and sex. Highest spending for injuries in emergency departments.

Select detailed area of expenditure:
All areas

Select Sex or Total Persons:
Total Persons

Select level of analysis:
◉ Total Expenditure
○ Proportion of Expenditure

**Burden of Disease or Injury group**

- Blood and metabolic disorders
- Cancer and other neoplasms
- Cardiovascular diseases
- Endocrine disorders
- Examination and observation NEC
- Gastrointestinal disorders
- Hearing and vision disorders
- Infant and congenital conditions
- Infectious diseases
- Injury (external cause)
- Injury (nature)
- Interventions NEC
- Kidney and urinary diseases
- Mental and substance use disorders
- Musculoskeletal disorders
- Neurological conditions
- Oral disorders
- Physical, behavioural social problems NEC
- Reproductive and maternal conditions
- Respiratory diseases
- Skin disorders
- Symptoms NEC

NEC: Not elsewhere classified
*Notes:*
(a) Pharmaceutical expenditure includes benefits and patient contributions for over and under-copayment prescriptions
(b) Dental expenditure does not contain age or sex disaggregation
Totals refer to recurrent spending attributed to specific diseases and injuries
*Source:* AIHW Disease Expenditure database
http://www.aihw.gov.au

Data table

The following interactive data visualisation (Figure 7) can be used to display spending on disease groups in 2020–21 by sex and age group. Data used to create the visualisation is available to download from the data tables.

**Figure 7: Expenditure on Burden of Disease or Injury group by sex and age group, 2020-21**

This butterfly chart shows expenditure for both males and females generally increases with age.

Select Burden of Disease or Injury group:
Cardiovascular diseases

| Age group | Females | Males |
|---|---|---|
| 85 years and over | $982M | $846M |
| 80-84 years | $763M | $884M |
| 75-79 years | $821M | $1,146M |
| 70-74 years | $814M | $1,259M |
| 65-69 years | $669M | $1,044M |
| 60-64 years | $516M | $839M |
| 55-59 years | $418M | $655M |
| 50-54 years | $297M | $436M |
| 45-49 years | $236M | $306M |
| 40-44 years | $152M | $175M |
| 35-39 years | $134M | $127M |
| 30-34 years | $95M | $85M |
| 25-29 years | $68M | $61M |
| 20-24 years | $49M | $46M |
| 15-19 years | $43M | $37M |
| 10-14 years | $26M | $24M |
| 5-9 years | $14M | $17M |
| 1-4 years | $12M | $17M |
| <1 year | $20M | $24M |
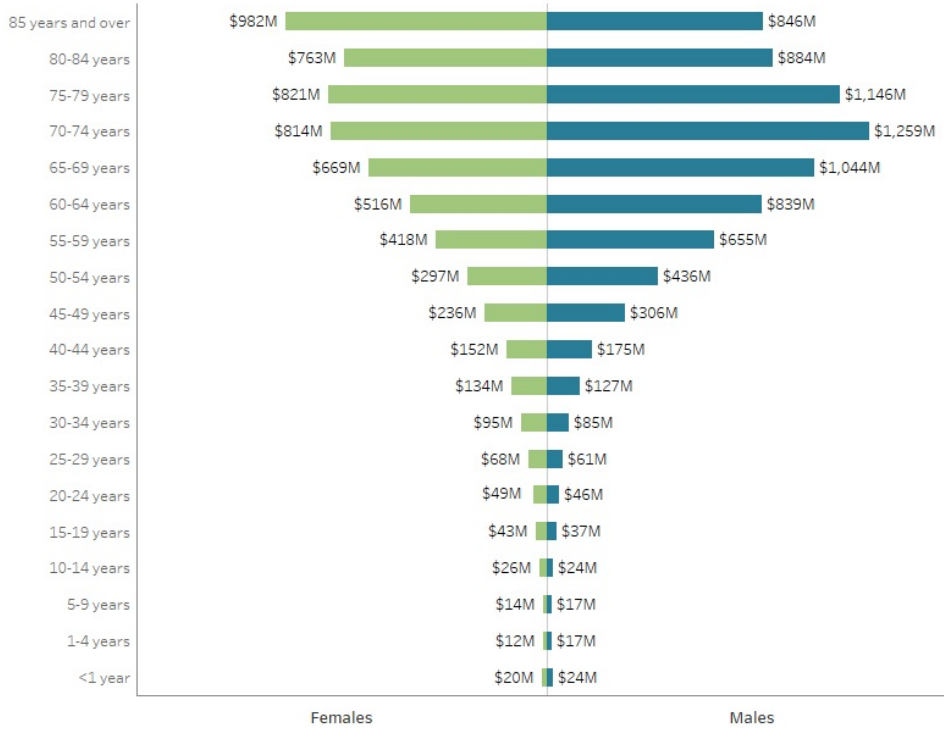
NEC: Not elsewhere classified
*Notes:*
(a)Totals refer to recurrent spending attributed to specific diseases and injuries
(b)The Injuries Burden of Disease group can be disaggregated according to the cause of injury, or nature of injury, the latter of which is reported here.
*Source:* AIHW Disease Expenditure database
http://www.aihw.gov.au

Data table

# Australian Burden of Disease conditions

The Burden of Disease conditions list contains over 200 conditions in 17 groups. Refer to Table 7 in the data tables for a mapping of all the ABDS conditions to the 17 disease groups. This is not an exhaustive list of all possible health conditions and, as such, the spending associated with 'other' conditions within a group is relatively large. For example, spending on Other maternal conditions includes costs related to healthy childbirth, which is not a health condition in the Burden of Disease list. Injury spending can be viewed in 2 ways, by the nature of injury (such as fractures) and the cause of injury (such as road traffic crashes).

- The spending associated with 'other' conditions within a disease group was the highest for *Other cardiovascular diseases, Other musculoskeletal*, and *Other blood and metabolic disorders* (excludes 'not elsewhere classified' groupings).
- The specific conditions with the highest spending were *Dental caries*, *Falls* and *Osteoarthritis* (excludes all 'other' conditions within groups).
- Of the estimated $150 billion of health spending included in this study, $2.6 billion could be allocated by age group and sex to the treatment and management of COVID–19 within the hospital, primary health care (GP services) and referred medical services (specialist and pathology) setting.

