



Western Australian Burden of Disease Study 2015: Healthcare costs of disease groups and conditions

Introduction

Burden of disease studies provide an assessment of the impact of diseases, injuries and risk factors on a population. This impact is measured in terms of 'years of healthy life lost' (known as disability-adjusted life years or DALY), which can occur through premature death (fatal burden) or living with the effects of a disease (non-fatal burden). The Western Australian Burden of Disease Study (WABoDS) 2015 provides estimates of the burden attributable to diseases, injuries and risk factors in the WA population (1). This burden is comparable between conditions, as well as between age groups and sexes, providing a powerful tool for policy and decision makers to assess the 'human costs' of various conditions in WA.

'Financial costs' provide a different perspective, which is the financial impact of diseases on the health system. This bulletin provides a snapshot of the financial impacts of different conditions on the WA health system, by presenting estimates of healthcare expenditure attributable to WABoDS conditions and disease groups, disaggregated by age group, sex and area of expenditure, for the 2015–16 financial year. The financial costs of conditions and disease groups can be used by government and health service providers, in combination with burden of disease data, to identify priorities and design policies, programs and services that best meet the needs of the WA population.

Methods

The methodology for producing the burden of disease estimates for the WABoDS is based on the Australian Burden of Disease Study 2015 (2, 3). The results from the WABoDS, including burden of disease estimates for different conditions and disease groups, are described in detail elsewhere (1, 4). Healthcare expenditure data for WA for 2015–16 were provided by the Australian Institute of Health and Welfare (AIHW). The AIHW estimated the healthcare costs for WABoDS conditions, which were aggregated to disease groups (5). Expenditure on these conditions and disease groups was apportioned by demographics (age and sex) and area of expenditure (hospital, non-hospital medical, pharmaceuticals or dental care) (5).

The types of healthcare expenditure used to produce the estimates included spending on hospital services, referred and un-referred medical services, Medicare-funded other health practitioner services, dental services, and pharmaceuticals listed on the Pharmaceutical Benefits Scheme. Spending on these services could be proportionally allocated to specific conditions using the AIHW disease expenditure database (5). Types of expenditure that were not included were capital expenditure (i.e. spending on new buildings and equipment), spending on community and public health programs, and indirect healthcare costs (e.g. lost productivity, travel costs for patients etc.) (5). These healthcare costs were not included either because they could not be directly attributed to a condition or disease group (e.g. capital expenditure), because there was insufficient data to allocate them to a condition or disease group, or because the data were unavailable (5). Detailed information on the areas of healthcare expenditure included or excluded in this analysis are provided in the AIHW report; *Disease Expenditure Study: Overview of analysis and methodology 2015–16* (5).

Results

Approximately \$11.6 billion of spending on healthcare in WA in 2015–16 can be attributed to the WABoDS disease groups, which accounts for around 65% of overall spending on healthcare goods and services in WA for the period (5, 6). Of the \$11.6 billion, \$7.2 billion was spent on hospital care, \$1.8 billion on non-hospital medical care, \$1.2 billion on pharmaceuticals, and \$1.4 billion on dental care (Figure 1).

