Australian Government
Australian Institute of Health and Welfare

Disease expenditure in Australia 2018-19

Web report | Last updated: **25 Aug 2021** | Topic: Health & welfare expenditure

About

Disease expenditure in Australia 2018-19 describes the activity and characteristics of Australia's health care system in terms of estimated expenditure for different demographic groups in the population, and expenditure relating to different groups of diseases.

This web report provides the most recent data available on the health care expenditure on all Australian Burden of Disease Study conditions, including expenditure by health care sector, type of condition, age group, and sex. Information is presented on the web pages using interactive visualisations, and downloadable Microsoft Excel workbooks.

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- Fact sheet
- Data

Findings from this report:

- Around 72% ($134 billion) of recurrent expenditure in 2018-19 could be attributed to specific disease groups
- The highest expenditure group was Musculoskeletal disorders, followed by Cardiovascular diseases
- The highest expenditure condition group for females was Reproductive and maternal ($8.7 billion)
- The highest expenditure condition group for males was Cardiovascular diseases ($6.7 billion)

Summary

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.

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 Indigenous status, 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 (AIHW 2015) 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, including how an ageing population affects health spending and comparisons of health spending between Aboriginal and Torres Strait Islander Australians and non-Indigenous Australians.

The current disease expenditure study draws upon previously published methods, with some minor updates in 2018–19. This update primarily affects spending on *Cancer and other neoplasms*, with 2015-16 pharmaceutical estimates revised upwards by around $760.2 million. These changes are discussed further in the *Disease Expenditure 2018–19 Study: Overview of analysis and methodology* report. The February 2022 update incorporates the following additional changes: a revised mapping of ICD-10-AM codes to ABDS conditions for the kidney and urinary diseases group; an updated mapping file for MBS item numbers to ABDS groups; updated 2018–19 data reported in Health expenditure Australia 2019–20. The AIHW is also undertaking work to update the disease expenditure time series with consistent methods.

Expenditure is estimated by ABDS condition, age group and sex for:

- admitted patient
- emergency department
- outpatient hospital services
- primary health care (general practitioners, allied health, pharmaceuticals and dental)
- referred medical services (specialists, pathology and diagnostic imaging).

All sources of funding, including patient co-payments, are included in expenditure estimates. Slight changes to the previous methods have been made to allocation of pharmaceutical expenditure to conditions, and Medicare services by age groups.

Box 1: 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 financially expended on treating, managing, or preventing conditions 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 AIHW has produced separate estimates of disease burden in the *Australian Burden of Disease Study* web report. Disease expenditure and burden are reported further in *How do we measure the cost of disease?*.

It is not feasible (or appropriate) to allocate some forms of health spending to specific diseases. Therefore the disease expenditure estimates in this publication are not comparable with estimates published in the AIHW's *Health Expenditure Australia* reports (which cover all health spending).

For details on the estimation methods, scope of data included, and comparability to previous studies, readers are directed to the Technical notes page, and the *Disease Expenditure 2018–19 Study: Overview of analysis and methodology* report.

In 2018-19:

$134 billion was attributed to specific disease groups

Musculoskeletal disorders had the highest estimated spending ($14 billion, or 10.3%)

$11.7 billion was spent on both Cardiovascular diseases and Cancer and other neoplasms

$9.6 billion was spent on Mental and substance use disorders

$5.0 billion was spent on Dental caries

$4.3 billion was spent on Falls

Area of spending

The areas of spending in the disease expenditure analysis include hospital services, primary health care services and referred medical services (generally provided by medical specialists). Hospital services include public and private admitted patient services, public hospital emergency departments, and public hospital outpatient clinics. Primary health care includes general practitioner services, allied health services, pharmaceuticals and dental. Referred medical services include specialist services, medical imaging, and pathology.

Key points

In 2018–19:

