HOPE

PREVENTION

CARE

EXERCISE

HEALTH

ARTHRITIS IN WISCONSIN

2009 BURDEN REPORT

WISCONSIN ARTHRITIS PROGRAM

OVERALL PREVALANCE OF ARTHRITIS

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HIGHLIGHTS: ARTHRITIS IN WISCONSIN

ARTHRITIS BY PREVALENCE

In Wisconsin, more than 27% of adults aged 18 years and older (1.1 million) reported that they have some form of arthritis during 2003–2007. Wisconsin's prevalence rate is similar to that of the U.S. rate of 26%.

ARTHRITIS BY CHARACTERISTICS

Although arthritis affects both men and women, women have a higher prevalence rate. During 2003–2007 about 31% of Wisconsin women (647,000) reported arthritis in comparison to 24% of Wisconsin men (484,000). Overall, more women than men have osteoarthritis. Not all types of arthritis are more common in women; more men have gout.

Arthritis affects persons of all races and ethnicities: Of adults with arthritis 28% are white; 27% are African American; 27% are Hispanic; and 18% are of other race.

Of those with arthritis, 37.8 % have limitations in daily activities.

Over 57% of Wisconsinites, over 65 years of age, have arthritis.

Adults who are overweight or obese are more likely to have arthritis than those of normal weight. In Wisconsin 33% of those who were obese reported they also had arthritis compared to 20% without arthritis.

Over 50% of adults with diabetes and heart disease also have arthritis.

An estimated 5,400 Wisconsin children have arthritis.

ARTHRITIS INTERVENTIONS

In 2003 and 2005 only 10.5% of Wisconsin residents have taken a class to learn to manage their symptoms.

Physical activity benefits persons with arthritis. About 47% of adults with arthritis reported a doctor or other health professional recommended physical activity or exercise to manage their arthritis.

Weight management and weight loss are an effective intervention for preventing joint diseases and disabilities. Among persons with arthritis, 21.3% reported receiving counseling from their health care provider to lose weight.

ARTHRITIS COSTS

In Wisconsin costs related to arthritis and rheumatic conditions total nearly $2.4 billion per year. This amount includes $1.5 billion in direct costs (i.e., medical expenditures) and $895 million in indirect costs (i.e., lost earnings).

INTRODUCTION

Arthritis is one of the most common chronic conditions in the United States and the world. Currently about one in five adults report having arthritis. Recent projections forecast a higher proportion of the population will develop arthritis as the population ages. (1,2)

Arthritis means "joint inflammation", based on a combination of Greek words; "arthron" for joint, and "itis" for inflammation. Arthritis is a chronic joint disease that affects joints, surrounding muscles, tendons, and tissues. The conditions may cause pain, discomfort, stiffness and swelling, not only in the joints, but in the surrounding muscles, tendons, and bones.

Arthritis is comprised of over 100 disease types and rheumatic conditions. The 100 types of arthritis refers to many, different conditions associated with joints, surrounding tissues, and connective tissues. Arthritis and other rheumatic conditions include osteoarthritis, rheumatoid arthritis, systemic lupus erythematosus, gout, bursitis, Lyme disease, carpal tunnel disease, and other conditions. (1,2)

Arthritis may be divided into two categories. One category is degenerative, and the other is inflammatory.

Osteoarthritis (OA) is the most common arthritis condition. OA is a degenerative joint cartilage condition that often affects the hands, hips, knees, and spine. Other types arthritis, such as rheumatoid arthritis is associated with abnormal immune responses in the body. Most of the causes of arthritis are unknown. Effective treatments and strategies are readily available.

Arthritis has garnered increasing attention because it is the leading cause of disability in the United States. The U.S. Department of Health and Human Services has included arthritis in its Health People 2010 national health plan. Some of the major issues defining the national objectives include: (3)

HIGH PREVALENCE

According to annual estimates, about 46 million U.S. adults report doctor-diagnosed arthritis, including one million in Wisconsin. As the population ages, these estimates will sharply increase. In the U.S. the prevalence of self-reported doctor-diagnosed arthritis is projected to increase to about 67 million by 2030, or about 20% of the adult population. This trend reflects the future impact of increasing trends in overweight and inactivity. By 2030, projections estimate that about one third of those with arthritis will report activity limitation due to their arthritis. (4)

COMMON DISABILITY

Arthritis is a leading cause of disability and functional limitation and trails only heat disease as the leading work disability. About 19 million U.S. adults are limited in their activities of daily living; this prevalence is expected to increase to 22 million persons by 2020. (5)

Economic, social and psychological burdens may develop for those with the condition, affecting their family, friends, and employers. The effects of arthritis often convert into economic terms, such as lost wages, and medical expenses. In many cases, pain, inability to perform activities of daily living, and loss of independence are difficult to document.