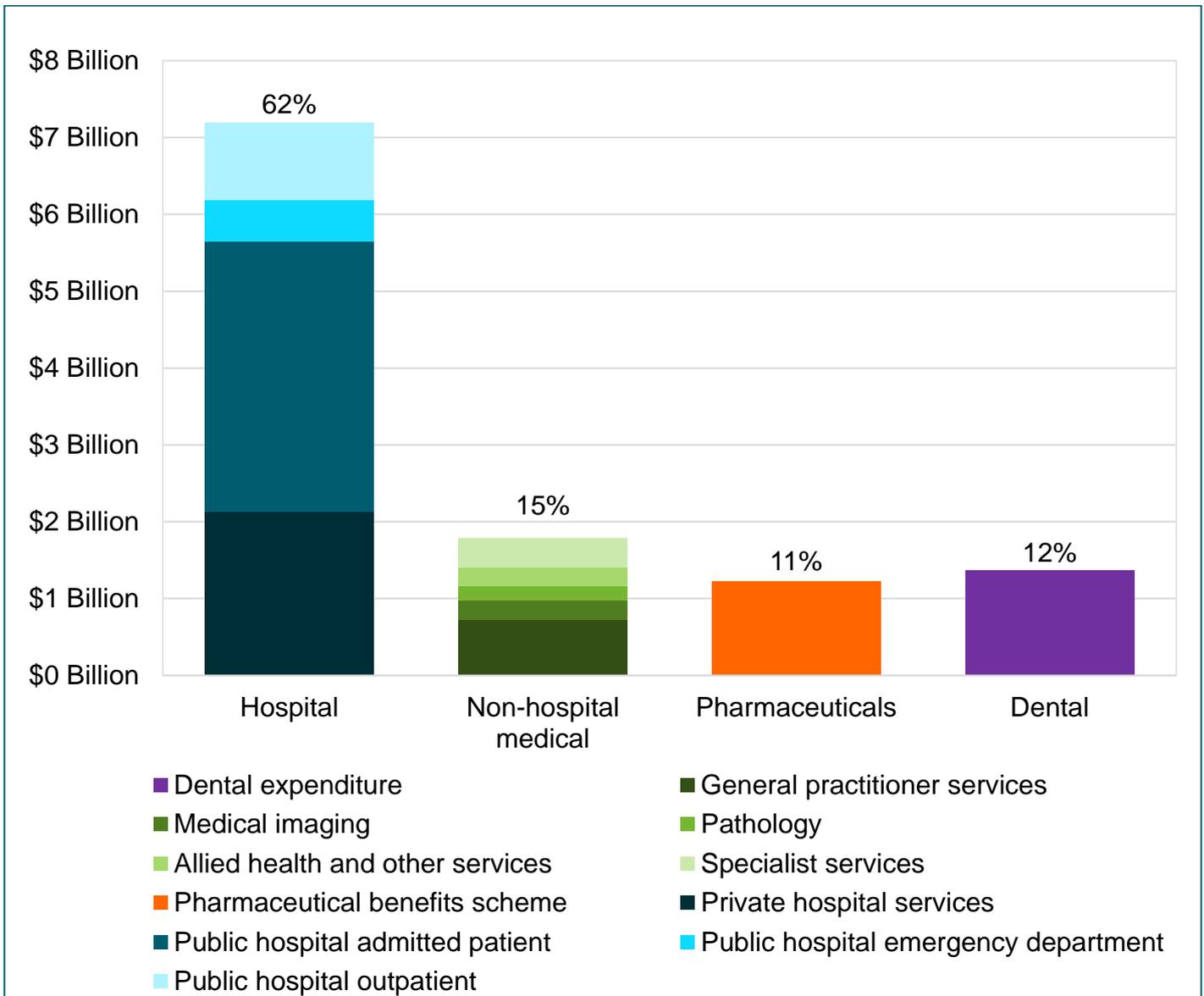


Figure 1. WA healthcare expenditure by area of expenditure, 2015–16.

Healthcare and human costs associated with the WABoDS disease groups

Both the human (burden of disease) and financial (healthcare expenditure) costs of conditions and disease groups can be used by government and health service providers to identify priorities for WA and design policies, programs and services that best meet the needs of the WA population.

Cancers contributed the most to the total burden of disease in WA in 2015 (17%), followed by mental and substance use disorders (13%), cardiovascular diseases (13%), musculoskeletal diseases (12%) and injuries (11%) (Figure 2). However, the disease groups associated with the most healthcare expenditure in 2015–16 were musculoskeletal diseases (\$1,331 million), followed by oral disorders (\$1,120 million), cardiovascular diseases (\$1,026 million), injuries (\$989 million) and reproductive and maternal conditions (\$906 million) (Figure 2, Table 1). Therefore, healthcare expenditure is not always equivalent to burden of disease.

The relationship between healthcare expenditure and burden of disease is complex. Low expenditure relative to disease burden does not necessarily equate to a need for increased healthcare expenditure on particular conditions or disease groups. There can be many reasons for high expenditure on disease groups that have a low burden on the population (and vice versa). For example, high expenditure on healthcare for reproductive and maternal conditions may translate to good outcomes for many mothers resulting in a lower burden from these conditions (7). Additionally, for some disease groups, spending outside of the healthcare system can play an important role in reducing the human cost of diseases (e.g. spending on education and transport to reduce road transport injuries and spending on health promotion to reduce the impacts of smoking and dietary risk factors). Finally, burden of disease also considers fatal burden, something that is not considered under healthcare costs. Therefore, the health expenditure on conditions or disease groups relative to their burden cannot be used to draw conclusions about their relative level of funding needs.