The following interactive data visualisation (Figure 8) can be used to display spending on conditions within disease groups for each area of expenditure. Data used to create the visualisation is available to download from the data tables.

## Figure 8: Expenditure on Burden of Disease conditions by area of expenditure, 2020-21

This horizontal bar chart shows expenditure for conditions within a disease group by area of expenditure.
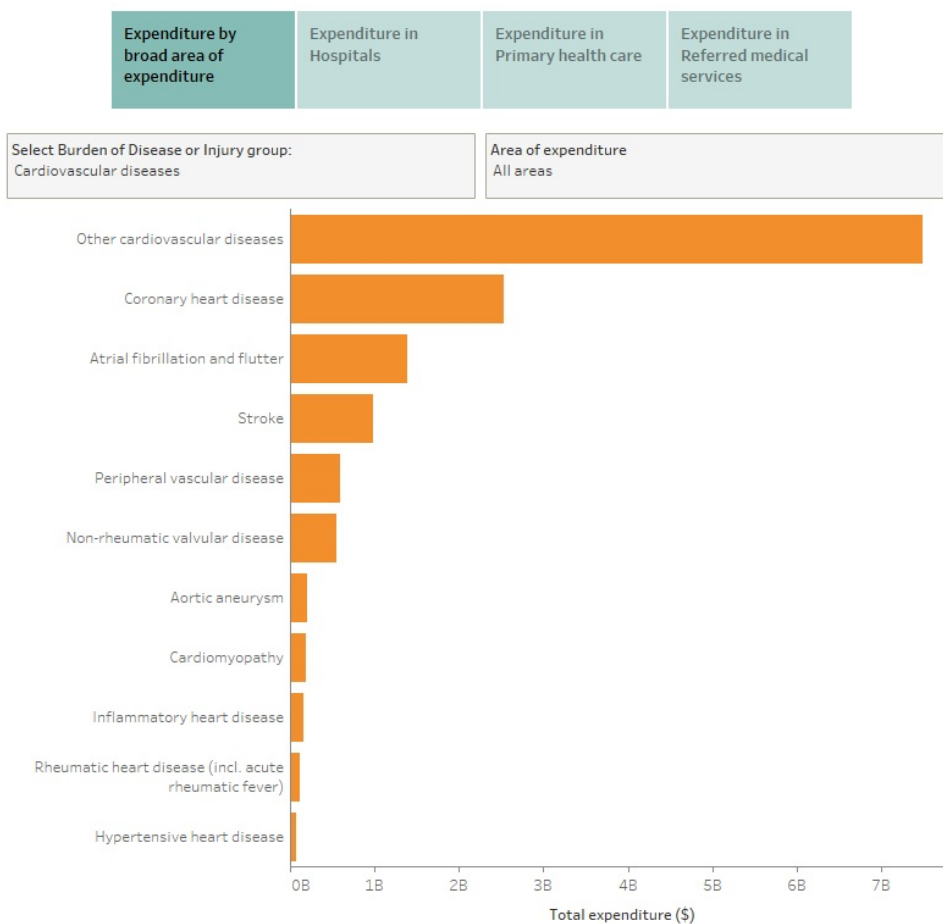


NEC: Not elsewhere classified
*Notes:*
(a) Pharmaceutical expenditure includes benefits and patient contributions for over and under-copayment prescriptions
(b) Dental expenditure does not contain age or sex disaggregation
(C) Lower respiratory infections includes influenza and pneumonia
Totals refer to recurrent spending attributed to specific diseases and injuries
*Source:* AIHW Disease Expenditure database
http://www.aihw.gov.au

Data table

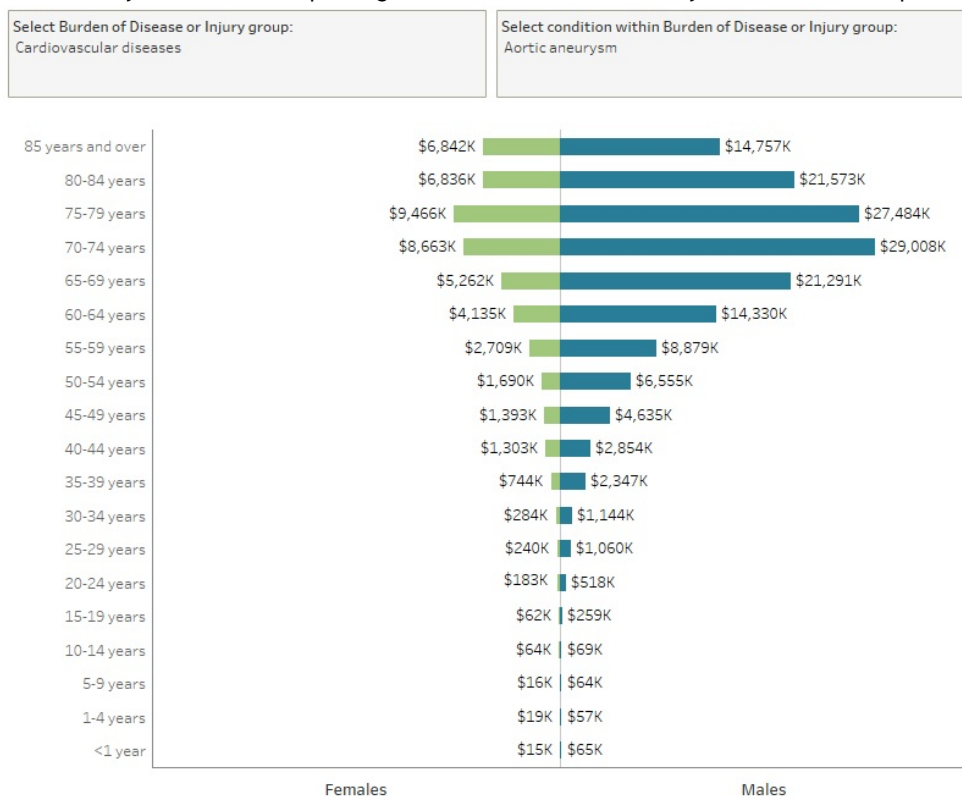## Spending on conditions varies by sex

- For females, spending was highest on Other maternal conditions, Other cardiovascular diseases, and Other musculoskeletal conditions. For specific conditions, the highest were Falls, Osteoarthritis, and Back pain and problems.
- For males, spending was highest on Other cardiovascular diseases, Other musculoskeletal conditions, and Other blood and metabolic disorders. For specific conditions, the highest were injuries caused by Falls, Osteoarthritis and Coronary heart disease.

