

# The Economic Burden of Hypercholesterolaemia

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# ACRONYMS

ABS	Australian Bureau of Statistics
ACS	Acute coronary syndrome
AIHW	Australian Institute of Health and Welfare
DALY	Disability adjusted life year
GBD	Global Burden of Disease
ICD	International Classification of Disease
IHD	Ischaemic heart disease
YLL	Years of life lost

# EXECUTIVE SUMMARY

Hypercholesterolaemia is a risk factor for both ischaemic heart disease (IHD or heart disease) and ischaemic stroke. With heart disease identified as the underlying cause of almost 19,000 deaths in 2017, and ischaemic stroke a further 1,250, reducing hypercholesterolaemia offers the potential for significant health and economic benefits.

While medically, it is understood that the economic burden of hypercholesterolaemia is significant, the purpose of this paper is to quantify and monetise this burden of hypercholesterolaemia.

The economic burden associated with hypercholesterolaemia is comprised of two components: the economic burden associated with the hypercholesterolaemia itself, and the economic burden associated with diseases caused by hypercholesterolaemia.

The report estimates these costs separately and brings them together at the conclusion of the report for an estimate of the total economic cost of hypercholesterolaemia.

As there are no physical symptoms with hypercholesterolaemia the economic burden associated with the diagnosis and treatment of hypercholesterolaemia are the out of pocket expenses associated with lipid modifying medication, an estimated \$92.5 million.

The economic burden of diseases attributable to hypercholesterolaemia is estimated using an incidence approach, including both direct healthcare expenditures and indirect productivity losses. The economic burden, or cost of heart disease is an estimated \$7,334.0 million in 2017-18, with a further \$1,293.7 million in costs due to ischaemic stroke.

However, only the proportion of costs that can be attributed to hypercholesterolaemia are included in the measure of the burden of hypercholesterolaemia.

The 'share' or attributable fraction is measured using the Global Burden of Disease (GBD) study, which looks at the burden of all diseases and injuries, and considers risk factors, and their attribution with diseases and injuries.

Over half of the burden of heart disease (51 percent) can be attributed to hypercholesterolaemia, and 12 percent of the burden of ischaemic stroke.

For 2017-18, the economic burden attributable to hypercholesterolaemia is \$3,996.8 million.

# INTRODUCTION

Cholesterol is a fatty substance that is carried around the body by lipoproteins in the blood and excess low-density lipoproteins (LDL) cholesterol forms fatty deposits in the walls of arteries. Over time the deposits build up in the walls of arteries, forming a plaque, causing narrowing and hardening of the arteries, and raising the risk of heart disease and ischaemic stroke.

Heart disease alone is the single leading cause of death in Australia: in 2017, almost 19,000 persons died from heart disease, with a further 1,250 deaths from ischaemic stroke.<sup>1</sup>

As a risk factor for both diseases, a large proportion of the burden associated with these diseases can be attributed to high cholesterol, also known as hypercholesterolaemia.

The purpose of this study is to estimate the economic cost of hypercholesterolaemia, including the cost of heart disease and ischaemic stroke, and the proportion of costs attributable to hypercholesterolaemia for heart disease and ischaemic stroke.

In estimating the resources consumed in the prevention and treatment of hypercholesterolaemia, this study provides a useful decision making tool for setting priorities in funding research, interventions and medication related to hypercholesterolaemia and its associated diseases.

## Approach

The economic burden associated with hypercholesterolaemia is comprised of two components:

- the economic burden directly associated with hypercholesterolaemia; and
- the economic burden associated with diseases caused by hypercholesterolaemia.

The report estimates these costs separately and brings them together at the conclusion of the report for an estimate of the total economic cost of hypercholesterolaemia.

## Structure of the report

As the purpose of this report is to detail the calculation of the economic burden of hypercholesterolaemia to the Australian economy, the following sections outline the data used, the steps taken, and the assumptions made in the calculation of the economic burden of hypercholesterolaemia.

- Economic burden of hypercholesterolaemia – this chapter outlines the burden and associated costs of a diagnosis of hypercholesterolaemia.
- Burden of disease – this chapter draws upon the GBD study to estimate the burden of disease and injury that can be attributed to hypercholesterolaemia.
- Economic cost of ischaemic stroke and heart disease – this chapter steps through the process of calculating the economic cost of heart disease and ischaemic stroke.
- Results– this chapter brings together the costs associated with hypercholesterolaemia, and its associated diseases to provide an estimate of the total economic burden attributable to hypercholesterolaemia.

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<sup>1</sup> Australian Bureau of Statistics 2018, Causes of Death, Australia 2017, ABS cat. no. 3303.0.

# ECONOMIC BURDEN OF HYPERCHOLESTROLAEMIA

There are an estimated 7.1 million Australians living with hypercholesterolaemia.<sup>2</sup> This includes those individuals with measured abnormal (high) total cholesterol<sup>3</sup> and those that self-reported as having high cholesterol.

Hypercholesterolaemia is asymptomatic and can only be detected through a blood test. Not surprisingly then, the Australian Health Survey 2011-12 found that of the estimated 5.6 million individuals with abnormal total cholesterol, only 5 percent were taking lipid modifying medication.<sup>4</sup>

As there are no symptoms with hypercholesterolaemia the primary burden of hypercholesterolaemia is the direct cost of medication. It is also hypothesised that a psychological burden could exist for individuals diagnosed with high cholesterol, knowing that they are at increased risk of developing heart disease or having a stroke, and dying prematurely.

## Cost of hypercholesterolaemia medication

For those individuals required to take lipid lowering medication to help lower their cholesterol levels, costs of taking medication will include out of pocket expenses. However, some people are prescribed lipid lowering medication for other heart related conditions. Consequently, only people prescribed lipid modifying medication for lowering cholesterol are included in the cost estimates.