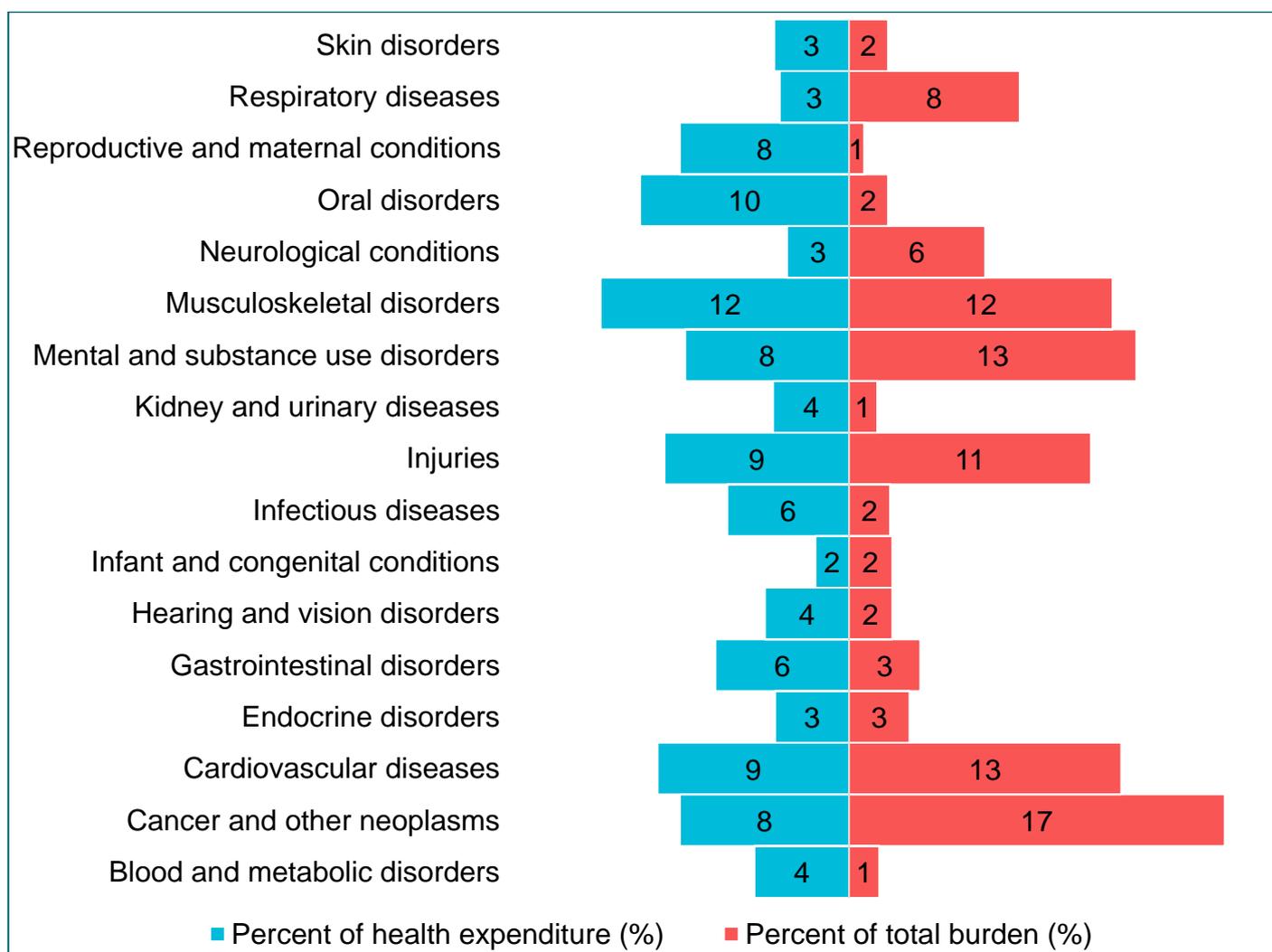


Figure 2. Healthcare expenditure and burden attributable to disease groups in WA, 2015–16.