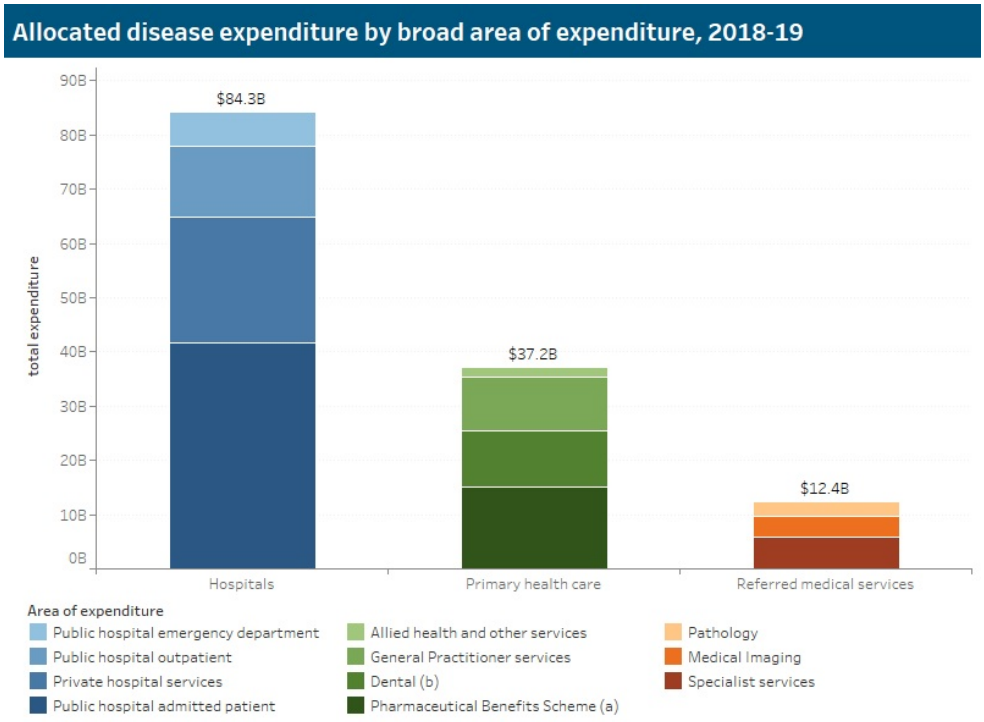
- Total health spending was estimated at $195.4 billion, approximately $7,764 per person.
- Recurrent health spending, which is expenditure that does not result in the creation or acquisition of fixed assets (such as building hospitals), was $184.9 billion.
- For the purposes of this report, $134 billion, or 72% of recurrent spending, was able to be attributed to specific diseases and injuries.
- Approximately 63% of this allocated spending relates to hospital services, 28% related to primary health care, and 9% related to referred medical services, as opposed to these categories making up 40%, 34% and 10% of total spending respectively.
- The main gaps in allocated spending relate to primary health care where data on diagnosis in the national collections is limited.

Some components of recurrent expenditure 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 $1.4 billion of highly specialised PBS drugs dispensed in hospitals as PBS spending, while the health expenditure database reports this as hospital spending.
- Additionally, $6.6 billion of MBS services provided in hospitals as part of an admission are allocated to public and private hospitals, while this spending is reported as referred medical services in the health expenditure database.

For further information, please refer to Technical notes and the *Disease Expenditure 2018–19 Study: Overview of analysis and methodology* report.

Figure D1: Allocated disease expenditure by broad area of expenditure, 2018-19. This bar chart shows how disease expenditure was allocated by broad area of expenditure in 2018-19. Total disease expenditure in 2018-19 was AUS$134 billion, of which $84.3 billion, $37.2 billion, and $12.4 billion were allocated to hospitals, primary health care, and referred medical services, respectively. The main area of disease expenditure is public hospital admitted patient services ($42 billion, 31.12% of total), followed by private hospital services ($23 billion, 17.23%), and Pharmaceutical Benefits Scheme ($15 billion, 11.27%).



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

Allocated spending in each area varied according to age:

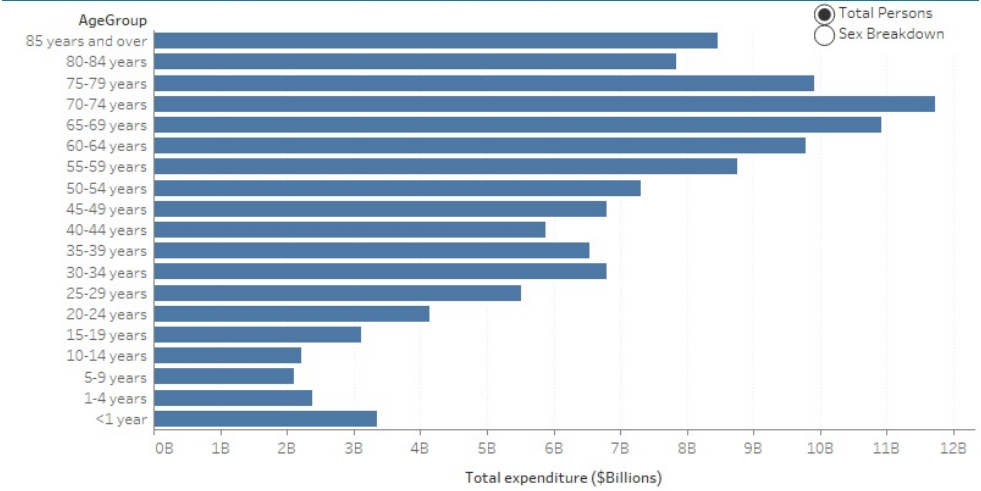
- Total spending generally increased with age for hospital admitted patient services, pathology and medical imaging.
- Emergency department and allied health spending were relatively steady across age groups.
- Spending on both the Pharmaceutical Benefits Scheme and medical specialist services generally increased substantially with age

These patterns of disease spending by age varied, however, according to sex:

- For males, the bulk of spending tends to occur later in life.
- Spending for females between the ages of 20 to 45 is substantially higher than males, largely due to spending on *maternal conditions*.

