

# Health care costs

## Introduction

This chapter presents information on the costs of health care for cardiovascular diseases in Australia. Results from two sources are presented – the Disease Costs and Impact Study 1993–94; and 1994–95 Australian casemix data.

## The Disease Costs and Impact Study

This section provides estimates of the health care costs of cardiovascular disease. These estimates come from the Disease Costs and Impact Study (DCIS) which is conducted by the Australian Institute of Health and Welfare. The DCIS estimates the direct costs of health services by taking known aggregate expenditures on health care and apportioning them to disease categories using Australian data on disease prevalence and costs (Australian Institute of Health and Welfare 1996a). Estimates for the health care costs (i.e. the costs of hospital admitted patient and outpatient services, nursing homes, medical services, allied health services, pharmaceuticals, and 'other') of cardiovascular diseases in 1993–94 are provided here.

### Cardiovascular health care costs in 1993–94

In 1993–94, health care costs for cardiovascular diseases totalled \$3,719 million (Table 56). This represented 12% of the total health care costs for all diseases in that year (\$31,397 million). Hospital admitted patient expenditure accounted for 41% of the health care costs of cardiovascular disease. Pharmaceutical costs accounted for a further 20%, while nursing home and medical services expenditure each accounted for approximately 15%.

Coronary heart disease was the major contributor to cardiovascular health care costs in 1993–94, accounting for 25% (\$894 million) of the total (Table 56). Approximately one fifth (\$168 million) of the cost of coronary heart disease was attributable to acute myocardial infarction.

Other major contributors to the health care costs of cardiovascular disease in 1993–94 were hypertensive disease, cerebrovascular disease, and 'other forms of heart disease', particularly heart failure (Table 56).

In terms of specific sectors of expenditure for cardiovascular diseases, coronary heart disease was the major contributor to hospital admitted patient costs (Table 56). Cerebrovascular disease dominated nursing home costs, while hypertensive disease was the major contributor to medical, pharmaceutical, allied health professional and outpatient costs.

Overall, the health care costs of cardiovascular disease were similar for males and females (Table 57). The largest relative differences were for nursing home costs, which were higher for females; and hospital admitted patient costs, which were higher for males.

For specific cardiovascular conditions, the differences in costs between males and females were more pronounced (Tables S48–S59). The health care costs of coronary heart disease,

atherosclerosis and peripheral vascular disease were higher for males than females across nearly all sectors of expenditure. In contrast, the costs of hypertensive disease, cerebrovascular disease, rheumatic heart disease and heart failure were generally higher for females than males.

### Box 13: Health expenditure explanatory notes

*The categories of recurrent expenditure on health are apportioned using hospital morbidity data, casemix data, the Survey of Morbidity and Treatment in General Practice in Australia 1990–91, and the Australian Bureau of Statistics' National Health Survey 1989–90. The sectors of expenditure included here are hospital admitted patients and outpatients; nursing homes; medical services; allied health professional services; pharmaceuticals; and 'other', which includes research, other institutional (not elsewhere classified), administration, and other non-institutional. An overview of the disease costing methodology can be found in **Appendix H** and more detailed information on the methodology can be found in Disease Costing Methodology Used in the Disease Costs and Impact Study 1993–94 by Mathers et al. (in press).*

*The cardiovascular conditions included have been classified according to the International Classification of Diseases Ninth Revision (ICD-9-CM) and are listed here along with their corresponding International Classification of Primary Care codes.*

Cardiovascular disease	ICD-9-CM codes	ICPC codes
Rheumatic heart disease	390–398	K71
Hypertensive disease	401–405	K86, K87
Coronary heart disease	410–414	K74-K76
acute myocardial infarction	410	K75(p)
other coronary heart disease	411–414	K74, K75(p), K76
Other forms of heart disease	420–429	K77-K80, K83, K84(p)
cardiac dysrhythmias	426–427	K78-K80, K84(p)
heart failure	428	K77
other	420–425, 429	K70(p), K84(p), K83
Cerebrovascular disease	430–438	K89, K90, K92(p)
Diseases of arteries, arterioles and capillaries	440–448	K91, K92(p), K99(p)
atherosclerosis	440	K91
peripheral vascular disease	441–444	K92(p), K99(p)
other diseases of arteries, arterioles and capillaries	446–448	K99(p)
Other cardiovascular disease	415–417, 451–459	K82, K84(p), K88, K93–K96, K96, K99(p)