Specifically, where a person takes lipid lowering medication and they self-report high cholesterol, or they have measured high cholesterol, it is assumed that their usage of lipid lowering medication is due to hypercholesterolaemia. In 2011-12, an estimated 1.5 million Australians were taking lipid lowering medication due to hypercholesterolaemia.<sup>5</sup>

If an individual has a concession, the total out of pocket cost is \$6.40 for each prescription. For an individual that does not have a concession, they will pay a maximum \$39.50 out of pocket for each prescription of the generic brand.<sup>6</sup>

Assuming individuals fill their prescription quarterly, it is estimated that people spend a total of \$92.5 million on medications for hypercholesterolaemia. As presented in Chart 1, people aged 55 to 59 years have the largest out of pocket medication costs.

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<sup>2</sup> Heart Foundation calculation based on Australian Bureau of Statistics 2013, *Australian Health Survey, 2011-12*, customised using TableBuilder.

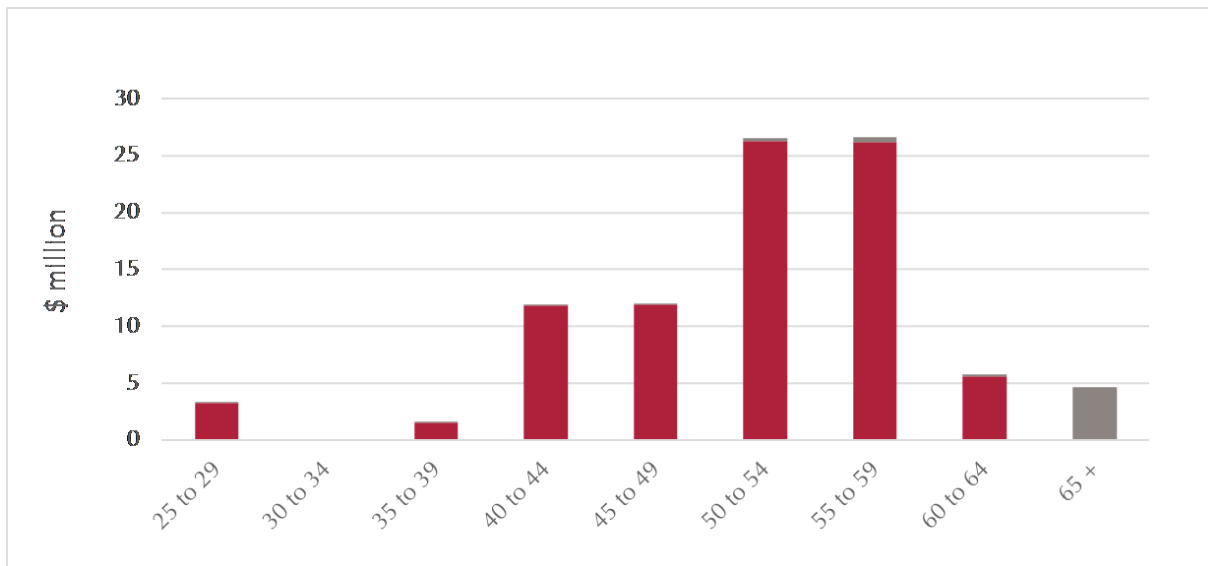
<sup>3</sup> Normal total cholesterol level is defined as less than 5.5mmol/L, and abnormal total cholesterol level is defined as greater than or equal to 5.5mmol/L.

<sup>4</sup> Australian Bureau of Statistics 2013, *Australian Health Survey, Core content – Risk factors and selected health conditions, 2011-12*, customised using TableBuilder.

<sup>5</sup> Heart Foundation calculation based on Australian Bureau of Statistics 2013, *Australian Health Survey, 2011-12*, customised using TableBuilder.

<sup>6</sup> Human Services 2018, *Pharmaceutical Benefits Safety Net*, [www.humanservices.gov.au/individuals/services/medicare/pharmaceutical-benefits-scheme-pbs-safety-net](http://www.humanservices.gov.au/individuals/services/medicare/pharmaceutical-benefits-scheme-pbs-safety-net), accessed 31 May 2018.

**Chart 1: Distribution of medication costs by age group and concession status, 2017-18**



*For those living with hypercholesterolaemia but not currently receiving pharmacotherapy, no costs have been included.*

### Psychological burden of hypercholesterolaemia

A diagnosis of hypercholesterolaemia may also mean the realisation of being at increased risk of developing life-threatening diseases, and even potentially, a lower life expectancy.

To assess whether diagnosis and prognosis have any impact upon quality of life, a 2002 study explored the quality of life for people with familial hypercholesterolaemia.<sup>7</sup> This study found that quality of life for people with familial hypercholesterolaemia was at least as good as for patients without, however, they were worried about developing heart disease.

Although a slightly different diagnosis to lifestyle-induced hypercholesterolaemia, this study enables us to conclude there is no significant or quantifiable psychological burden associated with the diagnosis of hypercholesterolaemia.

<sup>7</sup> Hollman G et al 2002, 'Quality of life in patients with familial hypercholesterolemia', *Journal of Internal Medicine*, vol. 251, issue 4, April.

# BURDEN OF DISEASE

A burden of disease analysis is a technique used to assess and compare the impact of different diseases, conditions or injuries and risk factors on a population. It measures the combined impact of premature death and living with disability into a summary measure of health called disability-adjusted life years (DALY). It combines the estimates of years of life lost due to premature death (YLL) and years lived in ill health or with disability (YLD) to estimate the total years of healthy life lost that can be attributed to disease and injury.

A burden of disease analysis also estimates the contribution of various risk factors to health loss, known as the attributable burden.

Four percent of the total burden of disease in Australia 2016 can be attributed to hypercholesterolaemia.<sup>8</sup> This burden is caused by just two diseases: heart disease and ischaemic stroke.<sup>9</sup> Hypercholesterolaemia accounts for 51 percent of the burden associated with heart disease and 12 percent of the burden associated with ischaemic stroke.