The following interactive data visualisations can be used to display health spending by age and sex, for each area of expenditure. Data used to create the visualisations can also be downloaded as an Excel workbook.
Figure D2: Allocated disease expenditure by demographics and area of expenditure, 2018-19. This bar chart shows how disease expenditure was allocated by demographics and area of expenditure in 2018-19. Allocated spending in each area varied across age, where total spending generally increased with age for hospital admitted patient services, while emergency department was relatively steady with age. These patterns of disease spending also differed across age; however, the bulk of spending tends to occur later in life, regardless of sex.

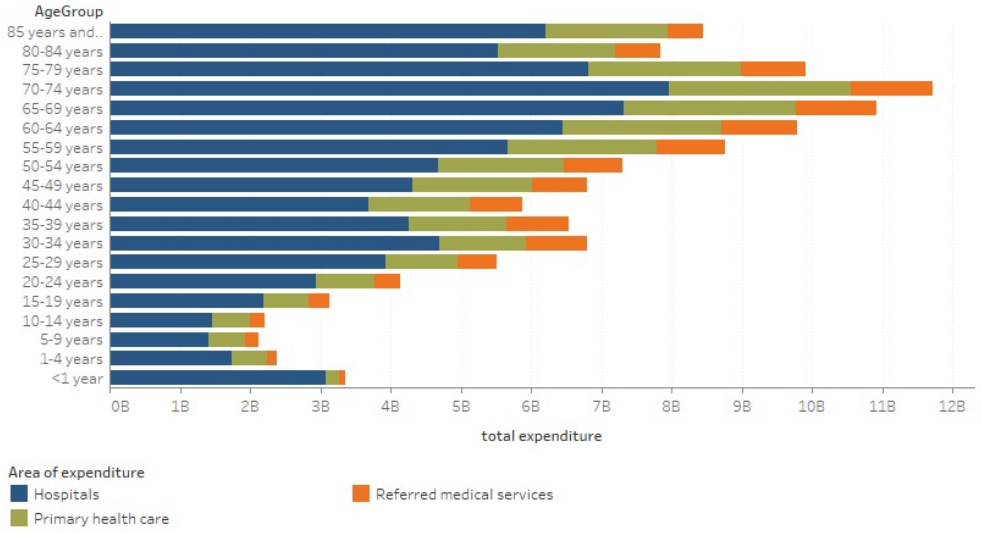
Allocated disease expenditure by demographics, 2018-19



All areas expenditure by demographics and area of expenditure, 2018-19

Explore by sex
Total Persons

Explore by area of expenditure
All areas



Area of 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..

