

7 > Health expenditure

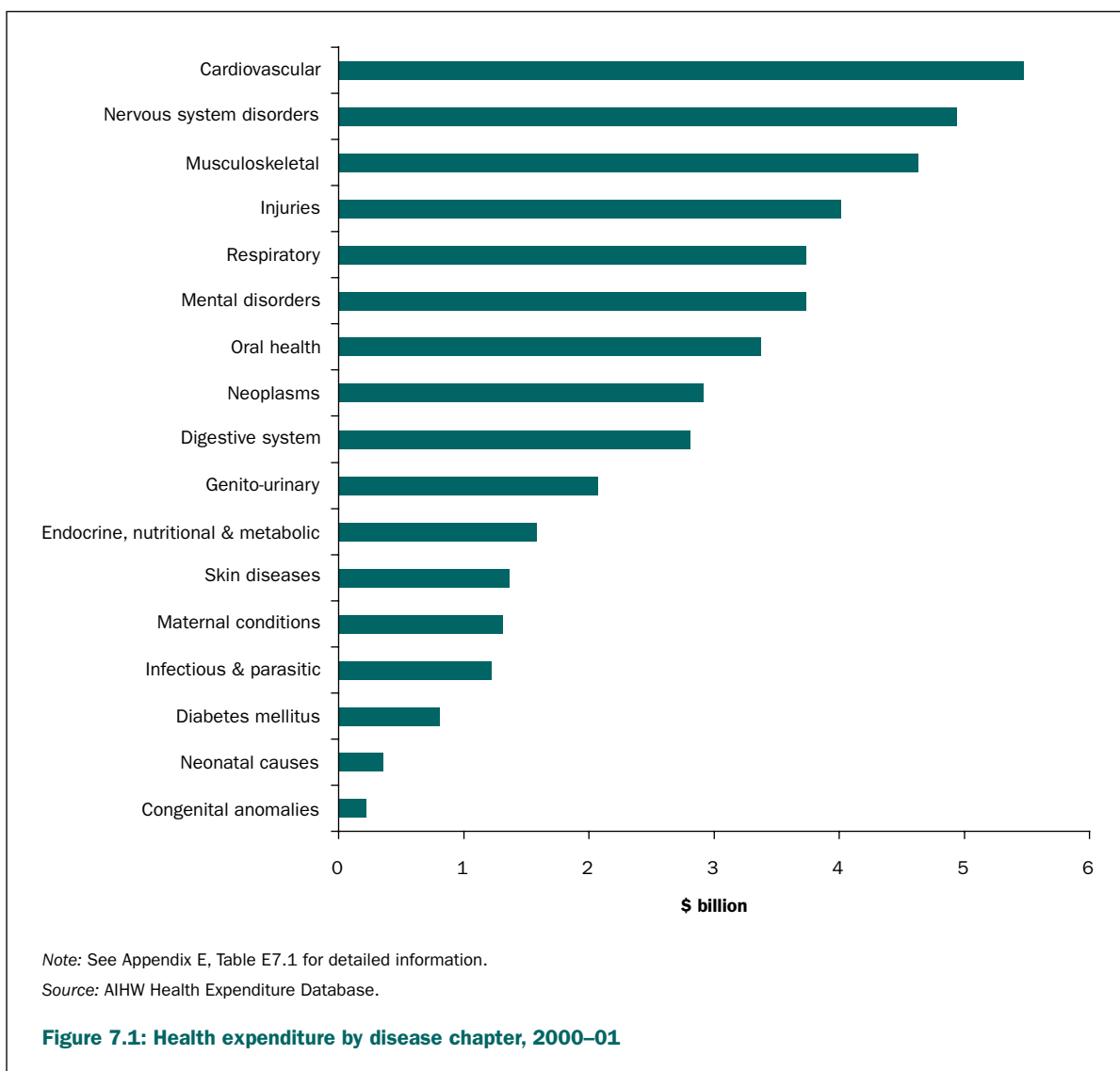
KEY POINTS

- Arthritis and musculoskeletal conditions accounted for the third largest component of health expenditure in Australia in 2000–01, with an estimated expenditure of \$4.6 billion.
- These high costs mainly are due to the long duration, high levels of associated disability and widespread prevalence of these diseases and conditions within the population.
- Hospital services accounted for the largest proportion (40%) of expenditure for arthritis and musculoskeletal conditions, followed by out-of-hospital medical services (19%).
- Between 1993–94 and 2000–01, the expenditure for arthritis and musculoskeletal conditions has increased at an average annual rate of 4.3%. The greatest growth in expenditure was for pharmaceuticals.
- Combined expenditure for osteoarthritis, rheumatoid arthritis and osteoporosis alone was \$1.6 billion in 2000–01. Osteoarthritis expenditure accounted for 26% of the expenditure for arthritis and musculoskeletal conditions, followed by rheumatoid arthritis (5%) and osteoporosis (5%).
- Hospital services accounted for the greatest component of expenditure on osteoarthritis (48%), followed by aged care homes (23%).
- The expenditure for rheumatoid arthritis was relatively similar across the various health care sectors except on research.
- Expenditure on osteoporosis was mainly for post-fracture treatment and the ongoing need for care; pharmaceuticals accounted for the largest component followed by aged care homes.

Chapters 2 to 6 have provided an overview of arthritis and musculoskeletal conditions and their impact in terms of morbidity, disability and mortality in Australia. They also described the range of health services accessed for their management. This chapter provides an overview of the expenditure made to purchase these services.

Health expenditure here refers to costs incurred for the prevention, diagnosis and treatment of arthritis and musculoskeletal conditions. It also covers expenditure for the rehabilitation of people with these diseases and conditions. Funding for these services comes from both government sources and from non-government sources (including from private health insurance and individuals). This chapter does not cover non-health-care costs or indirect costs that accrue to patients, such as travel costs, social and economic burden on carers and family, and lost wages. Intangibles such as reduced quality of life are not given a monetary value either.

Australia spent \$60.9 billion on health services in 2000–01, almost 9.1% of its GDP at an average cost of \$2,602 per person (AIHW 2004). Arthritis and musculoskeletal conditions constituted the third largest component of this expenditure, after cardiovascular diseases and nervous system disorders (Figure 7.1), with an estimated expenditure of \$4.6 billion (AIHW 2005). This equates to 9.2% of allocated health expenditure. Their long duration, high levels of disability and reduced functionality, in combination with their common prevalence, result in high costs for these conditions (Harris et al. 1998; AIHW: Mathers & Penm 1999; Access Economics 2001a, b; 2005).



Allocation of expenditure

Disease-specific health expenditure is usually calculated by classifying the health care industry into distinct operational areas such as hospitals, aged care homes, out-of-hospital medical services, other professional services, pharmaceuticals, research etc. (Table 7.1). Expenditure on most community and public health services, administration, transportation of patients and health aids are not allocated by disease.

The expenditure data is a satellite account of the national health accounts. The estimates are derived by health care sector using information drawn from a variety of data sources. These numbers are then aggregated to produce an estimate of total expenditure.

The Australian Institute of Health and Welfare (AIHW) has analysed expenditure by disease for the financial years 1993–94 and 2000–01 (AIHW: Mathers et al. 1998a; AIHW 2005). The estimates given here are drawn from this database.

