

National Arthritis Action Plan:

A Public Health Strategy

PREPARED UNDER THE LEADERSHIP OF

Arthritis Foundation

Association of State and Territorial Health Officials

Centers for Disease Control and Prevention

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PREFACE

The National Arthritis Act, signed into law by the President on January 4, 1975, authorized substantial expansion of arthritis research, training, public education, and treatment. In particular, it recommended establishment of comprehensive arthritis centers, an institute of arthritis in the National Institutes of Health (NIH), an arthritis data bank, and development of a long-range arthritis plan to address arthritis across the nation. Since that date, the first three of the Act's major recommendations have been realized: Multipurpose Arthritis Centers (MACs) conduct comprehensive research on arthritis and musculoskeletal diseases at academic centers across the country; the National Institute of Arthritis and Musculoskeletal and Skin Diseases in the NIH focuses on and promotes arthritis research; and ARAMIS (Arthritis, Rheumatism and Aging Medical Information System) serves as a clinic-based data source to advance the body of knowledge in the field of arthritis.

The sole remaining component is the development of a public health approach to arthritis. It is with great pride that we share the *National Arthritis Action Plan: A Public Health Strategy*. It is our hope that the Plan will guide the use and organization of our nation's health resources to combat the greatest single cause of chronic pain and disability among Americans. The Plan's implementation will help us to achieve a greater recognition nationwide — among the general public, people with arthritis and their families, medical care providers, and policy makers — of the impact of arthritis, what can be done to prevent or delay its onset, and what effective interventions are available to reduce disability and improve the quality of life of people with arthritis. We believe that true integration of the perspectives, values, and resources of the public health and arthritis communities will allow us to lessen the burden of arthritis on our citizens and our nation.



EXECUTIVE SUMMARY

The Facts

Arthritis encompasses more than 100 diseases and conditions that affect joints, the surrounding tissues, and other connective tissues. It affects nearly one of every six Americans, making it one of the most common diseases in the United States. By the year 2020, an estimated 60 million people will be affected. While all Americans are at risk of arthritis, the prevalence of this disease is higher among women than men.

In addition, arthritis is the leading cause of disability, limiting daily activities for more than 7 million citizens. It has a significant effect on quality of life — not only for the individual who experiences its painful symptoms and resulting disability, but also for family members and care givers. Compounding this picture are the enormous costs that our nation bears for treating arthritis and its complications and for the disability that can result from these conditions. These medical and social costs total almost \$65 billion — a figure equivalent to a moderate national recession.

Prevailing myths inaccurately portray arthritis as an old person's disease, an inevitable part of aging that must be endured. On the contrary, some forms of arthritis, such as osteoarthritis, *can* be prevented with weight control and precautions to avoid certain occupational and sports injuries. Similarly, the pain and disability accompanying all types of arthritis can be minimized through early diagnosis and appropriate management, including weight control, physical activity, self-management, physical and occupational therapy, and joint replacement surgery.

The Challenge

Arthritis has become one of our most pressing public health problems. Research has yielded a better understanding of many types of arthritis and an array of effective interventions to prevent arthritis and its complications, yet those interventions are not widely applied. The public health challenge before us is to ensure the delivery of effective interventions to those at greatest risk of arthritis and its complications. Three national agencies — the Arthritis Foundation, the Association of State and Territorial Health Officials, and the Centers for Disease Control and Prevention — recently joined forces to meet this challenge and focus national attention on this important problem. The result of their collaboration is this *National Arthritis Action Plan: A Public Health Strategy*. The Plan represents a combined effort of nearly 90 organizations, including governmental agencies, voluntary organizations, academic institutions, community interest groups, professional associations, and others with an interest in arthritis prevention and control.

The ultimate aims of the *National Arthritis Action Plan: A Public Health Strategy* are to:

- 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 them 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 Plan

Three major focal areas — surveillance, epidemiology, and prevention research; communication and education; and programs, policies, and systems — are proposed to stimulate and strengthen a national coordinated effort for reducing the occurrence of arthritis and its accompanying disability.

SURVEILLANCE, EPIDEMIOLOGY, AND PREVENTION RESEARCH

Objective: To establish a solid scientific base of knowledge on the prevention of arthritis and related disability.

Surveillance

1. Improve surveillance of arthritis in general and of specific types of arthritis at national and state levels.
2. Ensure standard and consistent use of data terms and coordinate use of arthritis databases.
3. Increase understanding of current and future clinical treatments for arthritis.

Epidemiology

1. Develop population-based, longitudinal data systems to track the occurrence, progression, and impact of arthritis.
2. Identify modifiable risk factors to reduce the incidence of and disability from arthritis.
3. Study the personal effects of arthritis.

Prevention Research

1. Evaluate the efficacy and cost-effectiveness of current and future interventions and community strategies.
2. Estimate the costs of arthritis in general and of specific types of arthritis.

COMMUNICATION AND EDUCATION

Objective: To increase awareness of arthritis, its impact, the importance of early diagnosis and appropriate management, and effective prevention strategies.

For the Public

1. Promote partnerships to deliver consistent messages that reach entire populations.
2. Conduct market research to shape the messages.
3. Increase awareness throughout all communities.

For People with Arthritis and Their Families

1. Incorporate arthritis into chronic disease prevention, health promotion and education, and other programs of state and local health departments.
2. Create national and local communication campaigns to motivate people with arthritis symptoms to seek early diagnosis and appropriate management.
3. Improve the ability of people with arthritis to make informed decisions about the use of unproven remedies.

For Health Professionals

1. Improve the knowledge, attitudes, and practices of primary care practitioners and other physicians through undergraduate and graduate education, continuing medical education, and in-service education.
2. Improve the knowledge, attitudes, and practices of other health professionals through undergraduate and graduate education, continuing education, and in-service education.
3. Extend the reach of arthritis-related messages by using communication vehicles such as state and county medical societies, state and national professional organizations, professional newsletters and conferences, and websites of professional organizations and advocacy groups.

PROGRAMS, POLICIES, AND SYSTEMS

Objective: To implement effective programs to prevent the onset of arthritis and its related disability.

Programs

1. Develop and disseminate primary, secondary, and tertiary prevention intervention programs.
2. Develop and disseminate arthritis management education programs for health professionals.

Policies

1. Create awareness of arthritis as a public health issue.
2. Incorporate arthritis objectives into *Healthy People 2010*.

Systems

1. Build arthritis capacity and competency into the public health infrastructure.
2. Modify health care systems to better meet the needs of people with arthritis.
3. Build state and local interagency alliances to address arthritis.
4. Target state and local efforts to those at greatest risk of arthritis.

Effective arthritis strategies exist, yet few have been implemented fully. Given the importance of this health problem — its prevalence, its impact on disability and quality of life, and the resulting cost — the time for action is now. This strategic plan outlines a comprehensive, systematic public health approach that heretofore did not exist. It is our intention that the Plan will guide the use of the nation's resources to decrease the burden of arthritis for all Americans and increase the quality of life of those affected by arthritis.

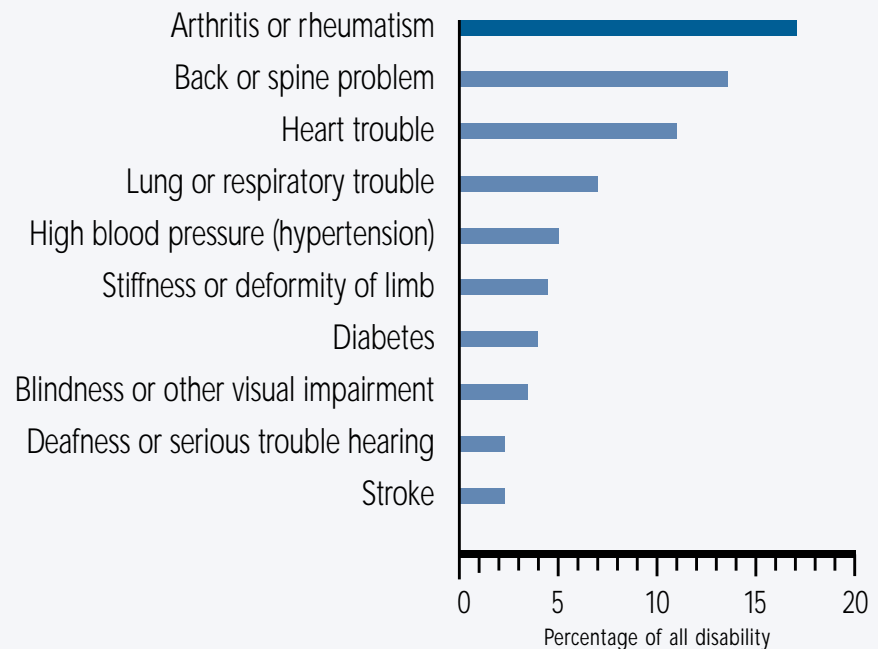


I. BACKGROUND

A. Definition of Arthritis

Arthritis and other rheumatic conditions are among the most common chronic conditions and the leading cause of disability* in the United States.¹ These conditions frequently lead to limitations in work, recreation, and usual activities, including basic self-care. Some types of arthritis can result in life-threatening complications. The term “arthritis,” as used here, encompasses more than 100 diseases and conditions affecting joints, the surrounding tissues, and other connective tissues. These diseases and conditions include osteoarthritis, rheumatoid arthritis, lupus, juvenile rheumatoid arthritis, gout, fibromyalgia, bursitis, rheumatic fever, and Lyme disease. Three of the most common forms of arthritis are osteoarthritis, rheumatoid arthritis, and fibromyalgia.

