

7 Allied health services

7.1 Summary

This methodology uses attribution factors based on the 1990–91 Survey of Morbidity and Treatment in General Practice in Australia undertaken by Professor Bridges-Webb and colleagues (the GP survey) and the 1989–90 Australian Bureau of Statistics (ABS) National Health Survey to allocate total Australian expenditure on allied health practitioners to age–sex–disease groups. Total visits to allied health practitioners in 1993–94 for each age–sex–disease group are estimated from the National Health Survey data on visits to 14 types of allied health practitioners in the two weeks prior to interview. Annual visits to other types of allied health practitioners are estimated from referrals by general practitioners in the GP survey. Expenditure is allocated assuming that all visits have the same cost. The methodology covers all allied health professionals excluding dental services, which are addressed in Chapter 6 of this paper, and pharmacists, who are addressed in Chapter 8 on prescription and over-the-counter drugs.

Box 7.1: Key assumptions

- *All visits to practitioners generate services with equal costs.*
- *The pattern of visits to practitioners estimated from the National Health Survey is the same as that in 1993–94.*
- *For practitioner visits reported in the National Health Survey, the cost of the visit is equally attributable to all of the reasons for that visit.*
- *For other types of practitioners, the distribution of visits by disease, age and sex is the same as the distributions of referrals by general practitioners.*
- *A referral to an allied health practitioner in the GP survey is equally attributable to all the diseases appropriate to that practitioner type managed in the encounter.*

Box 7.2: Data sources

- *1990–91 Survey of Morbidity and Treatment in General Practice in Australia.*
- *1989–90 ABS National Health Survey.*
- *AIHW Health Expenditure Database.*

7.2 Overview of allied health methodology

Allocation of total expenditure on allied health practitioner services (from the AIHW Health Expenditure Database) to age–sex–disease groups is done in two steps. The first is the allocation to treatment or prevention and screening groups within each ICD-9 chapter. The second is the allocation of the cancer and cardiovascular treatment groups to specific cancers and cardiovascular disease groups.

The methodology is based on the data sources shown in Box 7.2. Chapter 5 (Medical costs) contains a further description of the GP survey data. This methodology covers all allied health professionals, excluding dental services, which are addressed in Chapter 6 of this paper, and pharmacists, which are addressed in Chapter 8 on prescription and over-the-counter drugs.