The methodology used to derive 2000–01 estimates was consistent with that used for 1993–94 (AIHW: Mathers et al. 1998b), thus allowing objective comparisons between the two sets of estimates. Health inflation adjustments have been made to allow for differences between the two financial years. The estimates by disease have allocated around 87.5% of total recurrent health expenditure in 2000–01. Expenditure not allocated by disease includes capital expenditure, expenditure on community health (except community mental health), public health programs (except cancer screening programs), health administration and health aids and appliances.

Table 7.1: Areas of health expenditure, 2000–01

Sector	Service	Type of information	Data source
Hospital care	Admitted patients	Admitted patient care	National Hospital Morbidity Database
	Non-admitted patients	Accident and Emergency, Outpatients specialist services	ABS National Health Surveys
Aged care	Aged care homes		ABS Surveys of Disability, Ageing and Carers
Pharmaceuticals	Prescription drugs	Type of medications Frequency	Pharmaceutical Benefits Scheme, BEACH survey
	Over-the-counter drugs	Type of medications	ABS National Health Surveys
Out-of-hospital medical services	General practitioners	Consultations	BEACH survey, Medicare data
	Private specialists	Consultations	BEACH survey, Medicare data
	Pathology, radiology etc.	Type of tests	BEACH survey, Medicare data
Other professional services	Allied health and alternative health practitioners	Physiotherapists Chiropractors	ABS National Health Survey, BEACH survey
Research	Medical and health research	Research activity	ABS Research and Experimental Development surveys

Note: All sectors use the AIHW Health Expenditure Database as a data source.

Sources: AIHW 1998a, 2005.

Expenditure by health care sector

The composition of expenditure for arthritis and musculoskeletal conditions (\$4.6 billion in 2000–01) by health care sector (Figure 7.2) was different from that for other disease groups (AIHW 2005). Out-of-hospital medical services and services provided by other health professionals cost proportionately more for arthritis and musculoskeletal conditions than for other disease groups. This pattern of expenditure is in line with the debilitating and painful nature of these diseases and conditions, which often requires long-term treatment and professional advice on management.

Hospital services: The utilisation of hospital-based services for arthritis and musculoskeletal conditions cost \$1.8 billion in 2000–01. A large proportion of this expenditure was on admitted patient care. In relative terms, however, the proportion of admitted patient expenditure for arthritis and musculoskeletal conditions (27.8%) was lower, compared with its proportion in the health expenditure overall (34.6%). Out-of-hospital medical services expenditure ranked the highest for people with arthritis and musculoskeletal conditions.

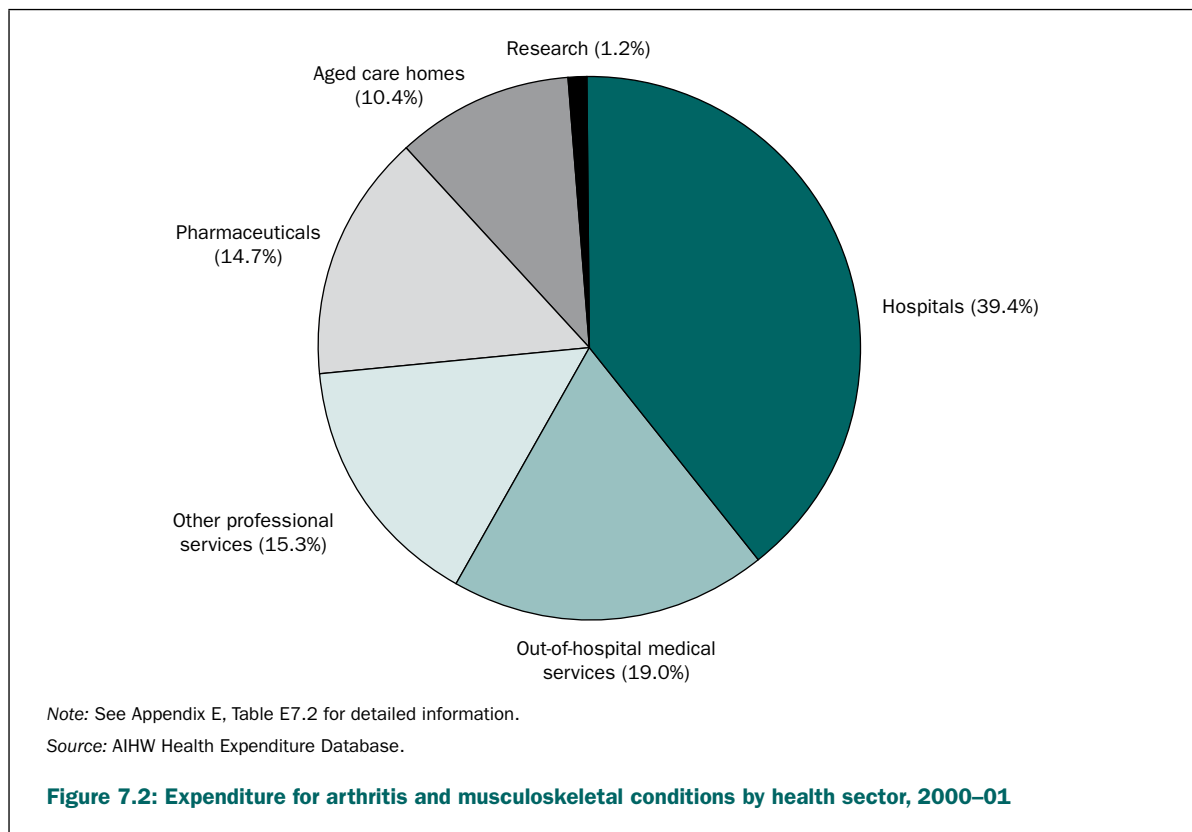
Aged care homes: The expenditure on aged care homes (high-level residential aged care) was \$482.2 million, or 10.4% of the total estimated expenditure for arthritis and musculoskeletal conditions. The proportional expenditure was higher than that observed in overall health expenditure (7.8%). Arthritis and musculoskeletal conditions contribute much to disability in higher age groups, resulting in a greater level of dependency. This is reflected in the aged care home expenditure.

Pharmaceuticals: Both prescription and over-the-counter drugs are large ticket items for arthritis and musculoskeletal conditions. Pharmaceuticals accounted for 14.7% of the expenditure in 2000–01, slightly lower than the proportion in overall health expenditure that year. Over two-thirds of the expenditure was for prescription drugs, a lower proportion than that noted generally.

Out-of-hospital medical services: As mentioned earlier, out-of-hospital medical services costs are high for arthritis and musculoskeletal conditions. A total of \$878.7 million was spent on services used in this sector, the largest amount spent for any disease group in Australia in 2000–01. The expense constituted 19.0% of total expenditure for arthritis and musculoskeletal conditions in that year. In addition to consultations with general practitioners (GPs) and specialists, this component of expenditure covers diagnostic services such as medical imaging and pathology tests.

