

# 3 Non-inpatient hospital services

## 3.1 Summary

This methodology uses attribution factors based on the 1989–90 Australian Bureau of Statistics (ABS) National Health Survey to allocate total expenditure on non-inpatient services for 1993–94 to age–sex–disease categories. Total visits to outpatient clinics (including casualty or accident and emergency departments) for each age–sex–disease group are estimated from the National Health Survey data on numbers of outpatient visits in the two weeks prior to interview. Expenditure is allocated assuming that all visits have the same cost.

The methodology covers non-inpatient services in public acute hospitals, but not those in public psychiatric hospitals.

### Box 3.1: Key assumptions

- *The utilisation pattern of non-inpatient services in the 1989–90 ABS National Health Survey is representative of the use of non-inpatient services in 1993–94.*
- *All non-inpatient services have the same average cost across age–sex–disease groups.*
- *Non-inpatient services for cancers and for heart disease are allocated to DCIS disease groups at sub-chapter level, assuming that they are distributed in proportion to inpatient expenditure for each age–sex group.*

### Box 3.2: Data sources

- *National Health Ministers' Benchmarking Working Group 1996.*
- *1989–90 ABS National Health Survey.*
- *AIHW Health Expenditure Database.*

## 3.2 Overview of non-inpatient methodology

Public acute hospitals accounted for 28% of total health expenditure in 1993–94. These hospitals treat inpatients (admitted patients) and non-inpatients (outpatients and casualty or accident and emergency patients). The proportions of total public acute hospital expenditure which relate to inpatients are given by the inpatient fractions (Table 3.1) estimated for each State and Territory by the National Health Ministers' Benchmarking Working Group (1996). Non-inpatient expenditure by public acute hospitals totalled an estimated \$2,421 million in 1993–94, representing 7% of total recurrent health expenditure.

Recurrent expenditure for public psychiatric hospitals included in the AIHW Health Expenditure Database relates entirely to inpatients. Outpatient expenditures by public psychiatric hospitals are included with other non-inpatient psychiatric services in the 'Community and public health' sector, which is not yet included in the Disease Costs and Impact Study (DCIS) model.

Allocation of total expenditure on non-inpatient services to age–sex–disease groups is done in two steps. The first is the allocation to treatment and prevention or screening groups within each ICD-9 chapter, using attribution factors based on the National Health Survey data on number of outpatient visits in the two weeks prior to interview. Of the total sample of 57,000 people interviewed for the National Health Survey, 1,295 reported visiting an outpatient clinic or emergency department in the last two weeks, with a total of 1,736 visits reported during this two-week period.

Total visits to outpatient clinics (including casualty or accident and emergency departments) for each age–sex–disease group are estimated from the National Health Survey sample, weighted to represent the Australian population, and expenditure is allocated assuming that all visits have the same cost. Although some information is available from ambulatory care casemix studies on the relative costs of different types of non-inpatient services, the total lack of information on types of services in the National Health Survey precludes the use of such information at this stage.

Expenditure at the chapter level is apportioned to specific disease groups at the sub-chapter level, to the extent possible, using the specific codes used to record health conditions in the National Health Survey and, where these do not provide sufficient detail, on the corresponding attribution fractions based on the DCIS inpatient expenditure fractions for acute hospitals.

### 3.3 Non-inpatient methodology in detail

#### 3.3.1 Total utilisation and costs of non-inpatient services

Inpatient fractions for 1993–94 are shown in Table 3.1, together with total occasions of service and estimated total expenditure on non-inpatient services. This table includes an estimated \$49 million for repatriation hospital non-inpatient services. This latter figure was calculated using an inpatient fraction of 0.825, calculated from 1991–92 data on outpatient services and total bed days for repatriation hospitals, assuming a HASAC ratio of 6.11 outpatient services per bed day (Cooper-Stanbury, Solon & Cook 1994; National Health Ministers' Benchmarking Working Group 1996).

**Table 3.1: Total utilisation and costs of non-inpatient services, 1993–94**

State/ Territory	Total non-inpatient services ('000s)	IFRAC	Non-inpatient expenditure (\$ million)
NSW	12,346	71.7	1,039
Vic	6,559	79.3	462
Qld	6,115	77.0	341
WA	2,643	74.8	226
SA	2,119	79.8	165
Tas	664	77.4	57
ACT	404	77.4	43
NT	322	76.9	27
DVA	459	86.2	49
<b>Total</b>	<b>31,602</b>	<b>76.0</b>	<b>2,408</b>

Source: Cooper-Stanbury, Solon & Cook 1994; National Health Ministers' Benchmarking Working Group 1996.

### 3.3.2 Attribution fractions for disease at ICD-9 chapter level

Allocation of non-inpatient treatment costs to age–sex–disease groups was based on the reported number of outpatient visits in the two weeks prior to interview in the National Health Survey. The reasons given for these visits were grouped into ICD-9 chapters (see Table 1.4) and attribution fractions calculated assuming that all visits reported by a respondent were equally attributable to all the reasons reported by that respondent.

