

4 Nursing homes

4.1 Summary

This methodology uses attribution factors based on the distribution of the main disabling health condition of nursing home residents in the 1993 Australian Bureau of Statistics (ABS) Survey of Disability, Ageing and Carers to allocate total nursing home expenditure for 1993–94 to age–sex–disease categories at ICD-9 chapter level. This expenditure is apportioned to specific disease groups at the sub-chapter level according to the distribution of diagnoses for patients in that age–sex group who transfer from acute hospitals.

Box 4.1: Key assumptions

- *Nursing home expenditure is attributable to the main health condition resulting in disability.*
- *Nursing home bed days for disease groups within ICD-9 chapters are distributed in the same way as the principal diagnoses of patients transferring from acute hospitals.*
- *Nursing home bed days have the same average cost for all age–sex–disease categories.*

Box 4.2: Data sources

- *1993 ABS Survey of Disability, Ageing and Carers.*
- *AIHW National Hospital Morbidity Database 1993–94.*
- *AIHW Health Expenditure Database.*

4.2 Overview of nursing homes methodology

Nursing home expenditure accounted for nearly 8% of total health expenditure in 1993–94. The 1989–90 methodology based its attribution of nursing home costs to disease on the diagnosis, age and sex patterns of patients who transfer from hospitals to nursing homes. Around 65% of patients in nursing homes are patients who transferred from hospitals (Gillett 1991). It was recognised that this was probably not a satisfactory basis for attributing nursing home costs to disease since the 35% of nursing home patients who transfer from the community are likely to have a different pattern of disease. Also, the principal diagnosis for an acute hospital episode may not necessarily be the same as the principal reason for admission to a nursing home following the acute episode.

The 1993 Survey of Disability, Ageing and Carers (ABS 1993) contains a sample of nursing homes and provides information on the main health condition causing disability for nursing home residents (of whom approximately 5,000 were sampled in the survey). This information has been used to attribute nursing home costs to age–sex–disease groups at the ICD-9 chapter level on the assumption that the distribution of principal disabling conditions in the survey reflects the distribution of nursing home bed days by disease, age and sex, and that all bed days are of equal average cost.

For a given age–sex group, nursing home expenditure at the ICD-9 chapter level is apportioned to specific disease groups at the sub-chapter level according to the distribution of diagnoses for patients in that age–sex group who transfer from acute hospitals.

This methodology does not include an adjustment for the resource intensity of treatment in nursing homes. While such an adjustment is clearly desirable, data are not yet available on the distribution of dependency levels of nursing home residents by disease category. These dependency levels form the basis of Commonwealth payments to nursing homes. If and when such data become available, it would be worthwhile to further revise the methodology for nursing home costs.