Table 1. Healthcare expenditure by disease group in WA, 2015–16.

Rank	Disease group	Expenditure (in millions)
1	Musculoskeletal disorders	\$1,331
2	Oral disorders	\$1,120
3	Cardiovascular diseases	\$1,026
4	Injury (external cause)	\$989
5	Reproductive and maternal conditions	\$906
6	Cancer and other neoplasms	\$905
7	Mental and substance use disorders	\$879
8	Gastrointestinal disorders	\$716
9	Infectious diseases	\$651
10	Blood and metabolic disorders	\$507
11	Hearing and vision disorders	\$451
12	Kidney and urinary diseases	\$407
13	Skin disorders	\$402
14	Endocrine disorders	\$397
15	Respiratory diseases	\$372
16	Neurological conditions	\$332
17	Infant and congenital conditions	\$180
	Total	\$11,570

Difference in healthcare expenditure for males and females by disease group

Healthcare expenditure on the WABoDS disease groups differed between males and females. Musculoskeletal disorders contributed the most to healthcare expenditure for males (\$606 million), followed by cardiovascular diseases (\$572 million), and injuries (\$484 million). Conversely, for females, reproductive and maternal conditions was the disease group with the highest healthcare expenditure (\$825 million), followed by musculoskeletal disorders (\$687 million), and mental and substance use disorders (\$463 million). Overall, there was more healthcare expenditure on females (\$5.4 billion) than males (\$4.8 billion), which could be attributed to greater spending on reproductive and maternal conditions in females (~\$746 million more in females than males).

Differences in healthcare expenditure by age group and disease group

In WA in 2015–16, the age group associated with the highest proportion of healthcare expenditure was 65–69 year-olds (8.8%), followed by 60–64 year-olds (7.9%) and 70–74 year-olds (7.9%) (Figure 3). More than 50% of healthcare expenditure in 2015–16 was for over 55 year-olds and the majority of this spending was for musculoskeletal disorders (\$792 million), followed by cardiovascular diseases (\$757 million) and cancers (\$621 million). In infancy (<12 months) and from one to four years of age, the majority of healthcare spending was for infant and congenital conditions and infectious diseases respectively. This trend shifted for 5–14 year-olds with most healthcare expenditure going towards injuries, compared to mental and substance use disorders for 15–19 year-olds. For 20–39 year-olds, the majority of healthcare expenditure was for reproductive and maternal conditions, followed by mental health and substance use disorders, then injuries for 20–34 year-olds. For 40–44 year-olds, the majority of healthcare spending was on mental and substance use disorders, compared to high healthcare expenditure on musculoskeletal conditions for 45–49 year-olds. Similarly, for 50–69 year-olds most of the healthcare spending was for musculoskeletal

disorders, followed by cancers. Spending trends also changed in older adulthood, with most of the healthcare expenditure for 75+ year-olds going towards services for cardiovascular diseases.

