

The Burden of Musculoskeletal Diseases in the United States

is a joint project of the American Academy of Orthopaedic Surgeons, American Academy of Physical Medicine and Rehabilitation, American College of Rheumatology, American Society for Bone and Mineral Research, Arthritis Foundation, National University of Health Sciences, Orthopaedic Research Society, Scoliosis Research Society, and the United States Bone and Joint Decade.

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Bone and Joint Decade

The Bone and Joint Decade is an international collaborative movement sanctioned by the United Nations/World Health Organization working to improve the quality of life for people with musculoskeletal conditions and to advance the understanding, prevention and treatment of these conditions.

Officially proclaimed by the U.S. President, the United States Bone and Joint Decade (USBJD) 2002-2011 has been endorsed by all 50 States and more than one hundred national health care professional, patient and public organizations, all 125 U.S. medical schools and many colleges of medicine.

The goal of the United States Bone and Joint Decade is to improve bone and joint health by enhancing collaborative efforts among individuals and organizations in order to raise awareness of the growing burden of musculoskeletal disorders on society, to promote wellness and prevent musculoskeletal disease, and to advance research that will lead to improvements in prevention, diagnosis and treatment.

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The Burden of Musculoskeletal Diseases

in the United States

*Prevalence,
Societal
and Economic Cost*

The material presented in *The Burden of Musculoskeletal Diseases in the United States* is made available for informational purposes only. This material is not intended to suggest procedures or course of treatment, only to provide an interpretation of available data on the incidence and prevalence of most major musculoskeletal conditions.

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Musculoskeletal diseases, which include back pain, arthritis, bodily injuries, and osteoporosis, are reported by persons in the U.S. more than any other health condition. In 2004, the estimated total cost of treatment and lost wages associated with musculoskeletal diseases was \$849 billion, equal to 7.7 percent of the gross domestic product (GDP). In spite of this high cost, funding for research to reduce the pain and suffering created by these conditions is currently less than 2 percent of the National Institutes of Health budget each year.

The Burden of Musculoskeletal Diseases in the United States was produced by experts from rheumatology, orthopaedic surgery, physical medicine and rehabilitation, and other musculoskeletal health care specialties to provide a better understanding of the extent and burden of current and future musculoskeletal diseases as the proportion of the U.S. population over the age of 65 increases. Preventive measures and new treatments are urgently needed to alleviate the pain and disability caused by musculoskeletal diseases.

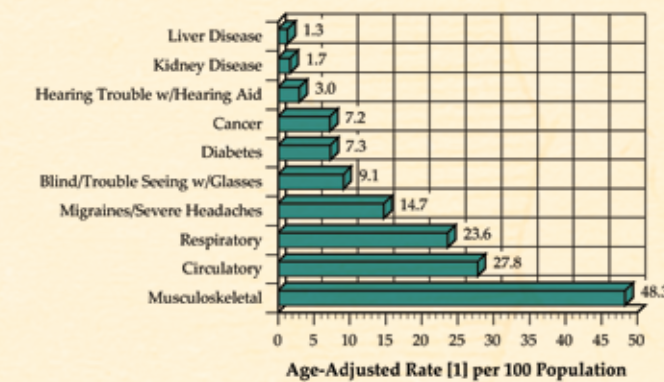
This Executive Summary has been developed from *The Burden of Musculoskeletal Diseases in the United States*, a joint project of a number of musculoskeletal organizations under the auspices of the United States Bone and Joint Decade. The full publication can be viewed at: www.boneandjointburden.org

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The Burden of Musculoskeletal Disease

Musculoskeletal diseases rarely are a cause of death and do not have the high visibility of conditions such as heart problems, respiratory problems, and cancer, yet they are more prevalent. They are a major cause of pain and reduced quality of life. In 2005, 107.7 million adults, one in two aged 18 and over, reported suffering from a musculoskeletal condition lasting three months or longer during the past year. This is nearly twice the number who reported any other medical condition. In addition, nearly 15 million adults reported they were unable to perform at least one common activity, such as self-care, walking, or rising from a chair, on a regular basis due to their musculoskeletal condition.

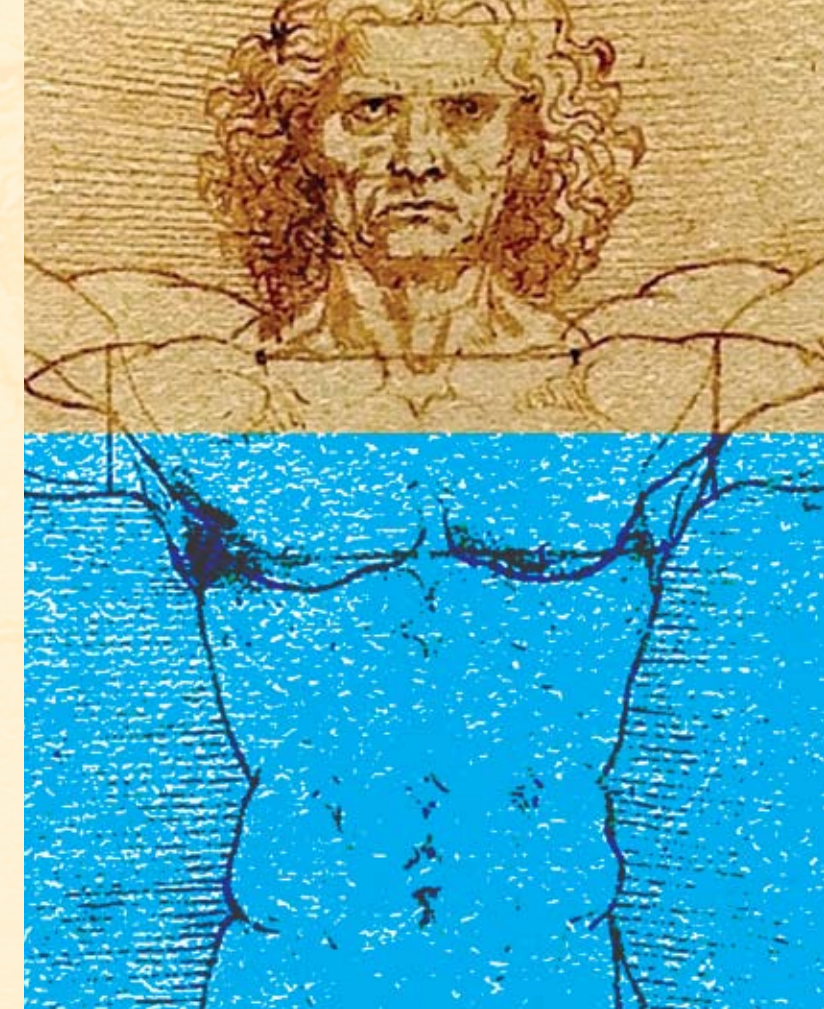
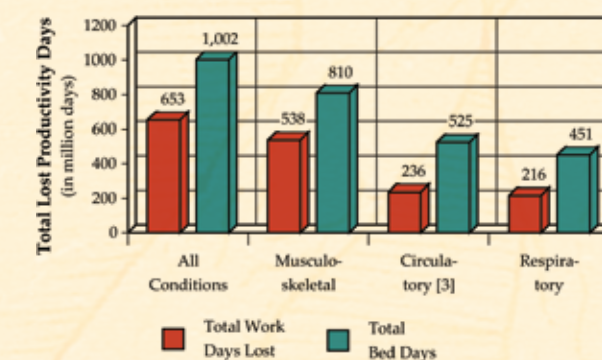
Prevalence of Self-Reported Primary Medical Conditions for Persons Aged 18 and Over, United States 2005