The burden of disease attributable to hypercholesterolaemia is often called the population attributable fraction. This means that without high cholesterol, the burden of heart disease would only be 49 percent of its current figure, and ischaemic stroke, 78 percent. It also means that 51 percent of the cost of heart disease, and 12 percent of the cost of ischaemic strokes, can be attributed to hypercholesterolaemia.

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<sup>8</sup> Heart Foundation calculations based on Global Burden of Disease 2016, *Global Burden of Disease Study 2016, Results*, Institute of Health Metrics and Evaluation (IHME), available from [https://http://vizhub.healthdata.org/gbd-compare/](https://vizhub.healthdata.org/gbd-compare/)

<sup>9</sup> Ischaemic stroke is a type of stroke which involves the blockage of a blood vessel. This compares to a haemorrhagic stroke, where there is a bleed in the brain. The latter is not attributed to hypercholesterolaemia.





# ECONOMIC COST OF ISCHAEMIC STROKE AND HEART DISEASE

Estimating the economic cost of disease includes measuring the resources directly consumed through disease prevention and treatment (i.e. healthcare costs) and indirect costs such as productivity losses through premature death or reduction in the ability to work.

This section outlines the methodology and results of the economic cost of stroke and heart disease. A cost incidence approach is taken, which provides an annual cost of the stroke and heart disease events for 2017-18.

As the methodology is consistent across ischaemic stroke and heart disease, the steps taken to estimate the economic cost of both diseases is presented together. However, it should be noted that in leveraging the Heart Foundation study, *The Economic Cost of Acute Coronary Syndrome in Australia*,<sup>10</sup> only the steps relating to ischaemic stroke and the non-Acute Coronary Syndrome (ACS) component of heart disease are presented here.<sup>11</sup>

## Incidence of disease

The incidence of disease in 2017-18 is measured by estimating the number of hospital separations where the disease is the principal diagnosis for the corresponding separation.

It has previously been estimated that there will be 78,866 separations for ACS in 2017-18.<sup>12</sup> Consequently, it is only necessary to estimate the additional conditions within ischaemic heart disease (including other acute ischaemic heart disease and chronic ischaemic heart disease)<sup>13</sup> and ischaemic stroke.

To estimate the number of separations in 2017-18, it is necessary to consider the historical trend in hospital separations and changes in Australia's demographics.

To this end, the trend in age-standardised rate (ASR) of separations is calculated. This tells us, holding population size and structure constant, how separations have changed over time. As illustrated in Chart 2, the trend in ASR separations is down for cardiovascular disease (CVD), and relatively unchanged for ischaemic stroke, where the ASR separations for CVD is used as a proxy for IHD, which forms a significant component of CVD.

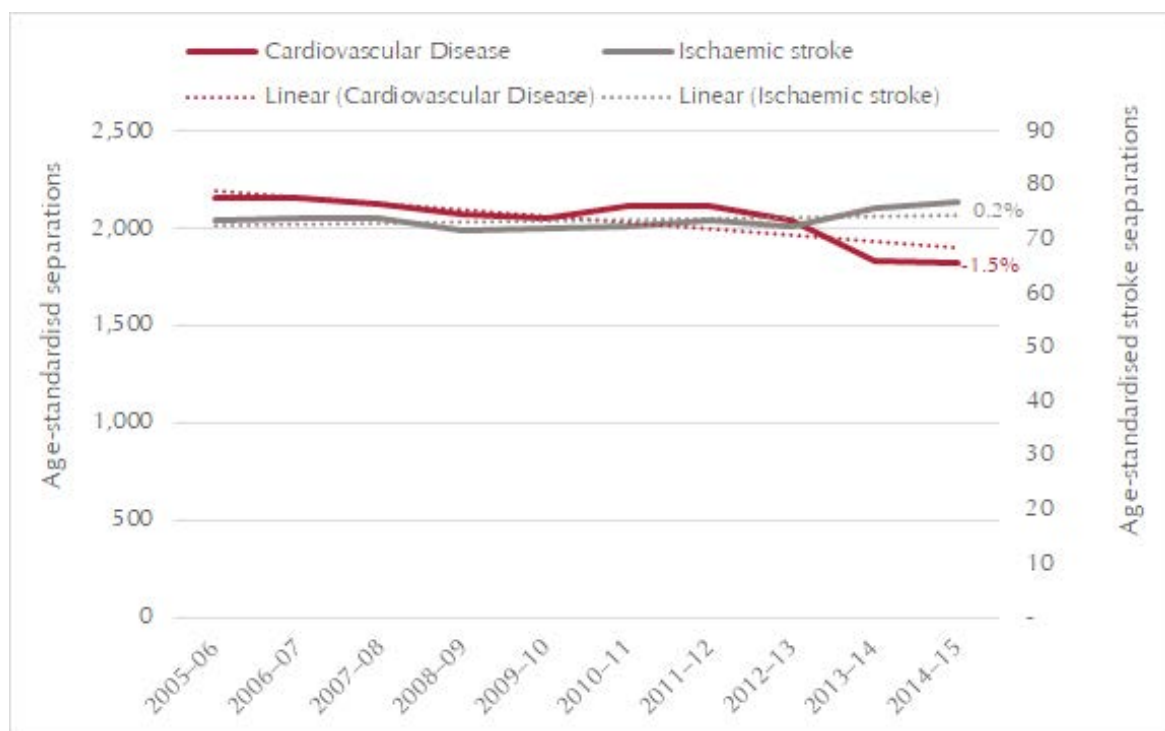
<sup>10</sup> Heart Foundation 2018, *Economic cost of Acute Coronary Syndrome in Australia: The cost to Governments*; and Heart Foundation 2018, *Economic cost of Acute Coronary Syndrome in Australia: The cost to individuals and their families*.

<sup>11</sup> Please see the series, *Economic cost of Acute Coronary Syndrome in Australia* for further detail on the methodology used to estimate the economic cost of ACS.

<sup>12</sup> Heart Foundation 2018 *ibid* op cit.