Leading Causes of Disability Among Persons Aged 15 Years and Older, United States, 1991–1992



Source: CDC. Prevalence of disability and associated health conditions — United States, 1991-1992. *MMWR* 1994;43(40):730-731, 737-739.

* The scientific community uses different terms and definitions to describe disability concepts. For the sake of simplicity, the disability concepts used in this Plan are based on the World Health Organization's draft classification ICIDH-2, which progresses from “impairment” at the level of body function to “activity limitation” at the level of personal function to “participation restriction” at the level of societal function. In this document, the word “disability” encompasses this entire spectrum.

- **Osteoarthritis**, or “degenerative joint disease,” most often affects the hip, knee, foot, and hand — but can affect other joints as well. Degeneration of joint cartilage and changes in underlying bone and supporting tissues lead to pain, stiffness, movement problems, and activity limitations.
- **Rheumatoid arthritis** is characterized by chronic inflammation of the joint lining. Symptoms include pain, stiffness, and swelling of multiple joints. The inflammation may extend to other joint tissues and cause bone and cartilage erosion, joint deformities, movement problems, and activity limitations. Rheumatoid arthritis can also affect connective tissue and blood vessels throughout the body, triggering inflammation in a variety of organs, including the lungs and heart, and increasing a person’s risk of dying of respiratory and infectious diseases.
- **Fibromyalgia** is a pain syndrome involving muscle and muscle attachment areas. Common symptoms include widespread pain throughout the muscles of the body, sleep disorders, fatigue, headaches, and irritable bowel syndrome.

B. The Arthritis Burden

Arthritis affects an estimated 42.7 million Americans — nearly one of every six people.² Approximately 21 million people have osteoarthritis, 3.7 million have fibromyalgia, and another 2.1 million have rheumatoid arthritis.³

Although this prevalence is high, it is expected to increase even more as the U.S. population ages. By the year 2020, an estimated 60 million people will have arthritis.⁴ This trend is due in large part to the growing number of older Americans over the next 25 years and to the relatively high frequency of arthritis, primarily osteoarthritis, among older people.

In addition, arthritis has a significant effect on quality of life — not only for those who experience its painful symptoms and resulting disability, but also for their family members and care givers. Over 7 million Americans are limited in their ability to participate in their main daily activities, such as going to school or work or maintaining their independence — simply because of their arthritis.⁴ Like arthritis prevalence, the prevalence of arthritis-related disability is also expected to rise by the year 2020, when an estimated 11.6 million people will be affected.⁴

Compounding this picture are the enormous costs that our nation bears for treating arthritis, its complications, and the disability that results from uncontrolled disease. The total cost is almost \$65 billion — a figure equivalent to a moderate national recession.⁵ This amount includes an estimated medical bill of \$15 billion each year⁵ for such expenses as 39 million physician visits and more than half a million hospitalizations (CDC, unpublished data). The balance is largely due to indirect costs resulting from wage losses.⁵

Thus, arthritis has become one of our most pressing public health problems — a problem that is expected to worsen in the next millennium unless prompt and responsible action is taken.

“Arthritis and other rheumatic conditions have an annual economic impact on the nation roughly equivalent to a moderate recession, with an aggregate cost of about 1.1% of the gross national product.”

– EDWARD H. YELIN, PH.D.,
PROFESSOR OF MEDICINE AND
HEALTH POLICY, UNIVERSITY OF
CALIFORNIA, SAN FRANCISCO

How does arthritis affect individuals?

Arthritis is a threat to a person's physical, psychological, social, and economic well-being. It often deprives people of their freedom and independence and can disrupt the lives of family members and other care givers.

- **Physical** symptoms of arthritis include pain, loss of joint motion, and fatigue. Because of these symptoms, people with arthritis are significantly less physically active than the rest of the adult population — even after taking their disability into account.⁶ This level of inactivity puts them at higher risk for a variety of other diseases, including premature death, heart disease, diabetes, high blood pressure, colon cancer, overweight, depression, and anxiety. In fact, in its severe forms arthritis can shorten life expectancy. The 2 million Americans with rheumatoid arthritis, for example, are at risk for premature death because of systemic complications of the disease and complications of its treatment.⁷
- **Psychological** stress, depression, anger, and anxiety often accompany arthritis. People with arthritis may experience difficulty coping with pain and disability, which in turn can lead to feelings of helplessness, lack of self-control, and changes in self-esteem and self-image.
- **Social** well-being is affected by arthritis. People with arthritis frequently experience decreased community involvement, difficulties in school, and sexual problems. These social problems are often aggravated by a lack of understanding and empathy among co-workers, employers, teachers, school nurses, and others.
- **Economic** implications of arthritis include inadequate access to care, and financial burdens due to health care costs and income loss resulting from work limitations. Arthritis is second only to heart disease as a major cause of missed work.⁸

What are some common myths about arthritis?

- **Arthritis is an old person's disease.** Although arthritis affects one of every two people over 65 years of age, most people with arthritis — nearly three out of five — are younger than age 65.⁴ People of all ages are affected, including children and teens. Juvenile rheumatoid arthritis is one of the most common chronic illnesses of childhood.⁹
- **Arthritis is just a normal part of aging.** If this were true, most older adults — and no children — would have arthritis. However, nearly half of the elderly population never experience these conditions, and an estimated 285,000 children are indeed affected (CDC, unpublished data). Furthermore, some forms of arthritis (e.g., osteoarthritis of the knee) can be prevented.

- **There is no cure for most forms of arthritis.** Although no “magic bullet” for all types of arthritis exists, research shows that early diagnosis and appropriate management can help reduce the consequences associated with many types of arthritis. Medication, education, physical activity, and surgery are four effective treatment strategies that can indeed make a difference. One intervention in particular — the Arthritis Self-Help Course — has been shown to reduce pain by 20% and physician visits by 40%.¹⁰

Who is at risk for arthritis?

Certain factors are known to be associated with a greater risk of arthritis. Three of these factors are *nonmodifiable*: female sex, older age, and genetic predisposition. Although these factors cannot be changed, knowledge of their presence helps identify groups at higher risk for arthritis so that intervention efforts can be targeted accordingly.

- **Women** aged 15 years and older account for 60% of arthritis cases. At least 26.4 million women have arthritis, the leading chronic condition among women,^{11,12} and by the year 2020, an estimated 36 million women will be affected.¹¹ Furthermore, approximately 4.6 million women report arthritis as a major or contributing cause of activity limitation.¹²
- **Age** is also associated with increased risk of arthritis. Half of the elderly population is affected by arthritis, and risk increases with age.
- **Genetic predisposition** to arthritis is a third nonmodifiable risk factor. Certain genes are known to be associated with a higher risk of some types of arthritis. Because of the growing body of research in the area of genetics, discovery of additional genes associated with specific types of arthritis is anticipated.

Some demographic factors, such as lower levels of education and lower income, are associated with arthritis. Although these risk factors are potentially modifiable, it is not clear if modifying them would indeed reduce the risk of arthritis since the mechanisms by which they increase that risk are not yet understood.