Other professional services: Services provided by other health professionals including allied health cost \$709.7 million in 2000–01—more than 15.0% of the total expenditure for arthritis and musculoskeletal conditions. A large component of allied health services is physiotherapy services. Other professional services include consultations with chiropractors, osteopaths, podiatrists etc.

Research: Research related to arthritis and musculoskeletal conditions accounted for a small proportion (1.2%) of the total expenditure for arthritis and musculoskeletal conditions. In contrast, 2.4% of the overall health expenditure is allocated to research. This is research conducted by universities and other institutions to understand the cause, extent and impact of arthritis and musculoskeletal conditions, and to further develop and evaluate new and existing treatment methods and public health interventions.



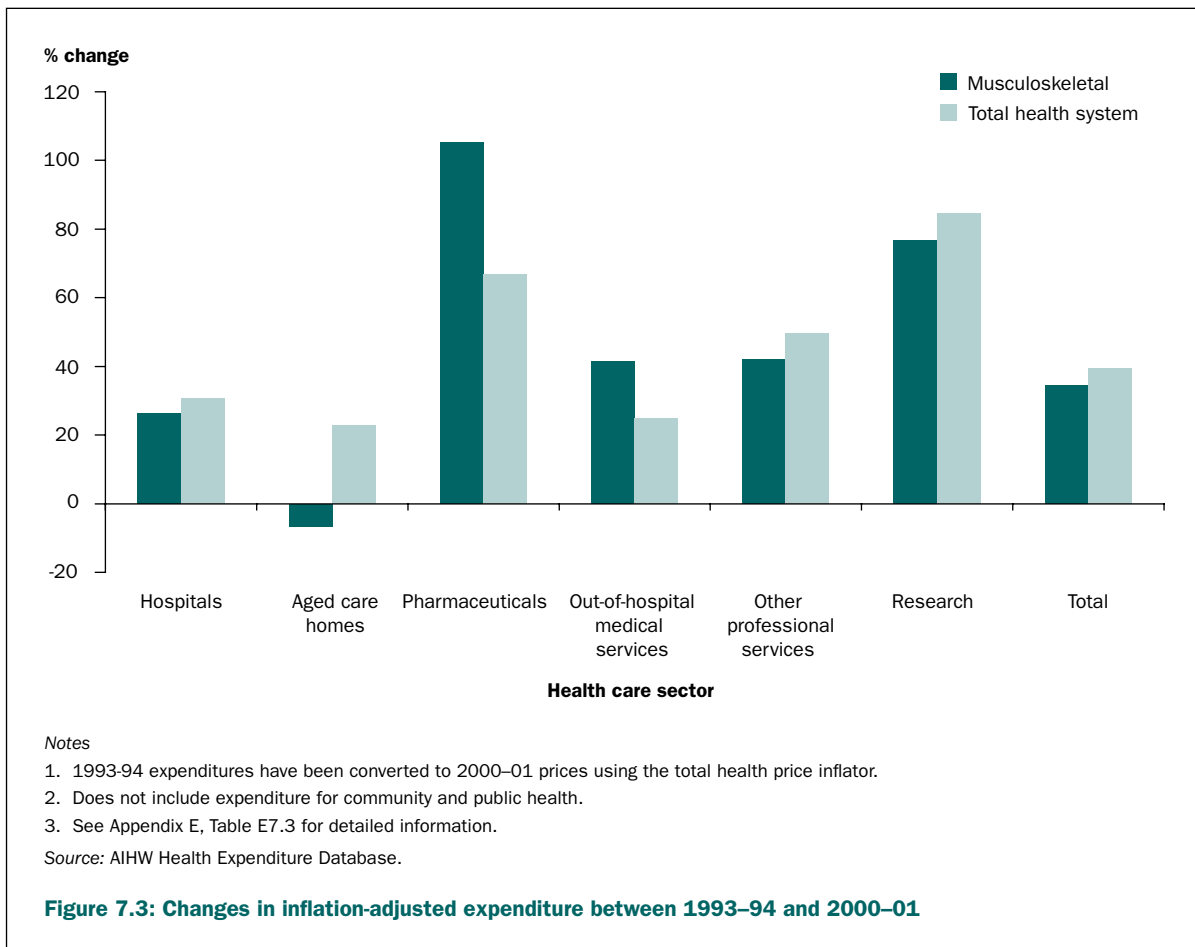
Trends over time

The health expenditure for arthritis and musculoskeletal conditions is on the increase in real terms. Adjusting for health price inflation, health expenditure on these conditions in 1993-94 (in 2000-01 prices) was \$3.4 billion. The estimated expenditure of \$4.6 billion in 2000-01 for these conditions was an average annual increase of 4.3% over eight years. In addition to population ageing and population growth, innovations in surgical techniques, pharmaceuticals and biomedical devices have also contributed to the increase.

The changes in health expenditure for arthritis and musculoskeletal conditions between 1993-94 and 2000-01 showed a high degree of inter-sectoral variability (Figure 7.3). The largest increase was for pharmaceuticals, 105.3% over eight years. High growth was also noted for research, other professional services, out-of-hospital medical services and hospitals. In contrast, expenditure in aged care homes fell between the two periods.

The decrease in aged care home expenditure is partly attributable to the current trend of deinstitutionalisation, both for disability and aged care services. The proportion of people living in cared accommodation, and reporting arthritis or a musculoskeletal condition as their main disabling condition, declined from 1.1% to 0.7% between 1998 and 2003 (ABS 2004).

The increase in expenditure for arthritis and musculoskeletal conditions was relatively smaller than growth in health expenditure overall between 1993-94 and 2000-01 (Figure 7.3). The annual growth in inflation-adjusted expenditure for all diseases in that period was 4.9%, compared with the average rate of 4.3% for arthritis and musculoskeletal conditions. This differential emerged despite much faster expenditure growth for pharmaceuticals and out-of-hospital medical services for arthritis and musculoskeletal conditions. A fall in expenditure on aged care services may have depressed the growth in expenditure.