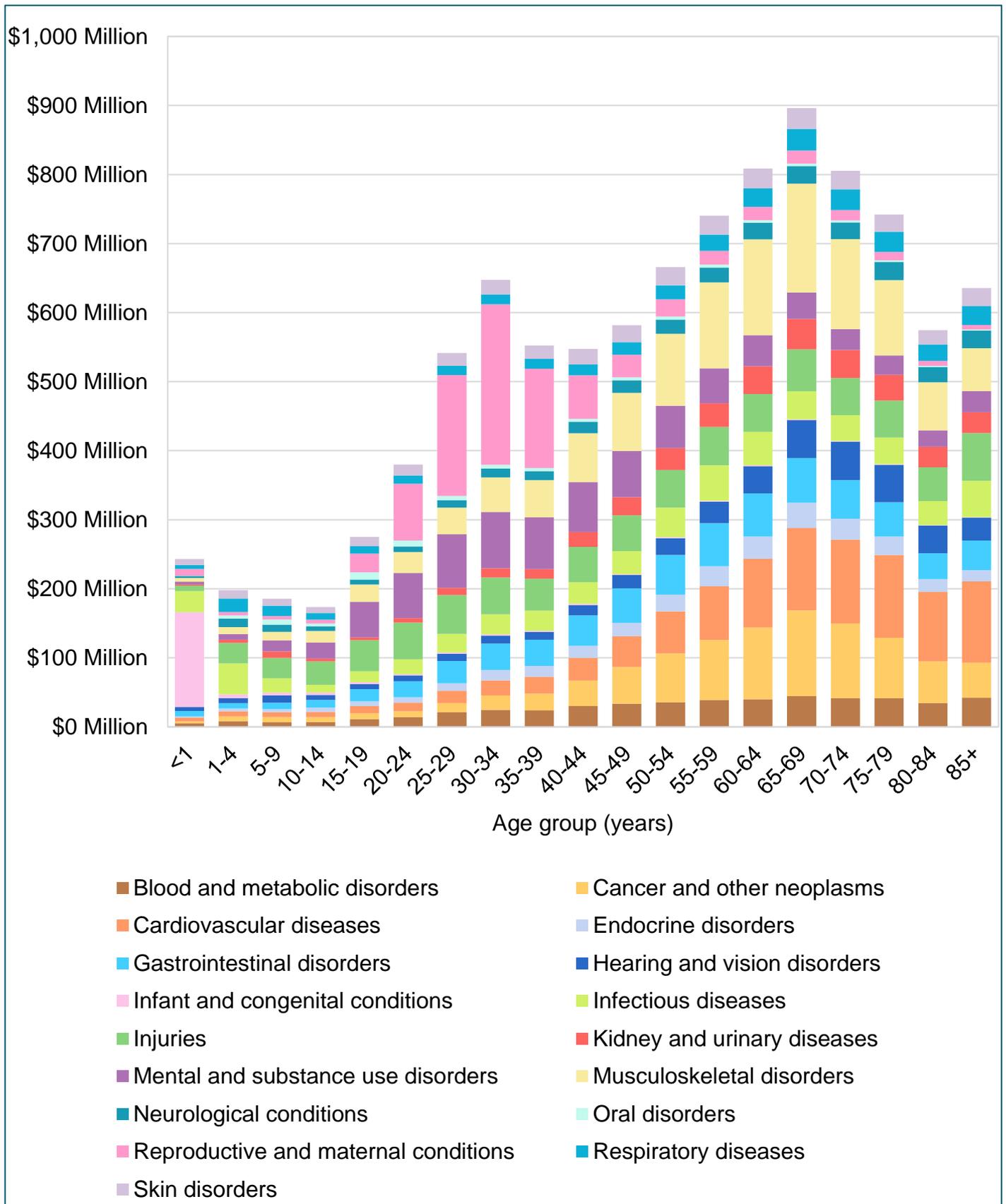


Figure 3. WA healthcare expenditure by age group and disease group in WA, 2015–16.

Expenditure areas for the five disease groups with the highest healthcare expenditure

For three of the disease groups (i.e. cardiovascular diseases, injuries, and reproductive and maternal conditions), the expenditure area responsible for the majority of spending was public hospital admissions (Figure 4). This expenditure area was in the top five for healthcare spending for all five disease groups, as was spending on private hospital services and public hospital outpatient services. Oral disorders were unique, in that the vast majority of spending (92.5%) went towards the dental expenditure area, totalling over \$1 billion for 2015–16. This was also a high expenditure area for injuries (8.1%), as was spending on public hospital emergency department presentations (17.4%). Other expenditure areas in the top five for the disease groups were the pharmaceutical benefits scheme (musculoskeletal disorders and cardiovascular diseases), medical imaging (musculoskeletal disorders), general practitioner services (oral disorders, cardiovascular diseases and reproductive and maternal conditions) and specialist services (reproductive and maternal conditions).

