

Public Health and Arthritis: A Growing Imperative

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- Forty-six million people have doctor-diagnosed arthritis and by 2030 it is projected to be 67 million, or 25% of the US population.
- Arthritis is the number one cause of disability and costs the United States an estimated 128 billion annually.
- Public health focuses on the assessment and reduction of health burden in the population.
- Three types of prevention strategies can be applied to arthritis.

The Merriam-Webster Dictionary defines public health as “the art and science dealing with the protection and improvement of community health by organized community effort and including preventive medicine and sanitary and social science.” Until the mid-20th century, the field of public health was primarily concerned with the prevention and control of infectious diseases. More recently, public health scientists and practitioners have also been engaged in the prevention and control of chronic diseases. In the mid-19th century, when the therapeutic armamentarium of physicians was limited, the relationship between the fields of public health and medicine was very close. Indeed, most public health professionals were physicians. However, as biomedical science led to more and more diagnostic and therapeutic strategies for physicians in the 20th century, and as separate schools of medicine and public health were established in American universities, the fields have developed different approaches to solving health problems. Medicine has been primarily concerned with the diagnosis and the palliative and curative treatments of disease and the health of the individual patient. Public health has been primarily concerned with the prevention and control of disease and the health of the population. The goal of this chapter is to illustrate the magnitude of the arthritis public health problem in the United States and to describe potential public health approaches to mitigate this problem. In order to more clearly describe public health perspective, science, and intervention, contrasts will be made with the medical approach, but this should not be interpreted to mean that one approach is

superior to the other. In fact, it is likely that arthritis patient–physician encounters will be more effective when arthritis public health efforts are successful and vice versa. It is this synergy for which both fields should be striving.

RATIONALE FOR ARTHRITIS PUBLIC HEALTH INITIATIVE

Arthritis and other rheumatic conditions are the leading cause of disability in the United States (1), making it a major public health problem. Arthritis is one of the most common chronic diseases in the United States. Forty-six million Americans, or one out of every five adults, has doctor-diagnosed arthritis, and 300,000 children have arthritis (<http://www.cdc.gov/arthritis/>). Between 2003 and 2004, an estimated 19 million US adults reported arthritis-attributable activity limitation and 8 million reported arthritis affected their work (2). Arthritis is a large clinical burden, with 36 million ambulatory visits and 750,000 hospitalizations (3,4). In 2030, due to the aging of the population and the growing epidemic of obesity, the prevalence of self-reported, doctor-diagnosed arthritis is projected to increase to nearly 67 million (25% of the adult population) and 25 million (9.3% of the adult population) will report arthritis-attributable activity limitations (Table 1-1) (5).

In the future, this arthritis-related clinical and health care system burden will require a planned

TABLE 1-1. ESTIMATED US POPULATION AND PROJECTED PREVALENCE OF DOCTOR-DIAGNOSED ARTHRITIS AND ACTIVITY LIMITATION FOR ADULTS AGES 18 AND OLDER IN THE UNITED STATES.

YEAR	ESTIMATED US POPULATION IN THOUSANDS	PROJECTED PREVALENCE OF DOCTOR-DIAGNOSED ARTHRITIS IN THOUSANDS	PROJECTED PREVALENCE OF ARTHRITIS- ATTRIBUTABLE ACTIVITY LIMITATIONS IN THOUSANDS
2005	216,096	47,838	17,610
2015	238,154	55,725	20,601
2030	267,856	66,969	25,043

SOURCE: Hootman JM, Helmick CG, *Arthritis Rheum* 2006;54:226–229, by permission of *Arthritis and Rheumatism*.

coordinated approach with increased need for more arthritis specialists, increased need for training of primary care providers in arthritis management, and increased availability of public health interventions to improve quality of life through lifestyle changes and disease self-management.