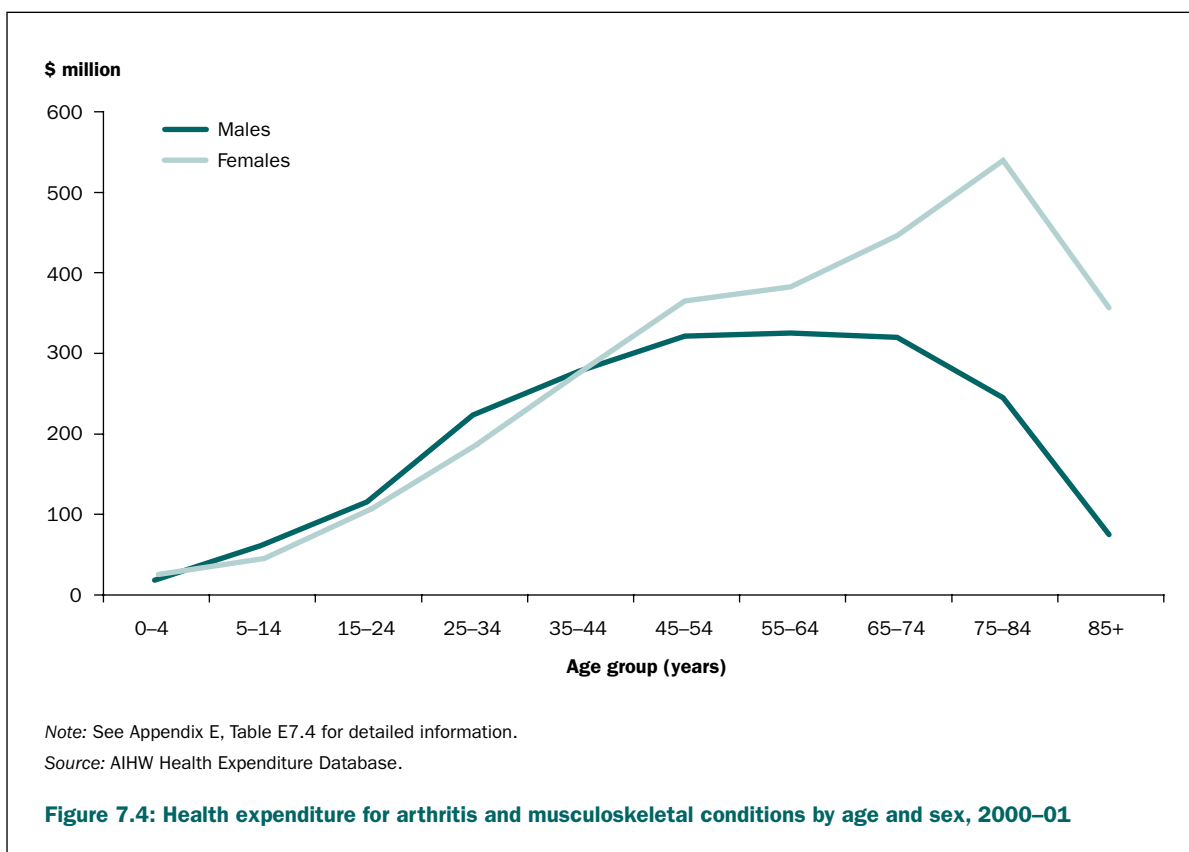
Factors affecting trends in health expenditure

Several different reasons may be offered as explanations for growth in the expenditure for arthritis and musculoskeletal conditions. While some of this increase would be in tandem with general increase in health system costs, certain factors may have played a bigger role in costs for arthritis and musculoskeletal conditions. Prominent among these are new but more costly prescription drugs and greater uptake of knee and hip replacement procedures.

Nonetheless, the growth in expenditure for arthritis and musculoskeletal conditions was lower than that for health expenditure overall. Reasons for this include reduction in the length of stay in hospitals and a greater emphasis on both treatments outside the hospital as well as deinstitutionalisation.

Expenditure by age and sex

Health expenditure is a function of disease prevalence by age and sex. The age-related increase in prevalence for arthritis and musculoskeletal conditions is reflected in health expenditure (Figure 7.4). The expenditure increases steadily with age, in both sexes, to the age of 55-64. From then on, the expenditure for males begins to decline. The expenditure for females peaks in the 75-84 age group.



Expenditure by type of arthritis or musculoskeletal condition

The AIHW Health Expenditure Database categorises arthritis and musculoskeletal conditions into six broad groups, namely osteoarthritis, chronic back pain, slipped disc, rheumatoid arthritis, osteoporosis, and other musculoskeletal conditions. The other musculoskeletal conditions accounted for 45.7% of the health expenditure in 2000-01 (Table 7.2).

Table 7.2: Health expenditure by type of arthritis or musculoskeletal condition, 2000-01

Disease group	Expenditure (\$ million)	Per cent
Osteoarthritis	1,183.0	25.5
Chronic back pain	566.9	12.2
Slipped disc	298.5	6.4
Rheumatoid arthritis	246.2	5.3
Osteoporosis	220.6	4.8
Other musculoskeletal conditions	2,118.0	45.7
Total	4,633.3	100.0

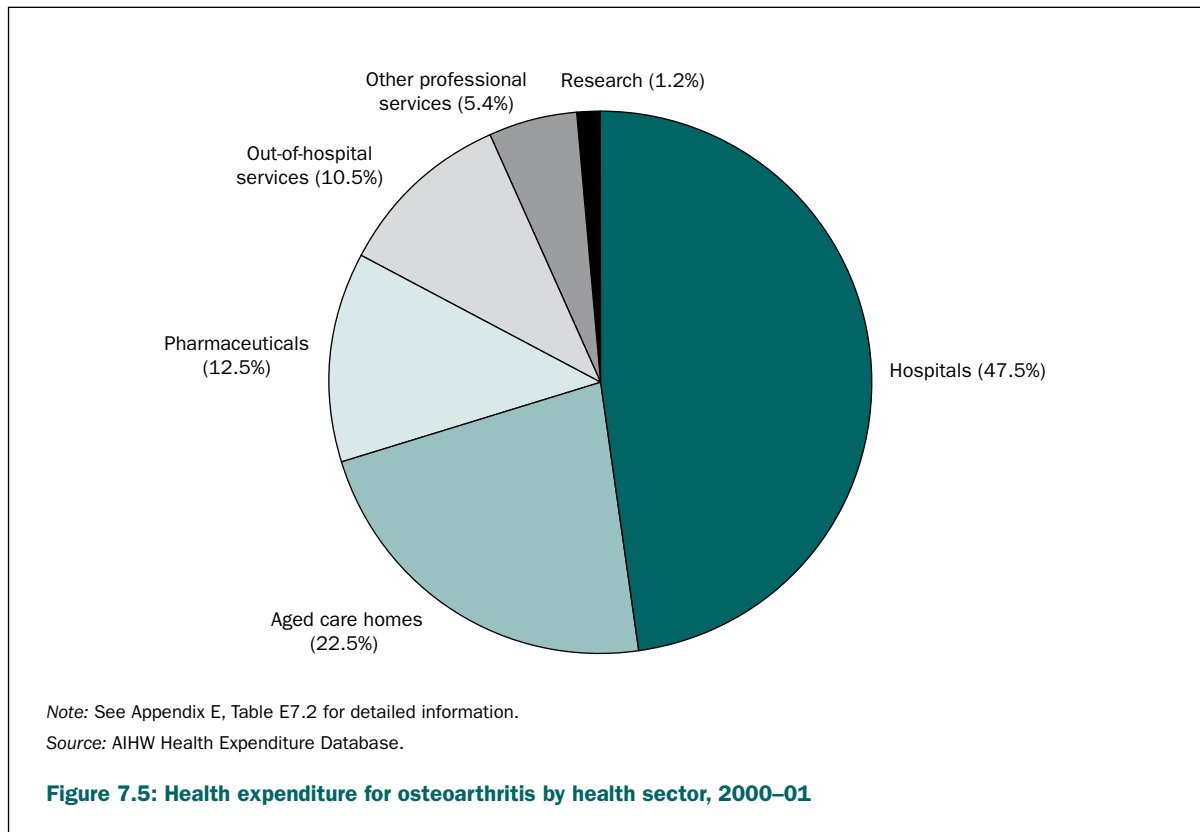
Source: AIHW Health Expenditure Database.

