



Australian Government

Australian Institute of
Health and Welfare

Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

Highlights

Arthritis and musculoskeletal conditions are a major cause of pain and disability, placing a high economic and personal burden on the community. With an estimated 6.1 million Australians having arthritis or a musculoskeletal condition, resulting expenditure on health services is substantial. This report provides details of expenditure on five major forms of arthritis and musculoskeletal conditions, using data from the AIHW Disease Expenditure Database.

- Arthritis and musculoskeletal conditions are the third largest contributor to direct health expenditure in Australia, at \$4.6 billion or 9.2% of total allocatable health expenditure in 2000–01.
- Osteoarthritis accounted for 26% of the expenditure on arthritis and musculoskeletal conditions, at \$1.2 billion. A further 12% was spent on chronic back pain and 6% on slipped disc. Rheumatoid arthritis and osteoporosis each accounted for around 5% of the expenditure. The remainder was spent on other musculoskeletal conditions (such as gout and juvenile arthritis).
- Hospital services were the largest component of expenditure for osteoarthritis, rheumatoid arthritis and chronic back pain. Pharmaceuticals constituted the greatest expenditure for osteoporosis, with 'other professional services' (including allied health services) being the major area of expenditure for slipped disc.

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Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

- On average, real (inflation-adjusted) health expenditure on arthritis and musculoskeletal conditions increased by 4.3% annually between 1993–94 and 2000–01. This is a smaller rate of increase than the overall average annual increase in real health expenditure in Australia over this period.
- The annual increases in expenditures on out-of-hospital medical services and pharmaceuticals were greater for arthritis and musculoskeletal conditions than for the health system as a whole.

Since arthritis and musculoskeletal conditions become more common with age, the burden associated with them is likely to increase as the Australian population ages. This may lead to greater health expenditure on these conditions in the future.

Introduction

Arthritis and musculoskeletal conditions are a major cause of pain and disability, affecting around 6.1 million Australians (AIHW: Rahman et al. 2005). However, effective treatment and management can reduce the effects of these conditions, and there is also potential for prevention. These facts were formally recognised in 2002 when arthritis and musculoskeletal conditions were declared a National Health Priority Area.

In 2000–01, Australia spent \$60.9 billion on health services, almost 9.1% of its GDP (AIHW 2005b). Around 87.5% of this, or \$50.1 billion, was able to be allocated by disease group. Arthritis and musculoskeletal conditions constituted the third largest component of this allocatable expenditure, after cardiovascular diseases and nervous system disorders, with an estimated expenditure of \$4.6 billion, or 9.2% of the total allocated health expenditure (AIHW 2005b).

There are more than 100 forms of arthritis and musculoskeletal conditions, each having different effects and requiring different treatment. Therefore, the relative contributions of the various forms to total expenditure vary across different areas of the health system. Examination of variations and trends in expenditure can help to highlight the impacts of the different conditions, and can also provide information on the effects of advances and changes in health practices, availability and use of more acceptable technologies, and changes in population structure.

However, the interpretation of this variation is complex and needs to be understood within the context of overall health expenditure. Comparisons between different health conditions need to be made with care, taking into account other factors such as the number of people with the condition, the severity of its effects and the types of treatment used. Expenditure may be higher for one condition than another because it is more common or more expensive to treat, not because it is more severe or inherently more ‘important’.

This bulletin presents information on direct health expenditure and health service use for arthritis and musculoskeletal conditions in Australia across the different areas of the health care system (as described in Box 1). Specifically, the relative contributions of some of the major types of arthritis and musculoskeletal conditions to expenditure and health service use across these areas are compared and contrasted. This bulletin focuses on five conditions: osteoarthritis, rheumatoid arthritis, osteoporosis, chronic back pain and slipped disc (see Box 2 for definitions). Other conditions not covered by these categories (such as gout, juvenile arthritis, spondylopathies, osteomyelitis and systemic lupus erythematosus) are included under the heading ‘other musculoskeletal conditions’.

Box 1: The AIHW Disease Expenditure Database health service areas where expenditure is able to be allocated by disease

- hospitals (admitted and non-admitted patients)
- high-level residential aged care
- out-of-hospital medical services (including general practitioners (GPs), specialists, imaging and pathology)
- pharmaceuticals (prescription drugs and over-the-counter medications)
- other professional services (such as physiotherapy, chiropractors and osteopaths)
- health-related research
- other health (includes cancer screening, oral health and community mental health).

The areas of ambulance services, aids and appliances, administration, and community and public health (excluding those in 'other health' above) were not able to be allocated by disease.

Total direct health expenditure on arthritis and musculoskeletal conditions

All expenditure data in this bulletin were obtained from the AIHW Disease Expenditure Database (see Appendix 1). This database categorises arthritis and musculoskeletal conditions into six broad groups, as listed in Table 1.

Osteoarthritis accounted for one-quarter of the total direct health expenditure for arthritis and musculoskeletal conditions in 2000–01, followed by chronic back pain (12%) and slipped disc (6%). Rheumatoid arthritis and osteoporosis accounted for around 5% each. The remaining expenditure was for 'other musculoskeletal conditions'.

Table 1: Direct health expenditure by type of arthritis or musculoskeletal condition, 2000–01

Condition	Expenditure (\$ million)	Per cent
Osteoarthritis	1,183	25.5
Chronic back pain	567	12.2
Slipped disc	299	6.4
Rheumatoid arthritis	246	5.3
Osteoporosis	221	4.8
Other musculoskeletal conditions	2,118	45.7
All arthritis and musculoskeletal conditions	4,633	100.0

Source: AIHW Disease Expenditure Database.



Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

Expenditure by health service area and type of condition

The composition of direct health expenditure for arthritis and musculoskeletal conditions (\$4.6 billion in 2000–01) by health service area is different from that for other disease groups (AIHW 2005b). Expenditure on high-level residential aged care services, out-of-hospital medical services and services provided by other health professionals was proportionately higher for arthritis and musculoskeletal conditions than for the other disease groups overall (Figure 1). This pattern of expenditure is a reflection of the debilitating and painful nature of these conditions, which often require long-term treatment and professional advice on management.

Because of their differing requirements, management and treatment options vary for different forms of arthritis and musculoskeletal conditions. Commonly, management strategies involve controlling pain and improving functionality and quality of life. Management of osteoarthritis and rheumatoid arthritis often focuses on preventing or controlling joint damage, whereas established osteoporosis requires that treatment also involve agents which reduce bone resorption or increase bone formation. Minimisation of inflammation around the nerves and joints, respectively, is important for treating the symptoms of slipped disc and rheumatoid arthritis. As a result of these differences, the proportion of expenditure in each health service area varies considerably from one condition to another (Figure 2).

Hospital services

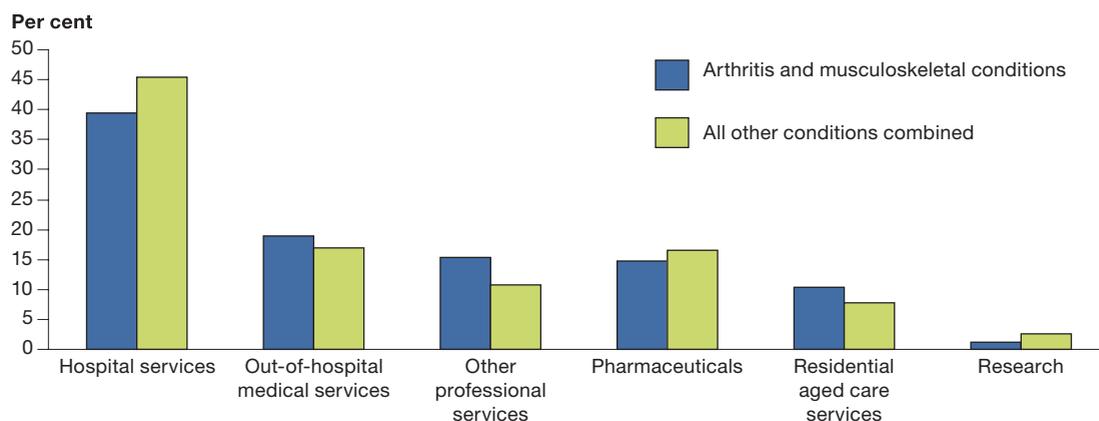
Hospital-based services accounted for the largest portion of the total direct health expenditure for arthritis and musculoskeletal conditions, at \$1.8 billion (39%) in 2000–01. Over two-thirds (70%) of this expenditure was for admitted patient care. Osteoarthritis accounted for the largest portion of expenditure on hospital services, followed by chronic back pain and slipped disc (Figure 3).