In this report dental expenditure is not currently reported by age and sex therefore ranking of conditions for sexes excludes dental expenditure.

The following interactive data visualisation (Figure 9) can be used to display spending on conditions within a disease group by age group and sex. Data used to create the visualisation is available to download from the data tables.

## Figure 9: Expenditure on Burden of Disease or Injury group by sex and age group, 2020-21

This butterfly bar chart shows spending for males and females for many conditions tends to peak around the 70–74 years age group.

Select Burden of Disease or Injury group:
Cardiovascular diseases

Select condition within Burden of Disease or Injury group:
Aortic aneurysm

| Age group | Females | Males |
|---|---|---|
| 85 years and over | $6,842K | $14,757K |
| 80-84 years | $6,836K | $21,573K |
| 75-79 years | $9,466K | $27,484K |
| 70-74 years | $8,663K | $29,008K |
| 65-69 years | $5,262K | $21,291K |
| 60-64 years | $4,135K | $14,330K |
| 55-59 years | $2,709K | $8,879K |
| 50-54 years | $1,690K | $6,555K |
| 45-49 years | $1,393K | $4,635K |
| 40-44 years | $1,303K | $2,854K |
| 35-39 years | $744K | $2,347K |
| 30-34 years | $284K | $1,144K |
| 25-29 years | $240K | $1,060K |
| 20-24 years | $183K | $518K |
| 15-19 years | $62K | $259K |
| 10-14 years | $64K | $69K |
| 5-9 years | $16K | $64K |
| 1-4 years | $19K | $57K |
| <1 year | $15K | $65K |

NEC: Not elsewhere classified
*Notes:*
(a) Lower respiratory infections includes influenza and pneumonia
(b)Totals refer to recurrent spending attributed to specific diseases and injuries
*Source:* AIHW Disease Expenditure database
http://www.aihw.gov.au

Data table

# Comparison with 2019-20 and across time series

Estimated spending by disease increased by $11.7 billion (in current prices) to $150.1 billion in 2020-21, up from $138.4 billion in 2019-20. This was an overall growth of 8.5% in nominal terms (current prices). This compares to a nominal growth of 9.2% in total health spending in 2020-21 reported in Health expenditure Australia 2021-22. As the disease expenditure study allocates around 72% of recurrent health spending to disease groups, the growth in spending on those areas of expenditure that are excluded from the disease expenditure study such as public health may have contributed to the higher overall growth in total health spending, due to the large increase in public health spending during the time of the COVID-19 pandemic.
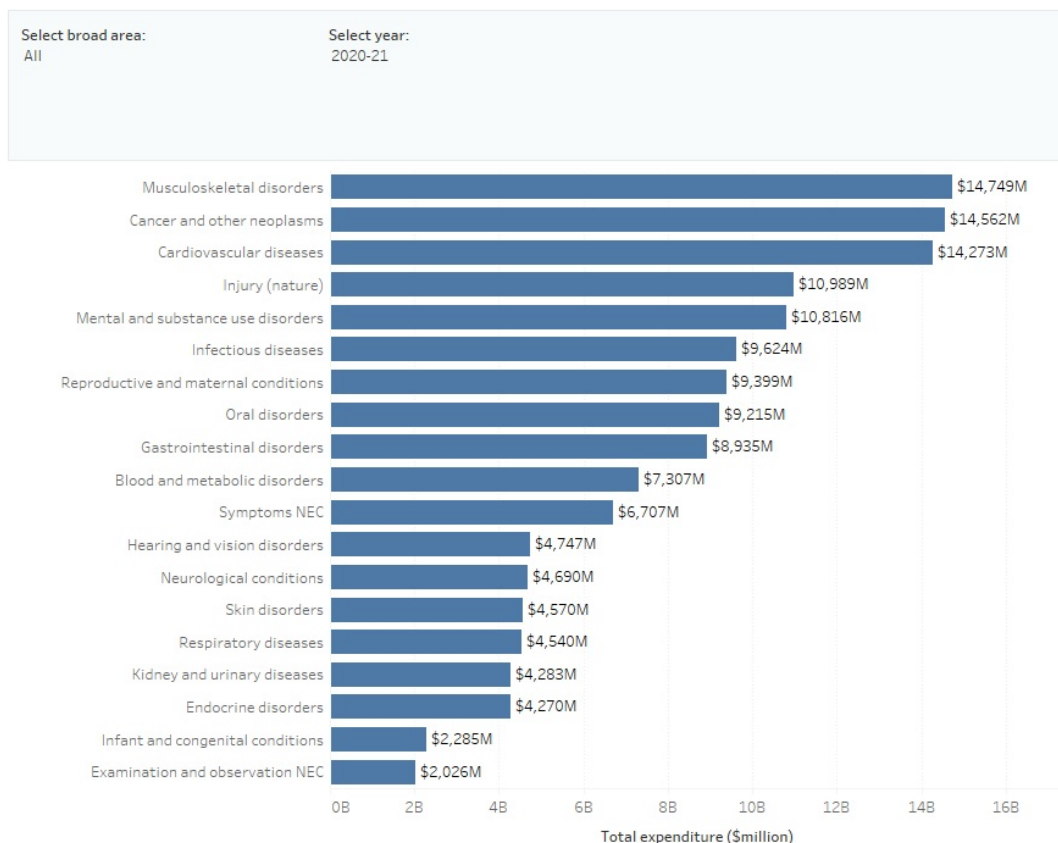
### Overall rank of disease groups

- Musculoskeletal disorders, Cardiovascular diseases and Cancers and other neoplasms were the top 3 disease groups in terms of spending throughout the decade from 2011-12 to 2020-21, accounting for just under one-third of all disease spending each year.
- Spending on Cancer and other neoplasms doubled from $7.3 billion in 2011-12 to $14.6 billion in 2020-21 (moved from rank 3 to rank 2 in terms of spending).
- Musculoskeletal disorders ranked the highest in terms of spending for 4 of the past 5 years, the exception was in 2019-20.
- In 2016-17 Infectious diseases was the fourth highest disease group, primarily due to a large increase in spending on PBS medications for Infectious diseases in that year.