Osteoarthritis accounted for one-quarter of the total expenditure of \$4.6 billion in 2000-01 on arthritis and musculoskeletal conditions, followed by that for chronic back pain and slipped disc. Rheumatoid arthritis and osteoporosis accounted for much smaller proportions.

The three focus areas of osteoarthritis, rheumatoid arthritis and osteoporosis accounted for a total of \$1.6 billion, or 35.6% of the overall expenditure for arthritis and musculoskeletal conditions, in 2000-01. Osteoarthritis-related expenditure was the largest component (25.5%), followed by that for rheumatoid arthritis (5.3%) and osteoporosis (4.8%).

Osteoarthritis

An estimated \$1.2 billion was spent on osteoarthritis, representing 25.5% of the total expenditure on arthritis and musculoskeletal conditions in 2000–01. Hospital services accounted for the largest portion of expenditure for osteoarthritis, followed by that for aged care homes and pharmaceuticals (Figure 7.5).



Hospital services: The greatest cost incurred for osteoarthritis was for hospital services. More than 87% of this expenditure was for admitted patient costs. In 2000–01, there were 57,444 hospital separations with the principal diagnosis of osteoarthritis, with an average length of stay (ALOS) of 6.1 days. A large proportion of these separations were for joint replacement surgery (March & Bagga 2004); the high costs associated with these procedures are reflected in overall numbers. Nonetheless, joint replacement surgery is a highly cost-effective treatment for osteoarthritis and results in a reduction in expenditure that would otherwise occur in the other health service areas. In 2000–01, over 30,400 total hip and knee arthroplasty procedures were performed in Australian hospitals. Of these, more than 86% of hip arthroplasty and 94% of knee arthroplasty procedures were performed on people with the principal diagnosis of osteoarthritis.

Aged care homes: Aged care homes accounted for the second largest portion of health expenditure for osteoarthritis. This partly reflects the higher prevalence of osteoarthritis in persons who reside in aged care homes.

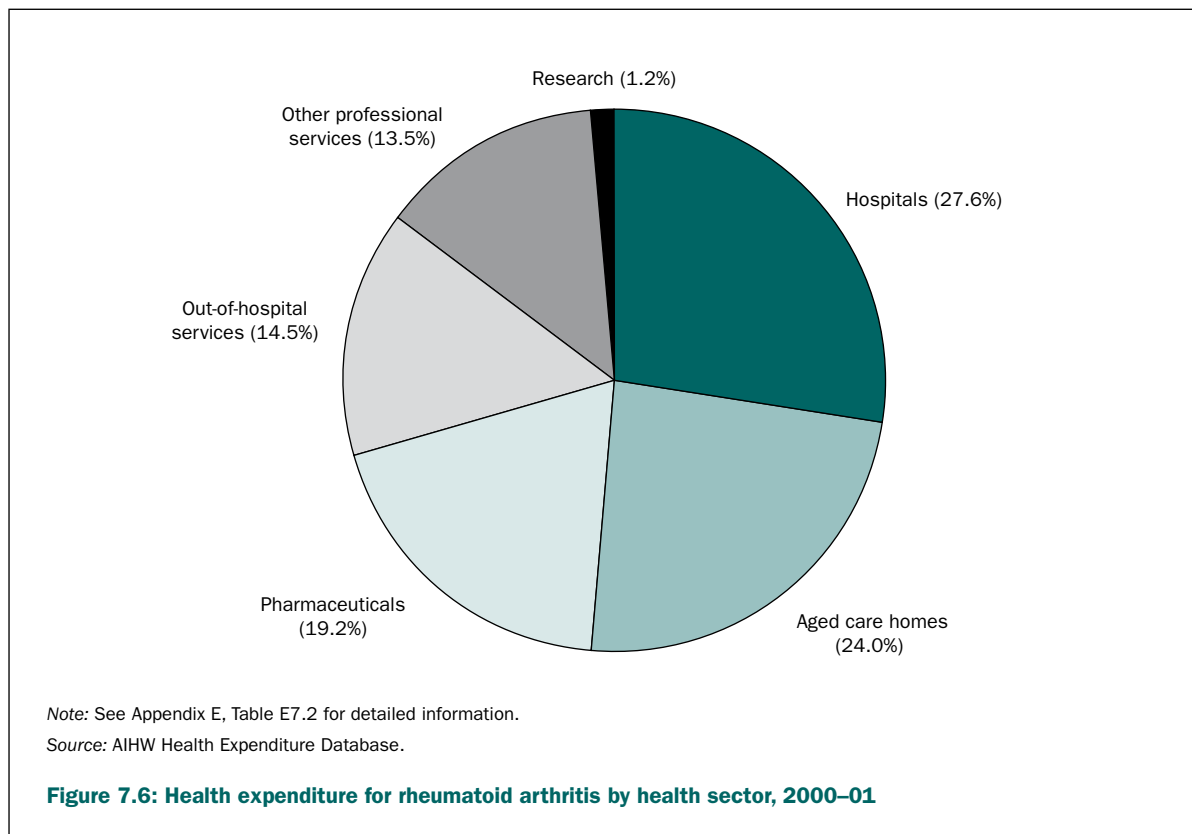
Pharmaceuticals and biologics: The management of osteoarthritis, which focuses on controlling pain and improving health-related quality of life, is commonly achieved through medication. In 2000–01, more than 92% of GP encounters for osteoarthritis prescribed, advised or supplied medication to manage the condition. Anti-inflammatory drugs, such as COX-2 inhibitors were the most commonly prescribed or advised, followed by paracetamol.

Out-of-hospital medical services: In 2000–01, osteoarthritis was the tenth most frequent problem managed by GPs (1.7% of all problems managed). Radiology and consultations with specialists were other major contributors to these expenses (AIHW: Britt et al. 2001).

Other professional services: Physiotherapy is commonly recommended for osteoarthritis. According to the 2001 NHS, 22.5% of people with osteoarthritis had consulted an allied or other health professional in the previous two weeks.

Rheumatoid arthritis

An estimated \$246 million was spent on rheumatoid arthritis, representing 5.3% of the total expenditure for arthritis and musculoskeletal conditions in 2000–01. The expenditure was relatively evenly distributed across various health care sectors, except research (Figure 7.6). The treatment for rheumatoid arthritis is long term and provided in a variety of settings, resulting in service utilisation across most of the health care sectors. This is reflected in the health expenditure pattern.



Hospital services: The largest component of expenditure for rheumatoid arthritis was for hospital services. However, almost two-thirds of this expenditure was for non-admitted patient services, provided by hospitals through outpatient clinics, emergency departments and a range of other specialised services (AIHW 2004).

Aged care homes: Aged care homes accounted for the second largest proportion of health expenditure for rheumatoid arthritis, reflecting the highly disabling nature of the disease and its increased prevalence in older age groups. Almost 85% of the expenditure in this sector was for females aged 65 and over.

Pharmaceuticals: The treatment for rheumatoid arthritis is changing, and with it the expenses for drugs. Medicines commonly prescribed or advised include disease-modifying anti-rheumatic drugs (DMARDs), non-steroidal anti-inflammatory drugs (NSAIDs) and low-dose corticosteroids.