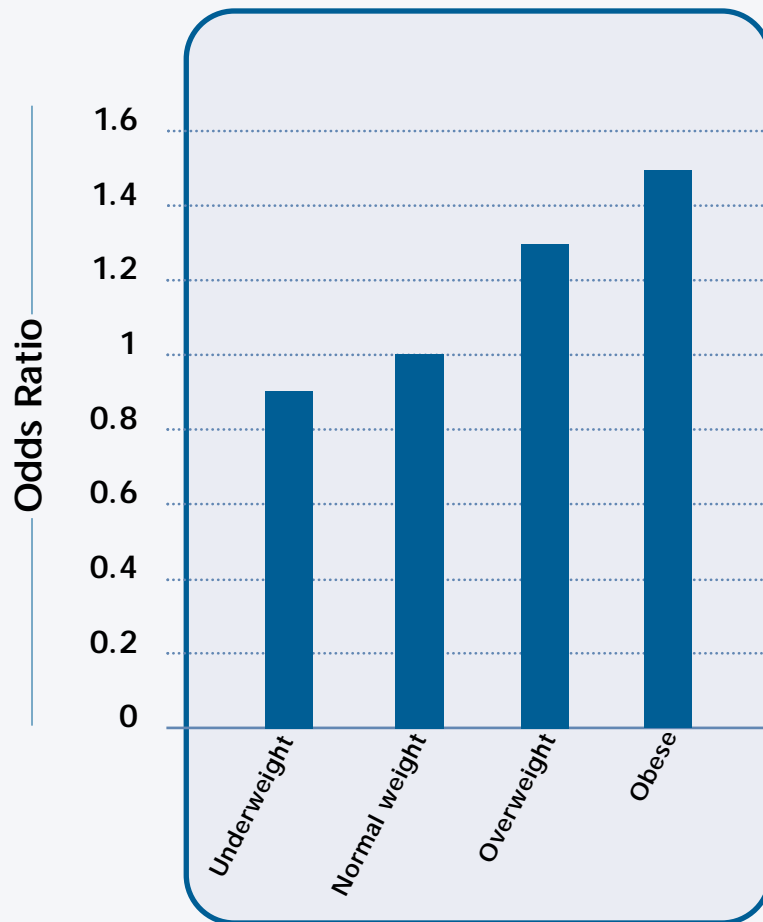
In addition, a few clearly *modifiable* risk factors are also associated with increased risk of arthritis. These include

- Obesity.¹³
- Joint injuries.
- Infections.
- Certain occupations (e.g., shipyard work, farming, heavy industry, and occupations with repetitive knee-bending).^{14,15}

“My friends think I’m crazy for playing tennis with arthritis, but I enjoy the challenge, camaraderie and atmosphere. I’m the competitive type – I’ve had to be to survive in this business. Don’t just settle back and say, ‘Well, I’ve got arthritis and I can’t just do anything about it.’ The more you give in to it, the worse it gets.”

– THE LATE SARAH CANNON
(NASHVILLE’S MINNIE PEARL)

Association of Arthritis and Weight Among Women Ages 18 Years and Older



Source: CDC. Factors associated with prevalent self-reported arthritis and other rheumatic conditions – United States, 1989-1991. *MMWR* 1996; 45(23) : 487-491

C. The Public Health Approach

The role of biomedical research is to increase our understanding of the causes and mechanisms of diseases, and to help develop efficacious interventions for them. Responsibility for applying those interventions rests with the medical care and public health communities, who must ensure that patients and their families and the public at large receive appropriate information about the interventions and have access to them as early as possible.

Because arthritis imposes a tremendous individual and societal burden — and because effective interventions are available — arthritis needs a coordinated public health approach. The focus of that approach should be broad and encompass whole population groups — in contrast with the classic medical approach, which

addresses the individual patient. **The challenge for public health is to identify and help implement strategies for improving the health of an entire population.**

Key to the public health model for arthritis is the concept of prevention. This concept encompasses three levels:

- **Primary prevention** is designed to prevent a disease or condition (arthritis, for example) from occurring in the first place. Vaccination against infectious diseases and physical activity to reduce the risk of heart disease are classic examples of primary prevention measures.
- **Secondary prevention** attempts to identify a disease in its earliest stage so that prompt and appropriate management can be initiated. Successful secondary prevention reduces the impact of the disease. Mammograms to detect breast cancer early are a secondary prevention measure.
- **Tertiary prevention** focuses on reducing or minimizing the consequences of a disease once it has developed. The goal of tertiary prevention is to eliminate, or at least delay, the onset of complications and disability due to the disease. Most medical interventions fall into this level. A typical example is the tight control of blood glucose levels in a person with diabetes to prevent complications.

Do primary prevention strategies exist for arthritis?

Only a few primary prevention strategies are considered effective for arthritis. These include

- **Weight control.** Maintaining an appropriate weight or reducing weight to a recommended level lowers a person's risk for certain common forms of arthritis. Obesity is a risk factor for osteoarthritis of the knee in women and gout in men.¹⁴⁻¹⁶
- **Occupational injury prevention.** Taking precautions to avoid repetitive joint use and resulting joint injury in the occupational setting can help to prevent arthritis.¹⁵
- **Sports injury prevention.** Using recommended injury prevention strategies (e.g., warm-ups, strengthening exercises, and appropriate equipment) helps to avoid joint injuries and damage to ligaments and cartilage, all of which can increase the risk of osteoarthritis.¹⁴
- **Infectious disease control.** Certain protective strategies can prevent the tick bites that cause Lyme disease and associated arthritis. Such strategies include using insect repellents, wearing long-sleeved shirts and pants when walking in the woods, and being educated on tick recognition and removal. For those at risk, vaccination can provide additional protection.

“ In the water, I can run and do things that I no longer can do on land. I feel like a person again. Once you’ve learned to live with arthritis in a way that you can see some good out of it, then you’ve begun to heal.”

- TUOVI COCHRANE,
1960 OLYMPIC GYMNAST

What secondary prevention strategies exist?

The following secondary prevention strategies are available but under-used:

- **Early diagnosis.** Early diagnosis of all types of arthritis is important. Many people with arthritis, particularly men and young people, never even see a physician for their arthritis,¹⁷ especially if they are in generally good health, have few activity or work limitations due to their arthritis, have no health insurance, or are overweight. Nearly 200,000 people fail to see a doctor even when their arthritis is causing activity limitation.¹⁷
- **Medical treatment.** Antibiotic treatment for early Lyme disease can prevent later stage disease.^{18,19} Reduction of uric acid levels in gout and early use of disease modifying anti-rheumatic drugs (DMARDs) for rheumatoid arthritis can improve long-term outcomes. Non-steroidal anti-inflammatory drugs help alleviate symptoms of osteoarthritis, and steroids are often prescribed for people with lupus.

What about tertiary prevention strategies?

Tertiary prevention strategies can reduce pain and disability, increase a person’s sense of control, and improve quality of life.

- **Self-management**
 - **Weight control and physical activity** are important components of a disease management program. Being overweight is associated with increased risk of osteoarthritis, and weight loss reduces the risk of knee osteoarthritis.²⁰ Physical activity maintains joint health and may also reduce the risk of other adverse outcomes unrelated to arthritis, such as premature death, heart disease, diabetes, high blood pressure, and colon cancer. Studies indicate that an exercise program can improve aerobic capacity and alleviate depression and anxiety among people with arthritis.²¹⁻²⁵

PACE (People with Arthritis Can Exercise) is one such community-based recreational exercise program. Trained instructors select from 72 different exercises and use a variety of endurance-building activities, games, relaxation techniques, and health education topics. Benefits include improved functional ability, decreased depression, and a stronger conviction that one can perform required behaviors.^{26,27}

Arthritis Foundation YMCA Aquatics Program involves gentle physical activity in warm water. This program has demonstrated beneficial results and is being further evaluated.

- **Education** is another effective self-management intervention for people with arthritis. A good example is the Arthritis Self-Help Course (ASHC). Developed in the early 1980s at Stanford University and currently sponsored by the Arthritis Foundation, ASHC has proven to reduce arthritis-related pain by 20% while also reducing overall costs — making it a highly cost-effective public

health intervention.^{28,29} The course consists of a 6-week session (2 hours per week) guided by two trained instructors who follow a detailed protocol of instruction. Currently reaching between 8,000 and 12,000 adults each year, ASHC typically is delivered in a community setting to groups of about 15 people. It includes

Information on nutrition, patient-physician communication, types of arthritis, appropriate use of painful joints, and the effects and uses of medications.