Rank	Musculoskeletal disorders	Oral disorders	Cardiovascular diseases	Injuries	Reproductive and maternal conditions
1 st	Private hospital services, \$508.0 M, 38.2%	Dental expenditure, \$1,036.5 M, 92.5%	Public hospital admitted patient, \$374.3 M, 36.5%	Public hospital admitted patient, \$372.2 M, 37.6%	Public hospital admitted patient, \$328.9 M, 36.3%
2 nd	Pharmaceutical benefits scheme, \$227.1 M, 17.1%	Private hospital services, \$32.7 M, 2.9%	Private hospital services, \$239.3 M, 23.3%	Public hospital emergency department, \$172.2 M, 17.4%	Private hospital services, \$219.4 M, 24.2%
3 rd	Public hospital admitted patient, \$201.3 M, 15.1%	Public hospital admitted patient, \$29.0 M, 2.6%	Pharmaceutical benefits scheme, \$150.7 M, 14.7%	Private hospital services, \$144.9 M, 14.7%	Public hospital outpatient, \$124.9 M, 13.8%
4 th	Public hospital outpatient, \$116.6 M, 8.8%	Public hospital outpatient, \$5.2 M, 0.5%	General practitioner services, \$76.5 M, 7.5%	Public hospital outpatient, \$85.2 M, 8.6%	Specialist services, \$82.4 M, 9.1%
5 th	Medical imaging, \$87.3 M, 6.6%	General practitioner services, \$4.9 M, 0.4%	Public hospital outpatient, \$57.8 M, 5.6%	Dental expenditure, \$79.8 M, 8.1%	General practitioner services, \$46.4 M, 5.1%

Figure 4. Top five areas of healthcare expenditure for disease groups with the highest healthcare expenditure in WA, 2015–16. M = Million; % = percentage of overall healthcare expenditure spent on an area for each disease group.

Healthcare expenditure on diseases

Table 2 contrasts the top 15 diseases according to their human and financial costs to the WA population. “Other” categories are excluded from these rankings as they tend to contribute to a high proportion of burden or healthcare expenditure but include a broad range of individual diseases that are not elsewhere classified. Excluding these categories, the conditions with the highest expenditure in WA were dental caries, falls and osteoarthritis. Overall, these top 15 diseases contribute to 28.7% of healthcare expenditure related to WABoDS conditions in WA.

Table 2. Top 15 diseases by burden (2015) and healthcare expenditure (2015–16) in WA.

DALY rank	Top 15 diseases by proportion of DALY*	Top 15 diseases by proportion of expenditure*	Expenditure (in millions)
1	Coronary heart disease	Dental caries	\$656
2	Chronic obstructive pulmonary disease	Falls	\$372
3	Back pain & problems	Osteoarthritis	\$349
4	Suicide/self-inflicted injuries	Back pain & problems	\$300
5	Depressive disorders	Coronary heart disease	\$209
6	Lung cancer	Depressive disorders	\$202
7	Anxiety disorders	Type 2 diabetes	\$189
8	Dementia	Anxiety disorders	\$172
9	Osteoarthritis	Rheumatoid arthritis	\$154
10	Stroke	Cataract	\$136
11	Type 2 diabetes	Skin infections (incl. cellulitis)	\$123
12	Asthma	Lower respiratory infections	\$120
13	Rheumatoid arthritis	Periodontal disease	\$116
14	Alcohol use disorders	Schizophrenia	\$112
15	Poisoning	Non-melanoma skin cancer	\$112
		Total	\$3,323

*“Other” conditions, for example, other cardiovascular diseases, have been excluded from the ranking.

Summary

In 2015–16, more than \$11.6 billion was spent on healthcare costs attributable to WABoDS disease groups. The disease groups with the highest financial impacts were musculoskeletal diseases (\$1,331 million), oral disorders (\$1,120 million), and cardiovascular diseases (\$1,026 million). Healthcare expenditure on disease groups and individual conditions varied by sex, with the majority of healthcare expenditure for males going towards musculoskeletal disorders (\$606 million) compared to reproductive and maternal conditions for females (\$825 million). There was also variance in expenditure by age. More than 50% of healthcare expenditure was for over 55 year-olds, reflecting the impacts of WA’s ageing population on the healthcare system. Finally, the individual diseases responsible for the greatest proportion of healthcare expenditure in WA were dental caries (\$656 million), falls (\$372 million) and osteoarthritis (\$349 million).

Acknowledgments

The WABoDS was conducted in partnership with the AIHW. We would like to thank the AIHW for their advice, assistance and input into the WABoDS, as well as for provision of the healthcare expenditure data that was used to produce this bulletin. This bulletin was put together by E. Coles and W. Sun of the Department of Health, Epidemiology Branch.

Enquiries

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