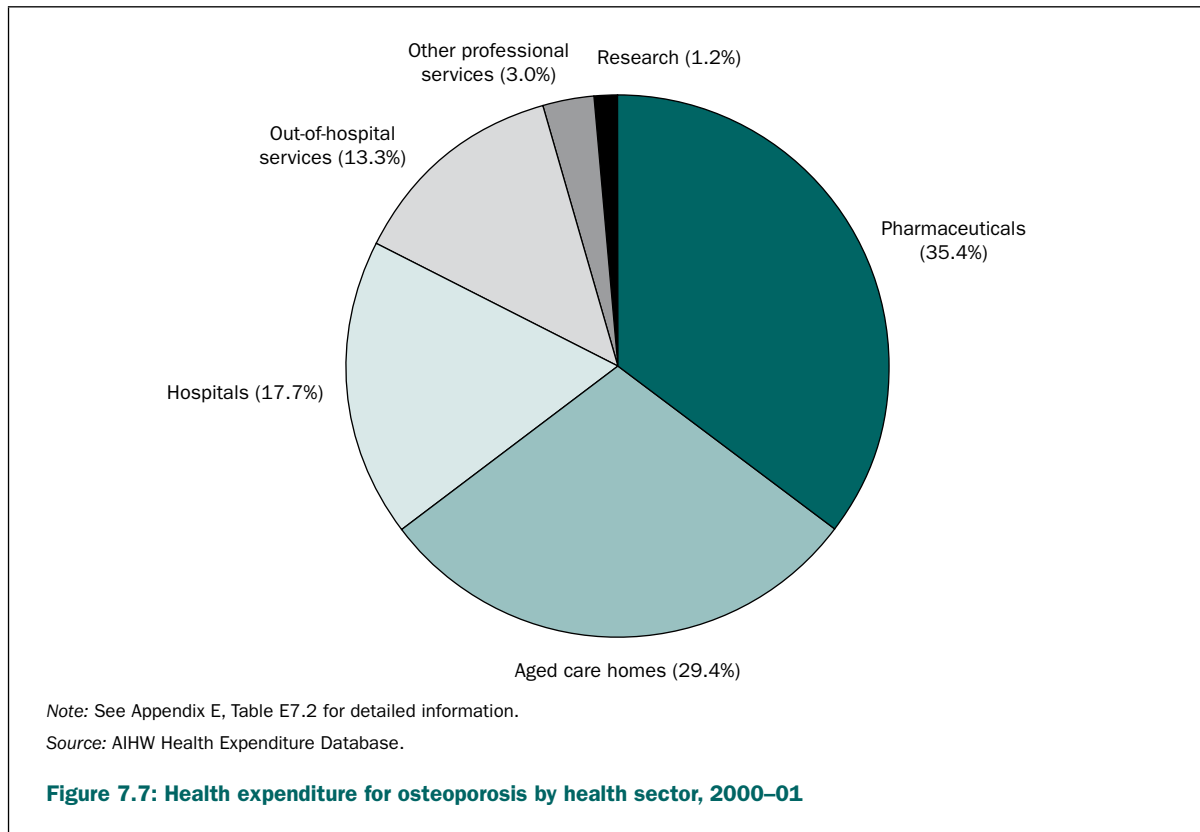
Out-of-hospital medical services: GPs are commonly consulted at the first stage of rheumatoid arthritis management. From this point, however, the treatment may continue in consultation with the GP or, more commonly, the patient is referred to a rheumatology clinic or specialist.

Other professional services: Consultations with physiotherapists and other allied health professionals are also common. Based on the 2001 NHS, 25.6% of people with rheumatoid arthritis had consulted an allied or other health professional within the previous two weeks of the survey. The proportion was slightly higher than that reported by people with osteoarthritis during the same survey.

Osteoporosis

In 2000–01, an estimated \$221 million was spent on osteoporosis, representing 4.8% of the total expenditure for arthritis and musculoskeletal conditions. Post-fracture treatment and the ongoing need for care accounted for most of the osteoporosis costs.

Of diagnosed fractures, hip fractures are probably the most debilitating and costly (Randell et al. 1995). Vertebral fractures also have comparatively high costs due their common occurrence among persons with osteoporosis (Gill et al. 2002). In 2000–01, pharmaceuticals accounted for the greatest proportion of the expenditure for osteoporosis, followed by expenditure on aged care homes and hospital services (Figure 7.7). The hospital-based treatment costs for osteoporotic fractures constituted a comparatively smaller component.



Pharmaceuticals: The pharmaceutical treatment of diagnosed osteoporosis and osteoporotic fractures comprised the largest proportion of expenditure. Of this, 96.7% was for prescription medications. In 2000–01, in more than 87% of GP encounters for osteoporosis, medication was prescribed, advised or supplied to prevent both the development of osteoporosis and further bone loss and to reduce fracture risk. The bisphosphonate, alendronate, was the most widely prescribed or advised medication, accounting for 33.2% of total prescriptions for osteoporosis. This was followed by calcium carbonate, which contributed 20.8% to the total.

Aged care homes: Aged care homes were the second biggest component of health system expenditure for osteoporosis. Of this, 96.3% was for older females reflecting the higher prevalence of osteoporosis in older age groups and in females.

Bone fracture, an adverse outcome of osteoporosis, plays a large role in the level of expenditure for aged care homes. Of these, hip fractures are probably the most debilitating and costly. It is estimated that up to 50% of those who experience a hip fracture never return to their pre-fracture health status (Gill et al. 2002). In 2000–01, 14.6% of community-based patients aged 55 and over who were admitted to hospitals for osteoporotic hip fractures, were discharged to an aged care home. It is estimated that 20–26% of people with hip fractures are permanently admitted to an aged care institution (DHFS 1996). In comparison, only 5% of older people without a hip fracture are institutionalised (Cumming et al. 1996).

Hospital services: Hospital services accounted for the third largest proportion of allocated health expenditure for osteoporosis. Most of this expenditure (81.7%) was for admitted patient care. There were just over 4,000 hospital separations for patients aged 55 and over with an osteoporotic fracture, at an average length of stay of 13.4 days in 2000–01. Over 39% of the separations were for hip fracture.

Out-of-hospital medical services: Visits to GPs commonly occur following a minor or non-hip fracture, with GPs often providing advice on the treatment and management of osteoporosis. In addition, discharge of public patients with non-hip fractures are commonly followed up by the GP (Harris et al. 1998).

Other professional services: In 2000–01, other professional services, including those provided by allied health professionals, accounted for the second lowest proportion of osteoporosis-related health expenditure. Based on the 2001 NHS, about 22% of people with osteoporosis had consulted an allied or other health professional within two weeks of the survey. Following discharge of private patients with either hip or non-hip fractures to private homes, these people will have at least one outpatient clinic appointment for physiotherapy and one orthopaedic outpatient clinic visit (Harris et al. 1998). In aged residences, patients who experience a hip fracture were more likely to receive physiotherapy and occupational therapy compared with any other fracture type (Zimmerman et al. 2002).

Variation in health expenditure between focus areas

Osteoarthritis, rheumatoid arthritis and osteoporosis show not only significant variation between them in total expenditure—reflecting differences in prevalence, duration, disease severity and age distribution—but also variation in expenditure by health care sector. Essentially, the three focus areas have unique expenditure patterns.