The number of hospital separations for arthritis and musculoskeletal conditions is increasing. Between 2000–01 and 2003–04, the number of separations with these conditions as the principal diagnosis increased by almost 9%, from 336,975 to 366,926.

Osteoarthritis

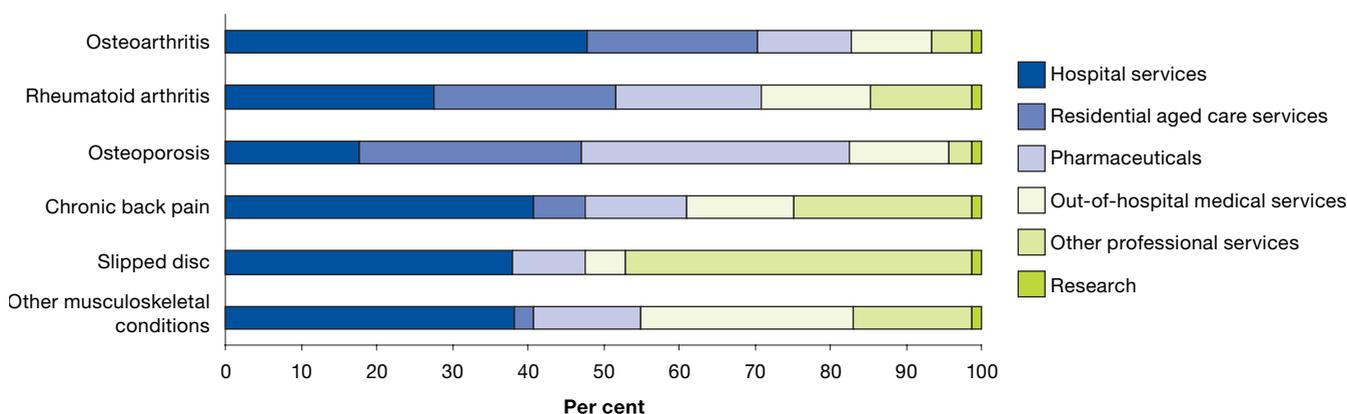
In 2000–01, expenditure on hospital services for osteoarthritis was almost \$567 million. More than 87% of this expenditure was on admitted patient services. A large number of people with osteoarthritis are hospitalised for surgical procedures (AIHW: Rahman et al. 2005). These procedures are commonly used to treat advanced cases of osteoarthritis that do not respond to other treatments, such as physical therapy and pharmaceuticals (Brooks 2001).

In 2000–01, there were over 57,400 hospital separations with the principal diagnosis of osteoarthritis. This number increased by 23% during the following three years, with almost 71,000 separations in 2003–04 (Table 2). A large proportion of separations for osteoarthritis are for joint replacement surgery, or 'arthroplasty'. Over 32,000 total hip and knee replacement procedures were performed in Australian hospitals during 2000–01, with these procedures costing an average \$12,500–\$26,400 each in the public sector (DoHA 2002). By 2003–04, the number of these procedures had risen to more than 42,000, with estimated average costs of \$13,600–\$30,600 each in the public sector (DoHA 2005). More than 86% of hip replacement and 94% of knee replacement procedures were performed on people with the principal diagnosis of osteoarthritis.



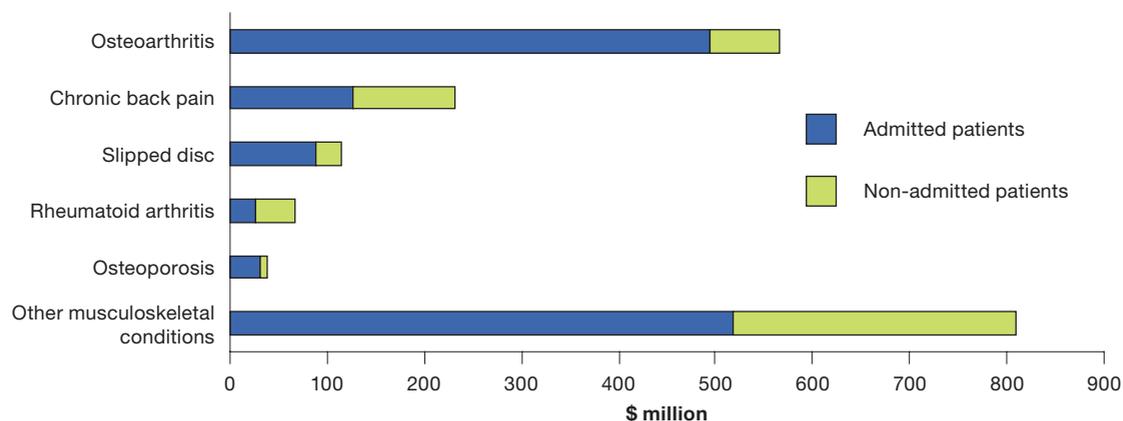
Source: AIHW Disease Expenditure Database.

Figure 1: Expenditure by health service area, as a proportion of total expenditure, 2000-01



Source: AIHW Disease Expenditure Database.

Figure 2: Distribution of expenditure by health service area for arthritis and musculoskeletal conditions, 2000-01



Source: AIHW Disease Expenditure Database.

Figure 3: Expenditure on hospital services for arthritis and musculoskeletal conditions, 2000-01

Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

Box 2: Arthritis and musculoskeletal conditions

<i>arthritis</i>	<i>A group of conditions in which there is inflammation of the joints, causing pain, stiffness, disability and deformity.</i>
<i>musculoskeletal conditions</i>	<i>Joint problems and disorders of the bones, muscles and their attachments to each other, other than arthritis.</i>
<i>osteoarthritis</i>	<i>The most common form of arthritis, estimated to affect over 1.5 million Australians (ABS 2006). It is caused mainly by the accumulated wear of the cartilage in joints, which disrupts the normal function of the joint, causing pain and functional limitations. The condition affects mainly the hands, spine, and weight-bearing joints such as the hips, knees and ankles.</i>
<i>rheumatoid arthritis</i>	<i>A chronic, inflammatory, autoimmune disease in which the immune system attacks the tissues lining the joints. The inflamed joints often cause pain, heat and swelling and can lead to functional limitations and severe disability. Around 491,000 Australians are estimated to have rheumatoid arthritis, based on self-reports (ABS 2006).</i>
<i>osteoporosis</i>	<i>Literally 'porous bones'. A musculoskeletal condition where the bone density thins and weakens, resulting in an increased risk of fracture. Osteoporotic fractures are common among the elderly, with the spine, hip and wrist being common fracture sites. Self-reported data suggest that almost 586,000 Australians have osteoporosis (ABS 2006). However, the actual number is likely to be higher than this estimate, as many people are not aware that they have the condition.</i>
<i>back pain</i>	<i>Pain coming from the spine, muscles, nerves or other structures in the back. Most back problems are transitional and short term, but in many cases they can become chronic (measured as pain persisting for more than 3 months). In 2004–05, more than 3.0 million Australians reported long-term problems in the back region, as a result of back pain or disc disorders (ABS 2006).</i>
<i>slipped disc</i>	<i>A condition in which, due to a tear in the outer ring of fibrous connective tissue, the intervertebral cartilage disc bulges and protrudes into the spinal canal, pushing on the spinal cord or on the nerve roots. The pressure on the nerve may cause pain, numbness and/or weakness in the part of the skin and muscle that the particular nerve leads to.</i>
<i>'other musculoskeletal conditions'</i>	<i>For the purposes of this bulletin, the group of all types of arthritis and musculoskeletal conditions other than osteoarthritis, rheumatoid arthritis, osteoporosis, chronic back pain and slipped disc. This group includes conditions such as juvenile arthritis, gout, osteomyelitis, systemic lupus erythematosus (SLE), spondylopathies, synovitis, bursopathies and Paget's disease of bone.</i>