The following interactive data visualisation (Figure 10) shows the change in rank in terms of overall spending and spending by broad area of expenditure between 2011-12 and 2020-21. Data used to create the visualisation is available to download from the data tables.

### Figure 10: Ranking of spending on disease groups, by broad area of expenditure, current prices, 2011-12 to 2020-21

This bar chart shows a time series of health spending by disease from 2011-12 to 2020-2. From 2011-12 to 2014-15, Cardiovascular diseases ranked the highest. This shifted to Musculoskeletal disorders in 2015-16.



Note:
The Injuries Burden of Disease group can be disaggregated according to the cause of injury, or nature of injury, the latter of which is reported here.
Source: AIHW Disease Expenditure database
https://www.aihw.gov.au
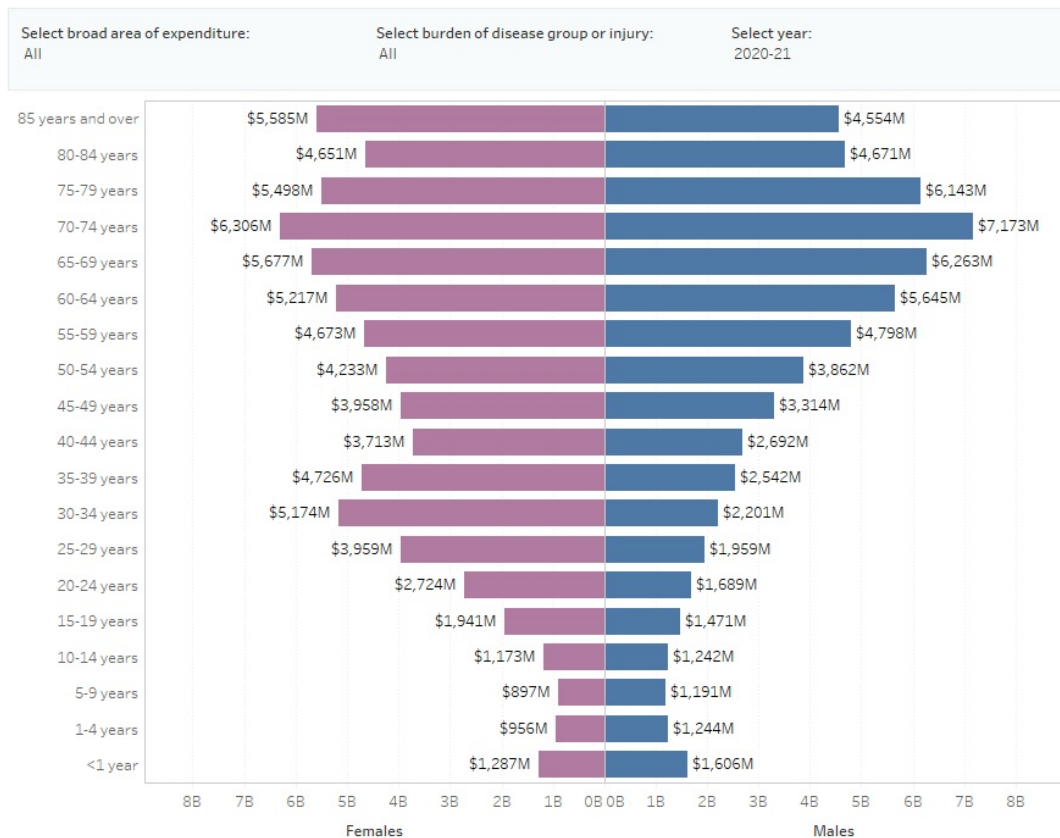
Data table

### Spending by sex and age group

- Across the decade from 2011-12 to 2020-21 spending peaked for both males and females in the 65-74 age groups.
- For Infectious diseases, since 2018-19, the 1-4 year age group had the highest share of spending for both males and females.

- Within the hospital setting spending on cancers peaked between 60-74 year old males and females with clear increases in spending starting from around age 30–34 years onwards.

The following interactive data visualisation (Figure 11) shows the spending on disease groups by broad area of expenditure, age group and sex in current prices between 2011–12 and 2020–21. Data used to create the visualisation is available to download from the data tables.

**Figure 11: Spending on disease groups, by broad area of expenditure, age group and sex, current prices, 2011-12 to 2020-21 ($ million)**

This butterfly chart shows spending for both males and females increasing with age across most disease groups across the decade 2011–12 to 2020-21.



| | Select broad area of expenditure: All | Select burden of disease group or injury: All | Select year: 2020-21 |
| --- | --- | --- | --- |

| Age group | Females | Males |
| --- | --- | --- |
| 85 years and over | $5,585M | $4,554M |
| 80-84 years | $4,651M | $4,671M |
| 75-79 years | $5,498M | $6,143M |
| 70-74 years | $6,306M | $7,173M |
| 65-69 years | $5,677M | $6,263M |
| 60-64 years | $5,217M | $5,645M |
| 55-59 years | $4,673M | $4,798M |
| 50-54 years | $4,233M | $3,862M |
| 45-49 years | $3,958M | $3,314M |
| 40-44 years | $3,713M | $2,692M |
| 35-39 years | $4,726M | $2,542M |
| 30-34 years | $5,174M | $2,201M |
| 25-29 years | $3,959M | $1,959M |
| 20-24 years | $2,724M | $1,689M |
| 15-19 years | $1,941M | $1,471M |
| 10-14 years | $1,173M | $1,242M |
| 5-9 years | $897M | $1,191M |
| 1-4 years | $956M | $1,244M |
| <1 year | $1,287M | $1,606M |