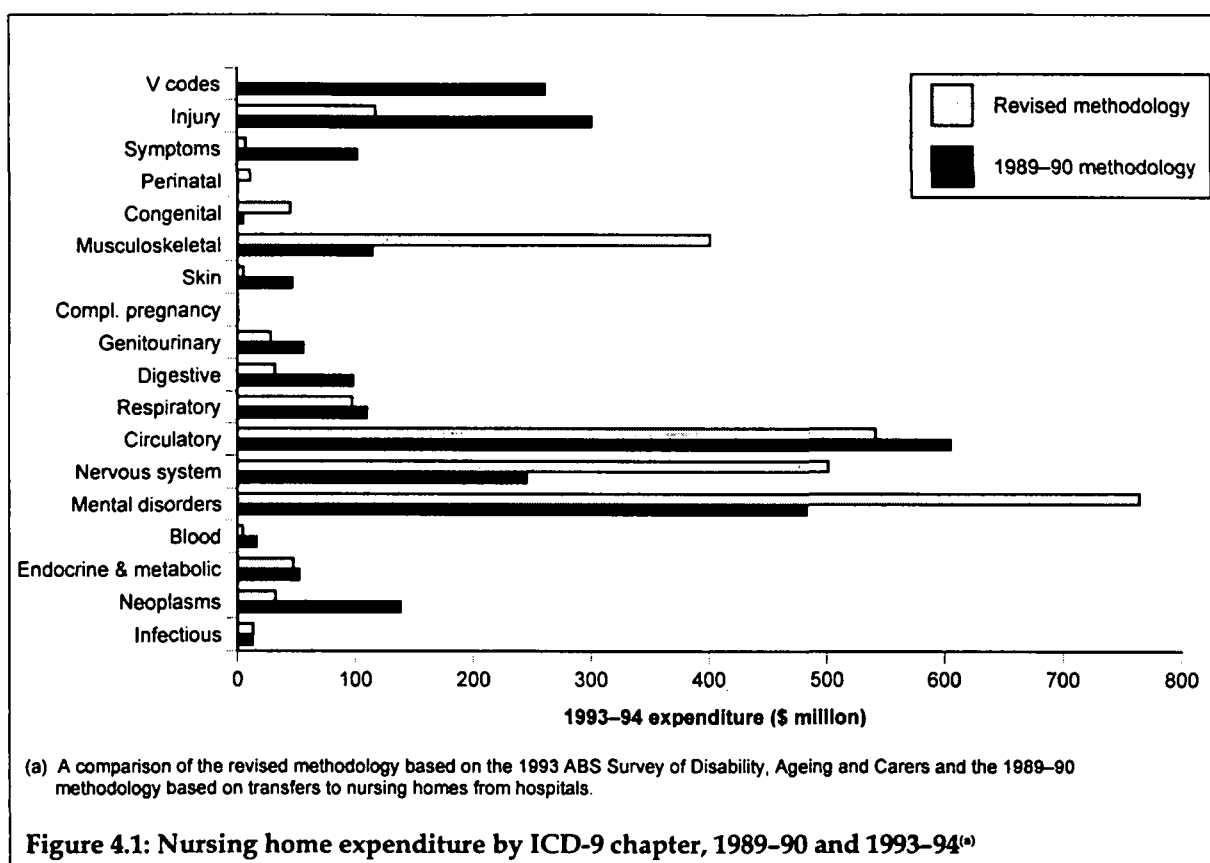
The current methodology does not take account of co-morbidity and assumes that all the cost of nursing home care is attributable to the main disabling condition. The method also assumes that disability is the principal reason for nursing home care. Depending on the uses to which disease costing data is put, it may not be appropriate to treat all nursing home expenditure as health service costs or to attribute all nursing home patients to disease categories. Co-morbidities may be too extensive in the older age groups and, for some applications, it may be sensible to exclude nursing home expenditure for the 'oldest old'. However, as total nursing home expenditure is included in the national accounts and AIHW health expenditure estimates as 'health expenditure', it is fully included in the Disease Costs and Impact Study (DCIS) estimates of disease costs.

There are quite substantial differences between the distribution of principal disabling conditions for nursing home residents and the distribution of principal diagnoses for patients transferring from hospitals to nursing homes. This is illustrated in Figure 4.1, which compares the 1993-94 estimates with the 1989-90 estimates. The latter have been inflated to add to the same total as the 1993-94 estimates to facilitate comparison of the relative changes. The revised methodology results in substantially higher expenditure attributed to:

- mental disorders;
- nervous system and sense organ conditions; and
- musculoskeletal conditions;

and substantially lower expenditure attributed to:

- neoplasms;
- injury and poisoning;
- symptoms, signs and ill-defined conditions; and
- V codes (other reasons for contact with health services).



4.3 Nursing home methodology in detail

4.3.1 Attribution to disease at ICD-9 chapter level

The 1993 ABS Survey of Disability, Ageing and Carers contained two questions which were used to map disability to disease. These related to (a) the main disabling condition and (b) the cause of the main disabling condition. The main disabling condition was defined as the health condition (disease or impairment) that caused the most problems (in terms of activity restriction). If only one condition was reported by the respondent, it was considered the main disabling condition. The responses to this question were coded to categories based on a condensed ICD-9 three-digit classification of disease, but codes were also included for a range of impairments such as brain injury, blindness, amputated leg, joint problem and speech problem.

Respondents were also asked the cause of the main disabling condition, and could specify a range of responses including:

- accident/injury
- working conditions
- disease/illness/hereditary (around 30 disease categories coded)
- war
- old age
- present at birth
- other
- don't know.

Preliminary analysis of the survey data indicated that where a person gave a disease as their main disabling condition (for example, arthritis, angina) they tended to give a 'determinant of disease' answer to the cause of condition question (for example, stress, old age). Where a person gave an impairment as an answer (for example, brain injury, blindness, amputation), they tended to give a disease or injury as the answer to the cause of condition (for example, AIDS, diabetes). Injury and perinatal conditions were only coded as responses to the cause question, and were not available as categories for the principal condition question.