Chronic back pain

Hospital treatment and management of chronic back pain is also common. Hospital services accounted for the largest proportion (41%) of expenditure for chronic back pain in 2000–01. In that year, almost 46,000 hospital separations were for the principal diagnosis of chronic back pain, with an average length of stay of 4.0 days. By 2003–04, this number had risen by nearly 7%, to almost 49,000 separations (Table 2).

Over 36,350 non-surgical procedures were performed on people with the principal diagnosis of chronic back pain. These procedures are generally non-invasive in nature and include cognitive, therapeutic or diagnostic interventions. The most common procedure was allied health intervention, mainly physiotherapy.

In 2000–01, there were over 3,600 surgical procedures listed for people with the principal diagnosis of chronic back pain. More than 1,100 of these separations were for spinal fusion procedures. In 2003–04, around 1,700 spinal fusion procedures were performed on people with the principal diagnosis of chronic back pain. These procedures cost on average \$15,000 to \$28,000 each in the public sector (DoHA 2005).

Slipped disc

Treatment for slipped disc is usually conservative, with non-surgical procedures being more common than surgical procedures. In 2000–01, there were over 21,500 hospital separations for the principal diagnosis of slipped disc, with over 27,500 non-surgical procedures performed. The most common procedure for slipped disc was allied health intervention, with over 9,300 separations for physiotherapy. These types of therapies may also be performed through outpatient (non-admitted) services. Admitted patients accounted for 77% of the expenditure on hospital services for slipped disc in 2000–01.

Surgical treatment for slipped disc is usually recommended if conservative treatments are not effective at relieving symptoms. Surgical procedures are aimed at reducing pressure on the nerves by removal of the herniated disc. In 2000–01, there were over 3,800 surgical procedures listed for people with the principal diagnosis of slipped disc; the most common procedure was spinal fusion.

Table 2: Hospital separations and expenditure on hospital services for arthritis and musculoskeletal conditions

Condition	Direct health expenditure on hospital services 2000–01 (\$ million)	Hospital separations		
		2000–01 (number)	2003–04 (number)	increase (per cent)
Osteoarthritis	493.5	57,444	70,703	23.1
Rheumatoid arthritis	27.4	4,491	5,506	22.6
Osteoporosis	31.8	7,476	7,969	6.6
Chronic back pain	127.4	45,817	48,866	6.7
Slipped disc	87.3	21,572	22,437	4.0
Other arthritis and musculoskeletal conditions	809.6	200,175	211,445	5.6
All arthritis and musculoskeletal conditions	1,286.1	336,975	366,926	8.9

Sources: AIHW Disease Expenditure Database and National Hospital Morbidity Database.



Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

Rheumatoid arthritis

Most of the hospital-based treatment for rheumatoid arthritis is provided through outpatient clinics, emergency departments and a range of other specialised services that patients receive without being formally admitted to the hospital. These are referred to as 'non-admitted patient services' (AIHW 2004). Almost two-thirds (\$41 million) of the hospital expenditure for rheumatoid arthritis in 2000–01 was for these types of services.

Expenditure on admitted patient services for rheumatoid arthritis amounted to \$27 million in 2000–01. With 4,491 separations for the principal diagnosis of rheumatoid arthritis in that year, this equates to an average expenditure of around \$6,100 per separation. In more than half of these separations, some kind of surgical procedure was performed. These procedures are aimed at restoring a degree of functional capacity, effectively relieving pain and improving function (Saito 2002). The most common surgical procedure performed for rheumatoid arthritis in 2000–01 was joint replacement surgery of the knee (14% of surgical separations for rheumatoid arthritis) or hip (7%). Non-surgical interventions are also frequently used; the most common of these are physiotherapy (provided in 37% of all separations with a principal diagnosis of rheumatoid arthritis in 2000–01), occupational therapy (17%) and steroid injections (10%).

The number of hospital separations for rheumatoid arthritis increased considerably between 2000–01 and 2003–04. In 2000–01 there were 4,491 separations with the principal diagnosis of rheumatoid arthritis, rising by more than 22% to 5,506 separations in 2003–04. Over the same period, the average length of stay for these separations decreased from 6.1 days to 4.5 days. Much of this change may be attributed to a substantial rise in the number of same-day separations for rheumatoid arthritis, which more than doubled, from 815 separations in 2000–01 to 2,161 in 2003–04.

Osteoporosis

Services provided by hospitals are not commonly sought for the treatment and management of osteoporosis itself. There were 7,476 separations with the principal diagnosis of osteoporosis in 2000–01, with admitted patient expenditure of almost \$32 million. An additional \$7 million was spent on non-admitted patient services.

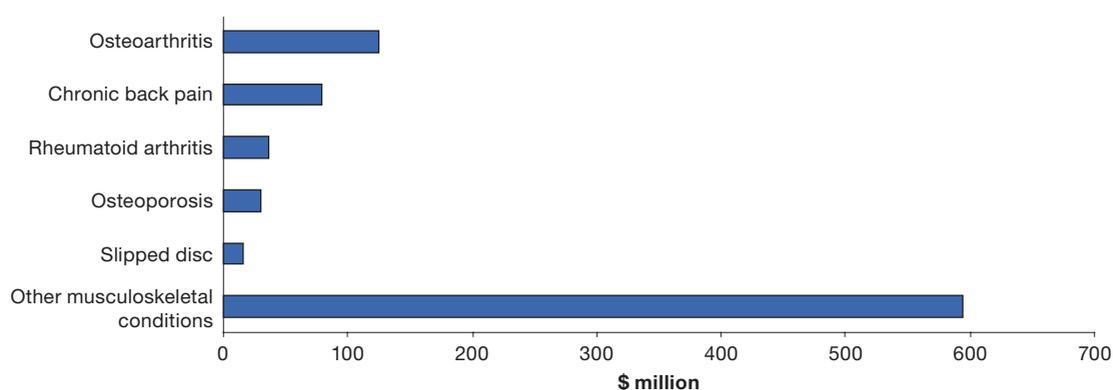
The fractures that occur as a result of osteoporosis often require hospital attendance, as they need immediate attention and the surgical techniques and biomedical devices used for treatment are available only in a hospital setting. However, diagnosis coding practice for hospital records means that many people admitted following a fracture will have 'fracture' recorded as the principal diagnosis and may have 'osteoporosis' only as an additional diagnosis. Since hospital expenditure is allocated on the basis of principal diagnosis, the expenditure reported here for osteoporosis does not include all osteoporotic fractures.