*Note:*
The Injuries Burden of Disease group can be disaggregated according to the cause of injury, or nature of injury, the latter of which is reported here.
Source: AIHW Disease Expenditure database
https://www.aihw.gov.au

Data tables

## Spending by area of expenditure

- Spending on Infectious diseases across the decade from 2011–12 to 2020–21 has shown the most variation. The impact of COVID-19, resulted in an increase in spending in 2019-20 and 2020-21 especially in the area of pathology and non-admitted services in public hospitals. Earlier in the decade, in 2016-17, there was an increase in spending of medicines on the PBS used to treat infectious diseases in that year, namely the inclusion of ledipasvir+sofosbuvir, which is primarily used to treat hepatitis C.
- Across the decade from 2011–12 to 2020–21 for Musculoskeletal disorders the highest share of spending was through private hospitals with an increasing share through public admitted patients.
- In recent years there was a steady increase in the amount spent in the public hospital admitted setting for treating injuries.
- Over the past five years, since 2016-17, there was an increased share and amount spent to treat neurological conditions with PBS medications.
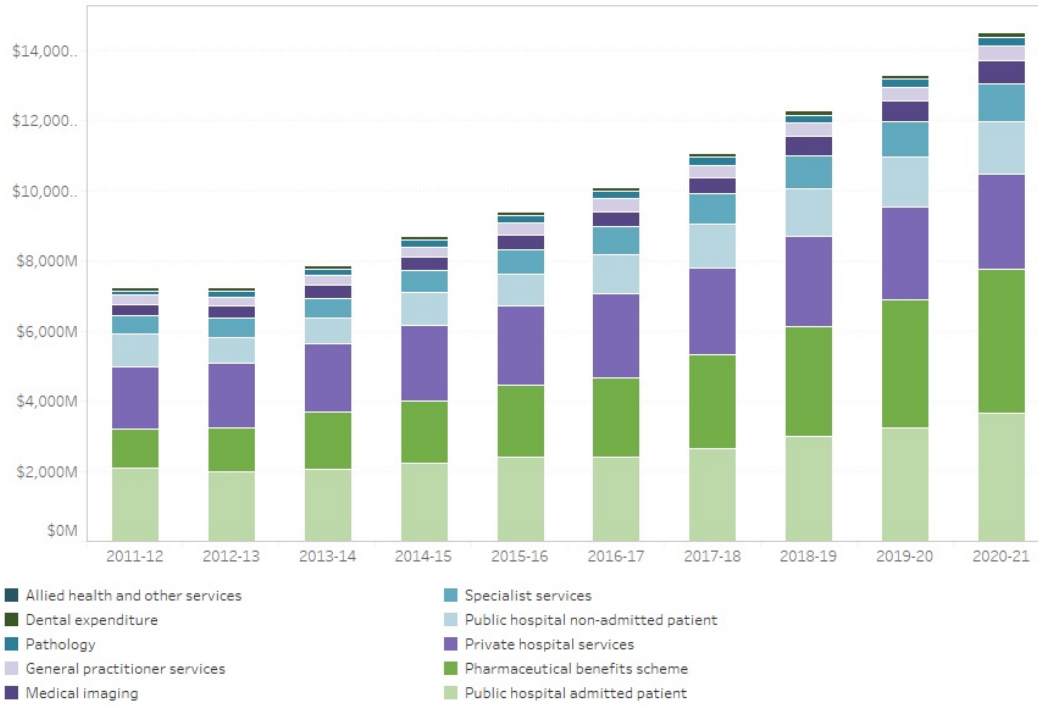
The following interactive data visualisation (Figure 12) shows the spending on disease groups by broad area of expenditure in current prices between 2011–12 and 2020–21. Data used to create the visualisation is available to download from the data tables.

**Figure 12: Spending on disease groups, by area of expenditure, current prices, 2011-12 to 2020-21 ($ million)**

This stacked bar chart shows the proportion of spending for each disease group that can be attributed to different areas of spending between 2011–12 and 2020–21.

## Cancer and other neoplasms



Legend:
- Allied health and other services
- Dental expenditure
- Pathology
- General practitioner services
- Medical imaging
- Specialist services
- Public hospital non-admitted patient
- Private hospital services
- Pharmaceutical benefits scheme
- Public hospital admitted patient

*Notes:*
(a)Public hospital non-admitted patient includes Public hospital emergency department and Public hospital outpatient.
(b)The Injuries Burden of Disease group can be disaggregated according to the cause of injury, or nature of injury, the latter of which is reported here.
Source: AIHW Disease Expenditure database
https://www.aihw.gov.au