HIGH LIFETIME RISK

A recent study estimated that the lifetime risk of developing knee osteoarthritis, with symptoms of pain, is 45%. Risk increases when other factors are present, such as previous knee injury and increased weight. (6)

HIGH COSTS

The total costs of arthritis was $128 billion, including $81 billion for direct costs (medical, hospital, clinic), and $47 billion in indirect costs (lost wages, lost productivity). Wisconsin's share was $1.5 billion in direct costs and $895 million in indirect costs, totaling nearly $2.4 billion. (7,8)

COMPLICATIONS

Studies indicate that arthritis makes it more difficult to be physically active. Not being physically active is a risk factor for many other chronic diseases. Since many persons with arthritis also have other chronic diseases, such as heart disease, or diabetes, new ways to assist people are needed. (2)

WISCONSIN ARTHRITIS PROGRAM

The federal Centers for Disease Control and Prevention (CDC) awarded a cooperative agreement to the Wisconsin Department of Health Services (DHS) for the Wisconsin Arthritis Program. Wisconsin is one of 12 states funded for this purpose.
To address the burden of arthritis, curb expansion of major risk factors, and reduce disabilities from the various types of arthritis, the Wisconsin DHS, Division of Public Health's Arthritis Program partners with Milwaukee Area Health Education Center and the Arthritis Foundation-Wisconsin Chapter, and with numerous, other community organizations.

The Wisconsin Arthritis Program, with its many partners, developed a statewide plan and surveillance report in 2002, and updated them in 2009.

The Arthritis Action Plan focus areas are:

- Data collection, surveillance, and evaluation;
- Promoting increased access to interventions;
- Supporting policies to address arthritis;
- Working in collaboration with other chronic disease programs.

Many stakeholders who focus on increasing awareness of the prevalence of arthritis, and reaching more persons with interventions and programs, will use this updated surveillance report. In addition, this report will assist in the Arthritis Action Plan's updated revision and tracking progress toward objectives.

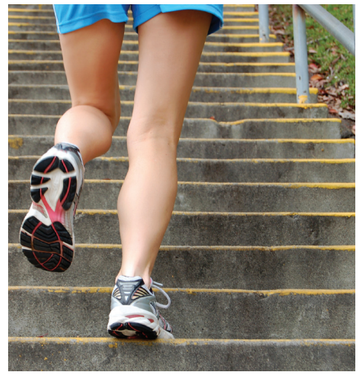
This *Arthritis in Wisconsin – 2009* report outlines the prevalence, risk factors, and other population characteristics of those who have arthritis in Wisconsin. Policy makers, advocates, public health workers, and clinicians may use this information as they face new challenges with the projections of many more persons with arthritis in the near future.

PREVALENCE OF ARTHRITIS IN WISCONSIN

Arthritis is a prevalent chronic condition with many, far reaching, implications for population health. The current determination of who has arthritis in Wisconsin is not tracked in health registries, such as in infectious diseases, but rather by health surveys. The measure of prevalence of arthritis is based on responses to the Behavioral Risk Factor Surveillance System (BRFSS). This is a state-based, random-digit-dialed health survey of adults (18 years and older). The federal Centers for Disease Control and Prevention administers the survey in states, territories, and the District of Columbia. The CDC included questions about arthritis since 1999. The CDC recommendation for arthritis is self-reported doctor diagnosed arthritis condition only. (Appendix A)

Respondents with self-reported doctor-diagnosed arthritis answered "yes" to the question: "Have you ever been told by a doctor or other health professional that you have some type of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?"

Therefore, for the purpose of this report, persons with doctor-diagnosed arthritis refers to those who stated that a health professional had told them they had arthritis based on these questions during the telephone interviews. Data represent combined responses from years 2003, 2005, and 2007. Wisconsin collected arthritis-related information through the BRFSS before 2003, but CDC recommended a new case definition in 2003. (Appendix B)



ARTHRITIS RISK FACTORS

There are two types of risk factors for health conditions: those that cannot be changed; known as non-modifiable, such as age, gender, and genetics; and those that are modifiable; such as weight, physical activity levels, smoking, or sports or occupational injuries.

ARTHRITIS RISK FACTORS

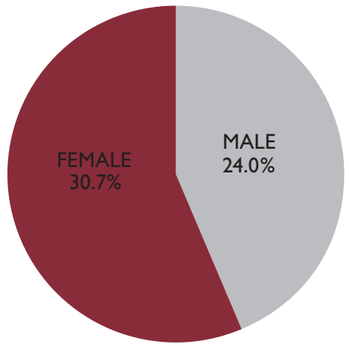
MODIFIABLE RISK FACTORS	NON-MODIFIABLE RISK FACTORS
Weight	Age
Physical Activity	Gender
Sports or Occcupational Joint Injury	Genetics
Tobacco Use or Exposure (RA)	

WISCONSIN'S ARTHRITIS PREVALENCE

Approximately 27.2% of adults aged 18 years and older (1.1 million) reported having arthritis during the years 2003-2007. Wisconsin's prevalence of arthritis is similar to the United States rate (26.1%).

Although arthritis affects men and women, women have a higher prevalence rate. Arthritis is the leading chronic condition among women. Women with osteoarthritis have more joints involved with more joint swelling symptoms than men. Not all types of arthritis are more common among women than men. More men have gout than women. Wisconsin women are more likely to report arthritis for all age groups, with the exception of the youngest age group.