<sup>13</sup> This includes ICD codes I20 (excluding I20.0), I23, I24 and I25.

**Chart 2: Trend in age-standardised rates of separations by disease, 2005-06 to 2014-15**

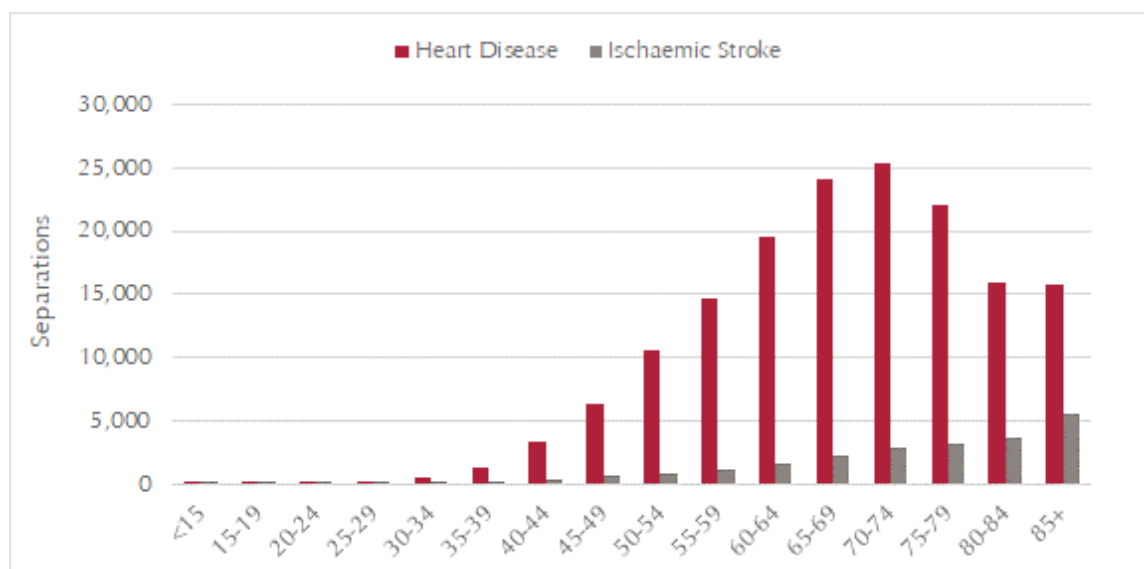


**Source:** AIHW 2018, National Hospital Morbidity Database; Heart Foundation calculations.

The trend in the ASR of separations is then used to determine the latest age-specific rate of separations to a 2017-18 figure. This is inflated using the estimated resident population to calculate the number of separations by diagnosis and age group in 2017-18.

Combining the two other conditions of ischaemic heart disease separations with the previously estimated ACS separations, this represents an estimated 159,847 heart disease separations, and 22,583 ischaemic stroke separations for 2017-18. This is presented by age group in Chart 3. This shows that for heart disease separations, the number of separations peaks for those aged 70-74, while ischaemic stroke separations are highest for those aged 85 years or older.

**Chart 3: Separations by disease and age group, 2017-18**



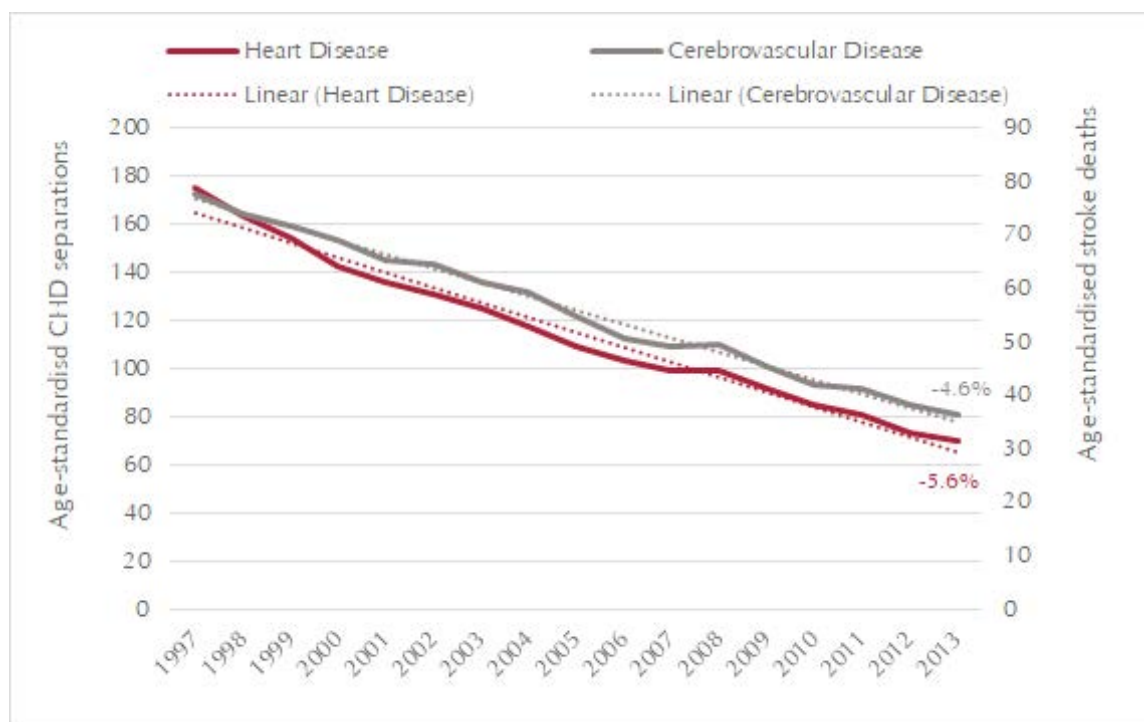
**Source:** AIHW 2018, National Hospital Morbidity Database; Australian Bureau of Statistics 2013, *Population Projections, Australia, cat. no. 3222.0*; Heart Foundation calculations.