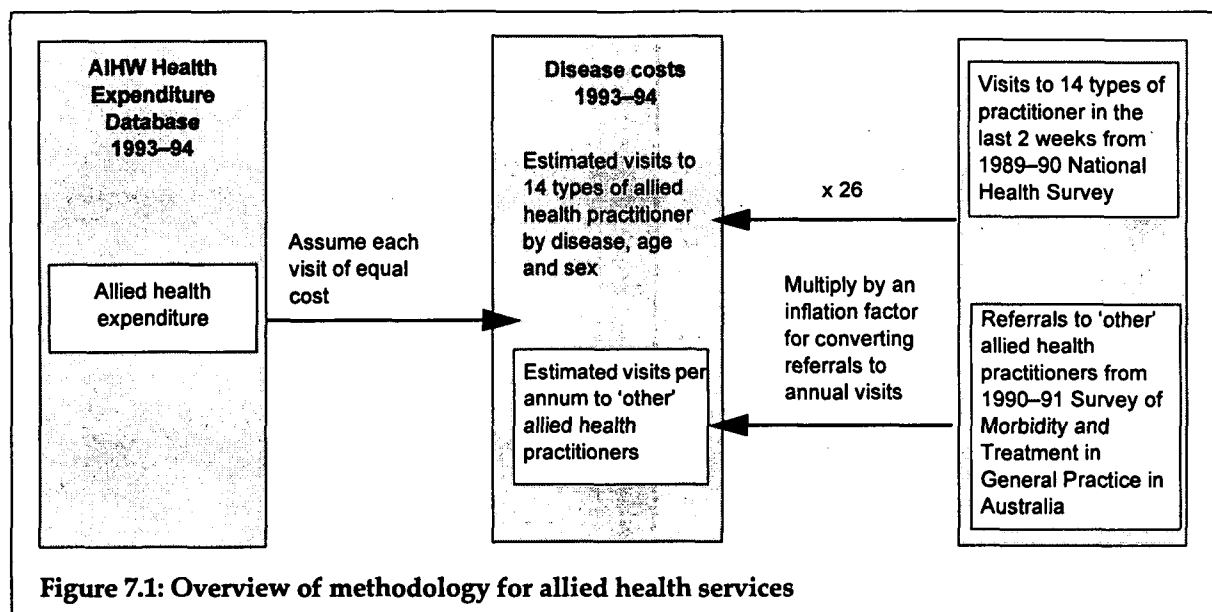


Figure 7.1: Overview of methodology for allied health services

7.2.1 Allocation of expenditure to ICD-9 chapters

The first step is to estimate the number of visits to each type of practitioner. The National Health Survey provides estimates of the total visits to selected practitioner types during a two-week period. However, not all types of practitioners are covered by the National Health Survey, so the visits to the remaining practitioner types must be estimated from the GP survey data. This is done by assuming that the ratio between total referrals for each type in the GP survey data and total visits estimated for that type from the National Health Survey data is constant across practitioner types. There are a group of practitioner types which are common to both the GP survey and the National Health Survey. This provides the basis for estimating an inflation factor to apply to referrals in the GP survey data to give an estimate of visits for an 'other practitioners' category, which is consistent with the National Health Survey data.

The attribution factors are then calculated so that costs are divided equally between each visit to a practitioner and then divided equally between each of the reasons for that visit. For the practitioners covered by the National Health Survey, this can be done directly from the survey data. For the other practitioners, this involves dividing the costs equally between the relevant problems managed in each encounter where there was a referral to a practitioner.

7.2.2 Allocating expenditure for sub-chapter disease groups

This step takes the expenditure allocated to treatment at the chapter level and apportions it to specific disease groups at the sub-chapter level. This allocation is based purely on the GP survey data.

Disease attribution factors are calculated so that the chapter-level treatment expenditure is divided equally between those encounters where (a) there is a referral to a practitioner and (b) at least one diagnosis for the disease of interest is among the problems managed in the encounter. The expenditure is further divided equally between all diagnoses in the disease group of interest managed in the encounter which are appropriate to the referred practitioner.

Table 7.1: Classification system for allied health practitioners

DCIS code	National Health Survey practitioner type	GP survey practitioner type
1	Chiropractor	Chiropractor
2	Osteopath	n.a.
3	Naturopath	n.a.
4	Herbalist	n.a.
5	Acupuncturist	Acupuncturist
6	Dietician	Dietician ^(a)
7	Optician	n.a.
8	Physiotherapist	Physiotherapist ^(a)
9	Psychologist	Psychologist, counsellor, marriage guidance ^(a)
10	Social worker	n.a.
11	Podiatrist	Podiatrist ^(a)
12	School nurse	n.a.
13	Baby nurse	n.a.
14	Other nurse	Includes home nursing
0	n.a.	Rehabilitation, relaxation/hypnotherapist, speech therapist, other health professional, drug and alcohol, other services nec

(a) These categories form the common set used in Equation 7.3 to estimate the inflation factor. The categories 'chiropractor' and 'acupuncturist' showed marked differences between the two data sets and so were excluded from the common set.

7.3 Allied health methodology in detail

7.3.1 Utilisation by age, sex and type of practitioner

Information is collected in the National Health Survey on visits to 14 types of allied health professionals (Table 7.1). The total number of visits to these practitioners ($t = 1, 2, \dots, 14$) is calculated as follows:

$$T_{tisa} = 26 \times \sum_{i=1}^{N_{tisa}} v_{it} \times wn_i \quad (7.1)$$

- where:
- N_{tisa} = Total number of survey respondents of age a and sex s who reported visiting a practitioner of type t
 - wn_i = National Health Survey weight for respondent i
 - v_{it} = Number of times respondent i reported visiting practitioner type t during last two weeks

The type $t = 0$ covers the remaining types of allied health practitioners identified in the GP survey data (Table 7.1). The total number of referrals for patients of age a and sex s to practitioners of type $t = 0$, based on the GP survey data, is calculated as:

$$R_{0sa} = \sum_{e=1}^{E_{0sa}} s_{e0} \times wb_e \quad (7.2)$$

- where:
- E_{0sa} = Total encounters with patients of age a and sex s with at least one referral to a practitioner of type 0
 - wb_e = GP survey weight for encounter e
 - s_{e0} = Number of referrals to a practitioner of type 0 in encounter e

In order to give an estimate of visits for an 'Other practitioners' category which is consistent with the National Health Survey data, it is necessary to apply an inflation factor to adjust the total referrals to practitioners of type 0 to match the total estimated visits to practitioners of types 1,2,...,14, f_{sa} .