Interactive, participatory components on designing individual physical activity, relaxation, and pain management programs.

Methods for solving problems that arise from the conditions.

Other effective arthritis self-management interventions that have not been studied as extensively as ASHC include

- **Bone-Up**, a home-study, self-care education program consisting of six lessons on audio cassettes, supplemented by printed materials at a fifth-grade reading level.³⁰⁻³² Program content closely resembles that of the ASHC.
- **Arthritis Home Help Program**, a mail-delivered arthritis home study program that takes an individualized approach to developing self-care skills. Benefits include improvements in joint pain, mobility, and ability to communicate with physicians.³³
- **Arthritis phone service interventions**, consisting of initial telephone contact and follow-up by trained nonmedical personnel who provide information, referral, and problem-solving strategies. People with osteoarthritis, rheumatoid arthritis, and lupus have shown improvements in physical and psychological health and pain as a result of this type of intervention.^{34,35}
- **Cognitive behavioral interventions**, group or individual interventions that focus on altering cognitive, behavioral, or emotional patterns using a variety of methods including relaxation, biofeedback, cognitive therapy, and stress management. These interventions have been effective in reducing arthritis pain.³⁶

Unfortunately, most of these interventions have not been widely applied. Some effective interventions reach fewer than 1% of those likely to benefit from them (Arthritis Foundation unpublished data).

- **Rehabilitation services.** Physical and occupational therapy can remediate impairments and diminish activity limitations. Therapeutic interventions include muscle strengthening, joint protection, activity modification, pain management, and education to preserve independence, encourage self-management, and promote wellness.

“The Arthritis Self-Help Course helped me learn how to manage the pain, find out that there really are lots of things I CAN do, keep a positive attitude, and better meet the challenges of the workplace.”

– JOYCE GALLAGHER

- **Medical and surgical treatment.** Many different drugs are used to treat arthritis. Medications for some types of arthritis can limit disease progression, control symptoms, and prevent serious complications. Common medications to reduce the effects of the disease are DMARDs (disease modifying anti-rheumatic drugs) for rheumatoid arthritis, muscle relaxants and low-dose antidepressants for fibromyalgia, allopurinol for gout, and antibiotics for Lyme disease.

Joint replacement therapy is most appropriate for people with chronic, severe pain or activity limitations. This expensive intervention, performed most often for severe destructive arthritis of the hip or knee, often reduces pain to a negligible level and improves activity by increasing the range of motion of the affected joint.

D. Development of a National Plan

In recognition of arthritis as an escalating public health problem, the Arthritis Foundation, the Association of State and Territorial Health Officials (ASTHO), and the Centers for Disease Control and Prevention (CDC) initiated the development of this strategic plan in the summer of 1997. The agencies first convened a working group of representatives of 22 organizations with expertise in arthritis, public health, and health services delivery (see Appendix A for a complete roster). During a 2-day meeting, the working group outlined strategies for a public health approach to arthritis and its resulting disability. The working group then helped to prepare and revise drafts of the Plan; these drafts were eventually reviewed by selected state chronic disease and health promotion program managers and a wider partnership network of governmental agencies, voluntary organizations, academic institutions, community interest groups, and professional associations (listed in Appendices B and C).

Congress strongly supported the Plan's development in its fiscal year 1999 House Appropriations Conference Report on CDC:

The conferees support the recent effort by CDC to develop a national plan for addressing the large and growing public health problem of arthritis. The conferees encourage CDC to continue to expand the arthritis knowledge base necessary to better identify an appropriate public health response for the nation's leading cause of disability.

The *National Arthritis Action Plan: A Public Health Strategy* is consistent with the congressional mandate. The Plan lays out a vision and a framework for addressing the arthritis problem in our nation. It further proposes strategic initiatives that would constitute a coordinated, responsible approach at all levels of the public health structure — national, state, and local. Lastly, it identifies gaps in our knowledge of arthritis that need to be filled by appropriate prevention research to strengthen the success of this concerted and worthwhile effort.



II. STRATEGIC FRAMEWORK

A. Vision

The ultimate aims of the *National Arthritis Action Plan: A Public Health Strategy* (NAAP) are to

- 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 them 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.

B. Values

Complementing this vision are four key values that must underlie a successful public health approach to arthritis. These values mandate that the NAAP

- **Emphasize prevention.**
Primary, secondary, and tertiary prevention of arthritis must be the main thrust of the initiative.
- **Use and expand the science base.**
Decision making must be data driven, and research and demonstrations that enhance our scientific knowledge must be encouraged and supported.
- **Seek social equity.**
The unique issues affecting the uninsured, the underinsured, the poor, the disabled, the poorly educated, the unskilled workforce, minority populations and other vulnerable groups must be understood and addressed.
- **Build partnerships.**
No one organization can effectively address arthritis. Strong partnerships must be built among the medical, voluntary, and public health communities to ensure a coordinated, united effort. Only through the collective energy of an interdisciplinary approach can we truly reduce the arthritis burden.

C. Goals

The overall goal of this Plan is to stimulate and strengthen a national coordinated effort for reducing the occurrence of arthritis and its accompanying disability. Specific goals are to

- Establish a solid scientific base of knowledge on the prevention of arthritis and related disability.
- Increase awareness of arthritis, its impact, the importance of early diagnosis and appropriate management, and effective prevention strategies.
- Implement effective programs to prevent the onset of arthritis and its related disability.
- Achieve the arthritis-related objectives included in *Healthy People 2010*. These objectives, listed in Appendix D, reflect benchmarks of success for measuring improvements in health and quality of life.

D. Action Framework

Accomplishing these goals while adhering to the key values requires a multifaceted approach — one that is ambitious but practical. The proposed approach consists of activities in three major areas:

Surveillance, epidemiology, and prevention research — the scientific tools of public health.

Surveillance is the ongoing and systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice. Surveillance is closely integrated with timely dissemination of these data and their translation into action.

Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations and the application of this study to the control of health problems.

Prevention research is the development and evaluation of interventions designed to prevent onset of or disability from a health problem or condition.

Communication and education — the tools to raise awareness of a public health problem and to stimulate action.

Communication is the effective transmission of a message from the sender to the receiver. Successful communication depends upon the selection of a message and a delivery strategy that best suit the intended audience. For most public health efforts, the audience includes the general public, people with or at risk of arthritis and their family members, and health professionals.

Health education is a combination of organized learning experiences that facilitate knowledge, attitudes, and voluntary behavior changes conducive to health. Health education also involves strategies to foster employer-, community-, and societal-level changes conducive to health in individuals and populations.³⁷

Programs, policies, and systems — tools for effecting change.

Programs are the actual implementation — at the national, state, and community levels — of specific interventions for the primary, secondary, and tertiary prevention of a public health problem.

Policies include legislation, regulations, ordinances, guidelines, and norms that establish an environment conducive to prevention. Examples of national policies are entitlement programs (e.g., Medicare and Medicaid) and the Americans with Disabilities Act; equally influential are policies at the state and community levels.

Systems are the health infrastructure required to operate and manage effective prevention programs. As our health system continues to evolve, delivery of quality care and preventive services becomes more complex. Relationships among the public and private sectors, individual practitioners and managed care organizations, and voluntary health organizations directly influence access to care and provision of clinical and community preventive services.

The next three sections of the NAAP are devoted to these major areas. Each section begins by outlining overall **Guiding Principles** to frame the approach, then proposes specific **Strategies** for action. Remaining **Research Questions** to further enhance our knowledge and success are also provided.

While the three strategic areas are by definition distinct, that distinction becomes blurred when translated into action. Thus some overlap among the recommended activities in the three areas is natural and necessary. Additionally, the activities are not listed in order of priority.



III. SURVEILLANCE, EPIDEMIOLOGY, AND PREVENTION RESEARCH

A. Guiding Principles

Surveillance, epidemiology, and prevention research are the scientific tools of public health. These tools are used to obtain accurate and reliable data, identify knowledge gaps and ways to address them, and make provisions for disseminating data to appropriate people. The underlying principles are threefold:

- To obtain better scientific information.
- To disseminate that information to those who need to know.
- To translate that information into action.

B. Surveillance Strategies

Three primary strategies constitute a national and state surveillance effort for arthritis. These strategies are explained below, along with specific activities for each strategy.