Australian Burden of Disease groups

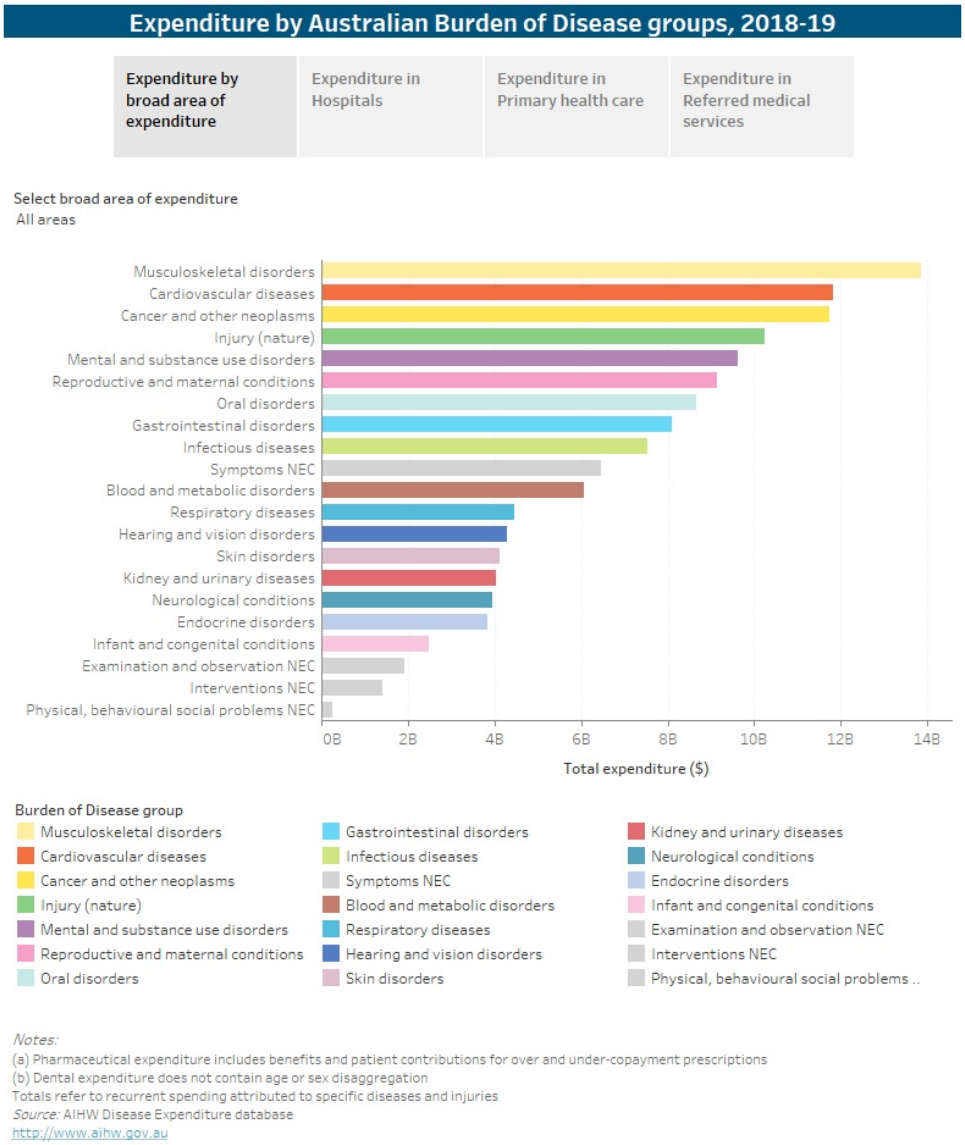
The Australian Burden of Disease Study (ABDS) condition list contains 219 conditions in 17 groups. In this disease hierarchy, each disease is allocated to a disease group. The burden of disease groups contains related diseases or conditions—such as cardiovascular diseases, gastrointestinal disorders, 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 *Cardiovascular diseases,* and *Cancer and other neoplasms*.

- The most expensive disease groups 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*.
- More than half of spending for allied health and other health practitioners related to *Mental and substance use disorders,* with just over a quarter relating to *Hearing and vision disorders*.

Of the estimated $134 billion of health spending included in this study, approximately 7% related to signs and symptoms, interventions, examination and observation, and physical, behavioural social problems not elsewhere classified.
Figure Story D3: Expenditure by Australian Burden of Disease groups, 2018-19. This bar chart shows how health expenditure was allocated by Australian Burden of Disease groups in 2018-19. The condition groups with the highest spending were Musculoskeletal disorders ($13,864 million, 10.35% of total), followed by Cardiovascular diseases ($11,821 million, 8.82%) and Cancer and other neoplasms ($11,742 million, 8.76%). However, the most expensive disease group for Primary health care was Oral disorders, while spending on general practitioner services was the highest for Infectious disease. Over half of spending for allied health and other services was related to Mental and substance use disorders.



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

- Spending on *Infectious diseases* was highest at ages 1-4, and slightly higher for males
- Spending on *Mental and substance use disorders* was highest between ages 20 and 49, for males and females
- Spending on chronic conditions such as *Cancer and other neoplasms*, *Cardiovascular diseases* and *Endocrine disorders* were highest from around age 50 onwards for males and females.

The following interactive data visualisations can be used to display spending on condition groups by age and sex, for each area of expenditure. Data used to create the visualisations can also be downloaded as an Excel workbook.