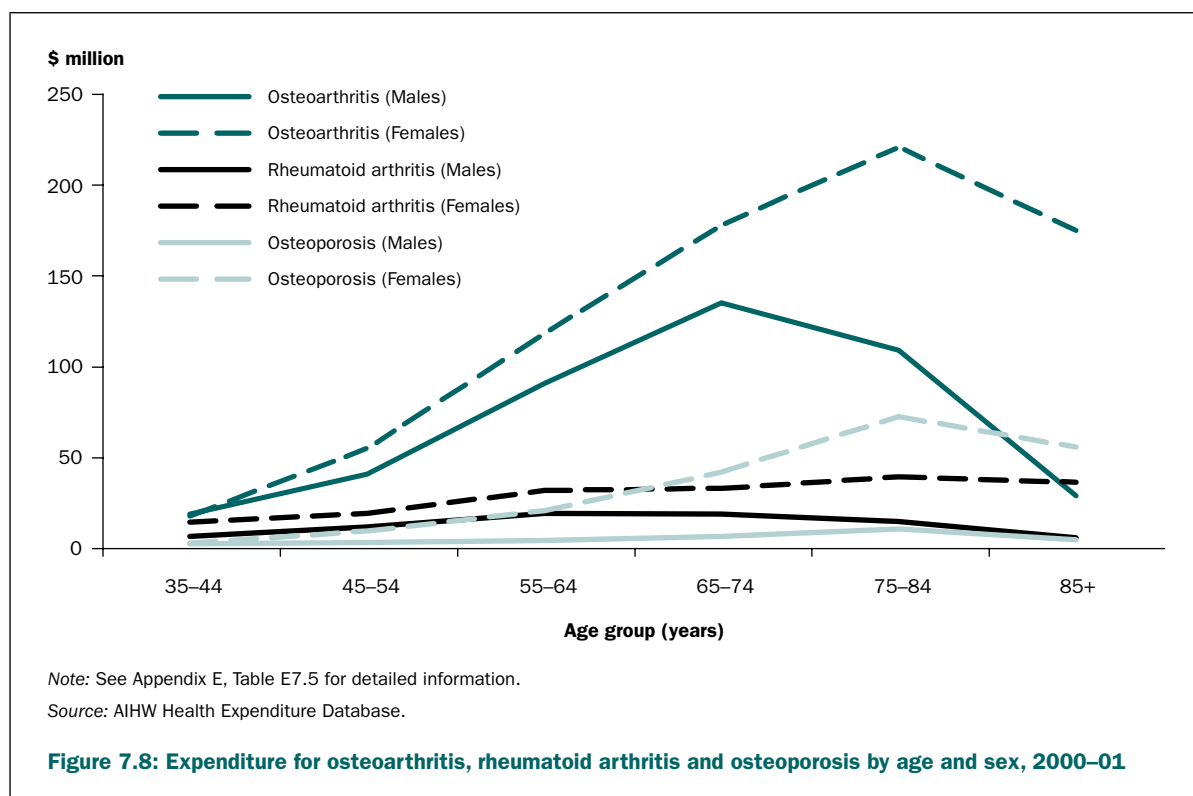
Age and sex are strong predictors of health expenditure in all three focus areas. The highest expenditure in any age group was for females with osteoarthritis, with the cost rising steeply from the age of 75 (Figure 7.8). Expenditure for osteoarthritis was also high among males. These high expenditures for osteoarthritis reflect greater and increasing prevalence with age, particularly for females.

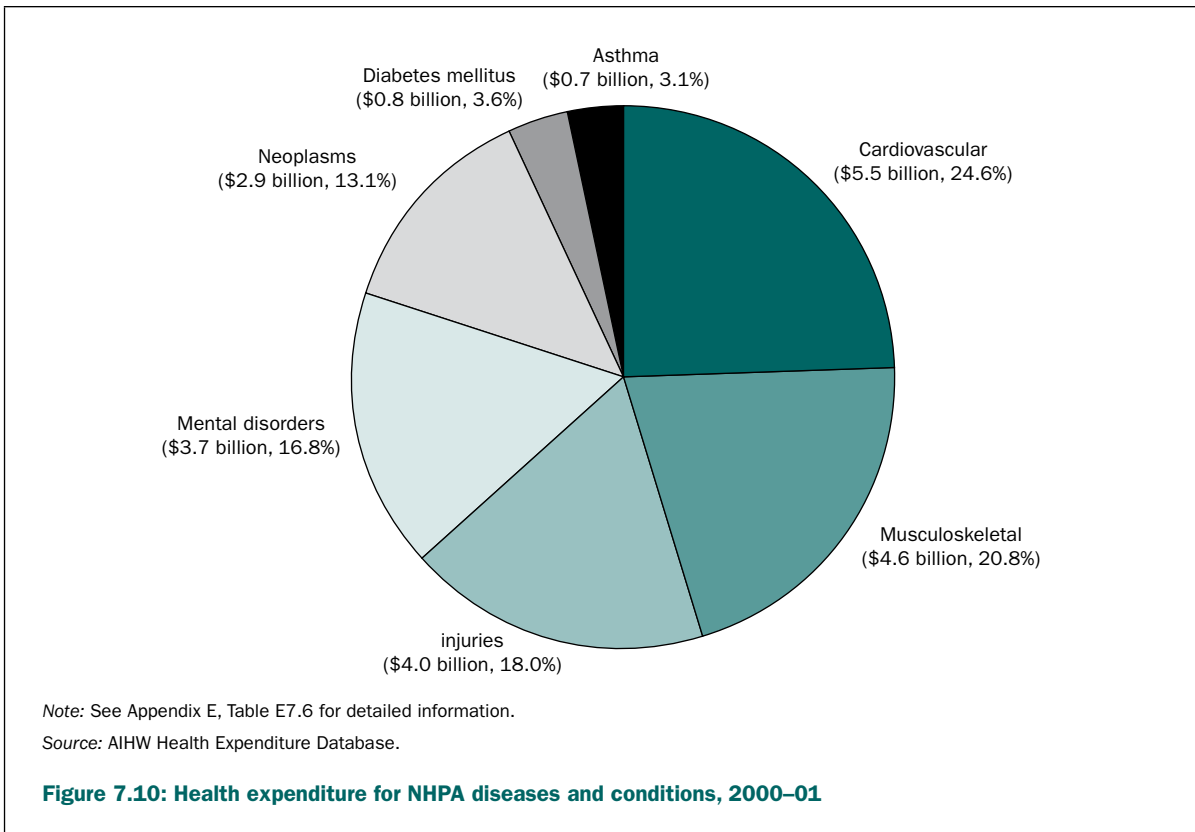
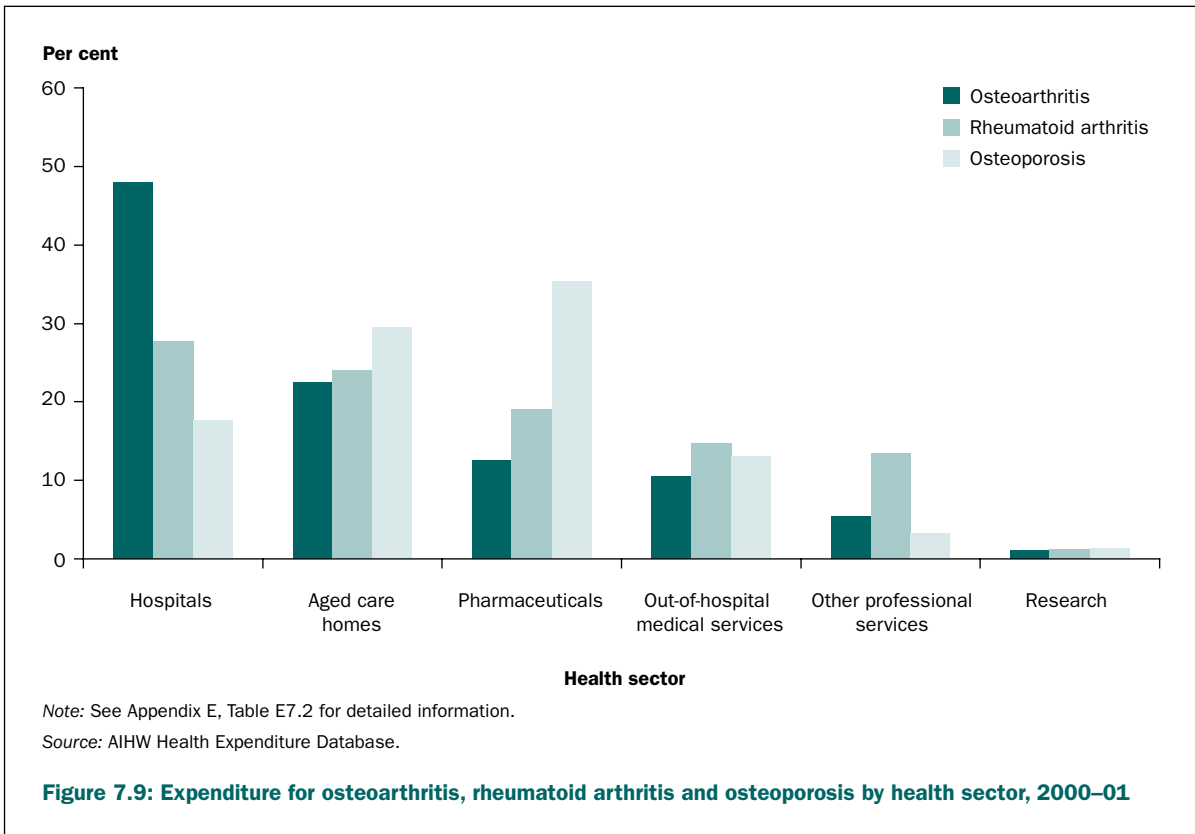
Expenditure for females with osteoporosis and rheumatoid arthritis was also high. The greater expenditure for females mirrors sex differences in prevalence for these conditions.