The Cost of Musculoskeletal Diseases

In 2004, the estimated cost for treatment of patients with musculoskeletal conditions was \$510 billion, the equivalent of 4.6 percent of the GDP. Indirect cost, primarily lost wages, were estimated to add another \$339 billion, or 3.1 percent of the GDP, resulting in total cost attributed to patients with musculoskeletal diseases of \$849 billion, or 7.7 percent of the GDP. In addition, musculoskeletal diseases accounted for the majority of both lost work and bed days due to health conditions in 2005.

Total Productivity Loss Due to Select Medical Conditions for Persons Aged 18 and Over, United States, 2005



Impacts of Aging

Musculoskeletal diseases occur more frequently as people age. Currently, persons over 65 years account for 12 to 13 percent of the total population; by 2030 it is expected they will comprise 20 percent, an increase of more than 50 percent. Activities that place stress on bones and joints in younger years, a sedentary lifestyle and obesity are major contributors to joint diseases. In coming decades, expectations of a healthy, active life throughout retirement years are projected to create an even greater burden on health care resources due to musculoskeletal diseases.

The Future

Aging of the U.S. population, higher rates of diagnoses and treatment, increasing medical cost and the cost of higher earnings loss all contribute to the rising burden of musculoskeletal diseases. A focus on preventative measures, such as education for weight loss and exercise programs, can help reduce this burden. Improvements in surgical techniques, joint replacement devices, and drugs and therapy to help return individuals to higher levels of functioning and quality of life will be imperative.

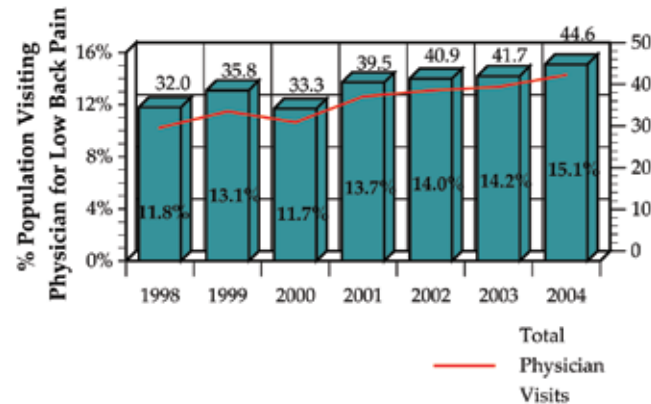
For graphs/charts citations visit full publication chapters at: www.boneandjointdisease.org

The Spine

Low back and neck pain are among the most common physical conditions requiring medical care. They also greatly affect the ability to work and manage daily activities of life. Each year one in two persons will experience back pain severe enough to make them aware of it. One in five will experience back pain severe enough to limit the amount or type of work they can do, with one in 20 unable to work at all. One in seven persons will spend at least one-half day in bed due to back pain. For many, the pain will last only a few days or weeks. However, chronic back pain of months to years often results.

Low back pain is reported by close to 30 percent of the adult population in two national health surveys. It is also the most common physical condition for which patients visit their doctor. In 2004, 15 percent of the U.S. population visited their physician with a complaint of back pain, a steadily rising rate since 1998. Overall, 40.5 million persons sought medical treatment for low back pain in 2004 with 4 percent of patients requiring hospitalization.

Trend in Number and Proportion of the Population with Physician Visits for Back Pain, United States 1998-2004



Neck pain is reported by 15 to 21 percent of adults in the two studies. Although less common, neck pain was the cause of 16.4 million patient visits in 2004. As with low back pain, most visits were to a doctor's office, but 3 percent of patients required hospitalization.