Osteoporotic fractures are much more common in persons over 55 years of age. In 2000–01, there were over 4,000 hospital separations for patients aged 55 years and over where both osteoporosis and fracture were recorded, with an average length of stay of 13.7 days. Hip fracture (fracture of the femur) was the most common fracture recorded in these cases (39% of separations), followed by fracture of the lumbar spine and pelvis (22%). Note that a large proportion of people with fractures of the smaller bones (wrist, ankle, vertebrae), which may have an osteoporotic component, are treated in emergency departments and are not formally admitted to hospital.

Out-of-hospital medical services

Out-of-hospital medical services include consultations with general practitioners (GPs) and other specialists outside of hospital, and diagnostic services such as medical imaging (for example, x-rays and ultrasound) and pathology tests. GPs are commonly the first source of care for people with arthritis and musculoskeletal conditions. Depending on the nature of the problem, various strategies are used by GPs for management, including medications, imaging or pathology tests and referrals to specialists.

Expenditure on out-of-hospital medical services is relatively high for arthritis and musculoskeletal conditions. In 2000–01, a total of \$879 million was spent on these services, the largest amount spent for any disease group in Australia. The expense constituted 19.0% of total direct health expenditure for arthritis and musculoskeletal conditions. ‘Other musculoskeletal conditions’ as a group accounted for over two-thirds of this expenditure. Osteoarthritis accounted for the second largest proportion, followed by chronic back pain (Figure 4).



Source: AIHW Disease Expenditure Database.

Figure 4: Expenditure on out-of-hospital medical services for arthritis and musculoskeletal conditions, 2000–01

Osteoarthritis

Management of osteoarthritis in the community setting generally begins with the GP. In 2000–01, osteoarthritis was the tenth most frequent problem managed by GPs (1.8% of all problems managed) (AIHW: Britt et al. 2001). Osteoarthritis (as defined in the AIHW Disease Expenditure Database—see Appendix 1) was managed at 2.3% of GP–patient encounters in 2000–01, equating to almost 2.3 million GP consultations for osteoarthritis in that year. In 2004–05, osteoarthritis was managed at 2.5% of reported encounters, equating to almost 2.4 million GP consultations.

Various strategies were used for managing the condition and its symptoms. Pharmaceutical management was common, with 93 medications prescribed, advised or supplied per 100 GP contacts on average in 2000–01. Other forms of management included x-ray of the knee (37% of all imaging tests performed on people with osteoarthritis) and hip (23%), and pathology tests. The most common referrals were to an orthopaedic surgeon (48% of all referrals to medical specialists for people with osteoarthritis) or a physiotherapist (16%).



Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

In 2000–01, out-of-hospital medical services accounted for 11% of the expenditure for osteoarthritis. In addition to GPs, radiology and consultations with specialists were major contributors to this expense.

Chronic back pain

Expenditure on out-of-hospital medical services for chronic back pain was over \$79 million in 2000–01, 14% of the total direct health expenditure for this condition. ‘Chronic back pain’, as defined in the AIHW Disease Expenditure Database, was managed at 1.2% of all GP–patient encounters reported in the 2000–01 BEACH survey, increasing to 1.4% of GP–patient encounters in 2004–05. This equates to more than 1.3 million GP consultations in 2004–05. The most common management strategy used by GPs for managing chronic back pain was medication, with an average of 88 prescriptions per 100 GP contacts. People with chronic back pain receive primary care mainly from allied or other health professionals. The most common referrals were to a physiotherapist (55% of all referrals for chronic back pain) or an orthopaedic surgeon (16%), and the most common imaging tests ordered were x-rays of the spine.

Rheumatoid arthritis

GPs are commonly consulted following the onset of symptoms of rheumatoid arthritis. Treatment may then continue in consultation with the GP or, more commonly, the patient is referred to a rheumatology clinic or specialist. Almost 15% (\$36 million) of the total direct health expenditure for rheumatoid arthritis in 2000–01 was attributed to out-of-hospital medical services.

According to the BEACH survey, rheumatoid arthritis was managed at 0.5% of GP–patient encounters in 2000–01, equating to around 499,000 consultations. Rheumatologists accounted for the most referrals in 2000–01 (69% of all GP referrals for people with rheumatoid arthritis), followed by physiotherapists (16%). The most common management strategy used by GPs was medication, with an average of 116 medications prescribed per 100 GP contacts for rheumatoid arthritis.

Osteoporosis

A large proportion of people diagnosed with osteoporosis receive advice on the treatment and management of the condition from their GP. Visits to GPs commonly occur following an injury or minor fracture from minimal trauma, or after experiencing ongoing and unexpected pain in the hands after the person braces him- or herself following a fall. In addition, the discharge of public patients with non-hip fractures is commonly followed up by the GP (Harris et al. 1998). Expenditure on out-of-hospital medical services for osteoporosis accounted for 13% of total osteoporosis-related direct health expenditure in 2000–01.

In 2000–01, osteoporosis accounted for 0.4% of all problems managed by GPs. This consultation rate, in conjunction with the low reported prevalence rate of osteoporosis, is reflected in the health expenditure database. Osteoporosis accounted for less than 4% of the expenditure for out-of-hospital medical services for arthritis and musculoskeletal conditions in 2000–01. An average of 93 medications were prescribed per 100 GP contacts for osteoporosis. Other forms of GP management of osteoporosis included imaging tests, particularly densitometry (accounting for 53% of all imaging tests performed on people with osteoporosis), and pathology tests for measuring full blood counts and calcium levels. Endocrinologists were the most common health professionals patients with osteoporosis were referred to by their GPs.

In 2004–05, osteoporosis was managed at 0.8% of all reported GP–patient encounters, twice the proportion in 2000–01. Comparison of estimates from the 2001 and 2004–05 National Health Surveys showed a 95% increase in the number of people self-reporting they had osteoporosis (ABS 2002, 2006). Although it is reasonable to assume that population ageing would cause some increase in the number of people with the condition, it is likely that the relatively large increases in self-reports and GP consultations between 2000–01 and 2004–05 indicate increased awareness of osteoporosis in the general population.

Slipped disc

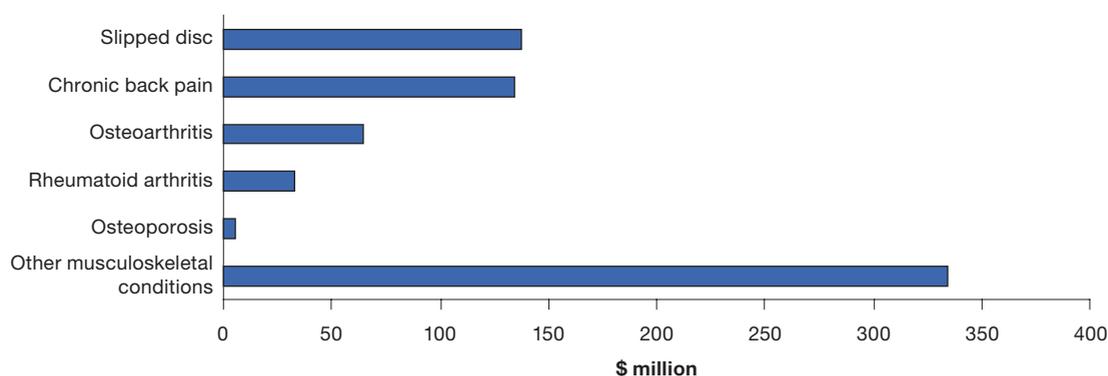
General practitioners are commonly consulted for diagnosis and treatment of slipped disc. In 2000–01, consultations for slipped disc (as defined in the AIHW Disease Expenditure Database) accounted for 0.2% of all problems managed by GPs, being managed at 0.3% of all GP–patient encounters, or around 299,000 consultations. As with other musculoskeletal conditions, medications were a common form of management for slipped disc, with an average of 84 medications per 100 GP contacts prescribed, advised or supplied by GPs.