1. Improve surveillance of arthritis in general and of specific types of arthritis at national and state levels.

Current surveillance is limited to self-reports of “any type” of arthritis aggregated at the national level. Surveillance of specific types of arthritis (e.g., gout) at national, state, and local levels would allow accurate measures of the occurrence of that condition in the population. It would also facilitate greater understanding of who is affected; who is at greatest risk; what health beliefs and behaviors increase that risk; which occupations and occupational activities increase that risk; and how the disease affects physical health, quality of life, economics, and other areas. Such data help to set public health priorities and focus the use of limited public health resources in the most effective way. Monitoring changes over time can also help assess the effectiveness of public health and other interventions. Thus, surveillance for arthritis is critical for understanding the epidemiology of these diseases, targeting interventions, developing policy, and setting priorities for prevention research. Specific activities to improve arthritis surveillance include

- Encourage states to use the Behavioral Risk Factor Surveillance System (BRFSS) modules on arthritis² and quality of life.
- Encourage the development and use of modules on arthritis and quality of life in national data sets (e.g., National Health Interview Survey, National Health and Nutrition Examination Survey).
- Analyze data on arthritis and quality of life (e.g., from the Behavioral Risk Factor Surveillance System, National Health Interview Survey, National Health and Nutrition Examination Survey) to quantify the impact of arthritis on quality of life.

- Identify surveillance gaps, including lack of data on children with arthritis.
- Explore the surveillance value of other data (e.g., from the National Hospital Discharge Survey, National Ambulatory and Medical Care Survey, National Hospital Ambulatory Medical Care Survey, Medicare Current Beneficiary Survey, Medicare claims, and other health plan data sources).
- Monitor changes in the occurrence of arthritis and its impact (e.g., on disability and quality of life).
- Identify the existence and causes of disparities in arthritis prevalence in different populations.
- Describe arthritis and factors associated with different types of arthritis.
- Foster collaborative and comparative studies to identify factors responsible for wide variations in rates of arthritis among people in different industries and occupations.
- Develop classification systems that capture better etiologic information (e.g., related to trauma).

2. Ensure standard and consistent use of data terms and coordinate use of arthritis databases.

Strong surveillance efforts depend on standardized definitions of common terms and consistent use of those definitions in different settings. Only through such consistency can communication be expedited. Coordinating use of arthritis data will efficiently use analytic resources and avoid duplication.

- Reach consensus on definitions of measures to ensure their consistent use.
- Explore the value of standardized definitions of inflammatory and noninflammatory arthritis.
- Develop a comprehensive inventory of past and current research studies and databases that can be used to address knowledge gaps.
- Validate self-report and other methods of arthritis measurement.
- Piggyback new arthritis studies on existing studies of other conditions.
- Encourage provision of more data sources on the Internet to encourage use of arthritis data.
- Adopt common data elements in population-based surveys (e.g., Behavioral Risk Factor Surveillance System, National Health Interview Survey, and National Health and Nutrition Examination Survey).
- Support the National Arthritis Data Workgroup as the source for coordinating prevalence and impact data.

“Surveillance, epidemiology, and prevention research are the scientific tools of public health”

3. Increase understanding of current and future clinical treatments for arthritis.

No population-based data exist to help determine how arthritis is currently treated in the United States. A wide variety of health care providers are involved in arthritis treatment, and the rapidly changing health care system complicates efforts to track the current practices of these providers. Further research is needed to identify the pivotal process measures and other performance indicators that will help track progress toward improved health outcomes. In addition, many people use alternative medicine approaches to alleviate arthritis symptoms, but the prevalence and success of these approaches are not well understood. A greater understanding of these issues would help determine the most effective use of health care dollars.

- Monitor provision and availability of services.
- Analyze differences by state, sex, and racial/ethnic groups.
- Gather information to better define the types of professionals who treat people with arthritis.
- Study medical referral systems and access to different types of medical care.
- Survey physicians and other providers on treatment strategies used and their beliefs about arthritis.
- Examine complementary and alternative therapy approaches.
- Collect and analyze more detailed state-level information on occupational factors using available Workers' Compensation databases, hospital discharge records, and health care data.
- Evaluate costs associated with appropriate and inappropriate delay of expensive treatment (e.g., joint replacement).

C. Epidemiology Strategies

1. Develop population-based, longitudinal data systems to track the occurrence, progression, and impact of arthritis.

Understanding a chronic disease such as arthritis requires knowledge of how the disease affects people over their life span. This understanding will help identify potentially modifiable factors that can reduce the incidence of and disability from arthritis. The longitudinal studies needed to provide this type of information are rare because they are more expensive than traditional cross-sectional, or snapshot, studies of affected people. Unfortunately, cross-sectional studies will never provide the information needed to understand the complexities of the more than 100 forms of arthritis. We can get a better understanding only by studying the same people with osteoarthritis, rheumatoid arthritis, juvenile rheumatoid arthritis, lupus, or other forms of arthritis for several years. Cohorts of healthy people, unaffected by arthritis, also need to be studied to determine the precursors of arthritis.

- Support existing longitudinal studies and, where needed, develop and implement longitudinal studies of arthritis disability, concurrent health problems, and the natural history of arthritis.
- Design longitudinal follow-up studies of the National Health Interview Survey and the National Health and Nutrition Examination Survey cohorts that include arthritis.

2. Identify modifiable risk factors to reduce the incidence of and disability from arthritis.

A key to prevention is the identification of modifiable risk factors and their interaction with the nonmodifiable risk factors that can help identify high risk groups. A few modifiable risk factors (e.g., obesity, joint injury, repetitive hand use in hand-intensive jobs) have already been identified, but this list needs to be greatly expanded to make a significant difference in the incidence and prevalence of arthritis. Sophisticated scientific inquiry is required to identify modifiable risk factors; this information can then be used to shape primary prevention efforts and intervention strategies to reduce disability.

- Use longitudinal databases to identify risk factors.
- Compare and contrast discrete population subgroups to identify potential risk factors for arthritis and their interaction with nonmodifiable risk factors.
- Identify strategies to reduce disability.
- Increase knowledge of the role of traumatic, occupational, and sports injuries as arthritis risk factors.
- Clarify the mechanisms by which overweight leads to arthritis.

3. Study the personal effects of arthritis.

Arthritis can challenge a person in many ways. Physical health can be affected by impairments and activity limitations. Mental health can be affected by depression and the difficulties of adjusting to new ways of coping. Economic effects can occur directly through higher health care costs and indirectly through constraints on ability to work, such as increased absenteeism. All these effects can be compounded by a person's lack of social, emotional, and economic resources, as well as by other medical problems. Knowing how these factors interact can help suggest better ways of adapting to the disease.

- Define the impact of coping, depression, and other emotional responses to arthritis.
- Examine accommodations to disease (e.g., use of adaptive equipment, use of self-help strategies, changes in expectations with aging).

- Assess satisfaction regarding personal accommodations to arthritis and health care services.
- Study how individuals attribute disability to arthritis and their other chronic conditions.

D. Prevention Research Strategies

1. Evaluate the efficacy and cost-effectiveness of current and future interventions and community strategies.

The purpose of arthritis interventions is to reduce the impact of arthritis. Knowing which ones improve or maintain health and their relative benefits and costs is crucial when making choices about spending limited health care and public health resources.

- Evaluate the efficacy of physical activity, weight control, and other interventions in modifying the risks of arthritis.
- Evaluate outcomes of early treatment for common forms of arthritis.
- Compare the costs of different interventions.
- Study the role of structural and environmental modifications (e.g., curb cuts, access, flexible work schedules) in delaying the onset of disability and in improving quality of life.
- Evaluate the cost-effectiveness of self-management and other existing prevention interventions.
- Develop strategies to engage people with arthritis who do not participate in self-management programs.
- Develop and evaluate new cost-effective self-management strategies.
- Conduct studies of employers and managed care organizations to identify appropriate surveillance and intervention strategies.
- Obtain evidence on the effectiveness of arthritis prevention measures for the U.S. Preventive Services Task Force.
- Include arthritis services in the *Guide to Community Preventive Services*.

2. Estimate the costs of arthritis in general and of specific types of arthritis.

To make rational decisions about priorities for spending society's resources, decision makers at all levels need information about the true costs of specific diseases. Such costs encompass both direct and indirect economic expenditures as well as personal and societal health costs (e.g., death, illness, quality of life, and disability). Limited research has been done to describe these costs fully and to translate and share this information with those responsible for allocating resources.