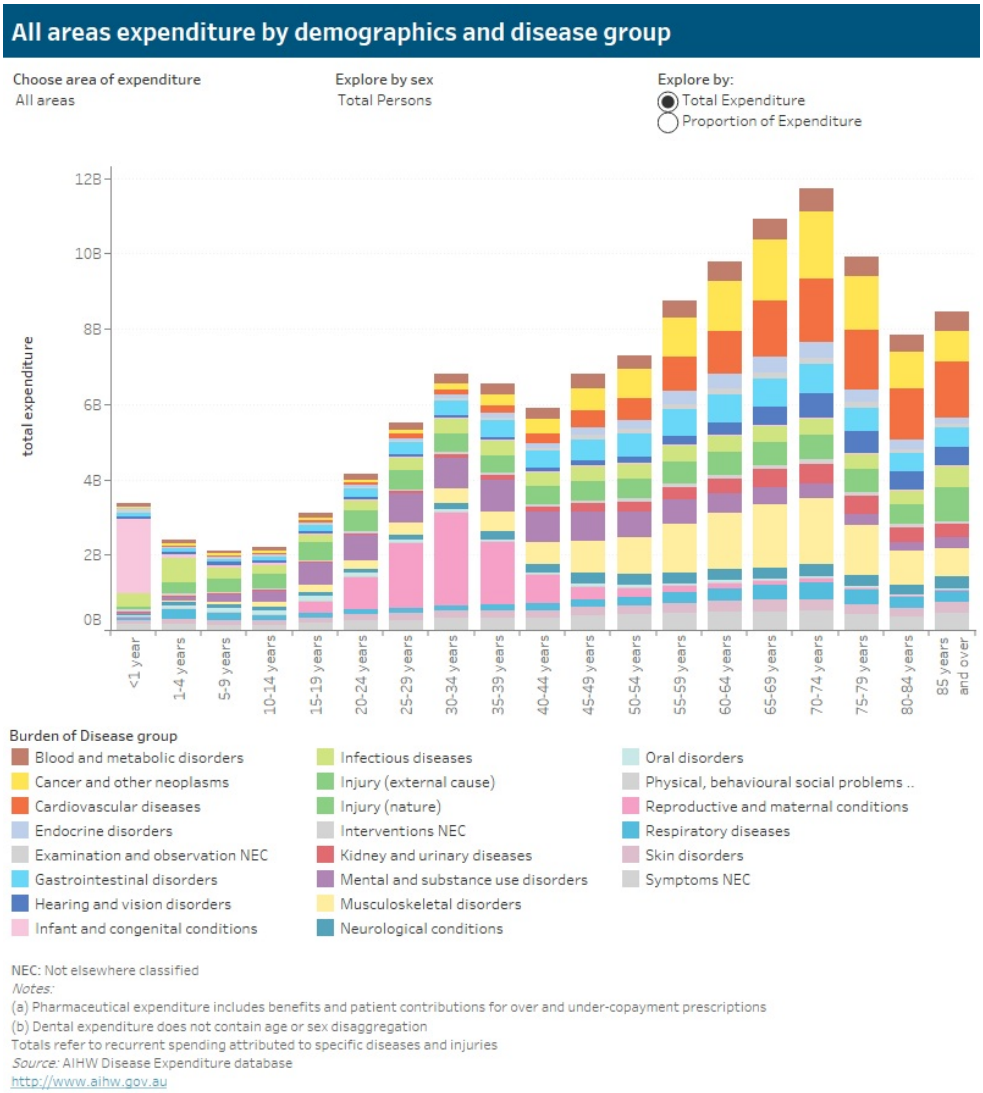
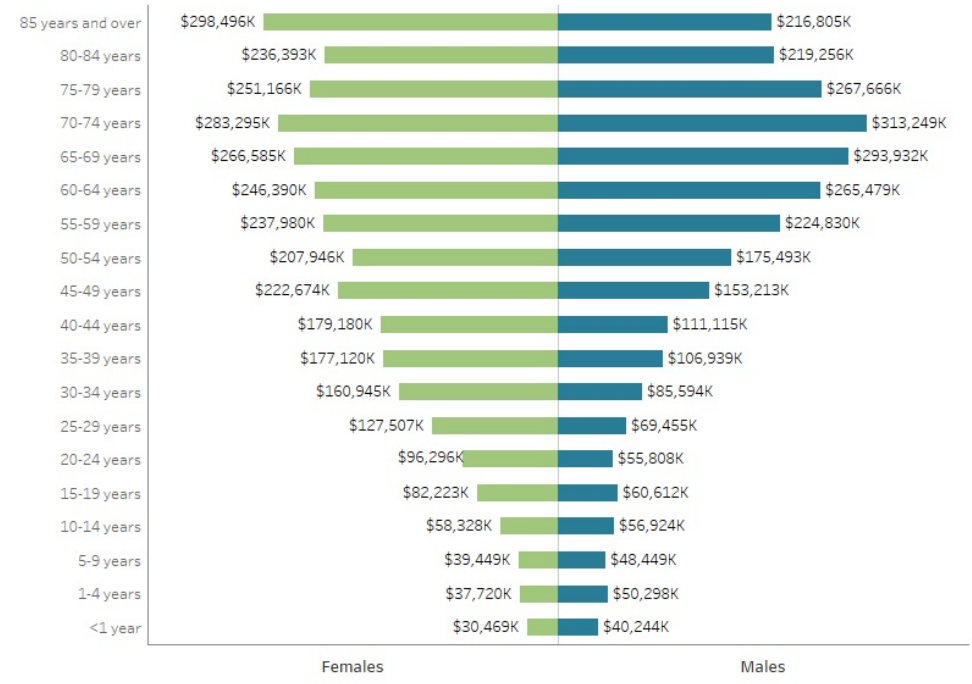


Figure D4: All areas of expenditure by demographics and disease group, 2018-19. This stacked bar chart shows how expenditure was allocated by demographics and disease group in 2018-19. The proportion of total spending associated with condition groups differed across age groups, sex, and area of expenditure. Spending on Infectious diseases was the highest at ages 1-4 ($640 million, 23.87% of total), and was slightly higher for females. However, for both males and females, spending on Mental and substance use disorders, Cancer and other neoplasms and Cardiovascular diseases was highest between ages 20 and 45 and from age 50 onwards.