Like chronic back pain, in addition to consultations with GPs, treatment and care of people with slipped disc is commonly provided by allied or other health professionals. The most common referrals made by GPs for people with slipped disc were to a physiotherapist (29% of all referrals for slipped disc) or to an orthopaedic surgeon (26%).

Expenditure on out-of-hospital services for slipped disc was almost \$16 million in 2000–01.

Other professional services

Support and assistance for people with arthritis and musculoskeletal conditions are commonly sought from community-based services provided by private home-nursing organisations. Allied health professionals, such as physiotherapists, chiropractors and podiatrists, are also frequently consulted. In 2000–01, expenditure on other professional services for arthritis and musculoskeletal conditions, including allied health, was \$710 million—more than 15% of the total expenditure for arthritis and musculoskeletal conditions. The group of ‘other musculoskeletal conditions’ accounted for the greatest proportion of this expenditure, followed by slipped disc and chronic back pain (Figure 5).



Source: AIHW Disease Expenditure Database.

Figure 5: Expenditure on other professional services for arthritis and musculoskeletal conditions, 2000–01



Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

Slipped disc and chronic back pain

Consultations with other health professionals, including allied health professionals, are an integral component of management for back pain and slipped disc. According to the 2001 National Health Survey, 21% of people reporting a slipped disc or back pain had consulted an allied or other health professional in the 2 weeks before the survey. The most frequently consulted were chiropractors (6%), chemists (5%), physiotherapists (4%) and chiropodists/podiatrists (2%).

Slipped disc and back pain together accounted for 38% of the expenditure on other professional services for arthritis and musculoskeletal conditions. This health service area accounted for the greatest proportion (46%) of expenditure for slipped disc and the second greatest (24%) for chronic back pain.

Osteoarthritis

Expenditure on other professional services for osteoarthritis amounted to more than \$64 million in 2000–01. Consultations with allied or other health professionals in the previous 2 weeks were reported by 19% of people with osteoarthritis in the 2001 National Health Survey. Chemists were the most frequently consulted allied or other health professional (5%), followed by physiotherapists (4%), chiropodists/podiatrists (3%) and chiropractors (3%).

Rheumatoid arthritis

According to the 2001 National Health Survey, 21% of people with rheumatoid arthritis had consulted an allied or other health professional in the 2 weeks before the survey. The professionals most frequently consulted were chemists (6%), with physiotherapists, chiropodists/podiatrists, chiropractors and nurses each accounting for around 3% of the consultations. In 2000–01, over \$33 million was spent on other professional services for rheumatoid arthritis.

Osteoporosis

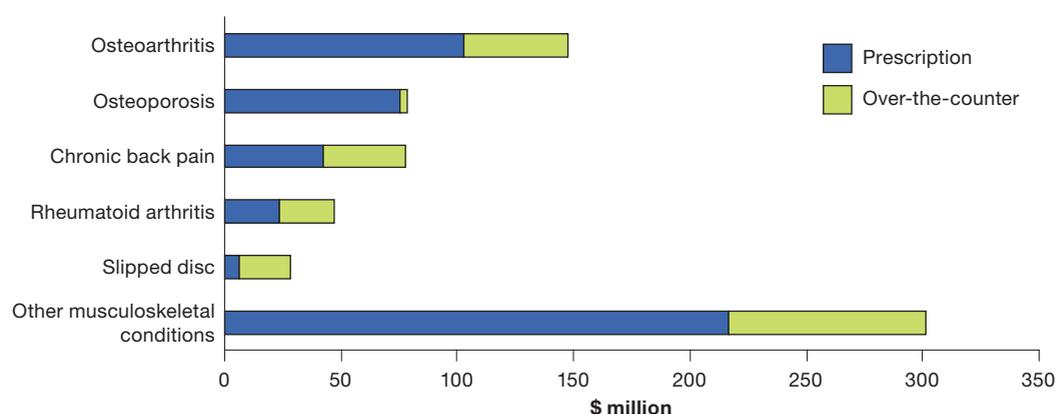
About 23% of people who self-reported osteoporosis had consulted an allied or other health professional in the 2 weeks before the 2001 National Health Survey. The most common consultations were with chemists (6%), chiropodists/podiatrists (6%) and physiotherapists (5%).

Post-fracture treatment is important in helping the person regain functionality and pre-fracture health status. Following discharge to private homes, private patients who have had a fracture will generally have at least one outpatient clinic appointment for physiotherapy and one orthopaedic outpatient clinic visit (Harris et al. 1998). In aged care facilities, patients who experience a hip fracture are more likely to receive physiotherapy and occupational therapy compared with any other fracture type (Zimmerman et al. 2002). Almost \$7 million was spent on other professional services for osteoporosis in 2000–01.

Pharmaceuticals

Medications, both prescribed and over-the-counter, are widely used in the management and treatment of arthritis and musculoskeletal conditions. These are usually aimed at controlling

pain and reducing inflammation in joints. In 2000–01, pharmaceuticals accounted for 15% of the total direct health expenditure for arthritis and musculoskeletal conditions; over two-thirds of this was for prescription drugs. Almost half of the expenditure on pharmaceuticals for arthritis and musculoskeletal conditions was for ‘other musculoskeletal conditions’. Osteoarthritis accounted for the second largest portion of the expenditure on pharmaceuticals, followed by osteoporosis and chronic back pain (Figure 6).



Source: AIHW Disease Expenditure Database.

Figure 6: Expenditure on pharmaceuticals for arthritis and musculoskeletal conditions, 2000–01

Osteoarthritis

The use of medications in the management of osteoarthritis focuses on relieving pain and improving health-related quality of life. Prescription drugs accounted for 70% of the expenditure on pharmaceuticals for osteoarthritis in 2000–01.

The 2000–01 BEACH survey indicated that the medications most commonly prescribed, advised or supplied by GPs to patients with osteoarthritis were celecoxib (35% of prescribed medications) and paracetamol preparations (28%). Celecoxib is a COX-2 inhibitor, a subclass of non-steroidal anti-inflammatory drugs (NSAIDs), used to reduce swelling and inflammation that occurs in the joints.

Osteoporosis

Treatment and prevention of osteoporosis is commonly managed with medications. In 2000–01, nearly 97% of the expenditure on pharmaceuticals for osteoporosis was for prescribed medications. These medications are intended to prevent the development of osteoporosis and additional bone loss, reducing the risk of fractures.

Calcium carbonate was the drug most commonly prescribed by GPs to people with osteoporosis in 2000–01 (contributing 20% to the total); this is an essential nutrient for the prevention of osteoporosis and is effective in reducing the rate of post-menopausal bone loss. The bisphosphonate, alendronate, was the next most commonly prescribed or advised medication, accounting for 19% of total prescriptions for osteoporosis. Bisphosphonates are safe and effective for managing osteoporosis; they increase bone mass and reduce the risk of fractures.



Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

Chronic back pain

Medications used in the treatment of chronic back pain are intended to control pain, inflammation and muscle spasms. Expenditure on pharmaceuticals for chronic back pain was over \$77 million in 2000–01; over-the-counter medications accounted for 45% of this. The most common medications prescribed, supplied or advised by GPs for people with chronic back pain in the 2000–01 BEACH survey were paracetamol preparations (35% of prescribed medications for chronic back pain) and celecoxib (19%).