The health care costs of cardiovascular diseases increased with age for both males and females in 1993–94. For all cardiovascular disease, costs were of a similar order of magnitude for males and females up to age 44 years (Figure 22). Between the ages of 45 and 74 years, costs were substantially higher for males than females. However, from age 75 onwards costs were higher for females.

For coronary heart disease, health care costs were higher for males than females at every age group except 75+ years (Figure 23). Among males, health care costs rose rapidly between the ages of 35 and 74 years but fell in the older age group. For females, the rise in costs also began at age 35 years and continued to increase through to the oldest age group.

**Table 56: Health care costs of cardiovascular diseases, Australia, 1993-94 (\$ '000)**

Disease	Hospital admitted patient <sup>(a)</sup>	Hospital out-patient	Nursing home	Medical <sup>(b)</sup>	Allied health professional	Pharmaceutical	Other <sup>(c)</sup>	Total
Rheumatic heart disease	17,660	1,106	525	1,824	203	1,473	1,198	<b>23,987</b>
Hypertensive disease	23,014	31,774	6,680	216,620	20,138	476,063	56,670	<b>830,990</b>
Coronary heart disease	556,514	17,724	72,533	87,978	5,491	105,365	48,839	<b>894,443</b>
Acute myocardial infarction	128,575	451	25,274	3,217	73	1,063	9,165	<b>167,819</b>
Other	427,939	17,273	47,259	84,760	5,418	104,302	39,674	<b>726,624</b>
Other forms of heart disease	311,237	41,450	167,112	92,860	4,679	81,073	42,509	<b>740,921</b>
Cardiac dysrhythmias	96,008	18,319	28,718	35,777	695	30,890	13,173	<b>223,581</b>
Heart failure	143,262	18,017	135,252	47,235	3,931	45,237	23,180	<b>416,113</b>
Other	71,967	5,114	3,142	9,848	53	4,946	6,156	<b>101,227</b>
Cerebrovascular disease	269,417	13,652	265,403	31,415	4,752	13,026	32,813	<b>630,476</b>
Diseases of arteries, arterioles, & capillaries	164,617	15,519	36,522	21,721	2,067	10,673	17,913	<b>269,034</b>
Atherosclerosis	36,181	6,797	8,092	1,633	139	1,636	5,142	<b>59,619</b>
Peripheral vascular disease	112,999	5,921	25,377	15,420	1,705	7,044	10,998	<b>179,465</b>
Other	15,437	2,802	3,053	4,668	223	1,994	1,773	<b>29,950</b>
Other cardiovascular disease	166,588	12,343	37,427	48,476	2,387	25,259	16,854	<b>309,334</b>
Unspecified treatment & aftercare	4,394	1,126	648	1,057	—	884	507	<b>8,616</b>
Prevention & screening	81	8,497	—	1,470	—	911	684	<b>11,644</b>
<b>Total</b>	<b>1,513,522</b>	<b>143,191</b>	<b>586,850</b>	<b>503,421</b>	<b>39,717</b>	<b>714,726</b>	<b>217,987</b>	<b>3,719,414</b>

(a) Includes public, private and repatriation hospitals.

(b) Medical services for private patients in hospitals are included under 'Hospital admitted patient'.

(c) Includes costs for the following areas of recurrent health expenditure—'Research', 'Other institutional (nec)', 'Administration', and 'Other non-institutional'.

Source: Australian Institute of Health and Welfare, Disease Costs and Impact Study.

Up to the age of 74 years, the health care costs of 'other forms of heart disease' were slightly higher for males than females (Figure 23). However, between the age groups 65–74 years and 75+ years, the costs for females rose by 248% compared to a rise of 55% for males.

For cerebrovascular disease, the patterns by age group and sex were very similar to that of 'other forms of heart disease'.