Figure D5: Expenditure on disease group by age group and sex, 2018-19. This butterfly chart shows how disease expenditure was allocated by age group and sex in 2018-19. The proportion of total spending on disease groups varied by age and sex. Spending on Cardiovascular diseases and Reproductive and maternal conditions was the highest for males and females, respectively. However, the bulk of expenditure on disease group tends to occur later in life, regardless of sex.

Expenditure on Blood and metabolic disorders by age group

Choose Burden of Disease group
Blood and metabolic disorders



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

Australian Burden of Disease conditions

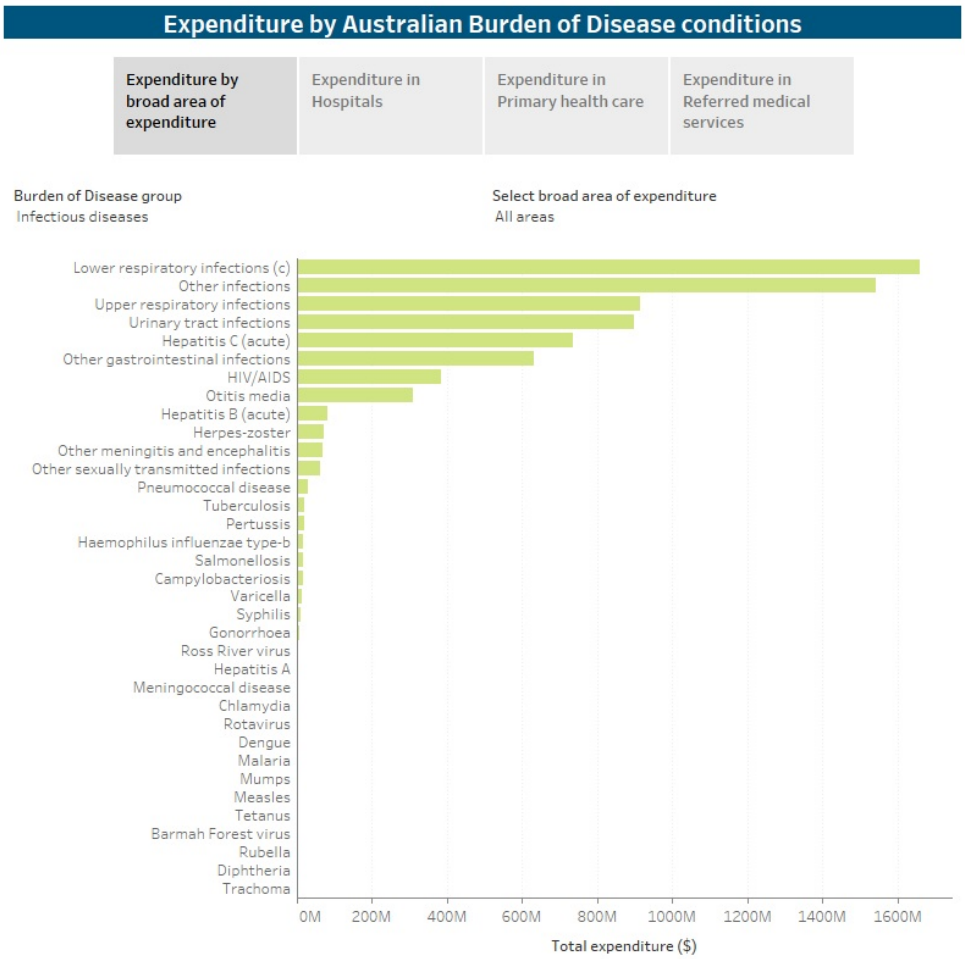
The Burden of Disease conditions list contains 219 conditions in 17 groups. This is not an exhaustive list of all possible health conditions and, as such, the spending associated with 'other' conditions within a group is relatively large. For example, spending on *Other maternal conditions* includes costs related to healthy childbirth, which is not a health condition in the Burden of Disease list. Injury spending can be viewed in two ways, by the nature of injury (such as fractures) and the cause of injury (such as road traffic crashes).