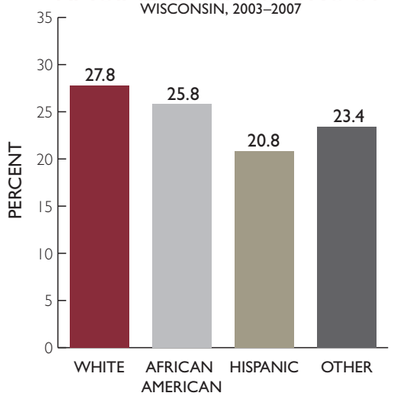
FIGURE 1: PREVALENCE OF ARTHRITIS BY
GENDER
WISCONSIN, 2003–2007



Source: Wisconsin BRFSS

During the three combined years of data, 30.7% of Wisconsin women (647,000) reported arthritis compared to 24% Wisconsin men (484,000). There are approximately 1,040,000 non-Hispanic whites (28%); 41,000 non-Hispanic African –Americans (27%); and 21,000 Hispanic (27%) adults who reported that they were diagnosed with arthritis.

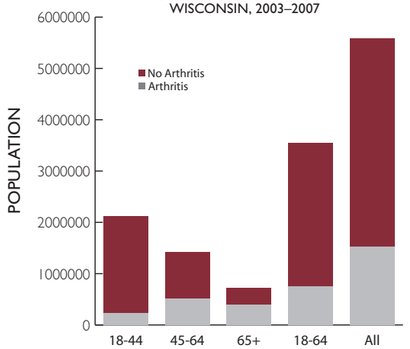
FIGURE 2: PREVALENCE OF ARTHRITIS BY
RACIAL/ETHNIC GROUP
WISCONSIN, 2003–2007



Source: Wisconsin BRFSS

The prevalence of self-reported arthritis ranges from 11.3% among 18-34 years olds, to 56.1% among those 65+ olds. Prevalence increases significantly in men and women 50 years and older. Half of the elderly population has arthritis or a rheumatic condition. Because age is associated with the likelihood of developing arthritis, it is necessary to adjust for the effect of age when comparing populations. Wisconsin's counties show variation with arthritis prevalence rates. (Appendix C)

FIGURE 3: PREVALENCE OF ARTHRITIS BY
AGE GROUPS
WISCONSIN, 2003–2007



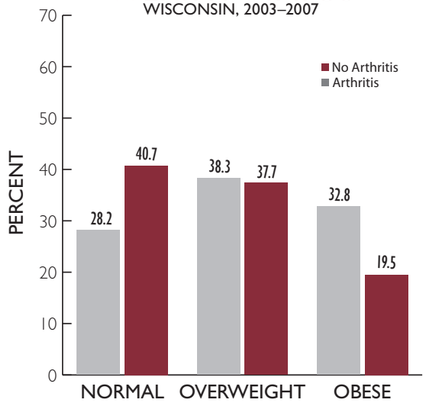
Source: Wisconsin BRFSS and NCHS

PREVALENCE OF ARTHRITIS BY WEIGHT CATEGORY, WISCONSIN, 2003-2007

Adults who are overweight or obese have higher rates of OA than do normal weight persons. Being overweight increases the load on the joint causing stress on cartilage that may affect surrounding tissue and bone. Obesity is a risk factor for both OA development and progression; and reducing weight will decrease OA risk and symptoms. (9)

Weight category is based on body mass index (BMI), a measurement based on height and weight. Weight categories are normal, overweight and obese. A normal weight is a BMI of 19 and less than 25; overweight is a BMI of 25 and less than 30. Obesity is a BMI of 30 or greater. (Appendix A)

FIGURE 4: PREVALENCE OF ARTHRITIS BY
WEIGHT STATUS
WISCONSIN, 2003–2007



Source: Wisconsin BRFSS

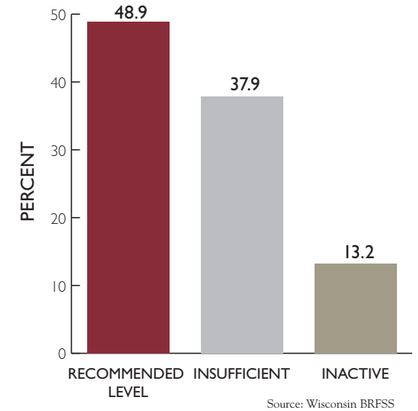
During the three-year study period, there were 28.2% of those of normal weight with arthritis compared to 40.7% with persons without arthritis. Of those with arthritis, 38.3% were overweight compared with 37.4% of persons without arthritis; and 32.8% were obese, compared to 19.5% without arthritis. Wisconsin adults who were obese were 1.4 times more likely to report arthritis than a person who reported a normal weight.

PREVALENCE BY EDUCATION LEVEL

The prevalence of arthritis varies by educational level. In Wisconsin 34.1% adults with a high school education reported arthritis, compared to 29.1% among persons who reported some college education and 24.7% among persons who reported a college degree.