## Deaths

As with the estimation of separations, 2017-18 deaths attributable to the additional ischaemic heart disease conditions and ischaemic stroke are estimated by growing the most recent data available by the age-standardised rate of deaths.

As illustrated in Chart 4, age-standardised mortality rates for heart disease and cerebrovascular disease<sup>14</sup> (stroke) have declined consistently between 1997 and 2013.

**Chart 4: Age-standardised rates of mortality by disease, 1997-2013**



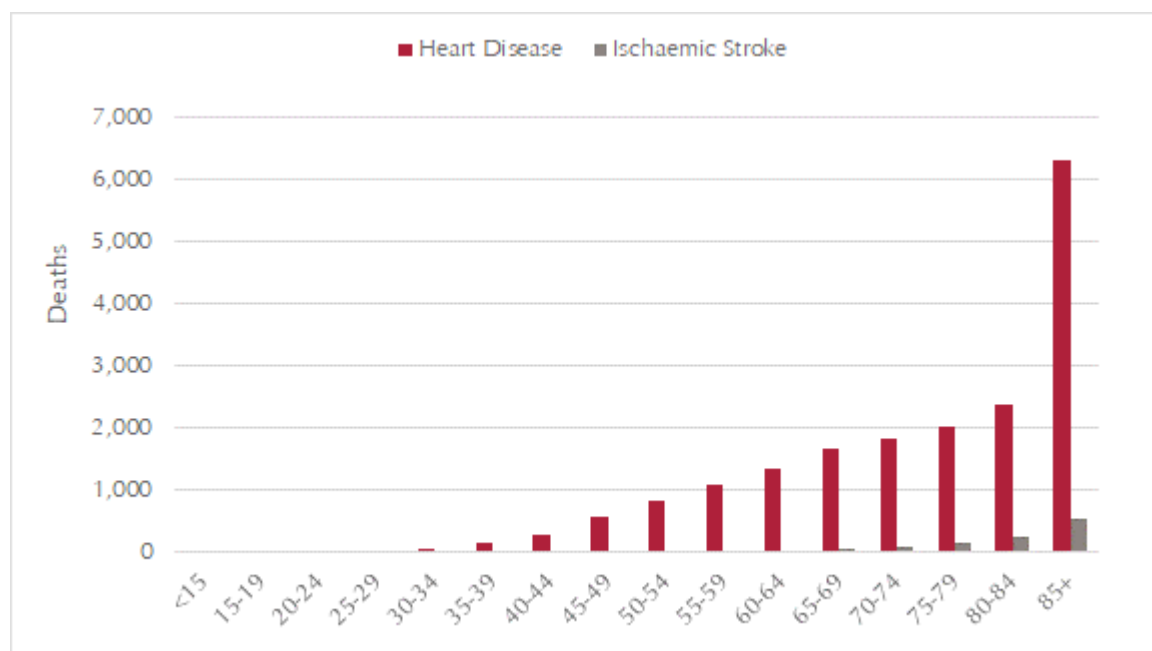
**Source:** AIHW 2015, *General Record of Incidence of Mortality books 2013: Coronary Heart Disease*, Canberra; AIHW 2015, *General Record of Incidence of Mortality books 2013: Cerebrovascular disease*, Canberra.

<sup>14</sup>Cerebrovascular disease is a group of conditions, including ischaemic stroke.

This trend is assumed to continue, with the age-standardised rate of mortality applied to the age-specific mortality rate in 2013 to estimate the age-specific mortality rate in 2017-18. This is then inflated using the estimated resident population to calculate the number of deaths by diagnosis and age group in 2017-18.

In 2017-18, there was an estimated 18,483 heart disease deaths and 1,103 deaths caused by ischaemic stroke. As illustrated in Chart 5, both deaths from heart disease and ischaemic stroke increase significantly for persons aged 85 years and over.

**Chart 5: Forecast deaths by disease and age group, 2017-18**



**Source:** AIHW 2015, *General Record of Incidence of Mortality books 2013: Coronary Heart Disease*, Canberra; AIHW 2015, *General Record of Incidence of Mortality books 2013: Cerebrovascular disease*, Canberra; Australian Bureau of Statistics 2013, *Population Projections, Australia*, cat. no. 3222.0; Heart Foundation calculations.

## Healthcare expenditure

To estimate the total healthcare expenditure attributable to the respective diseases a top down approach is taken. This means that an aggregate figure of expenditure is used, such as total health expenditure, and then apportioned to different diseases. The benefit of this approach is that it provides a ceiling to the total healthcare expenditure.

### Heart disease

In the Heart Foundation’s previous study on ACS, the total healthcare cost was an estimated \$1,930.2 million. Estimates of admitted hospital expenditure on the additional heart disease conditions is based on data provided by the Australian Institute of Health and Welfare (AIHW) through a customised data request.

In 2012-13 a total of \$623.4 million of admitted healthcare expenditure was attributed to the additional heart disease conditions, of which over three quarters was associated with male hospital separations.