Among both males and females, the health care costs of hypertensive disease increased steadily with age until age 74 years and then fell (Figure 23). From age 45 years onwards, costs were higher for females than males.

**Table 57: Health care costs of all cardiovascular disease by sex and sector of expenditure, Australia, 1993–94 (\$ '000)**

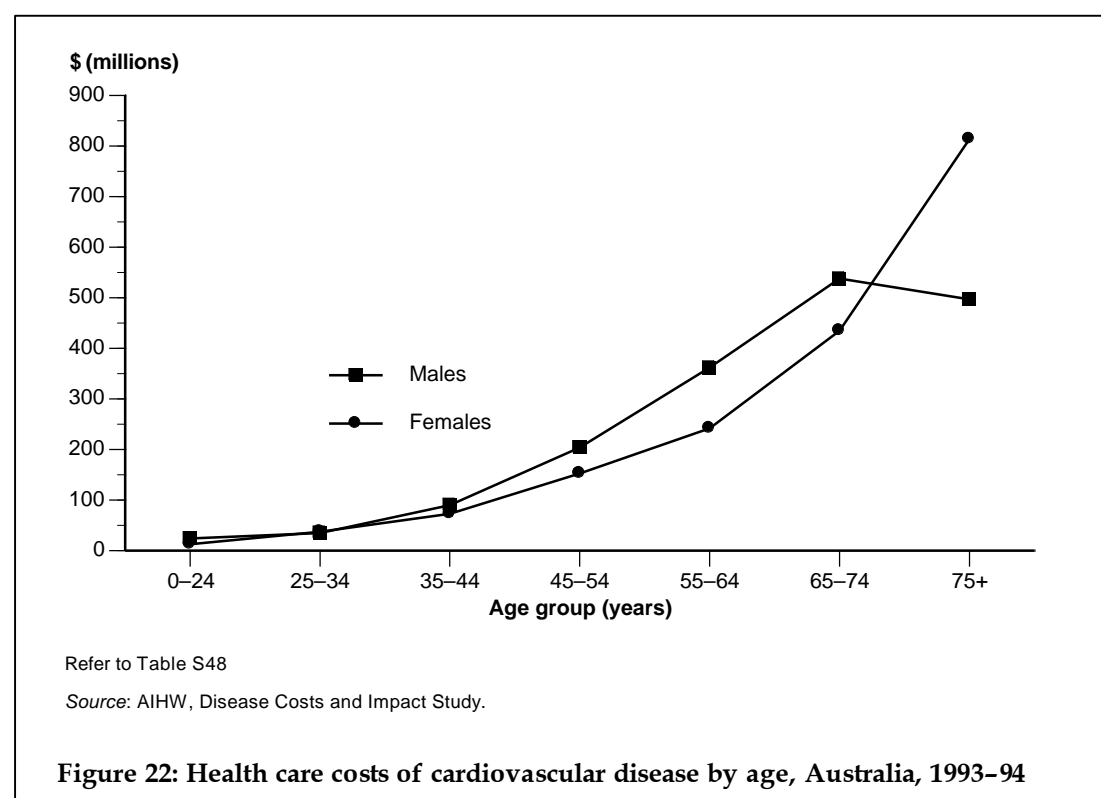
Sector of expenditure	Males	Females	Ratio of costs for males to costs for females
Hospital admitted patient <sup>(a)</sup>	876,458	637,064	1.4
Hospital outpatient	73,258	69,933	1.0
Nursing home	217,177	369,673	0.6
Medical <sup>(b)</sup>	243,960	259,461	0.9
Allied health professional	20,987	18,730	1.1
Pharmaceutical	303,065	411,662	0.7
Other <sup>(c)</sup>	107,514	110,472	1.0
<b>Total</b>	<b>1,842,419</b>	<b>1,876,995</b>	<b>1.0</b>

(a) Includes public, private and repatriation hospitals.