These age-sex-prevalence related differences in expenditure are also reflected in variation in expenditure by health care sector. While hospital services cost the most for osteoarthritis and rheumatoid arthritis, pharmaceuticals topped the list for osteoporosis. On the other hand, aged care was a much larger component of expenditure for osteoporosis and rheumatoid arthritis (Figure 7.9).

Comparisons with other National Health Priority Areas

In comparison with other National Health Priority Areas (NHPAs), the expenditure on arthritis and musculoskeletal conditions is relatively high (AIHW 2004; AIHW: Dixon 2005). The seven NHPAs of cardiovascular health, cancer control, injury prevention and control, mental health, arthritis and musculoskeletal conditions, diabetes mellitus, and asthma, together accounted for \$22.3 billion, or 44.4% of allocated health system expenditure in 2000–01. Of these, cardiovascular diseases were responsible for \$5.5 billion and musculoskeletal conditions for a total of \$4.6 billion. In comparison, diabetes and asthma cost \$0.8 billion and \$0.7 billion, respectively (Figure 7.10).





References

- ABS (Australian Bureau of Statistics) 2004. Disability, ageing and carers: summary of findings, Australia, 2003. ABS Cat. No. 4430.0. Canberra: ABS.
- Access Economics 2001a. The burden of brittle bones: costing osteoporosis in Australia. Canberra: Access Economics.
- Access Economics 2001b. The prevalence, cost and disease burden of arthritis in Australia. Canberra: Access Economics.
- Access Economics 2005. Arthritis the bottom line – the economic impact of arthritis in Australia. Canberra: Access Economics.
- AIHW (Australian Institute of Health and Welfare) 2004. Australia's health 2004. AIHW Cat. No. AUS 44. Canberra: AIHW.
- AIHW 2005. Health system expenditure on disease and injury in Australia, 2000–01. Second ed. AIHW Cat. No. HWE 26. Canberra: AIHW.
- AIHW: Britt H, Miller GC, Knox S et al. 2001. General practice activity in Australia 2000–01. AIHW Cat. No. GEP 8. Canberra: AIHW.
- AIHW: Dixon T 2005. Costs of diabetes in Australia, 2000–01. AIHW Bulletin No. 26. Canberra: AIHW.
- AIHW: Mathers C, Penm R, Carter R et al. 1998a. Health system costs of diseases and injury in Australia 1993–94. AIHW Cat. No. HWE 5. Canberra: AIHW.
- AIHW: Mathers C, Stevernsen C, Carter R et al. 1998b. Disease costing methodology used in the Disease Costs and Impact Study 1993–94. AIHW Cat. No. HWE 7. Canberra: AIHW.
- AIHW: Mathers C & Penm R 1999. Health system costs of injury, poisoning and musculoskeletal disorders in Australia 1993–94. AIHW Cat. No. HWE 12. Canberra: AIHW.
- Cumming RG, Klineberg R & Katelaris A 1996. Cohort study of risk of institutionalisation after hip fracture. Australian and New Zealand Journal of Public Health 20(6):579–82.
- DHFS (Commonwealth Department of Health and Family Services) 1996. Consensus panel: the prevention and management of osteoporosis. Medical Journal of Australia 167:S1–S15.
- Gill T, Taylor A, Leach G et al. 2002. Osteoporosis in South Australia: prevalence, effects & impact. Adelaide: Centre for Population Studies in Epidemiology.
- Harris AH, Cumming R, Watts J et al. 1998. The burden of illness and the cost of osteoporosis in Australia. Technical Report No. 8. Melbourne: Centre for Health Program Evaluation.
- March L & Bagga H 2004. Epidemiology of osteoarthritis in Australia. Medical Journal of Australia 180(Supplement 5):S6–S10.
- Mehrotra A, Dudley RA & Luft HS 2003. What's behind the health expenditure trends. Annual Review of Public Health 24:385–412.
- Randell A, Sambrook PN, Nguyen TV et al. 1995. Direct clinical and welfare costs of osteoporotic fractures in elderly men and women. Osteoporosis International 5:427–32.
- Zimmerman S, Chandler JM, Hawkes W et al. 2002. Effect of fracture on the health care use of nursing home residents. Archives of Internal Medicine 162:1502–8.