RISK OF DEVELOPING PAINFUL KNEE OSTEOARTHRITIS INCREASES WITH WEIGHT	
Healthy weight	30%
Overweight	47%
Obese	61%

FIGURE 5: PREVALENCE OF ARTHRITIS BY
PHYSICAL ACTIVITY LEVELS
WISCONSIN, 2003–2007



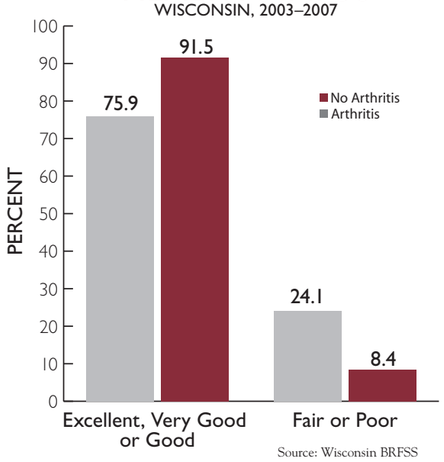
Source: Wisconsin BRFSS

There is an opposite relationship between income and the prevalence of arthritis. Among persons with an annual income of less than $20,000, 25.2% stated they had arthritis. As income increased to 50,000 or more, the percentage of persons with arthritis decreased to 21%.

PHYSICAL ACTIVITY/EXERCISE

In Wisconsin, adults with arthritis are more than twice as likely to report inactivity (13.5%) as adults who do not have arthritis (6.8%). The recommended physical activity for those with arthritis is 30 minutes of moderate physical activity for three or more days of the week. (10)

FIGURE 6: PREVALENCE OF ARTHRITIS BY
HEALTH STATUS
WISCONSIN, 2003–2007



Source: Wisconsin BRFSS

HEALTH-RELATED QUALITY OF LIFE

BRFSS has questions about health-related quality of life (HRQL). These questions refer to perceived physical and mental health well-being over time. HRQL is often used for gaining information from persons with chronic conditions in order to characterize their day to day coping and management.

In Wisconsin, adults with arthritis were nearly three times as likely to report being in fair or poor health than those without arthritis (24.1% vs 8.4%) Adults with arthritis were also less likely than persons without arthritis to report experiencing seven or more days in the last month when their physical health or mental was not good.

INJURIES

Injuries related to occupations, sports, or other sources that result in joint injuries and ligament damage can increase the risk of OA. For example, a history of joint trauma is the strongest risk factor for unilateral OA of the knee or hip. (11)

ARTHRITIS MANAGEMENT (ARTHRITIS MANAGEMENT MODULE)

The Behavioral Risk Factor Surveillance Systems (BRFSS) offers the states the opportunity to ask respondents with arthritis additional questions in an Arthritis Management Module. The module questions focus on activities of daily living, physician advisement, and educational courses. Wisconsin asked these additional questions in 2003 and 2007.

Persons with arthritis described their ability to function on the day they responded to the telephone survey. These were increases in the percentage of those who reported they could do "everything" or "most things" they wanted to do from 2003 to 2007. The categories of could do "something" or "hardly anything they like to do" have decreased, representing areas of improvement.

RESPONSES TO BRFSS ARTHRITIS MANAGEMENT QUESTIONS

	2003	2007
I can do everything	30%	36%
I can do most things I would like to do	44%	45%
I can do some things I would like to do	20%	15%
I can hardly do anything I would like to do	7%	4%

- The benefits of physical activity are numerous, specifically for those with arthritis. Physical activity assists with overall health, muscle strength, balance, and endurance. During the study years, 47% of adults with arthritis reported a doctor or other health professional recommended physical activity or exercise to manage their arthritis.
- Maintaining a healthy weight lowers the risk of arthritis. Weight management and weight loss are an effective intervention for preventing joint diseases and disabilities. Among persons with arthritis, 21.3% reported receiving counseling from their health care provider to lose weight.
- When asked if they had ever taken an educational course or class to learn how to manage their condition, 10.5% of persons with arthritis reported they had taken a course. This finding underscores the need for sustained and coordinated efforts to reach more persons with arthritis with self-management or arthritis-related interventions.

OTHER ISSUES

ACTIVITY LIMITATIONS

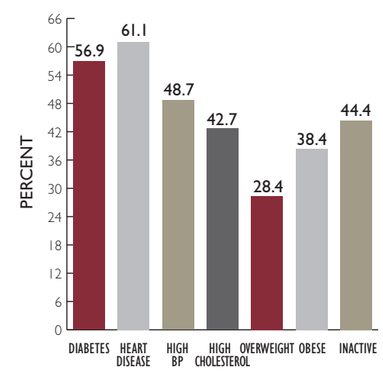
When asked if arthritis or joint symptoms limited their usual activities in any way, more than one third (39%) of Wisconsin adults with arthritis reported that they limited their activities due to their condition. Pain appears to play a lead role in activity limitation for persons with arthritis. Among Wisconsin residents who reported they limited their activities because of health problems, arthritis was listed as the leading problem that limited activity (16%), followed closely by back or neck problems (15%).

More than one third of adults with arthritis (36%) reported they needed help with their routine needs such as everyday household chores, doing necessary business, shopping, or getting around for other purposes compared to one in five adults without arthritis (22%).

CO-EXISTING CONDITIONS

More than half of adults with diabetes or heart disease also have arthritis. The presence of arthritis can complicate management of these chronic conditions by presenting an additional barrier to healthier lifestyles, such as increased pain during physical activity.