- Estimate the costs of health outcomes (e.g., illness, death, and health-related quality of life).
- Determine indirect costs, including work disability, lost productivity, and general disability.

E. Research Questions

Even if all of the strategies and activities proposed above were implemented successfully, many questions would still remain about the surveillance and epidemiology of arthritis and its prevention. Ongoing research in a variety of areas is needed to answer these questions and further strengthen national and state efforts to prevent arthritis. The following table lists several areas and related questions important in research.

AREA	QUESTIONS
Case definition	<ul style="list-style-type: none"> • How do self-reported diagnoses and symptoms relate to medical diagnoses? • Is diagnosis of specific forms of arthritis necessary for public health interventions? • Is the inflammatory/noninflammatory arthritis distinction useful? • Can we develop public health definitions for specific conditions? • Are the 1990 American College of Rheumatology diagnostic criteria for fibromyalgia sensitive and specific?
Epidemiology	<ul style="list-style-type: none"> • Who are the vulnerable high-risk populations? • What is the incidence of common forms of arthritis? • What are the unique limitations in social participation experienced by children with arthritis (e.g., in school)? • What is the prevalence of less common forms of arthritis? • What factors are responsible for racial differences in rates of total knee replacements? • What factors affect employment of people with arthritis? • How does physical activity affect disability? • What are research-based warning signs and symptoms of arthritis?

AREA	QUESTIONS
Natural history	<ul style="list-style-type: none"> • What is the nature, occurrence, and course of pain symptoms; what are the responses to symptoms; and what is the relationship of symptoms to objective criteria (e.g., pain threshold, depression, fatigue, sleep, physical activity patterns)? • How does the presence of other conditions affect arthritis outcomes? • Which factors contribute most to the development of arthritis? Can the onset of arthritis be postponed? • Which types and sites of arthritis cause which types of disability? • How do the physical or occupational activity patterns of people with arthritis change over time without intervention? • What are the outcomes of arthritis? • How do medical/disease outcomes affect functional and work status? • To what degree do sex, genetics, and race/ethnicity affect the incidence, impact, and treatment outcomes of different arthritis conditions?
Cost	<ul style="list-style-type: none"> • What are the intangible costs of arthritis? • How can indirect costs be assessed fully and accurately? • What are the direct and indirect economic costs to employers?
Intervention	<ul style="list-style-type: none"> • What are the most cost-effective exercise interventions? • How effective are clinical practice tools (e.g., practice guidelines, care pathways) for early diagnosis and appropriate management? • Are disease-modifying drugs being used appropriately to manage chronic inflammatory arthritis? • What factors facilitate or hinder self-management and treatment-seeking behaviors? • What strategies effectively reduce environmental barriers? • Which disability prevention strategies are most effective? • What factors are effective in promoting initial and continued participation in physical activity interventions? • How do community factors affect disability and quality of life?

AREA	QUESTIONS
Intervention (continued)	<ul style="list-style-type: none"> • What types of interventions are culturally appropriate for minority at-risk populations? • What are the barriers to and facilitators of participation in physical activity interventions by minority at-risk populations?
Prevention Research	<ul style="list-style-type: none"> • Do different types and levels of physical activity affect the risk of arthritis? • Do levels of physical activity recommended in <i>Physical Activity and Health: A Report of the Surgeon General</i> decrease the risk of arthritis? • How do outcomes of the early use of selected medications and surgical interventions compare with those of standard treatment? • How do self-management approaches differ in different social, cultural, and economic groups? • Does participation in managed care change willingness to seek care or patterns of diagnosis and treatment? Does it affect access to specialized care? • Does engaging in the care-giving role change the likelihood of seeking care? • Do health care systems have appropriate numbers of educated and trained primary care physicians to provide arthritis treatment? • Is care-giving for a person with arthritis as consequential for the care-giver as for those caring for a person with other chronic diseases (e.g., Alzheimer's disease)? • Does self-care for arthritis produce adequate independence? • Can activity limitation in arthritis be defined more completely than is usually done using Instrumental Activities of Daily Living measures? • What are the mechanisms by which low education levels and low income increase the risk of arthritis?

SUMMARY OF SURVEILLANCE, EPIDEMIOLOGY, AND PREVENTION RESEARCH STRATEGIES

Surveillance

1. Improve surveillance of arthritis in general and of specific types of arthritis at national and state levels.
2. Ensure standard and consistent use of data terms and coordinate use of arthritis databases.
3. Increase understanding of current and future clinical treatments for arthritis.

Epidemiology

1. Develop population-based, longitudinal data systems to track the occurrence, progression, and impact of arthritis.
2. Identify modifiable risk factors to reduce the incidence of and disability from arthritis.
3. Study the personal effects of arthritis.

Prevention Research

1. Evaluate the efficacy and cost-effectiveness of current and future interventions and community strategies.
2. Estimate the costs of arthritis in general and of specific types of arthritis.



IV. COMMUNICATION AND EDUCATION

A. Guiding Principles

Raising awareness of the impact of arthritis and of effective strategies for arthritis prevention and treatment is an important objective of the NAAP. Two avenues are available for achieving this objective: health communications and health education. The former is designed to increase awareness — the first important step in changing behavior. The latter encompasses the entire spectrum of behavior change.

Overarching principles for communicating about arthritis include the following:

- Structure health communication messages and health education about arthritis to reach three broad audiences: the public, people with arthritis and their families, and health professionals.
- Tailor the content and delivery mode of messages for subgroups within each of the three main audiences.
- For all audiences,
 - Use factual information.
 - Use correct and consistent terminology.
 - Convey that something can be done about arthritis.

B. Communication Strategies for the Public

This target audience, the broadest of the three, includes all Americans. A few subgroups are given a higher priority, however, because they have decision-making power or authority, or because they are more likely to be affected by arthritis. These priority audiences include

- People with arthritis symptoms.
- At-risk populations (e.g., ethnic groups, medically underserved populations, and groups with low socioeconomic status).
- Family members of people with arthritis.
- Women.
- Managed care organizations, payers, and members.
- Businesses and employers (including the public sector).
- Nontraditional partners (e.g., co-workers, neighbors, faith communities, Meals on Wheels programs, and local merchants).
- Federal, state, and community government leaders.

The predominance of misinformation about arthritis necessitates careful crafting of public messages to provide accurate information and to challenge myths and erroneous beliefs. Key concepts to be emphasized include

- Arthritis is a major national health problem and the leading cause of disability.
- Arthritis affects people of all ages, including children.
- Arthritis is a major health problem for women.
- Early diagnosis is a key to better outcomes; know the warning signs and seek treatment early.
- All forms of arthritis can be treated; some can be prevented. Use weight control to prevent osteoarthritis. Physical activity, rest, and activity modification can reduce pain and disability.

Three major strategies should be used to deliver these messages to the priority public audiences:

1. Promote partnerships to deliver consistent messages that reach entire populations.

Because of the breadth of the audience needing arthritis-related messages and the diversity of subpopulations within that audience, organizations and agencies must pool their resources and efforts to deliver a consistent message. The prevalence of misconceptions regarding arthritis heightens the need for uniform messages among the various organizations delivering arthritis awareness messages. Many communities have coalitions that address chronic diseases and their risk factors. These coalitions should be encouraged to add arthritis awareness to their educational campaigns.

- Identify national and state coalitions that address risk factors for arthritis.
- Strengthen collaborations among government agencies, voluntary health agencies, and professional organizations.
- Coordinate a communication campaign on behalf of all partnership network members.
- Seek and build on reliable sources of arthritis information, actions, and services.
- Involve new and innovative partners (e.g., agricultural extension agents, Area Agencies on Aging, city housing departments, employers, and religious organizations) in disseminating key messages.

2. Conduct market research to shape the messages.

Because arthritis potentially affects all community members, arthritis-related messages and delivery channels need to be tailored to appeal to different segments of the community. This degree of specification requires market research

“When you have arthritis, it’s a condition of your life, and you can do things to keep it at bay, but it’ll always be with you. That can be frustrating. I want to let people know that you can cope with arthritis and go on with your life. I go on... I’m busy with my career and raising my child, and on bad days I get my cane out.”

- ACTRESS ANNIE POTTS
(MARY JOE SHIVELY IN
TV’S DESIGNING WOMEN)

to both shape the message and delivery channels and test their effectiveness as awareness campaigns are developed.