Rheumatoid arthritis

Medications used to treat rheumatoid arthritis are aimed at relieving pain, reducing joint inflammation and improving functionality. Drugs commonly prescribed for treating rheumatoid arthritis include disease-modifying anti-rheumatic drugs (DMARDs), NSAIDs and low-dose corticosteroids. In 2000–01, the medications most commonly prescribed by GPs were the COX-2 inhibitor celecoxib and the DMARD methotrexate. Expenditure on pharmaceuticals for rheumatoid arthritis in 2000–01 was more than \$47 million.

Slipped disc

Treatment for slipped disc normally involves only a short period of rest, followed by exercise, and medication for pain relief. In 2000–01, the most common medications prescribed by GPs to people with slipped disc were paracetamol preparations (42% of prescribed medications). The COX-2 inhibitor celecoxib was also commonly prescribed. More than \$28 million was spent on pharmaceuticals for slipped disc in 2000–01, with over three-quarters of this expenditure being for over-the-counter medications.

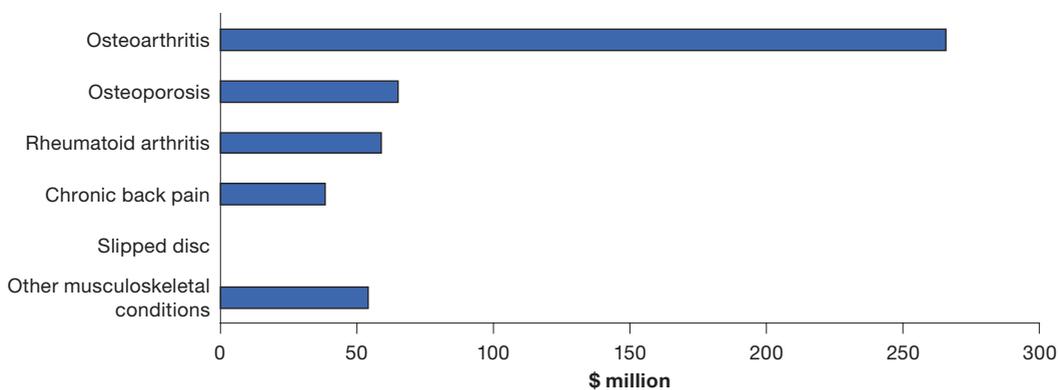
High-level residential aged care

Arthritis and musculoskeletal conditions are large contributors to disability, resulting in a high level of dependency because of limitations in physical functions and a reduced ability to perform daily activities. Accommodation and necessary support for older people who can no longer live at home are commonly provided through residential aged care services. The importance of these services for people with arthritis and musculoskeletal conditions is reflected in the expenditure data, with expenditure on high-level residential aged care services accounting for a higher proportion of total health expenditure for arthritis and musculoskeletal conditions than for all other health conditions combined (Figure 1).

Expenditure on high-level residential aged care was more than \$482 million, or 10.4% of the total estimated direct health expenditure for arthritis and musculoskeletal conditions, in 2000–01. Osteoarthritis accounted for the largest proportion of this, followed by osteoporosis and rheumatoid arthritis (Figure 7). No expenditure on high-level residential aged care services was attributed to slipped disc in 2000–01. Since most cases of slipped disc heal without surgery after a few weeks or months of non-surgical treatment, this condition does not directly lead to the usage of these services.

Osteoarthritis and rheumatoid arthritis

The high prevalence of osteoarthritis in the older age groups is reflected in the large proportion of health expenditure on high-level residential aged care services that was attributed to this condition—\$266 million, or 55% of high-level residential aged care expenditure for arthritis and musculoskeletal conditions (Figure 7). Although it is only the third largest component of expenditure in this health service area (Figure 7), the highly disabling nature of rheumatoid arthritis and its higher prevalence in the older age groups results in high-level residential aged care services accounting for the second largest proportion of overall health expenditure for the condition (Appendix 2).



Source: AIHW Disease Expenditure Database.

Figure 7: Expenditure on high-level residential aged care for arthritis and musculoskeletal conditions, 2000–01

Osteoporosis

Bone fracture, an adverse outcome of osteoporosis, plays a large role in the amount of expenditure for high-level residential aged care services. Of these, hip fractures are probably the most debilitating and costly. It is estimated that up to 50% of people 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 years and over who were admitted to hospitals for osteoporotic hip fractures were discharged to an aged care facility. It is estimated that 20–26% of older people with hip fractures are permanently admitted to an aged care institution (Department of Health and Family Services 1996), compared with 5% of older people without a hip fracture (Cumming et al. 1996).

High-level residential aged care services were the second biggest component of health system expenditure for osteoporosis, at almost \$65 million in 2000–01 (Appendix 2). Of this, 96.3% was for older females, reflecting the higher prevalence of osteoporosis among this group.

Chronic back pain

A relatively low proportion of the expenditure for chronic back pain was attributed to high-level residential aged care services. Just under 7% of the direct health expenditure for chronic back pain was spent on these services, compared with 23–29% of expenditure for osteoarthritis, rheumatoid arthritis and osteoporosis.



Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

Research

Direct health expenditure on research for arthritis and musculoskeletal conditions accounted for the smallest proportion of expenditure in 2000–01, at \$55 million or 1.2%. This research, conducted by universities and other institutions, aims to understand the causes and effects of arthritis and musculoskeletal conditions, and to further develop and evaluate new and existing treatment methods and public health interventions. It was not possible to further separate out expenditure on research for individual conditions.

Trends over time

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 represents a 34% increase since 1993–94, or an average annual increase of 4.3% over 8 years. In addition to population ageing and population growth, innovations in surgical techniques, pharmaceuticals and biomedical devices have all contributed to this increase.

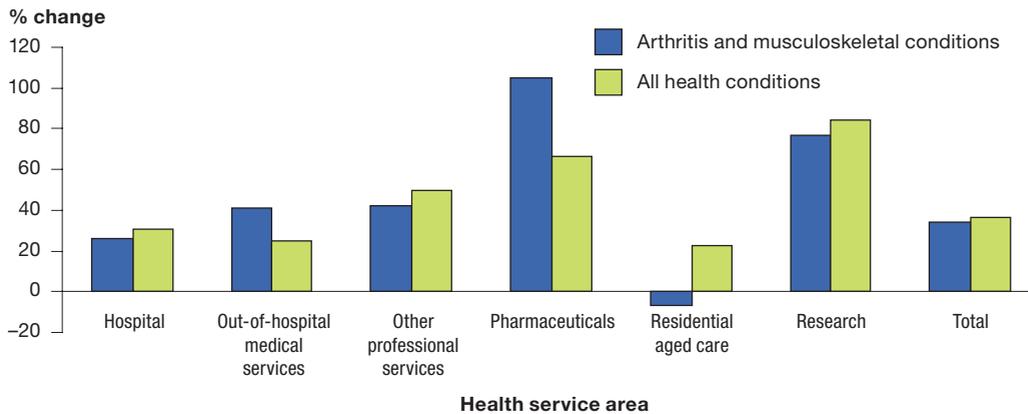
The changes in health expenditure for arthritis and musculoskeletal conditions between 1993–94 and 2000–01 showed a high degree of inter-area variability (Figure 8). The largest increase was for pharmaceuticals, at 105%, an average of 13% annually over 8 years. Growth was also noted for research, other professional services, out-of-hospital medical services and hospitals. In contrast, expenditure on residential aged care services for arthritis and musculoskeletal conditions decreased between 1993–94 and 2000–01.

