

**Disease costing
methodology used in the
Disease Costs and Impact
Study 1993–94**

The Australian Institute of Health and Welfare is an independent health and welfare statistics and information agency in the Commonwealth Department of Health and Family Services portfolio. The Institute's mission is to inform community discussion and decision making through national leadership in the development and provision of authoritative and timely information on the health and welfare of Australians.

HEALTH AND WELFARE EXPENDITURE SERIES
Number 3

Disease costing methodology used in the Disease Costs and Impact Study 1993–94

**Colin Mathers, Chris Stevenson,
Rob Carter and Ruth Penm**

**Australian Institute of Health and Welfare
Canberra**

AIHW Cat. No. HWE 7

© Commonwealth of Australia 1998

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced without written permission from AusInfo. Requests and enquiries concerning reproduction and rights should be addressed to the Manager, Legislative Services, AusInfo, GPO Box 84, Canberra ACT 2601.

A complete list of the Institute's publications is available from the Publications Unit, Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601, or via the Institute's website at <http://www.aihw.gov.au>.

ISBN 0 642 24766 8

ISSN 1323-5850

Suggested citation

Mathers C, Stevenson C, Carter R, Penm R 1998. Disease costing methodology used in the Disease Costs and Impact Study 1993–94. AIHW cat. no. HWE 7. Canberra: Australian Institute of Health and Welfare (Health and Welfare Expenditure Series no. 3).

Australian Institute of Health and Welfare

Board Chair
Professor Janice Read

Director
Mr Richard Madden

Any enquiries about or comments on this publication should be directed to:

Colin Mathers
Australian Institute of Health and Welfare
GPO Box 570
Canberra ACT 2601
Phone: (02) 6244 1138

Published by the Australian Institute of Health and Welfare

Printed by Elect Printing

Contents

List of tables	vii
List of figures	ix
Preface	xi
Acknowledgments	xiii
1 Introduction and overview	1
1.1 The Disease Costs and Impact Study	1
1.2 The DCIS methodology	1
1.3 Cost of illness analysis	2
1.4 Indirect costs of disease.....	3
1.5 Estimation of direct costs.....	4
1.6 Attribution of costs to age–sex–disease groups.....	6
1.7 Disease categories used in the DCIS	12
1.8 Results.....	17
2 Hospital inpatients	21
2.1 Summary	21
2.2 Overview of hospital inpatient methodology	22
2.3 Acute hospital inpatient methodology in detail.....	24
2.4 Public psychiatric hospital methodology in detail	34
2.5 Data issues	34
2.6 Differences from 1989–90 methodology	35
3 Non-inpatient hospital services	37
3.1 Summary	37
3.2 Overview of non-inpatient methodology.....	37
3.3 Non-inpatient methodology in detail	38
3.4 Differences from 1989–90 methodology	41
4 Nursing homes.....	43
4.1 Summary	43
4.2 Overview of nursing homes methodology	43
4.3 Nursing homes methodology in detail.....	45
4.4 Differences from 1989–90 methodology	47

5 Medical services	49
5.1 Summary	49
5.2 Overview of medical services methodology.....	50
5.3 Medical services methodology in detail	51
5.4 Data issues	56
5.5 Differences from 1989-90 methodology	57
6 Dental services.....	59
6.1 Summary	59
6.2 Overview of dental services methodology	59
6.3 Dental services methodology in detail	60
6.4 Differences from 1989-90 methodology	62
7 Allied health services	63
7.1 Summary	63
7.2 Overview of allied health methodology.....	63
7.3 Allied health methodology in detail	65
7.4 Differences from 1989-90 methodology	70
8 Pharmaceutical drugs	71
8.1 Summary	71
8.2 Overview of pharmaceutical costs methodology.....	71
8.3 Pharmaceuticals methodology in detail	73
8.4 Data issues	82
8.5 Differences from 1989-90 methodology	83

List of tables

Table 1.1:	Total recurrent health expenditure 1993–94, by area of expenditure	5
Table 1.2:	Total recurrent health expenditure 1993–94, by DCIS area of expenditure.....	6
Table 1.3:	Summary of DCIS methodology, 1993–94	7
Table 1.4:	Classification system for diseases and injury at chapter level of ICD-9, 1993–1994	13
Table 1.5:	Classification of cancer sites in terms of ICD-9 codes for neoplasms	16
Table 1.6:	Classification system for cardiovascular disease, 1993–1994.....	17
Table 1.7:	Health system costs for cancers and other diseases, by ICD-9 chapter and health sector, 1993–94 (\$ million)	18
Table 2.1:	AN-DRG versions used for 1993–94 hospital morbidity data	24
Table 2.2:	AN-DRG cost weight components.....	25
Table 2.3:	Inpatient fractions (IFRAC) for 1993–94.....	28
Table 2.4:	Components of in-hospital medical expenditure for private patients	29
Table 2.5:	Relative weights for component private medical costs	30
Table 2.6:	Assumed variation of DRG cost components with length of stay for private patients	33
Table 2.7:	Hospital inpatient costs by ICD-9 chapter, 1989–90 and 1993–94	36
Table 3.1:	Total utilisation and costs of non-inpatient services, 1993–94	38
Table 3.2:	Mapping of National Health Survey cardiovascular disease codes to DCIS sub-groups.....	40
Table 5.1:	Item numbers from GP encounter data which do not appear on the Medicare Benefits Schedule	52
Table 5.2:	Specialist type and corresponding ICPC codes	54
Table 5.3:	New age groupings for application of attribution fractions	57
Table 6.1:	Fee charged for dental procedure	60
Table 6.2:	Classification of dental services.....	60