FIGURE 7: PREVALENCE OF ARTHRITIS AMONG THOSE WITH CHRONIC CONDITIONS
WISCONSIN, 2005–2007



Source: Wisconsin BRFSS

CHILDREN AND ARTHRITIS

People of all ages are affected by arthritis including children and adolescents. Juvenile rheumatoid arthritis is one of the most common illnesses of childhood and adolescence. CDC estimates that there were 294,000 children with this condition during 2001-2004. Wisconsin's estimate, derived from the national estimate, was 5,400 children diagnosed with arthritis. (13,14)

DISPARITIES IN WISCONSIN

There are disparities related to arthritis among different population in Wisconsin. Causes for the many differences are often unknown; but may be related to both genetic and environmental factors. Examples of disparate burden include the following:

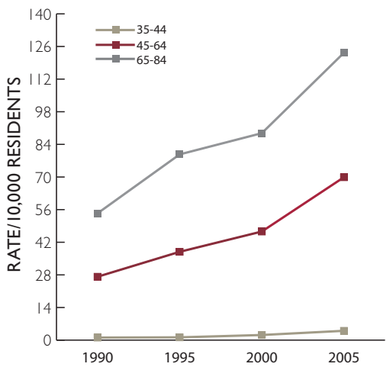
- While African American prevalence of arthritis is not different from non-Hispanic/Whites and Hispanic/Latinos, arthritis symptoms have a more significant affect on reported disability, activity limitation, and quality of life.
- Hispanic/Latinos and Hmong face language barriers and unique issues related to access to healthcare.
- Despite the substantial increase in the rates of total knee replacements for both populations, total knee replacements among Blacks was 37 percent lower than for whites in 2000 (31% lower in Wisconsin), and remained virtually unchanged in 2006 (37% lower in Wisconsin – a 6% change). Nationally and in Wisconsin, the rates for total knee replacements were lowest among black men and highest among white women.
- Some professions like farming that require repetitive movement, heavy lifting, and other activities that could lead to occupational injury, have a higher prevalence of arthritis than other professions that require little physical stress on the body. (11,14)

EXPENDITURES

HEALTH EXPENDITURES

Persons with arthritis who have functional impairment and pain symptoms are candidates for total joint replacement surgeries. Overall, this type of surgery has increased over 58% from 2000 to 2006 in the United States. (15,16) In Wisconsin, arthritis is a frequent and costly principal diagnosis for inpatient hospital discharges. Many residents are seeking and undergoing total hip and knee replacement surgeries. Joint replacement surgeries have dramatically increased with wide variations among age categories.

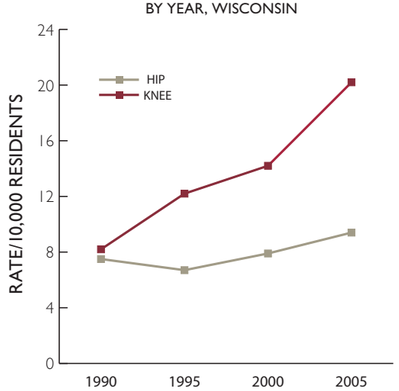
FIGURE 8: AGE-ADJUSTED RATES FOR
KNEE REPLACEMENT SURGERY
BY AGE AND YEAR, WISCONSIN



Source: Inpatient Hospital Discharge File, Wisconsin DHS, DPH (1990–2004), and Wisconsin Hospital Information Center, Inc. (after 2004)

Arthritis-related inpatient discharge diagnosis age-adjusted rate for knee replacement escalated from 8.2 per 10,000 hospital discharges in 1990 to 20.2 in 2005. The age-adjusted rate for hip replacement has increased as well, from 7.5 in 1990 to 9.94 in 2007.

FIGURE 9: AGE-ADJUSTED RATES FOR
HIP & KNEE REPLACEMENTS
BY YEAR, WISCONSIN



Source: Inpatient Hospital Discharge File, Wisconsin DHS, DPH (1990–2004), and Wisconsin Hospital Information Center, Inc. (after 2004)

With increasing prevalence and increases in expenditures toward joint replacement surgeries have shown arthritis to be a costly diagnosis.

ARTHRITIS-RELATED* TOTAL HOSPITAL DISCHARGES, ALL AGES, WISCONSIN

YEAR	N	AVERAGE CHARGE	AVERAGE LENGTH OF STAY
2007	646,521	$19,179	4.3
2005	650,094	$16,544	4.3
2003	640,139	$14,337	4.5

* Refer to arthritis-related diagnostic codes. (Appendix B)
Source: Inpatient hospital discharge file, 2003,2005, 2007, Bureau of Health Information and Policy. Wisconsin Hospital Association Information Center, Inc.

ARTHRITIS-RELATED* TOTAL KNEE REPLACEMENTS HOSPITAL DISCHARGES, ALL AGES, WISCONSIN

YEAR	N	AVERAGE CHARGE	AVERAGE LENGTH OF STAY	AGE-ADJUSTED RATES/10,000 RESIDENTS
2007	13,469	$32,007	3.4	21.6
2005	12,529	$28,409	3.6	20.3
2003	10,570	$24,700	3.9	18.3

* Refer to arthritis-related diagnostic codes. Procedural Code 815.4 (Appendix B)
Source: Inpatient hospital discharge file, 2003,2005, 2007, Bureau of Health Information and Policy. Wisconsin Hospital Association Information Center, Inc.