**Table 1: Admitted health expenditure on the additional heart disease conditions by gender, 2012-13**

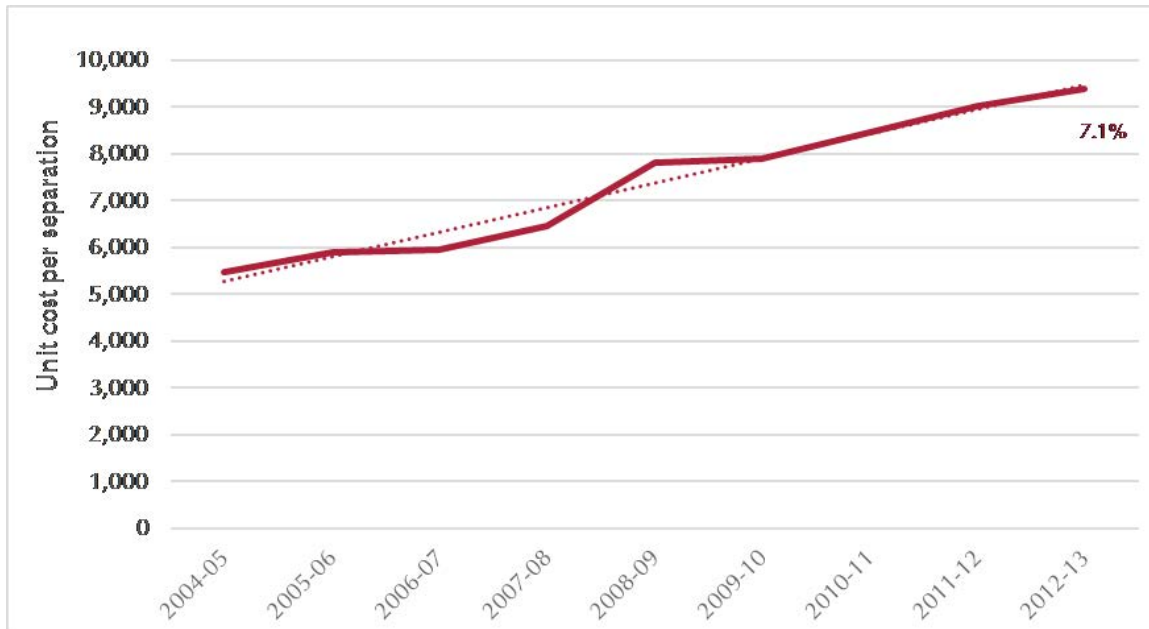
	Admitted health expenditure (\$ million)	Share of total (%)
<b>Male</b>	474.7	76.1
<b>Female</b>	148.7	23.9
<b>Total</b>	623.4	100.0

**Source:** AIHW 2017, Health Expenditure database, customised request.

With a corresponding number of separations, the unit separation cost is calculated by gender and age group.

To estimate how unit costs have changed since 2012-13 the historical trend in unit separation costs is analysed. As illustrated in Chart 6, unit costs have nominally increased by an average of 7.1 percent each year over the previous eight. It is assumed that this same trend continues.

**Chart 6: Unit cost per additional heart disease separation, 2004-05 to 2012-13, nominal prices**



**Source:** AIHW 2017, Health Expenditure database, customised request.

Based on the 2012-13 unit costs by gender and age group, and the assumed growth in nominal prices, the unit cost per additional heart disease separation is estimated for 2017-18 (see Table 2).

**Table 2: Unit cost per additional heart disease separations by age group, 2017-18**

Age group	Male	Female
15-44	12,025	9,895
45-64	14,233	10,137
65+	14,608	10,748

**Source:** AIHW 2017, Health Expenditure database, customised request.

To estimate total healthcare expenditure for 'other' heart disease, the unit cost per 'other' heart disease separation is multiplied by the number of 2017-18 separations by age group and gender. This comes to a total of \$1,442.0 million, with over three-quarters associated with male separations (see Table 3).

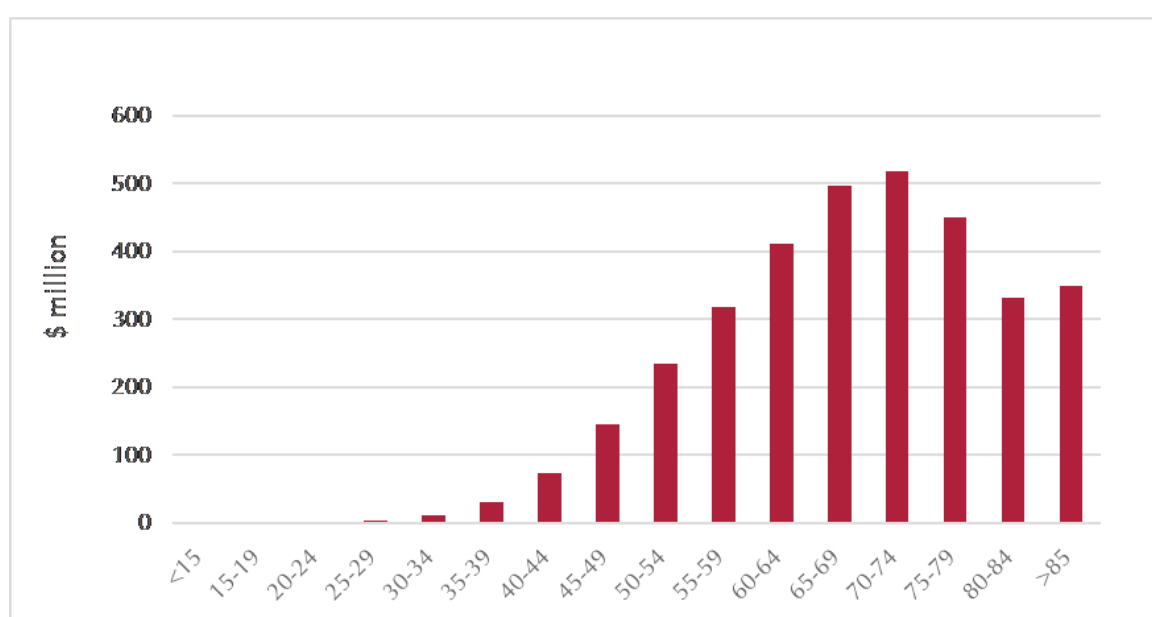
**Table 3: Admitted health expenditure for the additional heart disease separations by gender, 2017-18**

	Admitted health expenditure (\$ million)	Share of total (%)
Male	1,112.3	77.1
Female	329.7	22.9
Total	1,442.0	100.0

Source: Heart Foundation calculations

Combined with the previously estimated cost of ACS, health expenditure on heart disease admissions is \$3,372.2 million in 2017-18. The breakdown by age group is illustrated in Chart 7, showing that costs increase with age, peaking for the 70 to 74-year age group.