It was clear from the survey data that some of the people who specified a disease (such as cancer or heart disease) in response to the principal condition question also specified a disease or injury in response to the cause question, and that some of these latter responses were inappropriate. For example, some respondents specifying cancer as the principal condition reported that it was caused by heart disease or motor vehicle accidents.

For each major disease category, experts were consulted to determine which main disabling conditions could be reasonably causally associated with diseases or injuries in that group. This advice was used to assist in assigning disabled people to 'Main health problem' categories as follows:

- (a) 'Main health problem' was initially specified as the main disabling condition.
- (b) People whose main disabling condition was a catch-all category (disability not elsewhere classified, not stated, or unknown), and who did not specify a disease or injury as the cause of the main disabling condition, were assumed to have underlying causes distributed in the same proportions as people who did specify a disease or injury as the underlying cause.
- (c) Where a 'reasonable' disease or injury category was specified as the cause of the main disabling condition, this was defined as the 'main health problem'.
- (d) People whose main disabling condition was an impairment and who did not specify a 'reasonable' disease or injury category were assumed to have 'main health problems' distributed in the same proportions as other people with that main disabling condition.

Attribution fractions for nursing home costs were calculated assuming that the Survey of Disability, Ageing and Carers provided a snapshot of the distribution of bed days by ICD-9 chapter, age and sex. The proportion of total expenditure attributable to Chapter c , sex s and age a is given by:

$$\alpha_{csa} = \frac{n_{csa}}{\sum_c \sum_s \sum_a n_{csa}} \quad (4.1)$$

where: n_{csa} = Estimated number of nursing home residents in Australia with age a , sex s and main health condition in ICD-9 Chapter c

Assumptions

- Nursing home expenditure is attributable to the main health condition resulting in disability.
- Nursing home bed days have the same average cost for all age-sex-disease categories.

Data sources

- 1993 ABS Survey of Disability, Ageing and Carers.

4.3.2 Attribution to disease at sub-chapter level

Expenditure allocated to the chapter level is apportioned to specific disease groups at the sub-chapter level according to the distribution of diagnosis for patients in that age-sex group who transfer from acute hospitals. Total separations for patients transferring from public and private hospitals in Australia in 1993–94 are compiled by age, sex and DCIS disease group for each Chapter c . The attribution fraction for age a , sex s and disease d at sub-chapter level of Chapter c , is given by:

$$\gamma_{c d s a} = \frac{(\text{Total separations to nursing homes for disease group } d, \text{ sex } s, \text{ age } a)}{(\text{Total separations to nursing homes for Chapter } c, \text{ sex } s, \text{ age } a)}$$

The total nursing home expenditure for disease d , sex s and age a , $NHEX_{d s a}$, is estimated by applying the relevant attribution fractions for ICD-9 chapter and, where applicable, for sub-chapter disease groups:

$$NHEX_{d s a} = \alpha_{c s a} \times \gamma_{c d s a} \times NHEX \quad (4.2)$$

where:

$NHEX$	=	Total nursing home expenditure for Australia
$\alpha_{c s a}$	=	Attribution fraction to Chapter c from Equation 4.1
$\gamma_{c d s a}$	=	Attribution fraction to the disease grouping d at sub-chapter level of Chapter c

Assumptions

1. Nursing home bed days for disease groups within ICD-9 chapters are distributed in the same way as the principal diagnoses of patients transferring from acute hospitals.

Data sources

1. AIHW National Hospital Morbidity Database 1993–94.

4.4 Differences from 1989–90 methodology

- The 1989–90 methodology attributed costs to disease on the basis of the principal diagnosis pattern for patients transferring to nursing homes from acute hospitals. The revised methodology uses the distribution of main disabling health conditions in nursing home residents in 1993 to attribute costs at ICD-9 chapter level. This distribution is substantially different (see Figure 4.1)
- The revised methodology uses the distribution of separations from acute hospitals to attribute costs at sub-chapter level. The 1989–90 methodology used the distribution of acute hospital bed days by principal diagnosis for patients transferred to nursing homes.

References

- Australian Bureau of Statistics (ABS) 1993. Disability, ageing and carers: summary of findings Australia 1993. ABS Cat. No. 4430.0. Canberra: ABS.
- Gillett S 1991. Interaction of acute care and long term care of the aged in Australia. AIHW, Internal Report.