Some types of health practitioners appear in both the GP survey data and the National Health Survey data. These are denoted the 'common set' of practitioners (Table 7.1). The adjustment factor is the ratio between the total reported visits for each age and sex for this common set from the National Health Survey and the total referrals for each age and sex for this common set from the GP survey data.

$$f_{sa} = \frac{26 \times \sum_{i \in CN_{sa}} wn_i \times v_{ic}}{\sum_{e \in CB_{sa}} wb_e \times s_{ec}} \quad (7.3)$$

- where:
- CN_{sa} = The set of National Health Survey respondents of age a and sex s who reported visiting a practitioner in the common set
 - CB_{sa} = The set of encounters with patients of age a and sex s in the GP survey where a referral was made to a practitioner in the common set
 - s_{ec} = Number of referrals in encounter e to a practitioner in the common set
 - v_{ic} = Number of times respondent i reported visiting a practitioner in the common set
 - wn_i = National Health Survey weight for respondent i
 - wb_e = GP survey weight for encounter e

The estimated number of visits to practitioners of type 0 is then given by:

$$T_{0sa} = f_{sa} \times R_{0sa} \quad (7.4)$$

Assumptions

- The ratio between the number of referrals to a practitioner of a given type in the GP survey and the estimated number of visits to that practitioner type from the National Health Survey is constant across types of practitioner.

Data sources

- 1990–91 Survey of Morbidity and Treatment in General Practice in Australia.
- 1989–90 ABS National Health Survey.

7.3.2 Attribution fraction for allied health practitioners

The first term in the numerator of Equation 7.5 represents the estimated apportionment to diseases in group d of visits to a practitioner of type 0 based on the GP survey data. The second term represents the same apportionment for practitioners of type 1 to 14 based on National Health Survey data. The mapping of National Health Survey health condition codes to the treatment and prevention categories at chapter level of ICD-9 is shown in Table 1.4.

$$\alpha_{dsa} = \frac{\left\{ \sum_{e=1}^{E_{0sa}} \left(\frac{f_{sa} \times s_{e0} \times n_{de0} \times wb_e}{n_{e0}} \right) + \sum_{t=1}^{14} \sum_{i=1}^{N_{tisa}} \left(\frac{n_{dit} \times v_{it} \times wn_i}{n_{it}} \right) \right\}}{\sum_s \sum_a \sum_{t=0}^{14} T_{tsa}} \quad (7.5)$$

where:	E_{0sa}	=	Total encounters with a patient of age a and sex s with at least one referral to a practitioner of type 0
	wb_e	=	GP survey weight for encounter e
	s_{e0}	=	Number of referrals to a practitioner of type 0 in encounter e
	n_{de0}	=	Number of diagnoses in disease group d which are appropriate to a practitioner of type 0 and which are managed in encounter e
	n_{e0}	=	Total number of diagnoses which are appropriate to a practitioner of type 0 and which are managed in encounter e
	f_{sa}	=	Inflation factor for age a and sex s calculated in Equation 7.3
	N_{tisa}	=	Total number of survey respondents of age a and sex s who reported visiting a practitioner of type t
	wn_i	=	National Health Survey weight for respondent i
	v_{it}	=	Number of times respondent i reported visiting practitioner type t

- n_{dit} = Number of reasons in disease group d reported by respondent i for visiting practitioner type t
- n_{it} = Total number of reasons reported by respondent i for visiting practitioner type t
- T_{tsa} = Total visits by people of age a and sex s to a practitioner of type t calculated in Equations 7.1 and 7.4

This ensures that the attribution fraction α_{dsa} sums across age, sex and disease groups to unity.

Assumptions

- All visits to practitioners generate services with equal costs.
- The pattern of visits to practitioners estimated from the National Health Survey for 1989–90 is the same as that in 1993–94.
- Where practitioner visits are reported in the National Health Survey for a practitioner of a given type, the cost of services for each respondent is equally attributable to all of the reasons for visits to that practitioner type.
- Where practitioner visits are not reported in the National Health Survey, the pattern of diseases giving rise to referrals by general practitioners to practitioners is the same as the pattern of diseases for all practitioner visits.
- A referral to a particular type of practitioner in the GP survey is equally attributable to all the diseases appropriate to that practitioner type managed in the encounter where the referral was made.
 - Where no disease appropriate to that practitioner type is managed in the encounter, then the referral is attributed equally to all diseases managed in the encounter.
 - Where the grouping of practitioners into type is too broad to allow the identification of appropriate diseases, all diseases are considered appropriate.