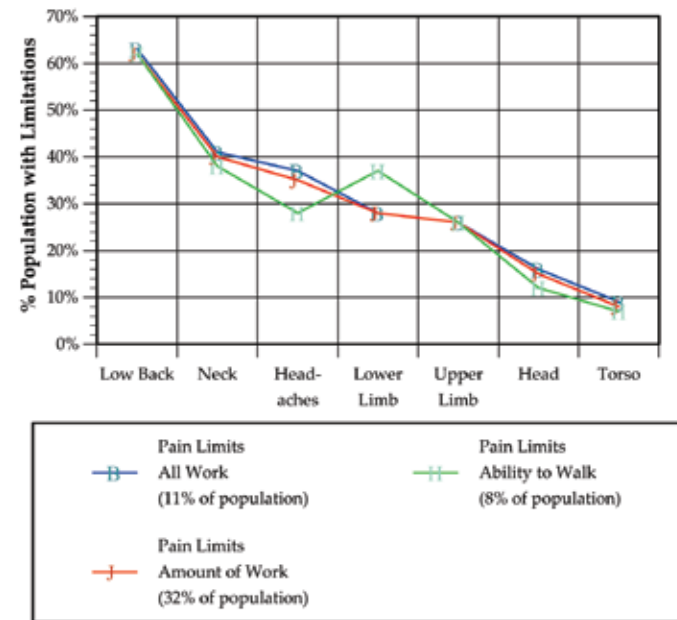
The Cost of Back Pain

In 2004, the estimated annual direct cost of treating back pain was \$193.9 billion. Between 1996 and 2004, the cost of spine conditions, in 2004 dollars, increased by 49 percent. The largest share of increase was related to prescription medications. In addition, annual indirect costs for lost wages resulting from back pain were estimated to add another \$22.4 billion to this cost.

Equally costly is the impact of back pain on the quality of people's lives. Back pain is the most frequently identified cause of limitations in ability to work or walk. Between 1999 and 2004, an average of 62 percent of persons reporting work or walking limitations reported low back pain as a cause. Neck pain was the second most frequently cited cause.

In 2004, 25.9 million persons lost an average of 7.2 days of work due to back pain, a total of 186.7 million work days lost that year.

Proportion of Persons Aged 18 and Over Reporting Pain Limits Ability to Walk or Work by Pain Site, United States 1999-2004

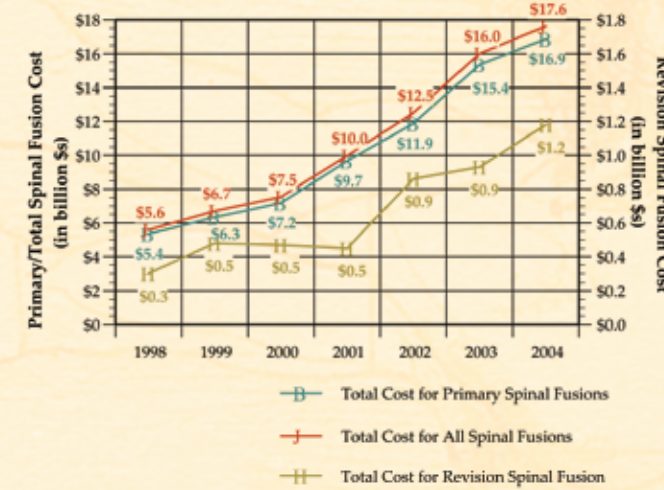


Spinal Procedures to Treat Back Pain

While non-surgical treatment for back pain is the treatment of choice, when back pain becomes so disabling that patients can no longer function in the activities of daily living, spine surgery may be performed. The three procedures most commonly performed are spinal diskectomy, spinal fusion and spinal decompression.

The number of spinal fusion procedures performed annually has increased steadily since 1998. The cost of performing spinal fusions in 2004 was estimated to be \$17.6 billion, more than three times the total cost in 1998. A diskectomy is performed primarily on patients with a ruptured disk. About 300,000 procedures are performed each year. In 2004, the total health care cost associated with diskectomy procedures was estimated to be \$11.25 billion. More than one-half (53 percent) of patients were between the ages of 45 and 64.

Seven Year Trend in Total Cost for Spinal Fusion Procedures, United States 1998-2004



The Future

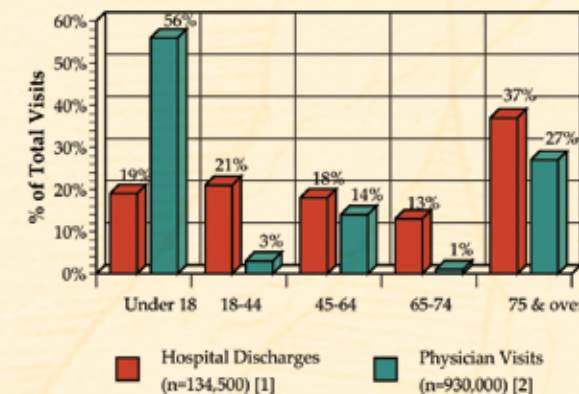
Greater understanding of the causes of back pain and its resultant disability is needed to halt the rising trend. Understanding why disk degeneration causes pain in some while not in others is needed to address both the burden of pain and the disability it causes.

Spinal Deformity and Related Conditions

Spinal deformities are conditions in which the spine is abnormally curved or aligned. One of the more common forms is scoliosis, a side-to-side abnormal curvature of the spine.

In 2004, 1.26 million patients required health care for spinal deformity. The majority, 74 percent, were visits to a doctor's office. Approximately 134,500 patients with spinal deformity were hospitalized; 93 percent of hospitalized patients were diagnosed with scoliosis. While more than one-half of the patients seen for spinal deformity and scoliosis in 2004 were under the age of 18, 37 percent of those treated in the hospital were aged 75 and older.