Data Tables

# COVID-19

The Coronavirus disease 2019 (COVID-19) pandemic has been one of the biggest public health challenges Australia has faced since the Influenza pandemic of 1918 around 100 years ago.
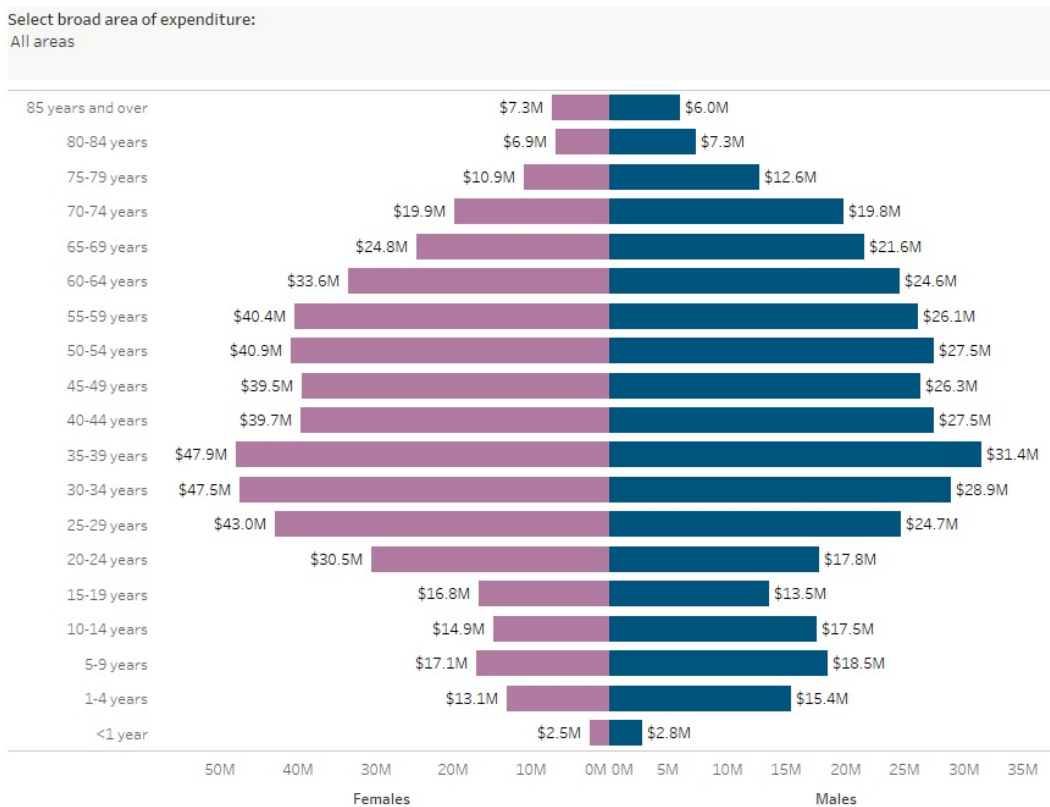
COVID-19 is included as an infectious disease within the ABDS conditions and in this study it captures the estimated spending that can be identified by age group and sex for patients who were confirmed or suspected COVID-19 positive patients that were treated in either a public hospital emergency department, public hospital admitted patient or in a private hospital. It also includes GP and specialist attendances related to COVID-19 and pathology testing for COVID-19 claimed through the MBS. In 2020-21, an estimated $2.6 billion was spent on COVID-19.

The COVID-19 spending in this report excludes payments under the National Partnership on COVID-19 Response (NPCR) as well as any community or public health related spending on COVID-19 outside of the NPCR. For further information on this spending refer to the report *Health system spending on COVID-19 on the response to COVID-19 in Australia 2019-20 to 2021-22*.

The following interactive data visualisation (Figure 13) can be used to see spending on COVID-19 by sex and age group. Data used to create the visualisation is available to download from the data tables.

## Figure 13: Expenditure on COVID-19 by age group and sex, 2020-21

This visualisation shows COVID-19 spending by area, sex and age group. People 30-34 years had the highest expenditure related to COVID-19 in 2020-21.



Select broad area of expenditure:
All areas

| Age group | Females | Males |
|---|---|---|
| 85 years and over | $7.3M | $6.0M |
| 80-84 years | $6.9M | $7.3M |
| 75-79 years | $10.9M | $12.6M |
| 70-74 years | $19.9M | $19.8M |
| 65-69 years | $24.8M | $21.6M |
| 60-64 years | $33.6M | $24.6M |
| 55-59 years | $40.4M | $26.1M |
| 50-54 years | $40.9M | $27.5M |
| 45-49 years | $39.5M | $26.3M |
| 40-44 years | $39.7M | $27.5M |
| 35-39 years | $47.9M | $31.4M |
| 30-34 years | $47.5M | $28.9M |
| 25-29 years | $43.0M | $24.7M |
| 20-24 years | $30.5M | $17.8M |
| 15-19 years | $16.8M | $13.5M |
| 10-14 years | $14.9M | $17.5M |
| 5-9 years | $17.1M | $18.5M |
| 1-4 years | $13.1M | $15.4M |
| <1 year | $2.5M | $2.8M |

**Note:** The data presented in the graph is based on the classification criteria used for COVID-19, including the ICD codes from version 11th (U07.1, U07.2, U07.4, U07.5, U07.7, U06.0). Additionally, the analysis considered clinic types (10.21, 20.57, 40.63, 30.09) and MBS items that had the keywords 'COVID-19', 'SARS-COV-2', and 'COVID' mentioned in their description.

*source:* AIHW Disease Expenditure database

Data table

The following interactive data visualisation (Figure 14) can be used to see spending on COVID-19 by sex, age group and area of expenditure. Data used to create the visualisation is available to download from the data tables.

## Figure 14: COVID-19 spending by detailed area of expenditure, sex and age group, 2020-21

This visualisation has COVID-19 spending by detailed area of expenditure, sex and age group in 2020-21.
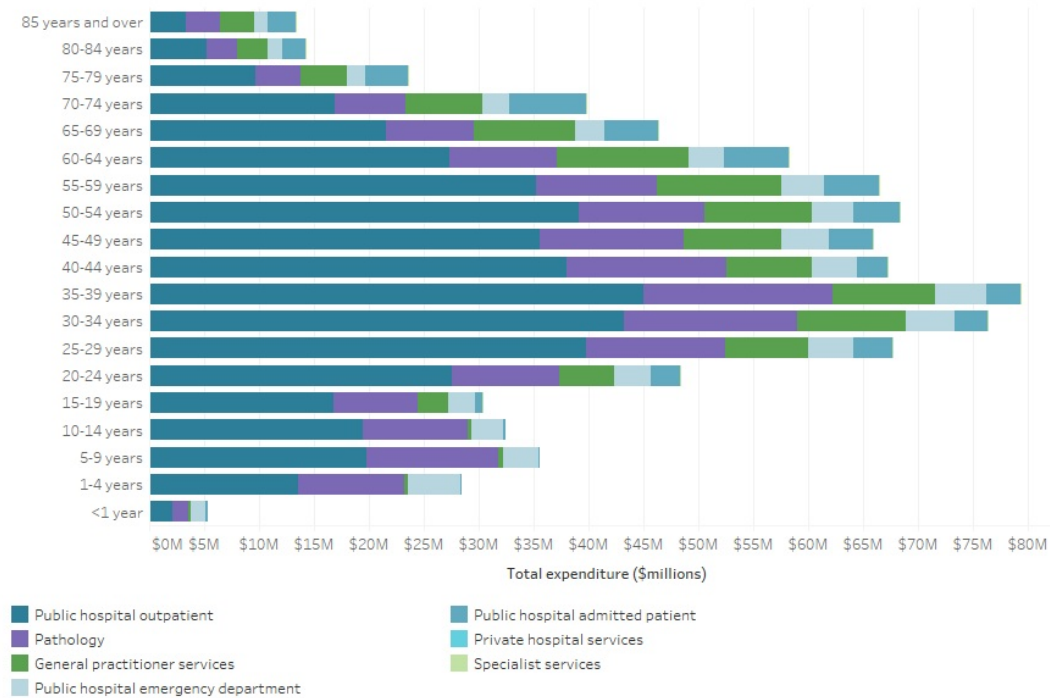
Note: The data presented in the graph is based on the classification criteria used for COVID-19, including the ICD codes from version 11th (U07.1, U07.2, U07.4, U07.5, U07.7, U06.0). Additionally, the analysis considered clinic types (10.21, 20.57, 40.63, 30.09) and MBS items that had the keywords 'COVID-19', 'SARS-COV-2', and 'COVID' mentioned in their description.