**Chart 7: Distribution of total healthcare expenditure on IHD by age group, 2017-18**



Source: Heart Foundation calculations

### Ischaemic Stroke

Hospital expenditure for stroke admissions is measured using the same data from AIHW, but sourced from publicly available reports, rather than directly through a customised data request.

Presented in Table 4 is the unit cost per stroke separation in 2008-09 by gender and age group. Note, the cost of stroke is used as a proxy for ischaemic stroke, as there is not expected to be substantial variation on a cost per separation basis.

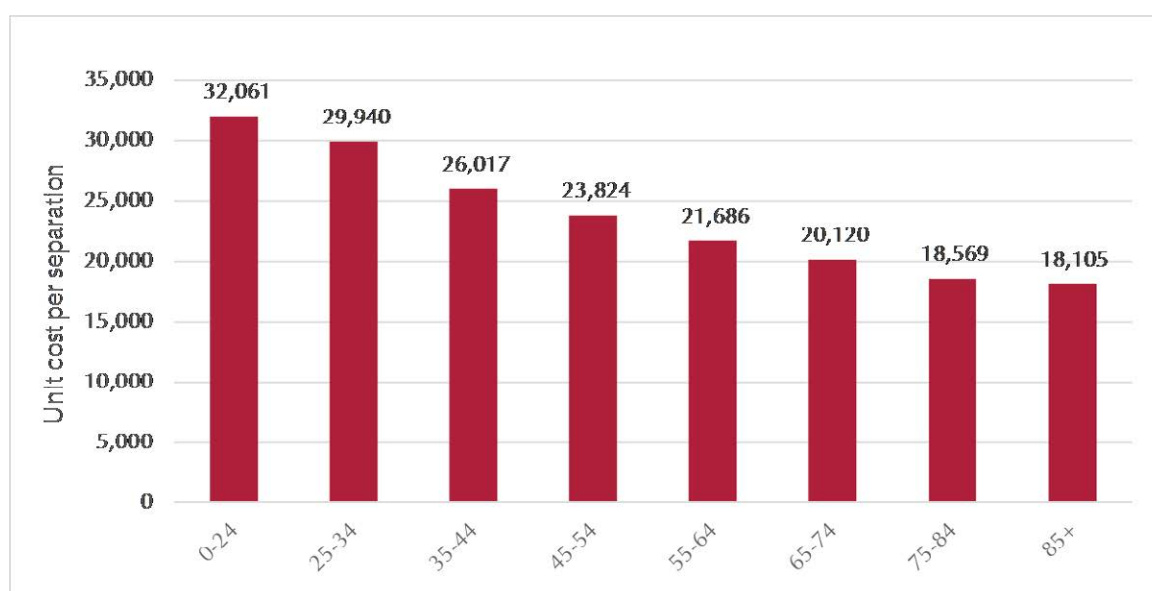
**Table 4: Unit cost per stroke separation by age group, 2008-09**

Age group	Cost per separation
0-24	25,091
25-34	23,431
35-44	20,361
45-54	18,645
55-64	16,972
65-74	15,746
75-84	14,532
85+	14,169

**Source:** AIHW 2014, Health-care expenditure on cardiovascular diseases 2008-09, cat. no. CVD 65, Table D7.

The 2008-09 unit cost per separation figures are inflated to 2017-18 prices using the historical trend in healthcare expenditure per separation for IHD. Although not ideal to use the trend in IHD health expenditure as a proxy for the trend in healthcare expenditure on stroke, it is expected that trends within CVD are more likely to be similar, that if we were to use the trend in aggregate healthcare expenditure (which is also available).

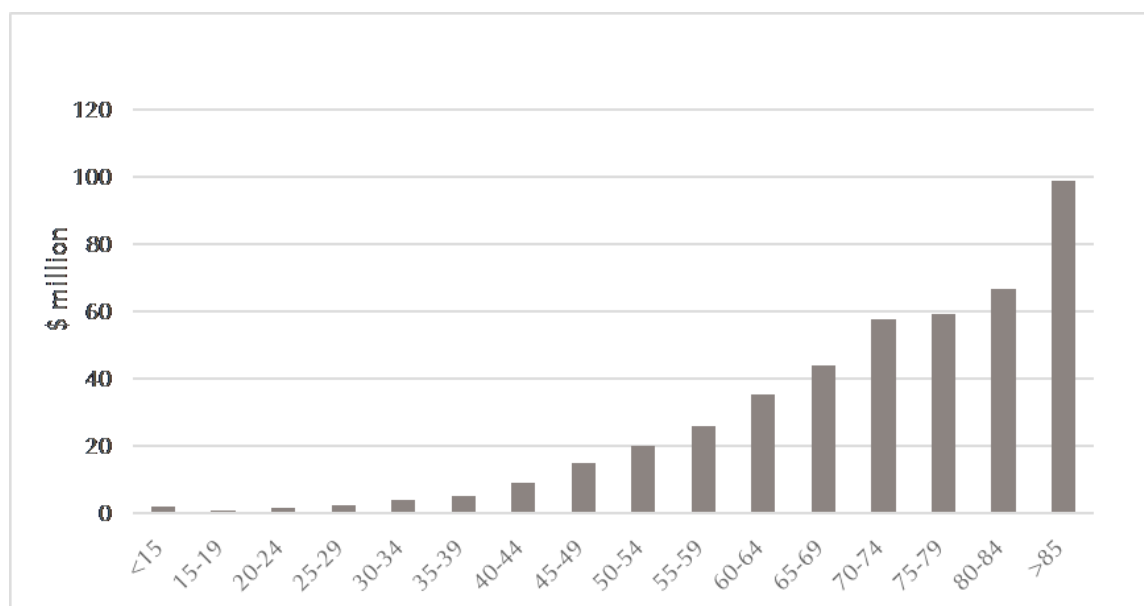
As illustrated in Chart 8, the cost per stroke separation ranges from \$18,105 to \$32,061 per separation, with the cost inversely related to age.