Hospitalization and Physician Visits for Spinal Deformity and Related Conditions Diagnosis by Age, United States 2004



The Cost of Spinal Deformity

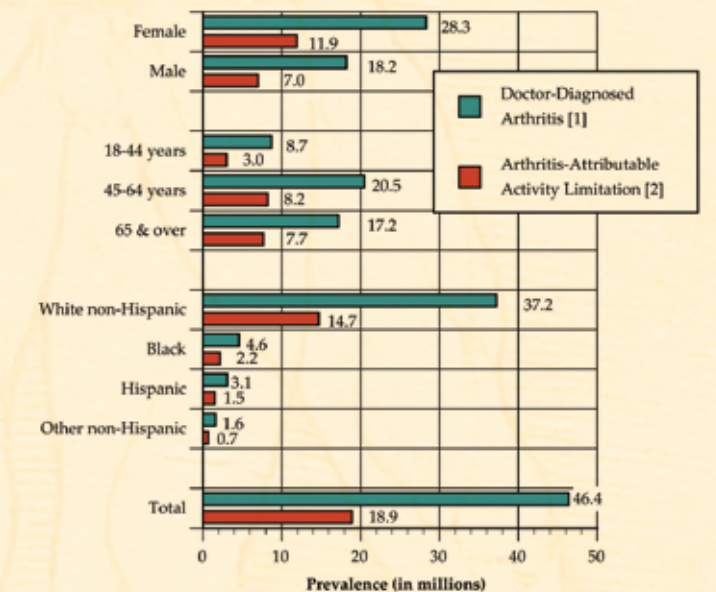
The estimated cost of treating patients hospitalized with a primary or first diagnosis of scoliosis in 2004 was \$688.1 million. Of this total, adult scoliosis was estimated to cost \$315.3 million, while child and adolescent primary idiopathic scoliosis hospitalization costs were \$373.3 million. Additional estimated costs of \$2.0 billion for treatment of hospitalized patients with any diagnosis of idiopathic scoliosis were incurred in 2004.

Arthritis and Related Conditions

Arthritis and other rheumatic conditions, identified as AORC, are the second most common musculoskeletal diseases among adults and often lead to disability and the inability to work. Among the more recognized AORC conditions, which include more than 100 diseases, are osteoarthritis, a degenerative joint disease; rheumatoid arthritis, a chronic inflammatory condition; gout, a painful and recurrent form of arthritis recognized from ancient times; and lupus. More than 300,000 children are affected by rheumatic conditions.

In 2003-2005, 46.4 million persons, or 21.6 percent of the adult population, reported having an AORC condition. Women are more likely to suffer from osteoarthritis than men, but it affects both sexes. In 2005, symptomatic osteoarthritis in the hands was estimated to affect 13.1 million adults in the U.S., 9.3 million adults had symptomatic knee osteoarthritis. Based on a doctor's examination, an estimated 26.9 million adults had clinical osteoarthritis in at least one joint in 2005. Rheumatoid arthritis was estimated to affect 1.3 million adults in 2005.

Prevalence of Self-Reported Doctor-Diagnosed Arthritis and Arthritis-Attributable Activity Limitations Among Adults Aged 18 & Older by Age, Sex, and Race/Ethnicity, United States, 2003-2005



The Cost of Arthritis and Related Conditions

In 2004, the estimated annual cost for medical care to treat all forms of arthritis and joint pain was \$281.5 billion, an increase of 53 percent in 2004 dollars over the estimated cost in 1996. The increasing cost of prescription drugs accounts for the largest proportion of this increase, and now accounts for 23 percent of arthritis-related expenses.

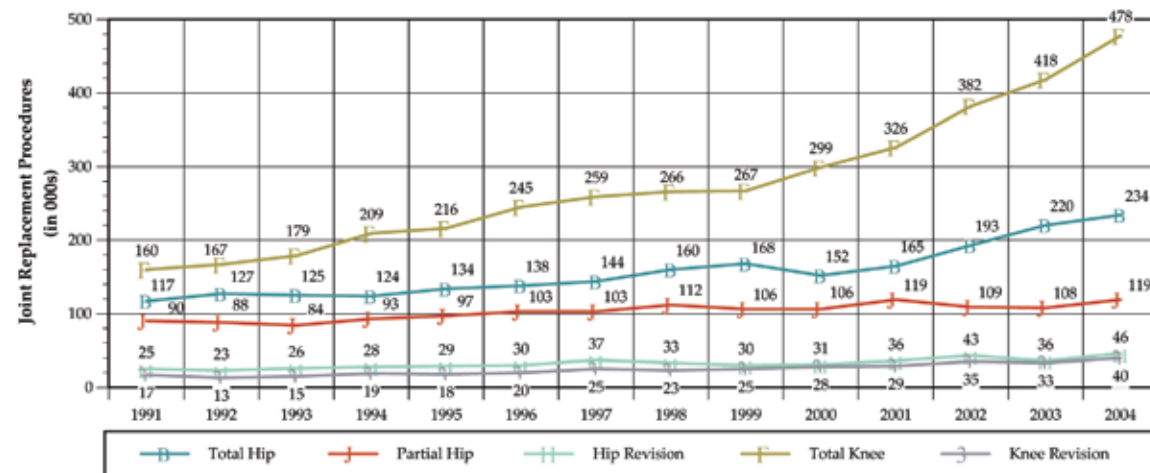
Indirect cost of lost wages due to an arthritic condition was estimated to be \$54.3 billion per year. About 9 percent of adults in the U.S., nearly 19 million, reported they had limitations in performing activities of daily living due to an arthritic condition. This number is expected to grow to 25 million persons by the year 2030.

In 2004, health care visits by persons with an AORC condition included 44.2 million ambulatory care visits, representing 5 percent of all care visits, to doctor's offices, hospital emergency rooms, and outpatient clinics. As a primary, or first diagnosis, AORC conditions accounted for 992,100 hospitalizations, while 4.6 million patients were hospitalized with an AORC condition along with another condition. Osteoarthritis is the most frequent cause of health care visits for an AORC condition.

Impact of Aging

One in two adults aged 65 and over has some form of arthritis. Osteoarthritis and rheumatoid arthritis are both found in increasing frequency in an aging population. However, nearly two-thirds of persons with arthritis are currently younger than 65 years. Although arthritis affects both men and women, it is more common in women.