*source:* AIHW Disease Expenditure database

The costs identified as COVID-19 in the disease expenditure database are part of a wider set of COVID-19 payments many of which are unable to be identified by aged group and sex at this point in time. These payments include:

- Australian Government payments to the state and territory health authorities under the National Partnership on COVID-19 Response (NPCR)
- Australian Government Department of Health and Aged Care payments related to COVID-19 that are outside of the NPCR including programs for private hospitals, medical services, community health, pharmaceuticals, public health, administration, health research, health workforce, capital and aged care
- State and territory government health authority payments under the NPCR.
- Estimated costs for out-of-pocket payments for respirators, face masks and shields

The report Health system spending on the response to COVID-19 in Australia 2019-20 to 2021-22 examines Australia's health system spending in response to the COVID-19 pandemic over the period 2019-20 to 2021-22. It covers funding by government and non-government, in key areas of expenditure: primary health care, (including MBS unreferred medical services, community and public health), hospitals, referred medical services, aged care and other health related areas of spending. In addition, this report compares Australia's COVID-19 spending to other OECD countries and provides a comparison of excess mortality during the pandemic.

# Research

Traditionally health research has been excluded from disease expenditure reporting. This section presents National Health and Medical Research Council (NHMRC) expenditure for disease, research and health areas from 2018–19 to 2020–21.

- In 2020–21, $1.4 billion was spent through the NHMRC expenditure on disease, research and health
- The largest spending was for Neurological diseases ($199.7 million)
- This was followed by spending in equal shares for Cancer and Infectious diseases ($162 million each)
- Since 2018–19, the greatest spending each year has been for Neurological diseases
- In 2020–21, $0.9 million was for COVID–19 research

The table below shows the NHMRC expenditure for disease, research and health areas from 2018–19 to 2020–21. For a comparison of NHMRC expenditure for disease, research and health areas back for years 2011–12 to 2020–21, this can be downloaded from the data section.

**Table 1: NHMRC expenditure for disease, research and health areas 2018-19 to 2020-21 ($ million)**

| Disease, research and health areas[1] | 2018-19 | 2019-20 | 2020-21 |
|---|---|---|---|
| Balance, Eye and Hearing Diseases | 22.1 | 21.9 | 22.1 |
| Blood Diseases | 21.8 | 23.4 | 23.0 |
| Cancer | 180.8 | 176.6 | 161.5 |
| Cardiovascular Disease | 109.6 | 110.3 | 104.8 |
| Congenital and Genetic Diseases | 108.3 | 108.0 | 96.4 |
| Endocrine, Metabolic and Nutritional Diseases | 111.1 | 116.9 | 111.4 |
| Environmental and Occupational Health | 17.2 | 17.9 | 19.0 |
| Gastrointestinal Diseases | 39.7 | 43.9 | 44.3 |
| Genitourinary Diseases | 41.1 | 41.6 | 37.4 |
| Immunological Diseases[2] | 80.7 | 79.3 | 75.8 |
| Infectious Diseases | 164.4 | 167.9 | 161.6 |
| Injury | 50.5 | 50.9 | 48.0 |
| Mental Health[3] | 108.3 | 107.5 | 101.1 |
| Musculoskeletal Diseases | 50.7 | 48.6 | 43.9 |
| Neurological Diseases | 210.5 | 215.9 | 199.7 |
| Orofacial Diseases | 3.5 | 2.9 | 2.4 |
| Reproductive Health | 67.2 | 70.0 | 69.6 |
| Respiratory Diseases | 53.3 | 56.4 | 56.2 |
| Skin Diseases | 11.4 | 10.8 | 10.6 |
| COVID-19 | | | .9 |
| **Total** | **1,452.23** | **1,470.65** | **1,389.57** |

Notes

1. These disease, health and research topics are based on the International Classification of Disease (ICD) produced by the World Health Organisation.
2. The figures in the table above for Immunological Diseases have been modified to exclude immunological research specifically related to cancer. These figures relate to research relevant to allergy, autoimmune diseases, and immunodeficiency.
3. Includes research into addiction.

Source: NHMRC.

# Technical notes

The main source of information for this web report is the AIHW's Disease expenditure database. It contains estimates of spending by Australian Burden of Disease Study condition, age group, and sex for hospital services (including public hospital admitted patients, public hospital emergency departments, public hospital outpatient services and private hospital admitted patients), primary health care (including general practitioner services, allied health services, benefit paid pharmaceuticals and dental services) and referred medical services (including specialist services, medical imaging and pathology).

The methods used for estimating disease spending is a mixture of 'top-down' and 'bottom-up' approaches, where total spending across the health system is estimated and then allocated to the relevant conditions based on the available service use data.

Although this approach produces consistency, good coverage and totals that add up to known expenditure, it is not as comprehensive for any specific disease as a detailed 'bottom-up' analysis, which would include the actual costs incurred for that disease. A lack of amenable data sources means that a more granular 'bottom-up' analysis is not possible.

Estimates in the Disease Expenditure Database have been derived by combining information from the:

- National Hospital Morbidity Database (NHMD)
- National Public Hospitals Establishments Database (NPHED)
- National Non-admitted Patient Emergency Department Care Database (NNAPEDC)
- National Non-admitted Patient Databases (aggregate, NAPAGG, and unit record, NAPUR)
- National Hospital Costs Data Collection (NHCDC)
- Private Hospital Data Bureau (PHDB) collection
- Bettering the Evaluation and Care of Health (BEACH) survey
- Medicare Benefits Schedule (MBS)
- Pharmaceutical Benefits Scheme (PBS)
- Health Expenditure Database.