THE MEDICAL MODEL COMPARED WITH THE PUBLIC HEALTH MODEL

There are several differences between medicine and public health, but perhaps the most important difference is that of perspective. Medicine focuses on the *diagnosis and treatment of individuals*, whereas public health focuses on the *assessment and the reduction of health burden in the population*. The diagnostic tools of the physician includes history, physical examination, and a vast array of diagnostic tests including blood tests, imaging, and tissue sampling, all performed on the individual patient. Medical treatment includes pharmaceuticals, surgery, and rehabilitation. The assessment tools of the public health professional include surveys and disease registries for defined populations (local, state, and/or national). Public health intervention includes community health education and programs and advocacy for public policy reform. Medical research programs emphasize basic science, drilling down to individual abnormalities at the molecular and genomic level, whereas public health research programs emphasize epidemiology and the social sciences, searching out risk factors that pertain to a large proportion of the population. While medical science has undeniably improved the individual treatment of some forms of arthritis (e.g., rheumatoid arthritis), still much more needs to be done to deal with the coming increases in arthritis prevalence and

arthritis-related disability associated with the aging of the US population. This is perhaps the most important reason to embrace an arthritis public health initiative: to have a greater impact on the health of the population.

PUBLIC HEALTH'S EMPHASIS ON PREVENTION AND HOW IT RELATES TO ARTHRITIS

Traditionally, public health has been concerned with the prevention of disease and the prevention of disease consequences (e.g., death and disability). Three types of prevention have been described: primary, secondary, and tertiary. Primary prevention is the prevention of the disease itself. In the infectious disease realm, this is made possible by the identification of the etiologic microorganism and the development of a vaccine that will protect the host from developing the infection even when the host is exposed to the microorganism. Primary prevention of a chronic disease requires the identification of an etiologic factor associated with the disease and the successful intervention (lifestyle change and/or pharmacologic treatment) on the risk factor. For example, the reduction of weight by dietary and physical activity intervention has been successful in the primary prevention of diabetes, and the pharmacologic treatment of hypertension has proven effective in the prevention of coronary artery disease. An example of a primary arthritis prevention trial showed that a vaccine for the spirochete associated with Lyme disease reduced the risk for this disease in endemic areas (6). While several etiologic factors associated with knee osteoarthritis (most notably obesity) have been identified, no trials have been performed to inform public health practice regarding the primary prevention of this condition,

although data will hopefully be available in the coming years.

Secondary prevention involves the detection of disease in its preclinical (i.e., asymptomatic) phase to allow for early treatment and the prevention of important consequences, such as death or disability. For example, mammography has been shown to prevent breast cancer–related death by detecting breast cancer before clinical signs and symptoms develop such that early treatment can be initiated. Similarly, screening for osteoporosis with dual-energy x-ray absorptiometry (DXA) scanning has been shown to reduce fracture rates and subsequent disability by allowing for early detection and treatment of this common condition. Secondary prevention of rheumatoid arthritis is likely to be successful because of effective medical treatment that limits joint destruction and arthritis-related disability. Studies have shown that the earlier the treatment, the less the ultimate destruction and disability. The challenge here is to identify a suitable screening test.

Tertiary prevention involves the treatment of clinical disease in order to prevent important consequences, such as death or disability. Thus, tertiary prevention is typically in the realm of medicine. However, public health and public policy efforts to make medical, surgical, and rehabilitation treatment more effective and more accessible are common public health tertiary prevention interventions.

ARTHRITIS PUBLIC HEALTH ACCOMPLISHMENTS

The Arthritis Foundation has focused its public health activities by promoting the health of people with and at risk for arthritis through its leadership and involvement in the National Arthritis Act, the National Arthritis Action Plan, the arthritis section of Healthy People 2010, and the National Committee on Quality Assurance (NCQA) to develop an arthritis-related Health Plan Employer Data and Information Set (HEDIS) measure (2003).

National Arthritis Act

In 1974, the Arthritis Foundation joined in a partnership that pushed the US Congress to pass the National Arthritis Act, which initiated an expanded response to arthritis through research, training, public education, and treatment. The National Arthritis Act called for a long-term strategy to address arthritis in the United States.

TABLE 1-2. THE NATIONAL ARTHRITIS ACTION PLAN.

The overarching aims of the NAAP are:

- Increase public awareness of arthritis as the leading cause of disability and an important public health problem.
- Prevent arthritis whenever possible.
- Promote early diagnosis and appropriate management for people with arthritis to ensure the maximum number of years of healthy life.
- Minimize preventable pain and disability due to arthritis.
- Support people with arthritis in developing and accessing the resources they need to cope with their disease.
- Ensure that people with arthritis receive the family, peer, and community support they need.