Total Hip and Knee Joint Replacement Procedures, United States 1991 to 2004



Joint Replacement: Treatment of Choice for Painful Arthritic Joints

Joint replacement has become the treatment of choice to restore function in severely arthritic joints. Arthroplasty procedures are available for a multitude of joints. The most frequently replaced joints are the knee and hip, followed by the shoulder. Total hip and primary knee replacements are performed almost exclusively due to osteoarthritis, with two of three persons hospitalized for osteoarthritis in 2004 undergoing a joint replacement procedure. A small proportion of replacements are due to rheumatoid arthritis or another condition. A partial hip replacement is performed principally for hip fracture.

The number of joint replacement procedures performed each year has risen steadily since the early 1990s, with knee replacements showing the highest growth. In 2004, 1.07 million joint replacement procedures were performed. Ninety-five percent (95%) of the procedures performed were on hips and knees. The estimated total hospital cost for joint replacements in 2004 was \$30 billion.

Joint replacement procedures are proven to be one of the most successful procedures available today. By 2030, it is projected more than 570,000 primary total hip replacements will be performed annually in the U.S. and nearly 3.5 million primary total knee replacements.¹ Continued research to improve the longevity of implants is needed to reduce the overall burden and cost of arthritis affected joints on an active, aging population.

The Future

In recent years, new medications have been used to address pain and disability associated with arthritis and other rheumatic conditions. Ongoing testing and research is needed to ensure medications are both safe and effective.

Primary prevention of AORC remains a sought-after but elusive goal. Risk factors are not well understood for most of the conditions, and studies are needed to identify these before preventive measures can be developed. Early diagnosis and treatment that may prevent joint damage once the condition is present is a goal for those with rheumatoid arthritis and other inflammatory types of arthritis. Finally, the prevention of complications is being pursued through the use of medications and other recommended interventions, such as self-management of the disease, education, physical activity, and weight loss.

Arthritis is the most common cause of disability² in adults, and a leading cause of work limitations.³ Over the next 25 years the number of people in the U.S. with arthritis and arthritis-attributable activity limitations is projected to increase by 40 percent to 67 million persons, affecting 25 percent of the adult population.⁴ Understanding the current and future impact of these conditions on the health care and public health systems is critical to reducing the burden of arthritis.

¹ Kurtz S, Lau E, Mowat F, et al: The future burden of hip and knee revisions: U.S. projections from 2005 to 2030. Paper presented at: 73rd Annual Meeting of the American Academy of Orthopaedic Surgeons: Chicago, IL; 2006.

² Centers for Disease Control (CDC): Prevalence of disabilities and associated health conditions among adults—United States, 1999. *Morb Mortal Wkly Rep* 2001;50:120-125.

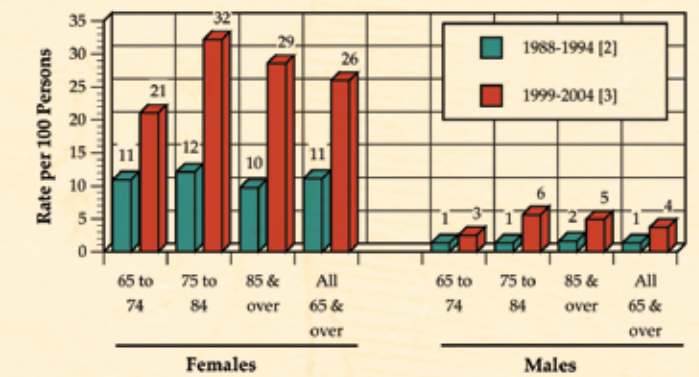
³ Stoddard S, Jans L, Ripple J, Kraus L: Chartbook on work and disability in the United States, 1998, in, *An InfoUse Report*, Washington D.C.: U.S. National Institute on Disability and Rehabilitation Research, 1998.

⁴ Hootman JM, Helmick CG: Projections of U.S. prevalence of arthritis and associated activity limitations. *Arthritis Rheum* 2006;54:226-229.

In the 1999 to 2004 National Health and Nutrition Examination Survey, nearly 10.5 million men and women aged 65 and over reported they had been told by their doctor they had osteoporosis, a rate of 26 in 100 women and 4 in 100 men. These rates of osteoporosis are dramatically higher than those found a decade earlier, likely due to increased testing of bone mass and extensive educational and awareness efforts. It is believed that osteoporosis is significantly under-diagnosed. In 2004, only 16 percent of persons admitted to the hospital with a low energy fracture were diagnosed with osteoporosis.

Falls are the leading cause of injury among persons aged 65 and older in the United States. Fractures are the primary cause of hospitalization or death following a fall. Osteoporosis is a leading underlying cause of low energy fractures after a fall. One in two women and one in four men over aged 50 will have an osteoporosis-related fracture in her or his remaining lifetime.⁵

Self-Reported Rate of Osteoporosis for Persons Aged 65 and Over, United States 1988-1994 and 1999-2004



Osteoporosis and Bone Health

Osteoporosis is a disease characterized by low bone mass and deterioration of bone structure that increases the risk of fracture. Osteoporosis is often called the "silent disease," progressing without symptoms until a low energy fall or minor activity fractures a bone. Osteoporosis can occur without a known cause or be attributed to another secondary condition, such as hyperthyroidism or celiac disease, or to medication, such as steroids.