- The condition categories with the highest spending were *Other cardiovascular, Other Musculoskeletal*, and *Dental caries* (excludes 'not elsewhere classified' groupings).
- The specific conditions with the highest spending were *Dental caries*, *Falls*, and *Osteoarthritis* (excludes all 'other' conditions within groups).

Figure Story D6: Expenditure on disease group by area of expenditure, 2018-19.

This bar chart shows how disease groups and conditions varied by area of spending. By excluding "other" conditions the results are:

- Looking at Hospitals, falls were the leading contributor to expenditure ($3,536 million) followed by osteoarthritis ($3,350 million) and back pain and problems ($2,145 million).
- For Primary health care, dental caries was the disease condition contributing most to expenditure ($4,605 million) followed by depressive disorders ($1,058 million) and type-2 diabetes ($980 million)
- For Referred medical services, back pain and problems had the highest estimated expenditure ($551 million)



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

Spending on conditions varies by sex.

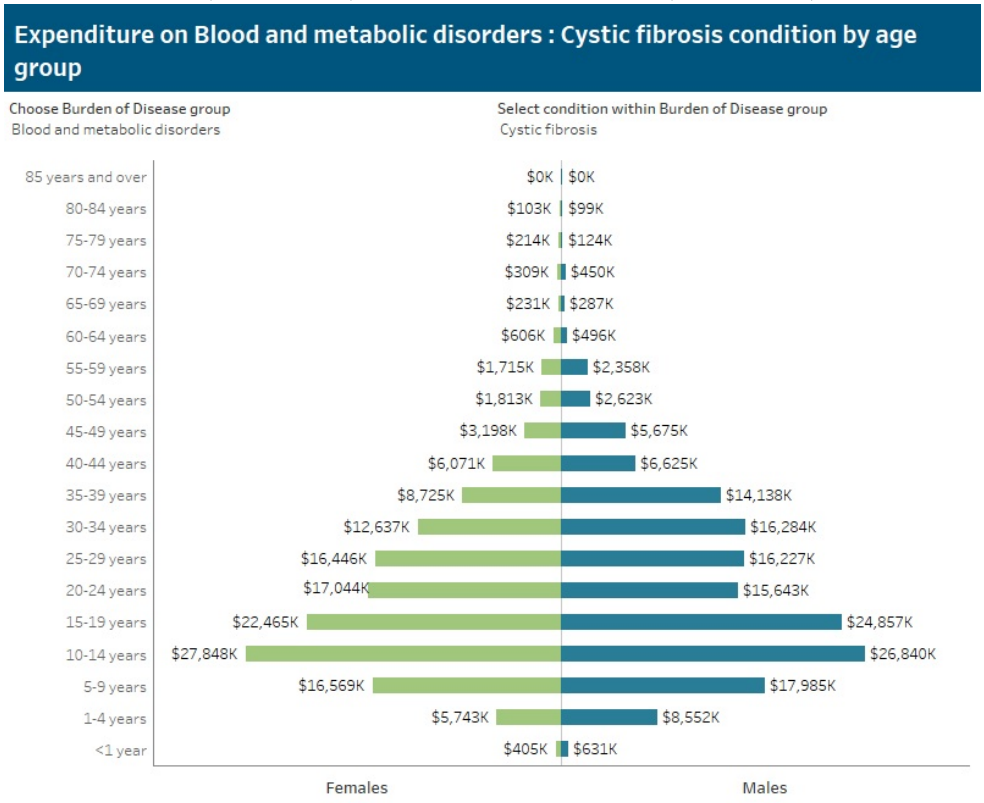
- For females, spending was highest on *Other maternal conditions, Other musculoskeletal conditions* and *Other cardiovascular diseases*. For specific conditions, the highest were *Falls*, *Osteoarthritis*, and *Back pain and problems*.

- For males, spending was highest on *Other cardiovascular diseases, Other musculoskeletal conditions,* and *Other injuries.* For specific conditions, the highest were *Falls*, *Osteoarthritis*, and *Coronary heart disease*.

Dental expenditure is not currently able to be reported by age and sex, except when provided through the MBS or as part of a public or private hospital admission. This ranking of conditions for sexes therefore excludes the bulk of dental expenditure.

The following interactive data visualisations can be used to display spending on condition groups by age and sex, for each area of expenditure. Data used to create the visualisations can also be downloaded as an Excel workbook.

Figure D7: Expenditure on disease group by condition category, age group, and sex, 2018-19. This butterfly chart shows how disease expenditure was allocated by condition category, age group, and sex in 2018-19. The patterns of disease spending varied significantly by condition category, age group, and sex. For males, spending was the highest on Other cardiovascular diseases ($3,052 million), Other musculoskeletal disorders ($2,442 million), and Other injuries (2,311 million). However, for females, spending was the highest on Other maternal conditions ($4,729 million), Other cardiovascular diseases ($2,977 million) and Other musculoskeletal disorders ($2,967 million).