- Identify subpopulations within target groups for arthritis messages.
- Design and implement behavioral research to determine the health practices and media preferences of each target group.
- Develop and test arthritis and disability messages for physical activity campaigns and nutrition and weight control programs.
- Develop messages about the importance of weight maintenance and physical activity.
- Produce materials that can be used by agencies and organizations that serve target groups.

3. Increase awareness throughout all communities.

Arthritis affects nearly one of every six people and more than one of every three families. It touches people throughout the community: children in schools, employees in the worksite, participants in senior centers, members of all faiths, and isolated individuals living alone. Prevailing myths and misinformation (such as “There is nothing you can do” or “Arthritis is an inevitable consequence of aging”) dominate current arthritis information. Millions of advertising dollars are spent to promote pain-relieving products for the “minor aches and pains of arthritis.” Accurate messages about arthritis must be disseminated throughout the community to counteract these erroneous perceptions.

- Tailor messages and develop campaigns to reach people with undiagnosed arthritis and to prompt them to seek early diagnosis and appropriate management.
- Tailor messages about community norms for weight and physical activity.
- Develop messages about injury prevention.
- Add to existing physical activity campaigns messages about the role of physical activity in minimizing arthritis disability.
- Increase awareness of the link between arthritis and weight control, physical activity, and nutrition.
- Use broad-based messages about the wide range of benefits of physical activity.
- Ensure that messages effectively counteract prevailing misconceptions.
- Create messages that challenge the “just learn to live with it” or the “stiff upper lip” approach to arthritis management.
- Add arthritis prevention to sports education programs.
- Include arthritis prevention messages in health education/healthy lifestyle programs in schools and workplaces.

C. Communication Strategies for People with Arthritis and Their Families

This audience includes those referred to in the medical system as the patients — anyone with any type of arthritis, regardless of age. It also encompasses families (and significant others) of these patients.

As for the public, market research is needed to shape effective messages for this audience. Key concepts to be emphasized are

- Arthritis comes in many different forms; for management to be most effective, it is important to know your type of arthritis.
- Effective interventions exist; seek treatment early, then continue to see your doctor and follow your management plan.
- Self-management can help improve quality of life.
- Physical activity and maintenance of appropriate weight can reduce pain and disability and promote general health.²¹
- Healthy living with arthritis is possible.

The strategies outlined below should be implemented and rigorously tested to determine their relative effectiveness.

1. Incorporate arthritis into chronic disease prevention, health promotion and education, and other programs of state and local health departments.

Several prevention strategies for arthritis are similar to risk-factor reduction strategies for other chronic conditions. Many state and local health departments already have programs directed toward increasing physical activity, promoting a healthy diet, and reducing obesity. All of these programs could be modified to incorporate an arthritis-specific message. In addition, state and local health departments have the opportunity to design programs directed at reducing arthritis disability through appropriate prevention messages.

- Identify potential partners with similar messages.
- Develop arthritis-specific messages to be incorporated into physical activity, weight control, and injury prevention campaigns.
- Develop and test communications messages directed at reducing arthritis disability.
- Provide funding for state health departments to develop programs to address issues identified by analysis of data from state BRFSS arthritis modules (e.g., failure to seek diagnosis, failure to follow treatment plans).
- Encourage state and local health departments to make arthritis patient education materials available at all treatment sites.

“I am proud of how far I have come... from the little girl who was too embarrassed to ask for help and who let ‘Arthur’ rule her emotions to a person who has learned to ask for help when needed and who rules ‘Arthur’ more than he rules her.”

- LINDA WILSON

- Facilitate partnerships between public health agencies and managed care organizations to provide appropriate arthritis education across the natural disease spectrum, from prediagnosis through disability management, and in all types of care settings (e.g., community-based care, in-home care).

2. Create national and local communication campaigns to motivate people with arthritis symptoms to seek early diagnosis and appropriate management.

In addition to seeking appropriate medical care, people with arthritis must become active self-managers if they are to successfully reduce the disability and threats to quality of life that arthritis can pose. However, many people with arthritis are either unaware of self-management strategies or find the appropriate self-management behaviors difficult to adopt. A comprehensive social marketing campaign could increase awareness of appropriate self-management and also help people with arthritis overcome their personal barriers to adopting appropriate self-management behaviors.

- Convene a scientific panel to determine which self-management strategies are most effective in reducing activity limitations.
- Develop a social marketing campaign to move people with arthritis through the stages of change necessary to adopt recommended self-management behaviors.
- Develop and disseminate a media campaign to promote the importance of seeking early diagnosis for the type of arthritis, obtaining medical treatment, and following prescribed management plans.
- Expand and update Arthritis Foundation booklets for people with arthritis.
- Adapt or develop educational materials for large minority groups (e.g., Hispanic, Chinese, Vietnamese).
- Sponsor support groups that meet locally or through the Internet.
- Develop arthritis education materials for delivery through emerging technology vehicles such as interactive television, Internet, and CD ROM.
- Develop materials to educate family members on ways to facilitate appropriate self-management and strategies to cope with their own arthritis-related stressors.

3. Improve the ability of people with arthritis to make informed decisions about the use of unproven remedies.

Using unproven remedies for arthritis can waste time and money. Some unproven remedies can be harmful to those who use them; others may not be directly harmful but may cause people to delay seeking early diagnosis and appropriate management. Because of their ongoing pain and lack of awareness of helpful intervention strategies, people with arthritis are particularly vulnerable to promoters of unproven remedies.

- Develop and disseminate messages to inform people about unproven remedies and to explain how to evaluate the health claims of various products.
- Support efforts to monitor and restrict the untruthful promotion of unproven remedies on the World Wide Web and other promotion avenues.
- Identify factors contributing to the use of unproven, harmful remedies and craft messages to counteract those factors.

D. Communication Strategies for Health Professionals

This audience includes all clinical, community, and public health professionals who potentially affect the health and well-being of people with or at risk for arthritis. Subgroups of the health professional audience include

- Primary health care providers, including pediatricians, who see the majority of arthritis patients.
- Rheumatologists, physiatrists, orthopedic surgeons, pediatric rheumatologists, and other physicians.
- Nurses.
- Physical therapists and occupational therapists.
- Social workers and mental health workers.
- Chiropractors.
- Podiatrists.
- Orthotists and pedorthists.
- Exercise and fitness professionals, teachers, and coaches.
- Alternative medicine practitioners.
- Pharmacists.
- Public health community members (e.g., educators, public health nurses, and program managers).

Although the specific message will vary for different types of providers, all of these professionals must know

- The prevalence of arthritis and its impact on disability and quality of life.
- The most common myths about arthritis and accurate information to dispel them.
- Prevention strategies.
- The importance of early diagnosis of the type of arthritis and appropriate management strategies.

- Referral sources (i.e., when and where to refer).
- Sources of support.
- The value of self-management and other nonpharmacological interventions.

To be able to intervene early and appropriately to reduce disability, health professionals must have accurate, up-to-date information about arthritis. The following approaches should be tailored, based on behavioral research, to each type of health professional.

1. Improve the knowledge, attitudes, and practices of primary care practitioners and other physicians through undergraduate and graduate education, continuing medical education, and in-service education.

Because most people with arthritis initially see a primary care provider in their quest for a diagnosis, primary care physicians are the first line of defense for the early diagnosis and appropriate management of arthritis. Primary care training programs vary in the amount of attention given to rheumatology training, even though arthritis is one of the most common conditions seen by primary care physicians. Increased training and continuing medical education on arthritis would address this discrepancy. Important topics include arthritis as a prototype chronic disease and the complementary roles of clinical care and community supports.

- Provide professional education for primary care providers through partnerships with managed care organizations.
- Influence physician behavior through the use of “champions” and influential opinion leaders.
- Partner with organizations that have expertise in medical education.
- Advocate for core rheumatology training in all primary care training programs.
- Test alternative delivery mechanisms such as interactive media or distance learning to provide continuing medical education credits to busy physicians.
- Develop a training module that emphasizes the importance of early diagnosis and appropriate management, the value of self-management, and other non-pharmacological strategies.

2. Improve the knowledge, attitudes, and practices of other health professionals through undergraduate and graduate education, continuing education, and in-service education.

Similar to physicians, most health professionals receive a limited amount of education about rheumatology in their professional training programs but then see many patients with arthritis (often as a concurrent condition) in clinical practice. Health professionals need current rheumatology knowledge to ensure they are providing competent care to their patients with arthritis.