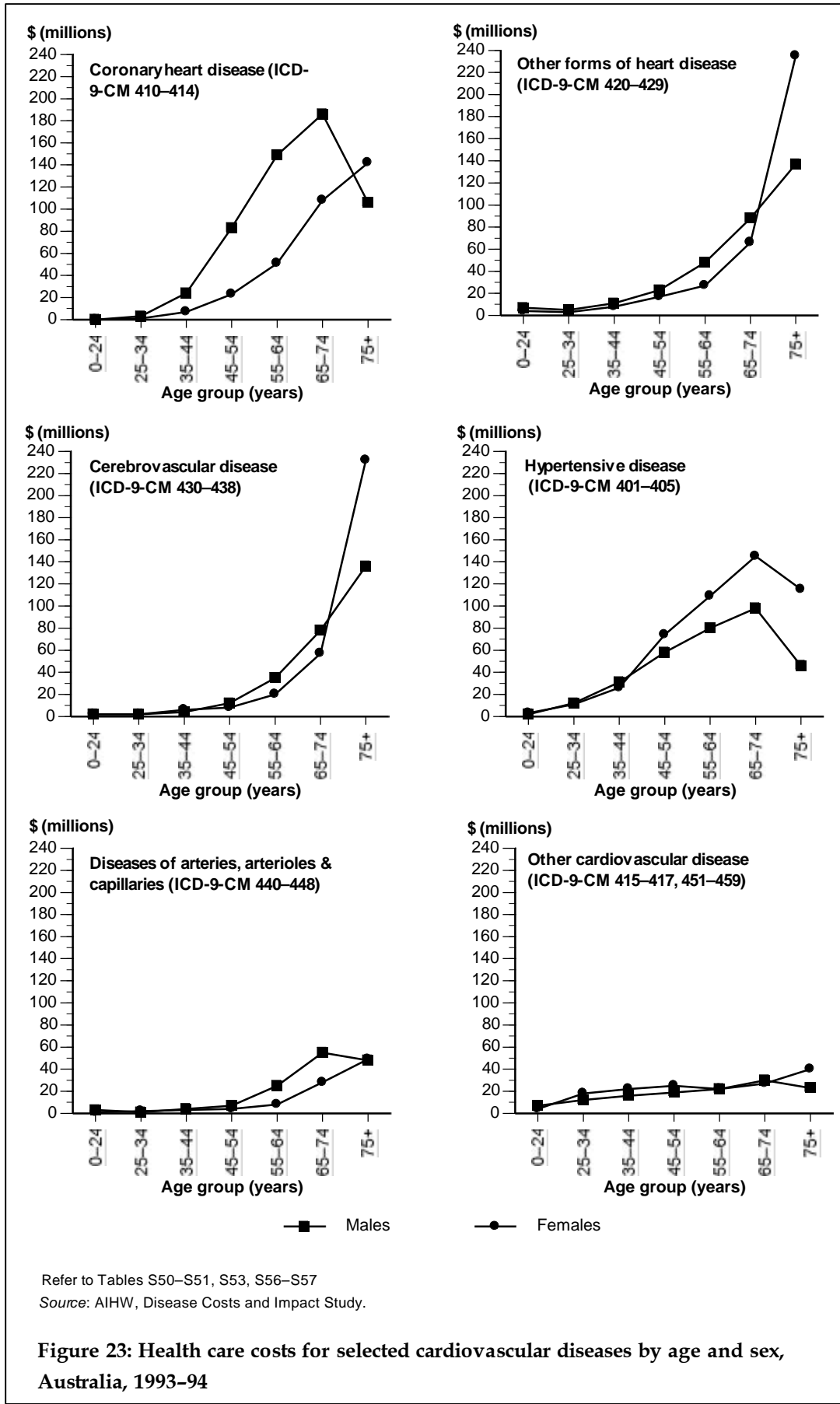
(b) Medical services for private patients in hospitals are included under 'Hospital admitted patient'.

(c) Includes costs for the following areas of recurrent health expenditure—'Research', 'Other institutional (nec)', 'Administration', and 'Other non-institutional'.

Source: Australian Institute of Health and Welfare, Disease Costs and Impact Study.