ARTHRITIS-RELATED* TOTAL HIP REPLACEMENTS HOSPITAL DISCHARGES, ALL AGES, WISCONSIN

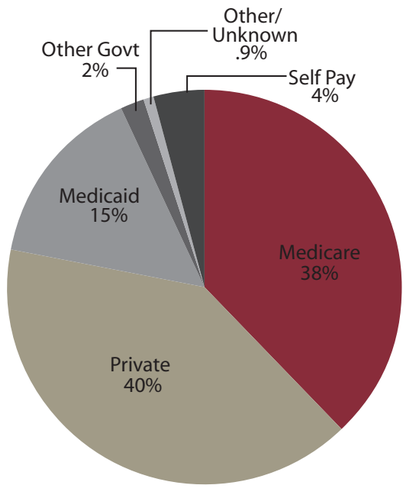
YEAR	N	AVERAGE CHARGE	AVERAGE LENGTH OF STAY	AGE-ADJUSTED RATES/10,000 RESIDENTS
2007	6,149	$33,965	3.5	9.9
2005	5,767	$30,503	3.7	9.4
2003	5,421	$26,794	4.0	9.4

* Refer to arthritis-related diagnostic codes. Procedural Code 815.1 (Appendix B)
Source: Inpatient hospital discharge file, 2003,2005, 2007, Bureau of Health Information and Policy. Wisconsin Hospital Association Information Center, Inc.

PAYERS

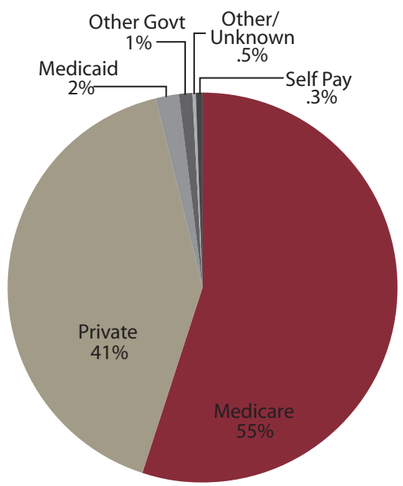
For the study years, the majority of joint replacement hospitalization charges were billed to Medicare, reflecting the age when complications related to joint disease lead to increased hospitalizations.

FIGURE 10: HOPITALIZATION CHARGES
ALL ARTHRITIS DIAGNOSES
WISCONSIN 2003–2007



Source: Inpatient Hospital Discharge File, Wisconsin DHS, DPH (1990–2004), and Wisconsin Hospital Information Center, Inc. (after 2004)

FIGURE 11: HOPITALIZATION CHARGES
ARTHRITIS-RELATED KNEE REPLACEMENT
WISCONSIN 2003–2007



Source: Inpatient Hospital Discharge File, Wisconsin DHS, DPH (1990–2004), and Wisconsin Hospital Information Center, Inc. (after 2004)

CONCLUSIONS

This report presents the burden of arthritis on Wisconsin residents. By using these data , community members, advocates and health professionals may know the scope and prevalence of arthritis. The report outlines actions steps, interventions to prevent and reduce risk of arthritis. The public health challenges of arthritis, noted in this report, may be addressed through action, awareness, and education.

APPENDIX A: GLOSSARY

AGE-ADJUSTMENT RATES: Age-adjusted rates are used for comparison purposes. The rates are calculated by applying age-specific rates in a population to a standard population. In this way, rate differences from age differences in population composition are eliminated. Age adjusted rates are a relative indicator rather than an actual measure of prevalence.

BODY MASS INDEX (BMI): This measurement is a number calculated from a person's height and weight. BMI refers to weight categories. They are:

BMI	WEIGHT STATUS
Below 18.5	Underweight
18.5-24.9	Normal
25.0-29.9	Overweight
30.0 and above	Obese

$$\text{BMI (Pound Measurement)} = \frac{\text{Weight in pounds X 703}}{\text{Height in inches}^2}$$

$$\text{BMI (Metric Measurement)} = \frac{\text{Weight in kilograms}}{\text{Height in meters}^2}$$

Website: http://www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.pdf

CARTILAGE: Cartilage is the slippery tissue that covers the ends of bones in a joint. Healthy cartilage allows bones to glide over each other. It helps absorb the shock of movement. In osteoarthritis, the top layer of cartilage breaks down and wears away, allowing bones to rub together. The rubbing causes pain, swelling, and loss of motion of the joint

CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC): The Centers are an agency of the federal Department of Health and Human Services. CDC is the government agency responsible for the protection of the nation's health.

CONFIDENCE INTERVAL: The confidence interval is a measure of the prescision of an estimate. The wider the inteval the less precise the estimate. The 95% confidence interval is used throughout the report, meaning that there is a 95% chance that the true value of the estimate lies within the range

OSTEOARTHRITIS: This arthritis type is also known as degenerative joint disease. It is the most common type of arthritis.

PREVALENCE: Prevalence is the proportion of the population reporting a disease or condition.

JOINT REPLACEMENT: This type of surgery replaces a joint affected by disease or injury with an artificial joint.