It is not technically appropriate or feasible to allocate all spending on health goods and services by disease. For example, neither administration expenditure nor capital expenditure can be meaningfully attributed to any particular condition due to their nature.

This study includes payments from all sources of funds, such as the Australian and State and Territory Governments, Private Health Insurance, and out of pocket payments by patients.

Some components of recurrent spending are allocated differently between the AIHW Health expenditure Australia database, and the disease expenditure study. This approach was taken to reflect patterns of healthcare use for particular conditions, which is the focus of this body of work, rather than health funding arrangements. Spending estimates in hospitals are slightly higher than in the Health Expenditure Database. This is discussed further in the accompanying methodology report.

Expenditure information is added to hospital activity data for every admitted patient record in the NHMD, all emergency department presentations in the NNAPEDC, and all service events in the National Non-admitted Patient Databases. Data sets have been constructed for all private hospital admitted patient separations. Aggregated data sets by sex, age group, state/territory and SA3 geographical area, including patient co-payments, have been created for MBS services by provider specialty and subgroup, and pharmaceuticals by Anatomical Therapeutic Classification (ATC). All of the data sets include expenditure estimates for each ABDS condition.

## Changes to methodology compared to the 2019-20 study

In this 2020–21 study compared to previous disease expenditure studies, there were changes to the methods used for MBS mapping, PBS mapping, Emergency Department (ED) analysis, Non-admitted patient analysis (NAP) and the identification of COVID-19 cases. The methodology changes are outlined briefly below. For further details on the methods used, refer to *Health system spending on disease and injury in Australia: Overview of analysis and methodology 2020-21.*

### MBS mapping

The mapping of MBS was refined. In addition to allocating MBS items to broader ABDS groups, they were also now mapped to specific ABDS conditions if the item description allowed such allocation.

This improvement allowed for a more precise allocation of expenditure at the condition level, resulting in a more accurate analysis.

### PBS mapping

The mapping of the PBS was refined. This was necessary due to certain categories of pharmaceuticals being under-represented in GP prescribing patterns, often because prescriptions are typically written by specialists or because the medication was newly listed on the PBS. To overcome this, a direct mapping approach was used to associate PBS medications with specific conditions, focusing on the drugs' generic names. The primary objective was to identify the most frequent medical uses of these medications. This streamlined approach allowed for a more efficient analysis, guided by specific criteria and assumptions.

Note, there was a variation in the method used for diabetes conditions in 2020–21. The allocation of spending for diabetes was based on the findings of the Fremantle study. This study was preferred over the BEACH study due to its more recent data and specific focus on diabetes.

## ED analysis

The analysis for ED cases involved merging total cost buckets (previously used average cost buckets) obtained from the Independent Hospital and Aged Care Pricing Authority (IHACPA) data with each hospital separation. This merging was based on factors such as the hospital and AR-DRG recorded for each separation.

If records did not match these specifications, costs were assigned based on state totals, ensuring comprehensive coverage.

## NAP analysis

The NAP analysis included merging total cost buckets from IHACPA data (previously used average cost buckets) with unit record separations. The merging was done based on establishment ID and Tier 2 classifications.

Like ED, records that did not find a match based on these criteria were further merged using either state or Tier 2 totals.

Additionally, clinic types were directly allocated to conditions using demographic patterns observed in the data. Seven clinics were directly allocated, with 4 clinics specifically related to COVID-19.

### Identification of COVID-19 cases

### Analysis for private and public hospitals:

The 11th version of the International Classification of Diseases (ICD) codes, including U07.1, U07.2, U07.4, U07.5, and U07.7, were used in the diagnostic field of both public and private admitted hospitals to identify COVID-19 cases.

### Analysis for ED cases:

The analysis included both confirmed COVID-19 cases using the designated codes and ruled-out cases (U06.0) in the emergency department.

### Introduction of Tier 2 clinic classes:

For NAP, four Tier 2 clinic classes (10.21, 20.57, 40.63, 30.09) were established to capture and track the diagnosis, treatment, and COVID-19 vaccination activities in outpatient clinics.

### MBS mapping for keyword search:

A mapping file was created for MBS areas to search for specific keywords in the item descriptions. The keywords used in the search were 'COVID-19', 'SARS-COV-2', and 'COVID'. This process enabled the identification of 26 MBS items that could be linked to COVID-19 based on the presence of these keywords in the item descriptions.

The AIHW continually seeks to improve the methods used to produce these estimates. Estimates for disease expenditure are subject to revision. Hence the most recently published results are not directly comparable with previously published data.

# Glossary

# Further information

The AIHW offers a customised data request service for access to statistics that are not available in published reports, tables, dynamic data displays or data cubes. Customised tabulations of disease expenditure estimates from the AIHW Disease Expenditure database may be provided, depending on the level of detail required.

Request a customised analysis from the AIHW (Note there may be a charge for custom data requests).

For any other questions relating to the disease expenditure information collected by the AIHW, contact disease.expenditure@aihw.gov.au.

# Data

# Report editions

## Previous releases

Health system spending on disease and injury in Australia 2020–21 supersedes all previous releases of the AIHW *Disease expenditure in Australia* report series. The variation in methodologies used in this report compared to previous reports means that data in this report is not comparable to earlier reports. Refer to the Data section in this report for downloadable Microsoft Excel tables for years 2011–12 to 2020–21 to allow for time series comparisons in both current and constant prices.

## This release

Health system spending on disease and injury in Australia, 2020-21 | 29 Nov 2023

## Previous releases

- Disease expenditure in Australia 2019–20 |
  **Web report** | 02 Dec 2022
- Disease expenditure in Australia 2018-19 |
  **Web report** | 25 Aug 2021
- Disease expenditure in Australia 2015-16 |
  **Web report** | 13 Jun 2019

# Related material

## Resources

## Related topics

- Burden of disease
- COVID-19