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

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 admitted patient, emergency department, and outpatient hospital services, out-of-hospital medical services, and prescription pharmaceuticals.

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:

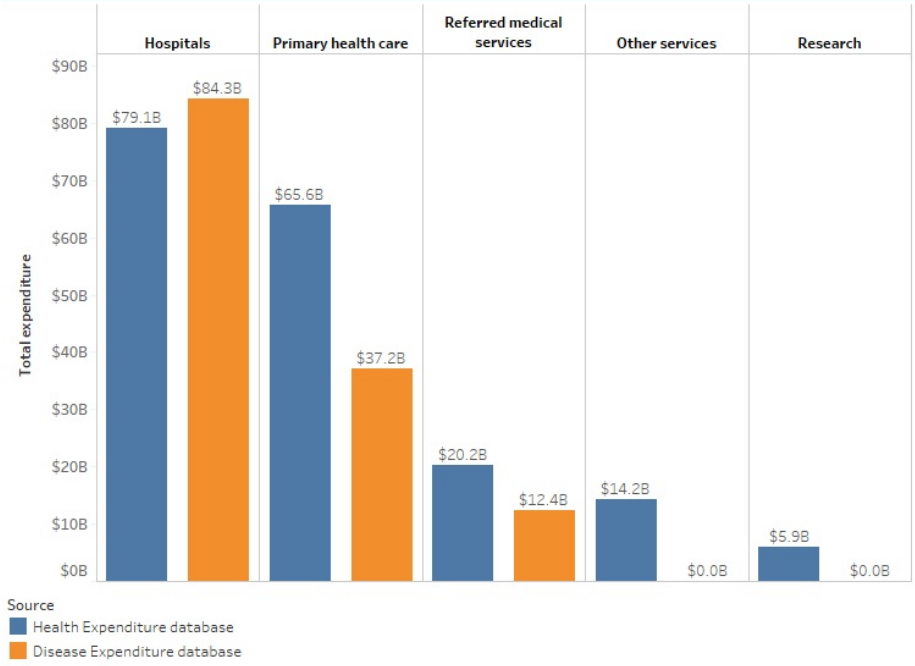
- National Hospital Morbidity Database (NHMD)
- National Public Hospitals Establishments Database (NPHED)
- National Non-admitted Patient Emergency Department Care Database (NNAPEDC)
- National Non-admitted Patient Databases (aggregate, NAPAGG, and unit record, NAPUR)
- National Hospital Costs Data Collection (NHCDC)
- Private Hospital Data Bureau (PHDB) collection
- Bettering the Evaluation and Care of Health (BEACH) surv
- 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. For the purposes of this report, $134 billion, or 72% of recurrent spending, was attributed to specific diseases and injuries. This expenditure 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 expenditure 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. Spending estimates in hospitals are slightly higher than in the Health Expenditure Database, while spending on referred medical services are lower. This is discussed further in the *Disease Expenditure 2018–19 Study: Overview of analysis and methodology* report.

Figure D1 comparison HEA-DEX: Allocated disease expenditure and recurrent health expenditure by broad area of expenditure, 2018-19.
This bar chart shows allocated and recurrent expenditure by broad area of expenditure in 2018-19 in the Health Expenditure and Disease Expenditure databases. Total recurrent health expenditure in 2018-19 was $ 185 billion in the Health Expenditure database, 72.43% ($134 billion) of which was able to be attributed to specific diseases and injuries. Approximately 63% of this allocated spending was related to hospital services, 28% ($37.2 billion) related to primary health care, and 9% ($12.4 billion) related to referred medical services, as opposed to these categories accounting for 43% ($79.1 billion), 35% ($65.6 billion), and 11% ($20.2 billion) of total recurrent spending, respectively.

Allocated disease expenditure and recurrent health expenditure by broad area of expenditure, 2018-19



Source:
AIHW Disease Expenditure database
AIHW Health Expenditure database
http://www.aihw.gov.au

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 copayments, 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.

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

The February 2022 update incorporates the following additional changes: a revised mapping of ICD-10 codes to ABDS conditions for the kidney and urinary diseases group; an updated mapping file used to map MBS item numbers to ABDS; updated 2018–19 data reported in Health expenditure Australia 2019–20.

Notes

Amendments

18 Feb 2022 – The February 2022 update incorporates a revised mapping of ICD-10 codes to ABDS conditions for the kidney and urinary diseases group; an updated mapping file for MBS item numbers to ABDS groups and updated data for 2018–19 from *Health expenditure Australia 2019–20*.

Data

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