The epidemiology of osteoporosis has only been fully described in Caucasian women, making estimates of the total number of persons with osteoporosis difficult to determine. In fact, we now know that osteoporosis affects men and women, and all ethnicities. The National Osteoporosis Foundation estimated there were 29.5 million women and 11.7 million men in the U.S. with osteoporosis or low bone mass in 2002. On average

The Cost of Osteoporosis

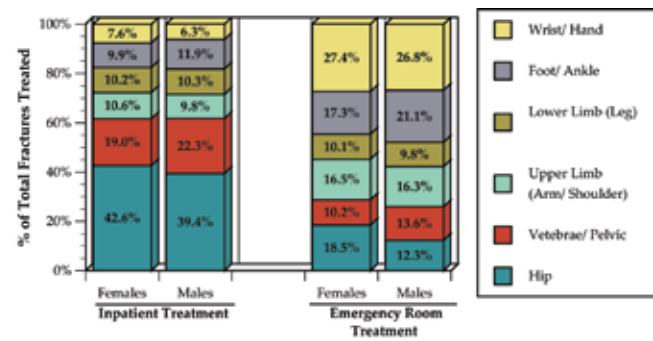
In 2004, the estimated cost of treating patients hospitalized with a diagnosis of osteoporosis was \$19.1 billion, although it is unlikely that osteoporosis was the primary, or first, diagnosis of these patients. The estimated cost of treating patients with a low energy fracture in 2004 was \$24.2 billion.

Among persons aged 45 and over, 6.2 million visits to a doctor or other health care center were for osteoporosis, and another additional 5.7 million visits were attributed to a low energy fracture in 2004. While most were treated in a doctor's office, 704,300 persons were hospitalized for a low energy fracture, primarily of the hip/pelvic area or vertebrae, and 1.23 million were treated in emergency rooms, primarily for wrist fractures.

Hip fractures significantly impact quality of life, and are often associated with chronic pain, reduced mobility, disability, and an increasing degree of dependence.⁶ The mortality rate in the first 12 months after hip fracture is

20 percent or higher.^{5,7} Current estimates are that one in four hip fractures occurs in males, and recent research indicates that men will have a different course of recovery than women, with higher rates of disability as well as mortality.^{8,9} Fifty percent of persons experiencing a hip fracture will be unable to walk without assistance, and 25 percent will require long-term or nursing home care.¹⁰

Proportion of Fracture Treatment for Persons Aged 45 and Over by Anatomic Site and Treatment Location, United States 2004



Impact of Aging

Osteoporosis is more common among seniors due to the gradual loss of bone which leads to reduced bone strength. Life-time factors affecting the rate of bone loss include heredity, menopause, serious health conditions and their treatment, as well as lifestyle factors such as diet, lack of weight-bearing exercise, smoking, or excessive alcohol consumption.

The Future

In 2002, an estimated 44 million persons over the age of 50 in the U.S. were at risk for fracture due to osteoporosis or low bone mass. By 2020, if current trends continue and effective treatments are not found and widely implemented, it is estimated that over 61 million persons will be at risk.¹¹ Projected costs for care of osteoporosis and low energy fractures over the next two decades are \$474 billion.¹² In addition to dollar cost, osteoporosis-related fractures bring a burden of pain and disability, resulting in time lost from work or the inability to perform activities of daily living.

For most people, the possibility of future low bone mass is set in the late teens and early twenties, a critical time in the building of bone density and quality. Hip fractures at an older age reflect previous history in maintaining maximum bone density and quality. The initiation of society-wide prevention measures for bone health, greater emphasis on identifying individuals at risk for osteoporosis and identification of new strategies to improve treatment and treatment adherence in high-risk groups are needed to combat the growing burden caused by osteoporosis.

5 National Osteoporosis Foundation (NOF): National Osteoporosis Foundation Fast Facts. Available at: www.nof.org/osteoporosis/diseasefacts.htm. Accessed September 19, 2007.

6 International Osteoporosis Foundation (IOF): Facts and statistics about osteoporosis and its impact, in, 2007. Available at: www.iofbonehealth.org/facts-and-statistics.html. Accessed September 19, 2007.

7 Moran CG, Wenn RT, Sikand M, Taylor AM: Early mortality after hip fracture: is delay before surgery important? *J Bone Joint Surg Am* 2005;87:483-489.

8 Orwig DL, Chan J, Magaziner J: Hip fracture and its consequences: differences between men and women. *Orthop Clin North Am* 2006;37:611-622.

9 Hawkes WG, Wehren L, Orwig D, et al: Gender differences in functioning after hip fracture. *J Gerontol A Biol Sci Med Sci* 2006;61:495-499.

10 Riggs BL, Melton LJ: The worldwide problem of osteoporosis: insights afforded by epidemiology. *Bone* 1995;17:505S-511S.

11 National Osteoporosis Foundation (NOF): *America's Bone Health: The State of Osteoporosis and Low Bone Mass in Our Nation*. Washington DC: National Osteoporosis Foundation, 2002.

12 Burge RT, Dawson-Hughes B, Solomon DH, et al: Incidence and economic burden of osteoporosis-related fractures in the United States, 2005-2025. *J Bone Miner Res* 2007;22:465-475.

Musculoskeletal Injuries

More than 3 of every 5 accidental injuries that occur annually in the U.S. are to the musculoskeletal system. In 2004, more than 57.2 million musculoskeletal injuries were treated in health care settings, and accounted for 60 percent of injuries of all types treated that year.