The aims of the NAAP will be achieved through three major types of activities:

- Surveillance, epidemiology, and prevention research
- Communication and education
- Programs, policies, and systems

National Arthritis Action Plan

The National Arthritis Action Plan (NAAP) brought together over 40 partners to create a blueprint for population-oriented efforts to combat arthritis. The NAAP emphasizes four public health values: prevention, the use and expansion of the science base, social equity, and building partnerships. The NAAP is now widely utilized by other public health and professional organizations as a model program for population-oriented efforts to combat a chronic disease (see Table 1-2 for the aims and activities of NAAP). In 2000, the federal government funded the Arthritis Program at the Centers for Disease Control (CDC) that provides the infrastructure for the program at the CDC, implementation of the arthritis public health plan through the establishment of arthritis programs in state health departments (see <http://www.cdc.gov/arthritis/>), limited investigator-initiated grant program, and a peer-reviewed grant to the Arthritis Foundation. With this funding, the CDC Arthritis Program and the Arthritis Foundation have created effective public education and awareness activities in both English and Spanish and have developed evidence-based programs for people with arthritis, including an arthritis-specific self-help course, an exercise program, and a water exercise program (see the Life Improvement Series descriptions at <http://www.arthritis.org>).

The Arthritis Group at the Center for Disease Control have developed arthritis data collection plans through the Behavioral Risk Factor Surveillance System (BRFSS), the National Health Interview Survey

(NHIS), and the National Health and Nutrition Examination Survey (NHANES), and it has published an annual arthritis data report during Arthritis Month in May.

Healthy People 2010

Healthy People 2010 is the nation's public health plan that was created in consultation with the nation's health constituencies by the Department of Health and Human Services. Healthy People 2010 has two goals: (1) increase quality and years of life and (2) eliminate health disparities. Healthy People 2010 contains a separate chapter on Arthritis and Other Rheumatic Conditions, including osteoporosis and back pain. The overall goal of this section of Healthy People 2010 is to "prevent illness and disability related to arthritis and other rheumatic conditions, osteoporosis, and chronic back conditions" (www.healthypeople.gov).

The general Healthy People 2010 arthritis objectives are to:

- Reduce the mean level of joint pain among adults with doctor-diagnosed arthritis.
- Reduce the proportion of adults with doctor-diagnosed arthritis who experience a limitation in activity due to arthritis or joint symptoms.
- Reduce the proportion of adults with doctor-diagnosed arthritis who have difficulty in performing two or more personal care activities, thereby preserving independence.
- Increase health care provider counseling for persons with doctor-diagnosed arthritis.
- Increase health care provider counseling about weight loss among persons with doctor-diagnosed arthritis.
- Increase health care provider counseling for physical activity or exercise for persons with doctor-diagnosed arthritis.
- Reduce the impact of doctor-diagnosed arthritis on employment.
- Increase the employment rate among adults with doctor-diagnosed arthritis in the working-aged population.
- Decrease the effect of doctor-diagnosed arthritis on paid work.
- Eliminate racial differences in the rate of total knee replacements.
- Increase the proportion of adults who have seen a health care provider for their chronic joint symptoms.
- Increase the proportion of persons with doctor-diagnosed arthritis who have had effective,

evidence-based arthritis education as an integral part of the management of their condition.

Quality of Care Measures for People with Arthritis

The Arthritis Foundation Quality Indicators Project (AFQUIP) created indicators for treatment of rheumatoid arthritis and osteoarthritis, and for analgesics and pain use (7).

These were used by the National Committee for Quality Assurance (NCQA) to develop a HEDIS measure for disease-modifying antirheumatic drugs (<http://www.ncqa.org>). The osteoarthritis indicators have been used by the American Medical Association (AMA) Physician Consortium for Performance Improvement.

Through a focus on public health goals, several organizations are cooperating and collaborating to lessen disability in the aging population, decrease health disparities, and increase physical activity and reduce calorie intake in order to mitigate the epidemic of obesity and its serious impacts on health. The Arthritis Foundation and the CDC are actively forming partnerships with state public health departments, federal government agencies such as the National Institute of Arthritis and Musculoskeletal and Skin Diseases at the National Institutes of Health, the Agency for Orthopedic Surgery, community health organizations, volunteer health organizations, other volunteer organizations such as Research! America, and professional organizations such as the American College of Rheumatology and the American Academy of Healthcare Research and Quality to move this agenda forward.

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