**Chart 8: Unit cost per stroke separation by age group, 2017-18**

**Source:** AIHW 2014, Health-care expenditure on cardiovascular diseases 2008-09, cat. no. CVD 65, Table D7; AIHW 2017, Health Expenditure database, customised request; Heart Foundation calculations.

Given the unit cost per stroke separation, and the corresponding number of separations, total healthcare expenditure on ischaemic stroke is an estimated \$450.1 million for 2017-18. This is presented by age group in Chart 9, illustrating that costs increase in line with age. This suggests that as our population lives longer, we may see an increase in the healthcare costs associated with stroke.

Chart 9: Distribution of total healthcare expenditure on ischaemic stroke by age group, 2017-18



Source: Heart Foundation calculations

### Productivity losses

Productivity losses are measured using the human capital approach. The human capital approach is based on the concept that an individual is irreplaceable and that the income a person would have earned during life is a loss in productivity to the economy.

Productivity loss is measured as the present value of the gross income that would have been earned for people who have died prematurely.

For premature deaths due to heart disease or stroke, estimates are made about the likelihood of being in paid employment,<sup>15</sup> and the income drawn from this employment. Assuming a retirement age of 65 years, the residual number of years of employment is calculated using the median age for each age group.

Gross earnings that an individual would have earned during their remaining working life were estimated using the Australian Bureau of Statistics (ABS) data on the average weekly earnings, by age group.<sup>16</sup> This data is drawn from the May 2016 collection and inflated to current prices using the wage price index.<sup>17</sup>

As outlined in Table 5 below, the total productivity losses from heart disease and ischaemic stroke are \$3,961.9 million and \$843.6 million respectively.

<sup>15</sup> ABS 2018, *Labour force, Australia – detailed*, cat. no. 6291.0.55.001.

<sup>16</sup> ABS 2017, *Employee earnings and hours, Australia, May 2016*, cat no. 6306.0

<sup>17</sup> ABS 2018, *Wage Price Index, Australia, December 2017*, cat. no. 6345.0.



**Table 5: Productivity losses by disease (\$ million), 2017-18**

Age group	Heart Disease	Ischaemic stroke
<15	-	12.8
15-19	0.9	11.0
20-24	8.9	21.9
25-29	38.9	35.2
30-34	99.0	55.3
35-39	267.7	78.8
40-44	536.4	116.4
45-49	882.4	168.1
50-54	999.4	160.3
55-59	766.5	127.1
60-64	361.8	56.7
Total	3,961.9	843.6

**Source:** Heart Foundation calculations.

### Total economic cost

In the final step to estimate the economic cost of heart disease and ischaemic stroke, healthcare expenditure and productivity losses are added together.

The calculation shows that heart disease is estimated to cost the Australian economy \$7334.0 million in 2017-18, and stroke, a further \$1,293.7 million.

**Table 6: Total economic cost by disease and cost type (\$ million), 2017-18**

	Healthcare expenditure	Productivity losses	Total
<b>Heart Disease</b>	3,372.2	3,961.9	7,334.0
<b>Ischaemic Stroke</b>	450.1	843.6	1,293.7

**Source:** Heart Foundation calculations.

# RESULTS

The economic burden of hypercholesterolaemia in 2017-18 is calculated by combining the out of pocket lipid-lowering medication costs, and the economic cost of heart disease and ischaemic stroke attributable to hypercholesterolaemia.

In total, it is estimated that the economic burden of hypercholesterolaemia in Australia for 2017-18 is \$3,996.8 million (see Table 7).

**Table 7: Total economic burden attributable to hypercholesterolaemia (\$ million), 2017-18**

Type of cost	Cost (\$ million)	Attribution to hypercholesterolaemia (%)	Total (\$ million)
Out of pocket expenses – medication	92.5	100.0	92.5
Economic cost of heart disease	7,334.0	51.1	3,746.4
Economic cost of ischaemic stroke	1,293.7	12.2	157.9
<b>Total</b>	<b>8,720.1</b>		<b>3,996.8</b>

Source: Heart Foundation calculations.

## CALL TO ACTION

### Detect and manage those at risk

More than 100,000 Australians have a heart attack or stroke each year, taking an immense social and economic toll on the community. And yet, much of this toll is avoidable if Australians at high risk are detected early and are then well-managed.

Disturbingly, over 1.4 million Australians aged 45 to 74 have a high risk of a heart attack or stroke within the next five years, with most not receiving the recommended treatment for hypercholesterolaemia.

Thousands of heart attacks and strokes could be averted if people aged 45–74 had an absolute cardiovascular risk assessment (heart health check) and those at high risk had their risk factors well managed according to existing guidelines.

Undertaking heart health checks and ensuring ongoing management of patients at high risk should be incorporated into the proposed Quality Improvement Incentive payment. A full heart health check allows therapy to be targeted to those who would most benefit. Not only is this good clinical practice, it makes sound economic sense.



# RECOMMENDATIONS

1. Establish a national target for population-wide absolute cardiovascular disease risk assessments, with the aim of having 90% or more of the eligible population assessed for risk within five years.
2. Provide financial support for Primary Health Networks to build capacity in general practice for undertaking risk assessments and for on-going management of those found to be at risk, and to support data collection.
3. Establish a new Medicare Benefits Schedule (MBS) item to support greater uptake of absolute cardiovascular disease risk assessment in general practice and to support on-going management of those found to be at risk.
4. Inclusion of absolute cardiovascular disease risk assessment in existing health assessment MBS items and the proposed Quality Improvement Incentive Payment.
5. Change MBS items, including chronic disease management plans, to support evidence-based, on-going management of those at risk of cardiovascular events, or those with existing cardiovascular disease.
6. Provide financial assistance to update the National Vascular Disease Prevention Alliance guidelines for the management of absolute cardiovascular disease risk.



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National Heart Foundation of Australia. Economic Report into High Cholesterol (Full report)  
National Heart Foundation of Australia, 2018.

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