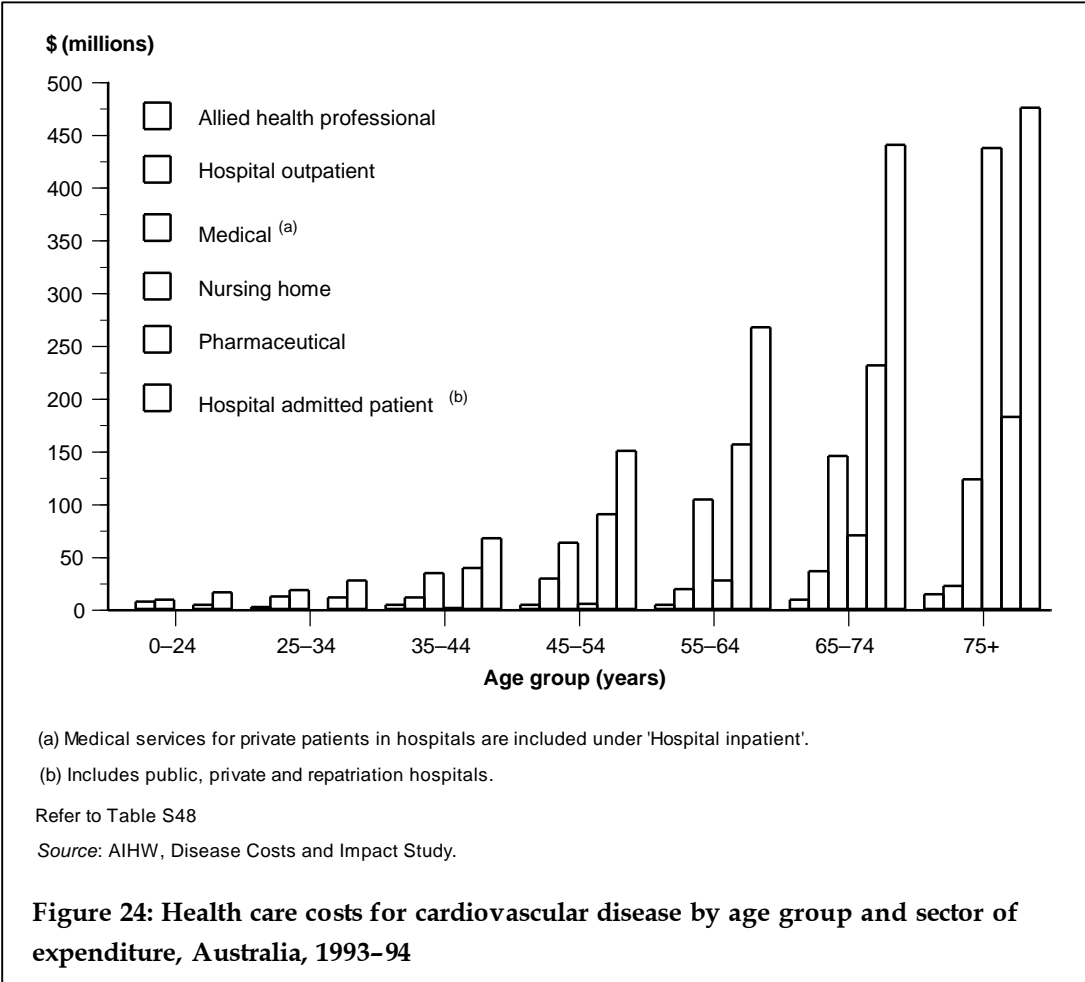


The health care costs of diseases of the arteries, arterioles and capillaries increased substantially from middle age onwards (45–54 years) for females (Figure 23). For males, the rise in costs also began from age 45 years; however costs for the 75+ year age group were slightly lower than for the 65–74 year age group.



**Figure 23: Health care costs for selected cardiovascular diseases by age and sex, Australia, 1993-94**

The costs of all cardiovascular disease also tended to increase with age for each sector of expenditure (Figure 24). In each age group, the highest costs were for hospital admitted patient services. The second most costly sector of expenditure was medical for persons aged 0–34 years, pharmaceutical for persons aged 35–74 years, and nursing home for persons aged 75 years and over. Between the age groups 65–74 years and 75+ years, nursing home costs for cardiovascular disease increased by over 500% from \$75 million to \$489 million.