Factors affecting trends in health expenditure

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

The decrease in expenditure on high-level residential aged care services is partly attributable to a greater emphasis on community care for older persons and others with a disability who require care. 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 total expenditure for arthritis and musculoskeletal conditions was slightly less than the growth in overall health expenditure between 1993–94 and 2000–01 (Figure 8). The growth in inflation-adjusted expenditure for all health conditions combined over that period was 37% (average 4.6% annually), compared with 34% (average 4.3% annually) for arthritis and musculoskeletal conditions. Comparatively faster expenditure growth for pharmaceuticals and out-of-hospital medical services for arthritis and musculoskeletal conditions was balanced by various factors, including a reduction in the length of stay in hospitals and a greater emphasis on treatments outside the hospital, as well as deinstitutionalisation causing a fall in expenditure on high-level residential aged care services.



Notes

1. 1993-94 expenditures were converted to 2000-01 prices using the total health price inflator.
2. Does not include expenditure for community and public health.

Source: AIHW Disease Expenditure Database.

Figure 8: Changes in inflation-adjusted expenditure between 1993-94 and 2000-01

Discussion

In addition to being major causes of illness, pain and disability in Australia, arthritis and musculoskeletal conditions account for a substantial proportion of overall health expenditure. In 2000-01, expenditure on arthritis and musculoskeletal conditions was over \$4.6 billion, 9.2% of the total allocated by disease group. Osteoarthritis accounted for 25% of this expenditure, with chronic back pain accounting for a further 12%. Slipped disc, rheumatoid arthritis and osteoporosis each accounted for 5-6%.

The relative contributions of each of the major types of arthritis and musculoskeletal conditions to expenditure in the various areas of the health system highlight the different impacts of the conditions and the management strategies used to combat these. For example, osteoarthritis accounted for the greatest proportion of expenditure on hospital services, reflecting the use of joint replacement surgery in its management. In contrast, slipped disc and back pain were the greatest contributors to expenditure on other professional services, reflecting management of these conditions by allied health practitioners including chiropractors and physiotherapists.

Trends in health expenditure over time also provide insight into changes in disease prevalence, changing management practices and the rise and fall of interventions such as surgical procedures and medications. Between 1993-94 and 2000-01, expenditure on pharmaceuticals for arthritis and musculoskeletal conditions more than doubled. This reflects the wide availability and uptake of new but more costly prescription drugs for treating these conditions. Expenditure on hospital services also increased over this period, mirroring the increased use of joint replacement procedures. Expenditure on high-level residential aged care services, however, decreased, reflecting the current tendency towards enabling older people and people with disabilities to retain their independence through home modifications, community assistance programs, and the use of aids and appliances.



Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

The long duration, high levels of disability and common prevalence of arthritis and musculoskeletal conditions result in high economic and personal costs. Since the incidence of these conditions rises with age, the ageing of the population will increase the number of Australians affected. The resulting growth in demand for management and treatment suggests that direct health expenditure associated with arthritis and musculoskeletal conditions will increase in the future.

Appendix 1. Methods and limitations

This bulletin focuses on the use of health care services and associated direct health expenditure, that is, expenditure incurred for the prevention, diagnosis and treatment of arthritis and musculoskeletal conditions. Limited information is available in Australia on non-health-care costs or indirect costs to patients, such as travel costs, social and economic burden on carers and family, and lost wages, so these have not been included. Intangibles such as reduced quality of life are not given a monetary value either.

Health expenditure data sources

Data on direct health expenditure for arthritis and musculoskeletal conditions in this bulletin are extracted from the AIHW Disease Expenditure Database. Data on the average cost of procedures in hospital were obtained from the National Hospital Cost Data Collection reports (DoHA 2002, 2005).

The AIHW Disease Expenditure Database

The AIHW Disease Expenditure Database is a satellite national account. Satellite accounts enable the linkage of non-monetary data sources and analysis to the monetary accounting system. The database is compiled by allocating the total recurrent health expenditure to various health service areas for over 200 disease and injury categories based on those used in the Australian Burden of Disease Study (AIHW: Mathers et al. 1999). These numbers are then aggregated to produce an estimate of total expenditure.

In 2000–01, expenditure allocated by health condition accounted for around 87.5%, or \$50.1 billion, of the total recurrent health expenditure in Australia. The remaining 12.5% of expenditure not allocated by health condition includes expenditure on community and public health services, health administration, ambulance services, and health aids and appliances.

Condition-specific health expenditure is usually calculated by classifying the health care industry into distinct operational areas. The operational areas used in the AIHW Disease Expenditure Database are hospitals (admitted and non-admitted patients), out-of-hospital medical services, other professional services, high-level residential aged care services, pharmaceuticals (prescription and over-the-counter) and health-related research. Funding for these health service areas comes from both government and non-government sources (including private health insurance and individuals).

Estimates of expenditure on admitted hospital patients, high-level residential aged care services, out-of-hospital medical services, prescription drugs and health-related research were based directly on analysis of the 2000–01 recurrent health expenditure data, and were allocated by health condition based on data from relevant 2000–01 surveys. However, expenditure allocation estimates by health condition for non-admitted hospital patients, over-the-counter medications and other

professional services for 2000–01 were not available. Instead, the 2000–01 expenditure data for these services was allocated to health conditions by adjusting the 1993–94 estimates (AIHW: Mathers & Penm 1998) for changes in the age and sex structure of the population. These estimates are approximations and therefore should be used with caution.

The AIHW Disease Expenditure Database allocates each health dollar to only one health condition, so that total expenditure for all health conditions equates to the total allocatable health system expenditure. Hence, related health complications, such as fractures, associated with certain musculoskeletal conditions would not necessarily be included in the musculoskeletal component unless explicitly allocated. Although expenditure estimates are reliable at the disease chapter level (i.e. all musculoskeletal conditions combined), the method is less sensitive and accurate for the individual conditions, so these estimates should be interpreted with caution.

Further details of the methodology used to compile the AIHW Disease Expenditure Database are available in *Health system expenditure on disease and injury in Australia 2000–01* (AIHW 2005b).

Health care service data sources

Several data sources provide information on the use of health care services for the management of arthritis and musculoskeletal conditions in Australia. These sources are described briefly below.

Bettering the Evaluation and Care of Health (BEACH) Survey

General practitioners (GPs) are usually the first point of call for medical services in Australia. Information on GP–patient encounters is collected through the Bettering the Evaluation and Care of Health (BEACH) Survey, an ongoing national data collection looking at the clinical activities of general practitioners (AIHW: Britt et al. 2001). The Australian General Practice Statistics and Classification Centre (an AIHW collaborating unit within the Family Medicine Research Centre, University of Sydney) conducts the survey.

BEACH began in April 1998 and involves an ever-changing random sample of approximately 1,000 GPs per year, each providing data on 100 consecutive patient encounters. The information available includes problems managed; medications provided, recommended or prescribed; referrals; tests and investigations performed or ordered; and patients' reasons for professional encounters. These data are encoded using the International Classification of Primary Care—2nd edition (ICPC-2) (Classification Committee of the World Organization of Family Doctors 1997) and its extended vocabulary, ICPC-2 PLUS (Britt 1997).

For this bulletin, data on GP encounters for osteoarthritis, rheumatoid arthritis, osteoporosis, chronic back pain and slipped disc were identified using the ICPC-2 and ICPC-2 PLUS codes that were defined for the creation of the AIHW Disease Expenditure Database (Table 3). The specific groups of codes used were determined by mapping between ICPC-2/ICPC-2 PLUS and ICD-10 (AIHW 2005b). Note that the codes used for some conditions (for example, osteoarthritis and chronic back pain) vary considerably from those normally used to report data from the BEACH surveys, and so the GP data presented here on the number of encounters and treatments given are not comparable to published results of the BEACH surveys. Data for chronic back pain in particular are likely to be a considerable underestimate of the number of GP consultations for this condition.