The total number of outpatient visits in the last two weeks is given by:

$$T = \sum_{i=1}^N v_i \times wn_i \quad (3.1)$$

- where:
- $N$  = Total number of survey respondents in National Health Survey
  - $wn_i$  = National Health Survey weight for respondent  $i$
  - $v_i$  = Number of times respondent  $i$  reported visiting outpatient or casualty services

The attribution fraction for visits and expenditure for age group  $a$ , sex  $s$  and ICD-9 Chapter  $c$  is given by:

$$\alpha_{asc} = \frac{\sum_{i=1}^{N_{csa}} \left( \frac{n_{ci} \times v_i \times wn_i}{n_i} \right)}{T} \quad (3.2)$$

- where:
- $N_{csa}$  = Total number of survey respondents of age  $a$  and sex  $s$  who reported visiting an outpatient or casualty service for a reason in category  $c$
  - $wn_i$  = National Health Survey weight for respondent  $i$
  - $v_i$  = Number of times respondent  $i$  reported visiting outpatient or casualty services
  - $n_{ic}$  = Number of reasons in disease category  $c$  for visiting outpatient or casualty services reported by respondent  $i$
  - $n_i$  = Total number of reasons for visiting outpatient or casualty services reported by respondent  $i$

#### Assumptions

- The utilisation pattern of non-inpatient services in the National Health Survey is representative of the use of non-inpatient services in 1993–94.
- All non-inpatient services have the same average cost across age–sex–disease groups.

#### Data sources

- 1989–90 ABS National Health Survey.

### 3.3.3 Attribution fractions for disease at sub-chapter level

The expenditure allocated to non-inpatient services at the chapter level is apportioned to specific disease groups at the sub-chapter level, to the extent possible, using the specific codes used to record health conditions in the National Health Survey. The level of detail of these codes varies with chapter and, where it is necessary to apportion costs at a finer level of detail than available in the National Health Survey, costs are allocated in proportion to total estimated costs for inpatient services.

Neoplasms are coded to a single category in the National Health Survey. For neoplasms, the attribution fraction for age, sex and disease at sub-chapter level of Chapter  $c$  is given by:

$$\gamma_{cdsa} = \frac{(\text{Outpatient visits for disease group } d, \text{ sex } s, \text{ age } a)}{(\text{Total outpatient visits for Chapter } c, \text{ sex } s, \text{ age } a)}$$

Cardiovascular disease codes in the National Health Survey are shown in Table 3.2, together with their mapping to DCIS disease sub-groups. Code 16 'Fluid problems' could potentially relate either to renal or cardiovascular problems. Examination of National Health Survey data found that less than 1% of respondents mentioned fluid problems with no other conditions. For those who mentioned other conditions, 57% mentioned heart disease or hypertension also. Only 2% mentioned kidney disease, and most of these also mentioned hypertension or heart disease. For the purposes of the DCIS, all fluid problems are assumed to relate to cardiovascular disease. For the within-chapter allocation, this code and Code 19 'Other cardiovascular disease' were excluded from analysis, so that effectively, costs for these conditions were distributed pro rata across all the cardiovascular sub-groups in proportion to the costs at sub-group level.

**Table 3.2: Mapping of National Health Survey cardiovascular disease codes to DCIS sub-groups**

National Health Survey code	Allocation to DCIS disease sub-group
15 Atherosclerosis	7.7 Diseases of arteries etc.
17 Varicose veins	7.8 Diseases of veins etc.
18 Haemorrhoids	7.8 Diseases of veins etc.
72 Hypertension	7.2 Hypertensive disease
82 Heart disease	Distribute to 7.1 (Rheumatic heart disease), 7.3 (Ischaemic heart disease), 7.4 (Diseases of pulmonary circulation) and 7.5 (Other forms of heart disease) in proportion to total inpatient costs
182 Signs and symptoms of heart problems	
119 Stroke after-effects	7.6 Cerebrovascular disease
219 Cerebrovascular disease	

#### Assumptions

- Non-inpatient services for cancers and for heart disease are allocated to DCIS disease groups at sub-chapter level assuming that they are distributed in proportion to inpatient expenditure for each age-sex group.

#### Data sources

- 1989-90 ABS National Health Survey.

### 3.3.4 Total non-inpatient expenditure by disease

The total non-inpatient expenditure for disease  $d$ , sex  $s$  and age  $a$ ,  $OPEX_{dsa}$ , is estimated by applying the relevant attribution fractions for ICD-9 chapter and, where applicable, for sub-chapter disease groups, to the total estimated non-inpatient expenditure  $OPEX = \$2,421$  million shown at the bottom of Table 3.1:

$$OPEX_{dsa} = \alpha_{csa} \times \gamma_{cdsa} \times OPEX \quad (3.3)$$

where:  $OPEX$  = Total expenditure on non-inpatient services (Table 3.1)

$\alpha_{csa}$  = Attribution fraction to Chapter  $c$  from Equation 3.1

$\gamma_{cdsa}$  = Attribution fraction to the disease grouping  $d$  at sub-chapter level of Chapter  $c$

### 3.4 Differences from 1989–90 methodology

- Non-inpatient service costs were not included in the 1989–90 methodology.

### References

Cooper-Stanbury M, Solon R & Cook M 1994. Hospital Utilisation and Costs Study 1991–92. Volume 1: A survey of public hospitals and related data. Canberra: AGPS.

National Health Ministers' Benchmarking Working Group 1996. First national report on health sector performance indicators: public hospitals – the state of play. Canberra: AIHW.