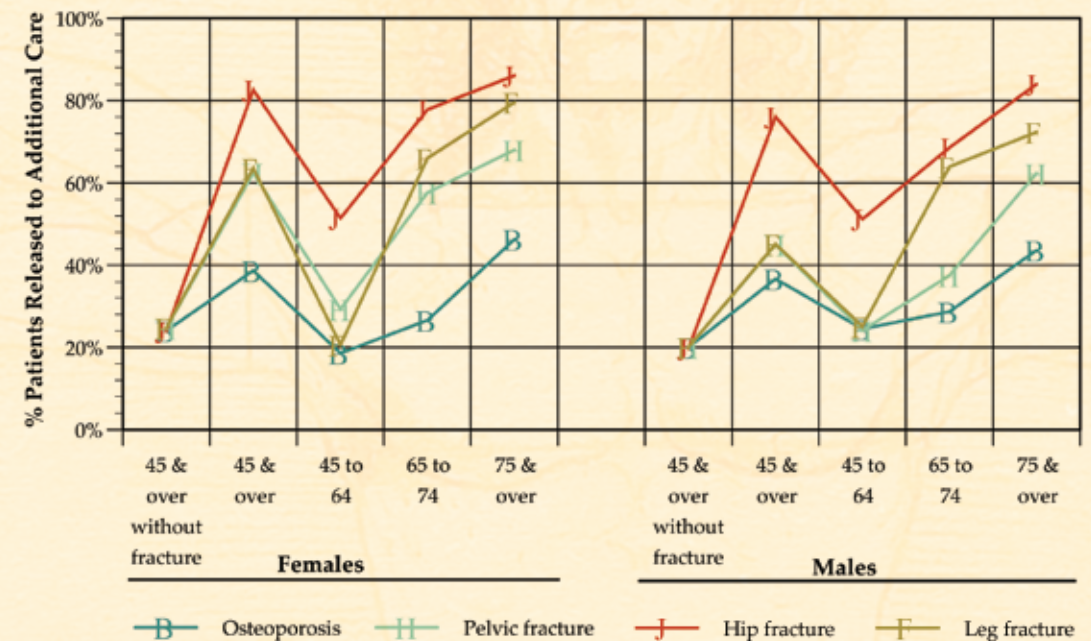
Musculoskeletal injuries include sprains and strains, usually incurred during sudden movement or excessive use (16.3 million injuries in 2004); fractures (15.3 million); open wounds, cuts and punctures (10.3 million); and contusions and bruises (8.4 million). Many more musculoskeletal injuries occur that are treated at home.

One in two musculoskeletal injuries occurs in the home, more than in any other location. About one in ten occurs while playing in sports activities, and another one in ten in automobile or pedestrian accidents.

Falls are the leading cause, 29 percent, of nonfatal musculoskeletal injuries. Among persons aged 65 and over, falls were the cause of 63 percent of nonfatal injuries treated in 2003.¹³

Workplace musculoskeletal injuries, known collectively as musculoskeletal disorders (MSDs), occur each year due to accidents and to cumulative and repetitive motion. MSDs are tracked by the U.S. Department of Labor, Bureau of Labor Statistics. MSD injuries are often more severe than the average nonfatal workplace injury or illness, with longer recovery time and an average of nine days

Hospital Discharge to Short/Intermediate/Skilled Nursing Care for Persons Aged 45 and Over by Age and Sex for Persons with Osteoporosis, Low Energy Fractures [1] and without a Fracture, United States, 2004



away from work, two days longer than average for all workplace injuries.¹⁴ Even though long term trends since 1996 show significant reductions in the total number of worker injuries each year, the proportion that are musculoskeletal related continues to account for more than one-half of all nonfatal injury cases involving days away from work.

The Cost of Musculoskeletal Injuries

The estimated cost in 2004 of treating all musculoskeletal injuries was \$127.4 billion. Since 1996, in 2004 dollars, the cost of treating musculoskeletal injuries has risen 37 percent. The share of cost attributed to prescription drugs rose from 11 percent in 1996 to 17 percent in 2004.

Only 3 percent of persons with a musculoskeletal injury were admitted to a hospital for treatment in 2004, yet this group represented 31 percent of all hospitalizations for an injury. The estimated total cost for treatment of hospitalized musculoskeletal injuries in 2004 was \$26.6 billion. The majority of this cost, 88 percent, is related to hospitalization for fractures.

Musculoskeletal injuries also produce significant cost due to days spent in bed or lost work days. Slightly more than one in ten persons in the workforce in 2005 reported a musculoskeletal injury caused them to miss work, with a cumulative total of 72.1 million work days lost due to these injuries.

Musculoskeletal injuries are often a cause of physical limitations in a person's ability to perform activities of daily living. In 2004, four out of every 100 persons, and 11 of 100 aged 65 and older, reported they were currently experiencing limitations in their ability to perform their daily activities as a result of a fracture and/or bone or joint injury.

The Future

Treatment of fractures, repetitive motion injuries, sprains and strains, and other musculoskeletal injuries will continue to be a major cost to the medical community and society. Education to increase awareness of the causes and how to avoid musculoskeletal injuries is needed. Improved treatment to reduce the long-term pain and disability, particularly from fractures in the elderly, is needed.

Activities "Unable to Perform" Due to Fracture of Bone/Joint Injury for Persons Aged 18 and Over, United States 2003-2004



13 National Safety Council. *Injury Facts, 2005-2006*. Itasca, IL: National Safety Council, 2006, p 13.

14 National Institute for Occupational Safety and Health (NIOSH): *Workers Health Chartbook*. Cincinnati, OH: Department of Health and Human Services, Centers for Disease Control and Prevention, 2004, p 58.

Congenital and Infantile Developmental Conditions of the Musculoskeletal System

Congenital and infantile developmental conditions of the musculoskeletal system include a variety of defects, ranging from extra fingers or toes to serious and disabling conditions, such as spina bifida. Congenital conditions are present at birth, while infantile developmental conditions present themselves in the first few months of a child's life.

Although the overall rate of congenital and infantile developmental conditions of the musculoskeletal system is low in comparison to other types of musculoskeletal conditions, they place a high life-time burden on patients, their families, and the medical community.

The estimated number of infants born each year with one of eight musculoskeletal defects ranges from just over 600 infants born with a longitudinal limb deficiency (missing one or more arms or legs) to more than 5,600 with polydactyly (the presence of extra fingers or toes.) Cerebral palsy, a group of disorders that affect a person's ability to move and to maintain balance and posture, is thought to affect 3 in 1000 children. Congenital and infantile developmental musculoskeletal conditions affect children of various races in different numbers.