## Australian casemix data

The term 'casemix' and its classification into Diagnosis Related Groups (DRGs) are explained on page 68. The *Australian Casemix Report* provides national information on public and private acute hospital activity for each financial year (Commonwealth Department of Health and Family Services 1997b). This hospital activity is measured by Australian National Diagnosis Related Groups (AN-DRGs). Information is available on average cost and cost by volume for AN-DRGs.

### AN-DRG costs in 1995–96

Public and private cost weights are calculated in different ways, using different cost components (Commonwealth Department of Health and Family Services 1996b). Therefore it is not appropriate to use the cost estimates provided in this section to suggest that the private sector is more cost effective than the public sector or vice versa.

In terms of cost by volume, 'heart failure & shock' (AN-DRG 252) was the leading cardiovascular AN-DRG in public acute hospitals with a total cost of \$117 million in 1995-96 (Table 58). Among private hospitals, AN-DRG 291 ('coronary bypass without invasive cardiac investigation procedure without major complications and comorbidities') was the leading cardiovascular AN-DRG for cost by volume. Five of the cardiovascular AN-DRGs with the highest cost by volume in public hospitals were also among the top ten in private hospitals.

**Table 58: The 10 cardiovascular AN-DRGs (V3.0) with the highest cost by volume, by type of hospital, Australia, 1995–96**

Hospital type / AN-DRG	Description	Number of separations	Cost by volume (\$ million)	% of total cost by volume for hospital type
<b>Public acute</b>				
252	Heart Failure & Shock	32,700	117	1.3
037	Cerebrovascular Disorders Except TIA W CC	13,378	106	1.2
249	Circ Disorders W AMI W/O Invasive Cardiac Inves Proc W/O Major CC	17,521	73	0.8
291	Coronary Bypass W/O Invasive Cardiac Inves Proc W/O Major CC	6,721	68	0.7
038	Cerebrovascular Disorders Except TIA W/O CC	11,804	65	0.7
297	Trans-Vascular Percutaneous Cardiac Intervention	8,719	46	0.5
270	Unstable Angina W/O CC	19,432	43	0.5
269	Unstable Angina W CC	12,074	37	0.4
274	Circ Dsr W/O AMI W Invas Card Inves Proc W/O Comp Dx & W/O Maj C	21,252	37	0.4
273	Circ Dsr W/O AMI W Invas Card Inves Proc W Comp Dx or W Maj CC	9,867	36	0.4
<b>Private acute</b>				
291	Coronary Bypass W/O Invasive Cardiac Inves Proc W/O Major CC	3,576	29	1.1
252	Heart Failure & Shock	6,594	21	0.7
274	Circ Dsr W/O AMI W Invas Card Inves Proc W/O Comp Dx & W/O Maj C	15,925	19	0.7
297	Trans-Vascular Percutaneous Cardiac Intervention	5,135	19	0.7
239	Vein Ligation & Stripping	9,941	16	0.6
288	Coronary Bypass W Invasive Card Inves Proc Age>64 or W N-Maj CC	1,217	13	0.5
037	Cerebrovascular Disorders Except TIA W CC	2,374	11	0.4
236	Cardiac Pacemaker Implantation	1,113	11	0.4
224	Cardiac Valve Proc W Pump W/O Invasive Card Inves Proc W/O Maj CC	846	10	0.4
230	Major Reconstruct Vascular Proc W/O Pump W/O CC	1,483	9	0.3

Notes: AMI—Acute myocardial infarction

Card—Cardiac

CC—Complications and Comorbidities

Circ—Circulatory

Comp—Complicated

Dsr—Disorder

Dx—Diagnosis

Invas—Invasive

Inves—Investigation

N—No

Proc—Procedure

TIA—Transient Ischaemic Attack

W—With

W/O—Without

Source: Australian Institute of Health and Welfare 1997a.