RISK FACTOR: Risk factors are characteristics, attributes, or behaviors that increase the likelihood of developing a disease or condition.

APPENDIX B: TECHNICAL NOTES

DATA SOURCES

The report tables use analyses from the recent three years of Behavioral Risk Factor Surveillance System arthritis-related reposndent information (2003, 2005, 2007). Arthritis questions are asked in the odd years of the calendar. In contrast, tobacco-related questions are asked every year.

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS).

The measure of prevalence of arthritis is based on responses to the Behavioral Risk Factor Surveillance System (BRFSS). This is a state-based random-digit-dialed survey of adults (18 years and older). The survey does not include adults living in institutions. The federal Centers for Disease Control and Prevention (CDC) administers the survey in 50 states, territories, and the District of Columbia. The CDC included questions about arthritis since 1999. The CDC recommendation for the case definition of arthritis is self-reported doctor diagnosed arthritis condition only. Website: http://www.cdc.gov/arthritis/data_statistics/brfss_questions.htm

INPATIENT HOSPITALIZATIONS

Wisconsin has had an inpatient hospitalization data system since 1989 housed in the Depatmant of Health Services, Bureau of Health Information. In 2003, the data system responsibilities were transferred to the Wisconsin Hospital Association. All of Wisconsin's acute care, non-federal hospitals report inpatient records.

Arthritis hospitalizations were based on codes developed by the National Arthritis Data Workgroup ICD-9-CM diagnostic codes for arthritis and other rheumatic conditions.

In 1994, the National Arthritis Data Workgroup (NADW) defined arthritis and other rheumatic conditions using a set of ICD-9-CM diagnostic codes that represented all potential diagnoses for arthritis and other rheumatic conditions (Table 1. See Arth Care & Res 1995;8:203-211; MMWR 1994;43:433-438). This has provided a standard definition for arthritis and other rheumatic conditions to use when analyzing data having ICD-9-CM coding. Website: http://www.cdc.gov/arthritis/data_statistics/pdf/arthritis_codes_2004.pdf

OTHER NOTES

Rate Calculations

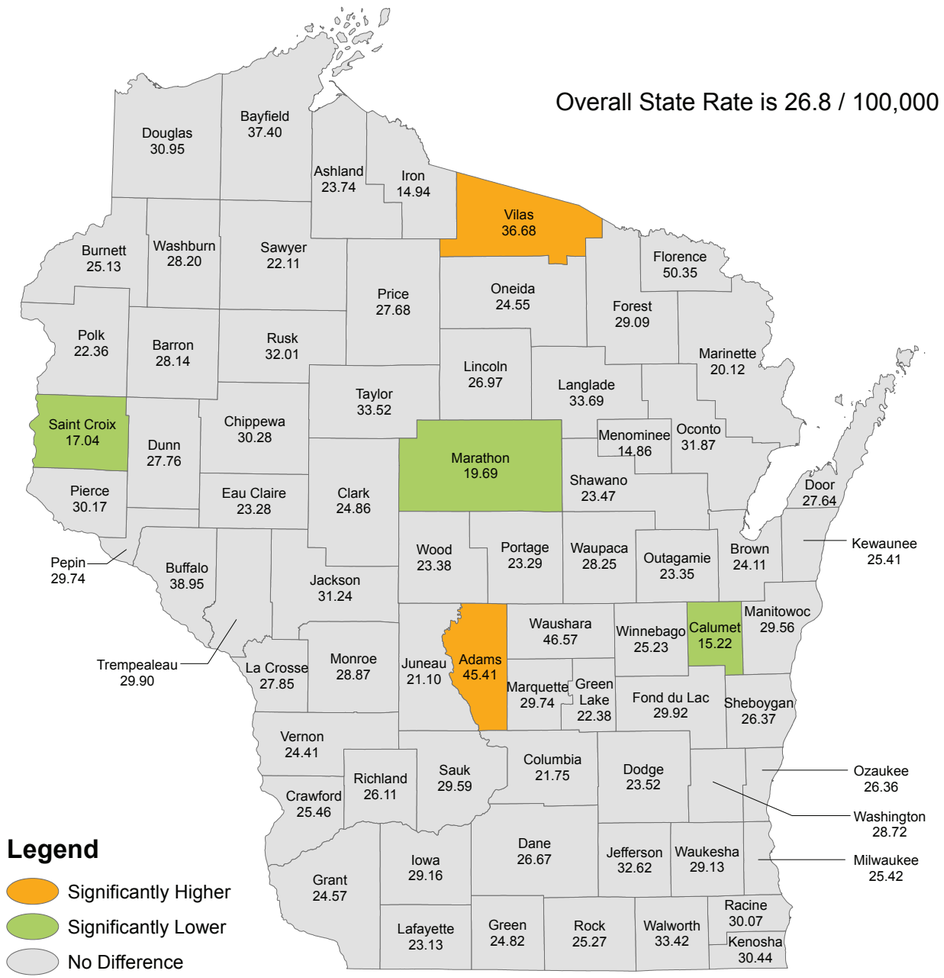
Rates are used to measure the burden of arthritis. A rate is the number of arthritis-related events in a population divided by the number of persons in the population during a specific time period.