Table 7.1: Classification system for allied health practitioners	65
Table 8.1: Drug groups used in the DCIS	75
Table 8.2: Total prescriptions and expenditure for DCIS drug groups, 1993-94	77
Table 8.3: Allocation of over-the-counter expenditures for cardiovascular disease to DCIS sub-groups at sub-chapter level.....	81

List of figures

Figure 2.1: Overview of methodology for costing hospital inpatient services	23
Figure 2.2: Hospital inpatient costs by ICD-9 chapter, 1989-90 and 1993-94	35
Figure 4.1: Nursing home expenditure by ICD-9 chapter, 1989-90 and 1993-94	45
Figure 5.1: Overview of methodology for medical services expenditure.....	51
Figure 7.1: Overview of methodology for allied health services	64
Figure 8.1: Overview of pharmaceutical drugs methodology.....	73
Figure 8.2: Prescription and non-prescription drug costs by ICD-9 chapter, 1993-94	82
Figure 8.3: Comparison of estimated pharmaceutical expenditure by ICD-9 chapter for 1993-94 using the old (1989-90) methodology and the revised methodology	83

Preface

The Australian Institute of Health and Welfare (AIHW) started the Disease Costs and Impact Study (DCIS) in 1992, with funding from the Health Advancement Program of the then Commonwealth Department of Health, Housing, Local Government and Community Services and from the National Health and Medical Research Council (NHMRC). Originally conceived as part of a broader approach to evaluation and referred to as the Macro Economic Evaluation Model, it was headed by Rob Carter at the Institute. The Macro Economic Evaluation Model estimated the economic impact of specific diseases and disease groups in Australia in 1989–90, both in relation to direct costs to the health system and a range of indirect costs. The study also developed a set of summary measures of disease impact in terms of potential years of life lost and health service use.

The project produced a series of reports in support of the National Health Goals and Targets program and NHMRC analysis of the potential impact of various health problems and review of preventive screening interventions in clinical practice (AIHW 1993; AIHW & NCHPE 1993a, 1993b, 1993c). Following completion of these reports, which estimated various disease and risk factor costs for 1989–90, Rob Carter moved to the National Centre for Health Program Evaluation in Melbourne, but continued collaboration with the Institute on the project. Work commenced on a comprehensive accounting of disease costs across all chapters of the ICD-9 Classification of Diseases and it became apparent that there were areas where the methodology required revision. It was decided to undertake a systematic revision of the methodology to address known problems, to make use of newly available data collections and to include additional sectors of the health system.

The Institute has decided to approach disease costing as a satellite national account and is currently undertaking a project to develop an explicit satellite national accounts framework for health and welfare expenditure. In updating cost estimates to 1993–94 data, the Institute's DCIS has focused on the direct costs of health services, so that the disease costings form a disaggregation of national health expenditure. This report describes the revised methodology and identifies differences from the 1989–90 methodology.

During 1998 the Institute will publish three reports on disease costs for 1993–94:

- *Health System Costs of Disease and Injury in Australia 1993–94*
- *Health System Costs of Cancer in Australia 1993–94* (in collaboration with the National Cancer Control Initiative)
- *Health System Costs of Cardiovascular Disease and Diabetes in Australia 1993–94.*

Acknowledgments

The authors gratefully acknowledge the support and assistance of the following people who contributed to the preparation of this paper.

The revised methodology builds on the work carried out by members of the former Macro Economic Evaluation Model Project to develop the original methodology, particularly Rob Carter, Kathryn Antioch, Maneerat Pinyopusarerk, Anne-Marie Waters and Lyn Conway. The original methodology was developed with funding support from the National Health Advancement Program of the Commonwealth Department of Health, Housing, Local Government and Community Services and from the National Health and Medical Research Council. We also thank Professor Jeff Richardson for comments on this paper and the methodology.

We would like to acknowledge the valuable assistance of many Institute staff in providing advice on sources of data and analysis of data sets, particularly John Goss, Mark Cooper-Stanbury, Deborah Schofield, Tony Hynes, Simon Eckermann, Elizabeth Moss and Michael Cook.

We would also like to gratefully acknowledge the assistance of the Family Medicine Research Unit of the University of Sydney in providing a copy of all data contained in the 1990–91 Survey of Morbidity and Treatment in General Practice in Australia and helpful advice.