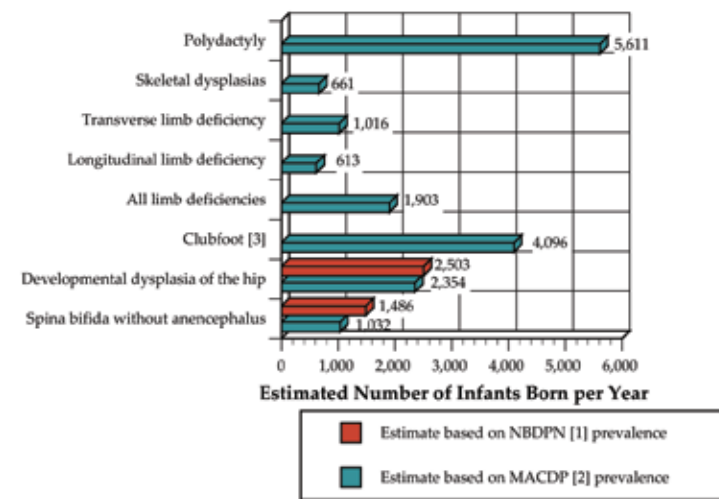
The Cost of Congenital and Infantile Developmental Conditions

The small number of persons affected with these conditions precludes accurate estimates of the cost of treating children and adults with congenital and developmental musculoskeletal conditions.

The Future

Further surveillance and research efforts in congenital and infantile developmental conditions are needed. First, a better understanding is needed of the extent to which these conditions affect disability, death, and the need for health care services. Second, there is a need to identify possible causes and factors that may influence the health status, development, and level of functioning of children with these conditions. Finally, there is a need to develop and evaluate potential ways to prevent their occurrence.

Estimated Number of Infants Born per Year in the United States with Selected Congenital Musculoskeletal Defects, 1999-2003



Neoplasms of Bone and Connective Tissue

Musculoskeletal bone-related cancers include bone and joint cancers and myeloma. The three most common primary cancers of bones and joints are osteosarcoma (bone tissue), Ewing's sarcoma (shaft of long bones and pelvic bones), and chondrosarcoma (malignant cartilage cells). Of these three cancers, Ewing's sarcoma is generally considered to have the worst prognosis. Myeloma is a malignant primary tumor of the bone marrow that can form in any of the bone-marrow cells and usually involves multiple bones at the same time.

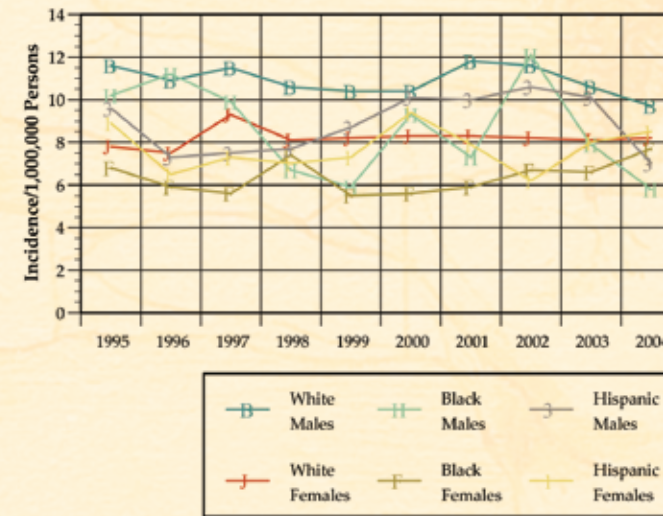
Soft tissue sarcomas are malignant tumors that develop in any part of the body, including fat, muscle, nerve, fibrous tissues around joints, blood vessels, or deep skin tissues.

In addition, many types of benign (non-cancerous) tumors form in the bones and soft tissues. Benign tumors are not tracked in any national database.

Bone cancers are found more often in males than females, and among white persons more than those of any other race. The average annual incidence of bone cancers between 2000 and 2004 was nine in one million persons; the rate among all males was ten in one million. Although annual rates of cancers of the bones and joints and myeloma vary somewhat, the overall incidence has remained relatively constant since the mid-1970s.¹⁵

Bone and connective tissue cancers are rare when compared with other cancers, accounting for about 1.5 percent of annual cancer cases between 2000 and 2004.

Incidence of Cancers of Bones and Joints, by Sex and Race United States 1995-2004



It is estimated 2,370 persons will be diagnosed with cancer of the bones and joints each year. Myeloma will be diagnosed in 19,900 persons each year.¹⁶ An additional 1,330 persons will die of cancer of the bones and joints, while 10,790 will die of myeloma. Soft tissue sarcomas are diagnosed in over 5,700 persons annually, and 3,560 persons with a soft tissue sarcoma will die.¹⁷

However, metastatic cancer to the bone (cancers that start in other organs yet spread to the bone) are far more prevalent and will occur in up to one-half of the estimated 600,000 people that will die of some form of cancer in the US annually.

The Cost of Neoplasms of Bone and Connective Tissue

Dollar costs associated with neoplasms of bone and connective tissue are not available.

Impact of Aging

Cancers of the bones and joints attack younger patients than most other broad categories of cancer, with one-half of persons diagnosed with a bone and joint cancer under the age of 40. More than one in four diagnoses (28 percent) of bone and joint cancer each year will be for children, youth and young people under the age of 20. This compares to a rate of 1 percent of all types of cancers diagnosed in children, youth and young people. A similar ratio is found related to death among children, youth and young people under the age of 20 from bone and joint cancers. Thus, bone and joint cancers, while rare, affect young people disproportionately.

Metastatic cancers tend to occur more frequently in the population over 50 years of age.

The Future

The high rate of diagnosis and death from bone cancers among children, youth and young adults creates a significant burden on the ability to work and the life of future generations. At least 75 percent of surviving bone and joint cancer patients will require surgery to save their diseased limbs.

The greatest overall expense will be for the treatment of patients with metastatic disease. Up to one half of patients that die of metastatic cancers will ultimately have it spread to their skeleton, especially those cancers that originate in the breasts, lungs, kidneys, thyroid glands and gastro-intestinal tract. Thus, ultimately these tumors will cause extensive health burden to the musculoskeletal system.

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