Only events involving Wisconsin residents were used to calculate rates. Hospitalizations of Wisconsin residents in other states were excluded. Age-specific rates and age-adjusted rates were calculated directly using the U.S. standard population. (National Center for Health Statistics).

Responses that stated "Don't know" or "Refused" were eliminated from the analysis. Survey data (BRFSS) 95% confidence intervals were calculated using Statistical Analysis Software (SAS) 9.1. (SAS Institute, Cary, NC).

APPENDIX C: MAP

Age-adjusted Arthritis Prevalence Rate by County
Compared to Overall State Rate, 2003 - 2007



Data Source:
Bureau of Community Health Promotion
WI Department of Health Services
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REFERENCES

1. CDC Prevalence of doctor-diagnosed arthritis and arthritis –attributable activity limitation – United States, 2000-2005. Mortality and Morbidity Weekly Report (MMWR); 2006; 55:1089. http://www.cdc.gov/mmwr/preview/mmwrhtml/mmm5540a2htm.

2. Arthritis Foundation, Association of State and Territorial Health Officials, Centers for Disease Control and Prevention, National Arthritis Plan: A Public Health Strategy. Atlanta, GA. Arthritis Foundation, 1999.

3. Healthy People 2010. United States Department of Health and Human Services (DHHS). http://www.healthypeople.gov

4. Helmick CG, Felson DT, Lawrence RC, Gabrial S, Hirsch R, Kwoh K, Kwok CK, Liang MH, Kremers HM, Mayes MD, Merkel PA, Pillenger SR, Reveille SD, and Stone JH. 2008 Estimates of the prevalence of arthritis and other rheumatic conditions in United States. Part I. Arthritis and Rheumatism 58(1): 15-25.

5. Lawrence RC, Felson DT, Helmick CG, Arnold LM, Choi H, Deyo RA, Gabrial S, Hirsch R, Hochberg MC, Hunder GG, Jordan JM, Katz JN, Kremers HM, and Wolfe F. 2008 Estimates of the prevalence of arthritis and other rheumatic conditions in United States. Part II. Arthritis and Rheumatism 58(1): 26-35.

6. Murphy L, Schwartz TA, Helmick CG, Renner JB, Tudor G, Koch G, Dragomir A, Kalsbeek WD, Luta G, and Jordan JM. Lifetime risk of sympotomatic knee osteoarthritis. Arthritis Rheumatology (Arthritis Care Research) 2008: 59:1207-13.

7. CDC. Impact of arthritis and other rheumatic conditions on the health care system – United States, 1997. MMWR 1999; 48:349-53.

8. CDC. National and state expenditures and lost earnings attributable to arthritis and other rheumatic conditions – United States, 2003. MMWR 2007; 56:338.

9. Felson DT, Zhang Y, Anthony JM, Naimark A, and Anderson JJ. Weight loss reduces the risk for sympotomatic knee osteoarthritis in women. The Framingham Study. Annuals of Internal Medicine 116:535-539.

10. Hootman JM, Macera CA, Ham SA, Helmick CG, and Sniezek JE. 2003 Physical activity levels among the general U.S. adult population with and without arthritis. Arthritis Care and Research 49(1):129-135.

11. Felson DT, Hannan MT, Maimark A, et al. Occupational physical demands, knee bending, and knee osteoarharhritis results from the Farmingham Study. J Rheumatology 1999; 18:1587-92.

12. Sacks JJ, Helmick CG, Luo YH, Ilowite NT, and Bowyer S. Prevalence of and annual health care visits for pediatric arthritis and other rheumatic conditions in the United States in 2001-2004. Arthritis Care Research 2007; 57(8):1439-1445.

13. Minden K. What are the costs of childhood onset rheumatic disease? Best Practices & Research in Clinical Rheumatology; 20(2):223-240.

14. CDC. Racial/ethnic differences in the prevalence and impact of doctor-diagnosed arthritis. MMWR 2005; 54(05):119-121).

15. CDC Racial disparities in total knee replacement among Medicare enrollees – United States, 200-2006. MMWR 2009:58(06);133-135.

16. Wendelhoe, AM, Hegmann KT, Biggs JJ, Cox CM, Portmann AJ, Gildea JH, Green LH, and Lyon JL. Relationship between body mass indices and surgical replacements of knee and hip joints. American Journal of Preventative Medicine 25(4):290-295.

THE WISCONSIN ARTHRITIS ACTION COUNCIL VISION: FOR WISCONSIN INDIVIDUALS AND FAMILIES TO HAVE ACCESS IN ALL SETTINGS TO INFORMATION AND PROGRAMS RELATED TO ARTHRITIS PREVENTION, SELF-MANAGEMENT, AND APPROPRIATE COMPREHENSIVE CLINICAL CARE. **MISSION:** TO PROVIDE STATEWIDE COORDINATION AIMED AT PREVENTION, MANAGEMENT, AND SUPPORT FOR WISCONSIN RESIDENTS WITH ARTHRITIS AND THEIR FAMILIES AND TO EXPAND THE SCOPE AND AVAILABILITY OF RESOURCES IN ALL SETTINGS STATEWIDE (COMMUNITIES, WORKSITES, HEALTHCARE, AND SCHOOLS).

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For more information visit www.wisconsinarthritisprogram.org

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