Table 3: ICPC-2 and ICPC-2 PLUS codes used in this bulletin for extraction of data on GP encounters for arthritis and musculoskeletal conditions

Condition	ICPC-2 code	ICPC-2 PLUS code
Osteoarthritis		L89001, L90001, L91001, L91003, L91008, L92007
Rheumatoid arthritis	L88	(all)
Osteoporosis		L95001, L95003
Chronic back pain		L02010, L03003, L03006, L03012, L83008, L83011, L84001, L84004, L84009, L84010, L84011, L84012, L84017, L86005, L86009, L86011, L86036, L86044
Slipped disc		L83002, L83018, L86007, L86010, L86039, L86043

National Health Survey

The National Health Survey (NHS), conducted every three years by the Australian Bureau of Statistics (ABS), is designed to collect information on the health status of Australians, their use of health services and facilities, and health-related aspects of their lifestyle, through self-reports. The 2001 NHS covered a sample of 26,900 people from February to November 2001 (ABS 2002). The 2004–05 NHS covered approximately 25,900 persons between August 2004 and June 2005 (ABS 2006).

The NHS collects information about arthritis, back pain, osteoporosis and other diseases of the musculoskeletal system and connective tissues. The symptoms covered include some types of swelling in the joints, limitations in motion and pain when moving. Information provided by participants was not necessarily based on a clinical diagnosis.

Although the NHS allows differentiation between major forms of arthritis (for example, osteoarthritis and rheumatoid arthritis), the quality and validity of this information is uncertain. The information on osteoporosis is also unreliable as most of the respondents had probably only heard of the diagnosis after having had a fracture. Many remain undiagnosed even following a fracture (Phillipov et al. 1998). In addition, there are differences in the composition of conditions encompassed under the terms ‘back pain’ and ‘slipped disc’ between the NHS and the AIHW Disease Expenditure Database. It is therefore not possible to directly match these health conditions between the two data sets. Information from the NHS relating to back pain and slipped disc has therefore been combined in this report.

Note also that the NHS is a community-based survey. Since arthritis and musculoskeletal conditions are much more prevalent in older age groups, the absence of information on persons in institutions (such as residential care facilities) tends to underestimate the extent of the problem.

In this bulletin, data from the 2001 NHS have been used to provide information on the use of other professional services (such as chemists, physiotherapists and chiropractors) for arthritis and musculoskeletal conditions.

National Hospital Morbidity Database

The National Hospital Morbidity Database, maintained at the AIHW, contains demographic, diagnostic, procedural and duration of stay information on episodes of care for patients admitted to hospital (AIHW 2005a). The data items are supplied to the AIHW by the state and territory health authorities and by the Department of Veterans’ Affairs.

In this bulletin, condition-specific data related to the principal diagnosis for hospitalisation and procedures performed are reported. These data can be used to provide an indication of morbidity levels in the population, as long as it is noted that admission rates are affected by differing admission practices, multiple admissions for chronic diseases and differing access to services.

Survey of Disability, Ageing and Carers

Information related to disability and residential aged care was extracted from the Survey of Disability, Ageing and Carers (SDAC), conducted by the ABS. The SDAC collects national information on disability levels of Australians, their current and future care needs, and the role of carers. The most recent survey collected information from a sample of 41,200 people over a 6-month period in 2003.

In addition to information on the extent of activity limitations and participation restriction, the survey also collects information about the role of various diseases and health conditions as disabling conditions (ABS 2004). The survey does not allow distinction between the different forms of arthritis, such as osteoarthritis and rheumatoid arthritis; instead, these are grouped together with a number of other conditions under the label 'arthritis and related disorders'. In this bulletin, disability-related data are for the main disabling condition, that is, a long-term condition identified by the respondent as the one causing the most problems.

Appendix 2. Detailed expenditure data

Table 4: Distribution of expenditure by health service area, arthritis and musculoskeletal conditions, 2000-01

Health service area	Type of arthritis and musculoskeletal condition						All arthritis and musculoskeletal conditions
	Osteo-arthritis	Rheumatoid arthritis	Osteoporosis	Chronic back pain	Slipped disc	Other	
(\$ million)							
Hospital services	566.8	68.0	38.9	230.7	113.7	809.6	1,827.7
<i>Admitted</i>	493.5	27.4	31.8	127.4	87.3	518.6	1,286.1
<i>Non-admitted</i>	73.2	40.6	7.1	103.3	26.4	291.0	541.6
Out-of-hospital medical services	124.6	35.8	29.4	79.4	15.9	593.5	878.7
Other professional services	64.2	33.2	6.6	134.2	137.2	334.2	709.7
Pharmaceuticals	147.8	47.2	78.1	77.3	28.2	301.3	679.9
<i>Prescription</i>	102.7	23.9	75.5	42.2	6.6	217.0	467.9
<i>Over-the-counter</i>	45.0	23.3	2.6	35.1	21.6	84.3	212.0
High-level residential aged care	265.7	59.0	64.8	38.5	0.0	54.1	482.2
Research	14.1	2.9	2.6	6.8	3.6	25.2	55.2
Total expenditure	1,183.1	246.1	220.5	567.0	298.6	2,118.0	4,633.3
(per cent)							
Hospital services	47.9	27.6	17.7	40.7	38.1	38.2	39.4
<i>Admitted</i>	41.7	11.1	14.4	22.5	29.2	24.5	27.8
<i>Non-admitted</i>	6.2	16.5	3.2	18.2	8.8	13.7	11.7
Out-of-hospital medical services	10.5	14.6	13.3	14.0	5.3	28.0	19.0
Other professional services	5.4	13.5	3.0	23.7	46.0	15.8	15.3
Pharmaceuticals	12.5	19.2	35.4	13.6	9.4	14.2	14.7
<i>Prescription</i>	8.7	9.7	34.3	7.4	2.2	10.2	10.1
<i>Over-the-counter</i>	3.8	9.5	1.2	6.2	7.2	4.0	4.6
High-level residential aged care	22.5	24.0	29.4	6.8	0.0	2.6	10.4
Research	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Total expenditure	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Columns may not add to totals due to rounding.

Source: AIHW Disease Expenditure Database.



Health expenditure for arthritis and musculoskeletal conditions in Australia, 2000–01

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Glossary

admitted patient	A patient who undergoes a hospital's formal admission process to receive treatment and/or care. This treatment and/or care is provided over a period of time and can occur in hospital and/or in the person's home.
arthroplasty	Surgery to replace a painful, damaged or diseased joint with an artificial joint. Also called 'joint replacement surgery'.
average length of stay	The average of the length of stay in hospital for admitted patient episodes.
chiropodist	A health professional who treats people with problems and diseases affecting the feet. Also called a podiatrist.
chiropractor	A health professional who treats people with problems associated with the body's muscular, nervous and skeletal systems, especially the spine.
encounter	Any professional interchange between a patient and a general practitioner.
endocrinologist	A medical practitioner who specialises in the diagnosis and treatment of conditions affecting the endocrine glands.
general practitioner (GP)	A medical practitioner who provides primary comprehensive and continuing care to patients and their families within the community (Royal Australian College of General Practitioners).
morbidity	Refers to ill health in an individual and to levels of ill health in a population or group.
non-admitted patient services	Services provided by hospitals through outpatient clinics, emergency departments and other specialised services where the patient is not formally admitted to the hospital.
orthopaedic surgeon	A medical practitioner who has specialised in surgery of the bones.
physiotherapist	A health professional who treats people with physical problems by identifying and maximising movement potential.
principal diagnosis	The diagnosis describing the problem that was chiefly responsible for the patient's episode of care in hospital.
principal procedure	The most significant procedure that was performed for treatment of the principal diagnosis.
separation	The formal process by which a hospital records the completion of treatment and/or care for an admitted patient.

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