Data sources

- 1990–91 Survey of Morbidity and Treatment in General Practice in Australia.
- 1989–90 ABS National Health Survey.

7.3.3 Expenditure by ICD-9 chapter

The mapping of National Health Survey health condition codes to ICD-9 chapters is shown in Table 1.4.

Total expenditure on allied health services by the treatment and prevention categories d at chapter level of ICD-9 and age a and sex s is given by:

$$AHP_{dsa} = AHPEX \times \alpha_{dsa} \quad (7.7)$$

where: $AHPEX$ = Total expenditure on allied health practitioners from the AIHW Health Expenditure Database
 α_{dsa} = Attribution fraction to disease type d , for age a and sex s , from Equation 7.5

Data sources

- AIHW Health Expenditure Database.

7.3.4 Expenditure by disease at sub-chapter level

The expenditure allocated to treatment at the chapter level is apportioned to specific disease groups at the sub-chapter level purely on the basis of the GP survey data. In this section, d refers to a disease diagnosis at sub-chapter level of Chapter c . The attribution fraction for age, sex and disease at sub-chapter level of Chapter c , β_{dsa} , is given by:

$$\beta_{dsa} = \frac{\sum_t \left\{ \sum_{e=1}^{E_{tsac}} \left(\frac{s_{et} \times n_{det} \times wb_e}{n_{et}} \right) \right\}}{\sum_t \left(\sum_{e=1}^{E_{tsac}} s_{et} \times wb_e \right)} \quad (7.8)$$

where: E_{tsac} = Total encounters with a patient of age a and sex s with at least one referral to a practitioner of type t and at least one diagnosis in Chapter c
 wb_e = GP survey weight for encounter e
 s_{et} = Number of referrals to a practitioner of type t in encounter e
 n_{det} = Number of diagnoses in disease group d which are appropriate to a practitioner of type t and which are managed in encounter e
 n_{et} = Total number of Chapter c diagnoses which are appropriate to a practitioner of type t and which are managed in encounter e

The disease attribution factors are calculated so that the chapter-level treatment expenditure is divided equally between those encounters where (a) there is a referral to a practitioner and (b) at least one diagnosis for the disease of interest is among the problems managed in the encounter. The expenditure is further divided equally between all diagnoses in the disease group of interest managed in the encounter which are appropriate to the referred practitioner. The matrix of expenditure on allied health practitioners by disease at sub-chapter level is given by:

$$AHP_{cdsa} = AHPEX \times \alpha_{csa} \times \beta_{dsa} \quad (7.9)$$

- where:
- $AHPEX$ = Total expenditure on allied health practitioners from the AIHW Health Expenditure Database
 - α_{csa} = Attribution fraction to the treatment classification for Chapter c for age a and sex s , from Equation 7.5
 - β_{dsa} = Attribution fraction to the disease grouping at sub-chapter level from Equation 7.8
 - AHP_{cdsa} = Total expenditure on allied health practitioners for Chapter c , disease group d , for age a and sex s

Assumptions

- The assumptions relating to the use of GP survey data listed in Section 7.3.2 also apply here. The method assumes that within chapters of ICD-9, the pattern of use of allied health services by disease is similar to the pattern of referrals observed in the GP survey.

Data sources

- 1990–91 Survey of Morbidity and Treatment in General Practice in Australia.

7.4 Differences from 1989–90 methodology

- The 1989–90 methodology used the National Health Survey to create an overall expenditure matrix for all practitioner types classified by age and sex and the GP survey data for attribution to disease group at an age–sex level. The revised methodology uses the National Health Survey data for the attribution to disease groups as well, where possible.
- The 1989–90 methodology did not address the issue of the National Health Survey not covering all practitioner types. The revised methodology supplements estimates from the National Health Survey with estimates from the GP survey to cover all practitioner types.
- The 1989–90 methodology used an attribution factor for the GP survey data based on the average number of problems managed per general practitioner encounter. This was calculated in such a way that the sum of the attribution factors across all diseases was less than 1. This sum must equal 1 for the whole expenditure to be attributed to diseases. The revised methodology ensures that the attribution factor adds to 1 across diseases for each age and sex.