- Partner with organizations that have expertise in providing professional education.
- Develop short-term specialty training programs to increase health professionals' arthritis expertise.
- Develop a training module that emphasizes the importance of early diagnosis and appropriate management, the value of self-management, and other non-pharmacological strategies.
- Advocate for core rheumatology training in all health professional training programs.
- Test alternative delivery mechanisms such as interactive media or distance learning to provide continuing education credits to health professionals.

3. Extend the reach of arthritis-related messages by using communication vehicles such as state and county medical societies, state and national professional organizations, professional newsletters and conferences, and websites of professional organizations and advocacy groups.

The fast pace of the current medical practice environment makes it difficult for physicians and other health professionals to attend all of the continuing education sessions they need. Consequently, they must be able to access arthritis information when they need it — without leaving their offices. Emerging technology such as websites and listservs, as well as standard newsletters and journals, can make arthritis information readily available.

- Create a listserv for all physicians and health professionals who would like to receive updates on arthritis information.
- Create a consortium of website links to relevant arthritis information and education sites.
- Develop tailored arthritis education articles and disseminate to professional and managed care organizations for publication in their newsletters.

E. Research Questions

Even if these proposed strategies and activities were implemented effectively, many questions would still need to be answered to ensure effective communication and education. A few key research questions are highlighted below.

TARGET AUDIENCE	QUESTIONS
The public	<ul style="list-style-type: none"> • Are different messages and communication techniques more or less useful among specific age, race, and ethnic subgroups and groups at different stages of change? • Does recognition of early warning signs and symptoms result in early diagnosis and appropriate management? • What messages and interventions result in appropriate behavior changes for weight control and injury prevention? • What does the public know and believe about effective arthritis intervention strategies? • What are employer and employee knowledge and attitudes about the impact of arthritis on ability to work?
People with arthritis and their families	<ul style="list-style-type: none"> • What public health or population-based programs are most effective in reducing pain and disability from arthritis? • What methods are effective for teaching self-management on an individual rather than a group basis? • What factors encourage or inhibit seeking early treatment? • Which assistive devices are most likely to help people with arthritis stay independent? • What are the comparative benefits of home-based, community-based, and job site-based physical activity strategies? • What do people with arthritis know and believe about effective arthritis intervention strategies? • How can use of self-management techniques be increased? • What factors encourage or inhibit physical activity among people with arthritis?
Health professionals	<ul style="list-style-type: none"> • Are managed care gatekeepers sufficiently aware of the signs and symptoms of arthritis and types of arthritis? • What programs are successful in promoting early diagnosis? • What communication strategies influence providers to adopt appropriate management strategies?

SUMMARY OF COMMUNICATION AND EDUCATION STRATEGIES

For the Public

1. Promote partnerships to deliver consistent messages that reach entire populations.
2. Conduct market research to shape the messages.
3. Increase awareness throughout all communities.

For People with Arthritis and Their Families

1. Incorporate arthritis into chronic disease prevention, health promotion and education, and other programs of state and local health departments.
2. Create national and local communication campaigns to motivate people with arthritis symptoms to seek early diagnosis and appropriate management.
3. Improve the ability of people with arthritis to make informed decisions about the use of unproven remedies.

For Health Professionals

1. Improve the knowledge, attitudes, and practices of primary care practitioners and other physicians through undergraduate and graduate education, continuing medical education, and in-service education.
2. Improve the knowledge, attitudes, and practices of other health professionals through undergraduate and graduate education, continuing education, and in-service education.
3. Extend the reach of arthritis-related messages by using communication vehicles such as state and county medical societies, state and national professional organizations, professional newsletters and conferences, and websites of professional organizations and advocacy groups.



V. PROGRAMS, POLICIES, AND SYSTEMS

A. Guiding Principles

This section describes recommended programs, policies, and systems at the national, state, and local levels to promote increased quality of life for people with arthritis and facilitate prevention measures. Efforts must be expanded beyond data and communication to modify our social systems to deal appropriately with arthritis. We must have

- A continuum of health services that includes primary, secondary, and tertiary prevention.
- A system of health services that bridges medical, voluntary, and public health agencies.
- Supportive policies to establish an environment conducive to preventive efforts.
- Community norms that promote prevention and improved quality of life.
- A well-trained public health workforce to implement a national arthritis prevention effort.

Programs, policies, and systems are tools for effecting change.

Programs are the actual implementation — at the national, state, and community levels — of specific effective interventions for primary, secondary, and tertiary prevention of a public health problem.

Policies include legislation, regulations, ordinances, guidelines, and norms that establish an environment conducive to prevention. Examples of national policies are entitlement programs (e.g., Medicare and Medicaid) and the Americans with Disabilities Act. Policies at the state and community levels influence public health efforts as well.

Systems are the health infrastructure required to operate and manage effective prevention programs. As our health care system continues to evolve, delivery of quality care becomes more complex. Relationships among the public and private sectors, individual practitioners and managed care organizations, and voluntary health organizations directly influence access to care and provision of clinical and community preventive services.

Strategies and activities supporting each of these components are presented in the following sections.

B. Program Strategies

Key prevention techniques are identified in the Background section. Program strategies for promulgating these prevention techniques are twofold:

1. Develop and disseminate primary, secondary, and tertiary prevention intervention programs.

Self-management education and exercise programs have beneficial effects for people with arthritis.^{20,21,28} Maintaining appropriate weight can reduce the risk of developing osteoarthritis, and getting regular physical activity can reduce disability from arthritis. However, these interventions are underused. People with arthritis have low levels of physical activity, even when their disability is taken into account.⁶ The following activities should target whole populations as well as specific at-risk groups.

- Conduct model demonstration programs to assess the effectiveness of interventions.
- Use pilot tests and demonstration programs to better define effective interventions in various settings.
- Identify and facilitate the dissemination of effective program or intervention research.
- Pilot test alternative delivery mechanisms to reach underserved populations.
- Develop and evaluate model programs for weight control and physical activity.
- Test weight control strategies among people with arthritis.
- Develop telephone service for arthritis education and support to decrease disability.
- Facilitate the widespread dissemination of self-management programs, with possible funding by the pharmaceutical industry or managed care organizations.
- Promote responsible use of medication.
- Promote implementation of self-management programs in work settings.

2. Develop and disseminate arthritis management education programs for health professionals.

Most people with arthritis are seen by primary care providers; many are told initially that “it’s only arthritis” or “it’s arthritis so there’s nothing we can do.” These dismissive responses waste the opportunity for early intervention. Similarly, many providers overlook nonpharmacological interventions that may reduce disability. Because of the widespread prevalence of arthritis, all health care providers need up-to-date information on treating and managing arthritis. Primary care providers also need to know when to refer patients to rheumatologists, orthopedists, and other specialists.

“The healthcare system has not yet recognized the crucial role patients have in their own self-management.”

- HALSTED R. HOLMAN, MD

- Emphasize nonpharmacological management strategies in primary care training programs.
- Develop training modules that emphasize the importance of early diagnosis and appropriate management and the value of self-management and other nonpharmacological strategies.
- Incorporate training modules on arthritis management into programs that train nontraditional health care providers.

C. Policy Strategies

Certain policies, if widely adopted, would greatly enhance the chances of success in preventing arthritis and improving the quality of life of those affected by this condition. These policies can best be built around the following strategies.

1. Create awareness of arthritis as a public health issue.

Before effective arthritis-related policies can be developed, policy makers must be aware that arthritis is an important public health issue. This awareness has been limited by prevailing misconceptions of arthritis as just minor aches and pains resolved by simple pain relievers, by lack of recognition of the high prevalence of arthritis, and by a lack of understanding of the significant financial and human costs of arthritis to American society. Policy makers need to be educated about arthritis' effects on society and the success of intervention programs; only then can they develop relevant arthritis-related policies.

- Educate policy makers on the health burden and costs of arthritis.
- Promote the recognition of arthritis as both a women's health and a minority health issue.
- Collaborate with state public health officials to ensure that they have the information they need to better address arthritis in their states.
- Include arthritis in federal health and disability policies that are not intended to be specifically for persons with arthritis (e.g., those related to the Americans with Disabilities Act).
- Develop grassroots activities to focus attention on arthritis issues in individual states.
- Delineate the continuum of primary, secondary, and tertiary prevention strategies and indicators of success to guide policy and other decision makers.
- Develop a policy requiring managed care organizations to cover any intervention proven to be cost-effective.

2. Incorporate arthritis objectives into *Healthy People 2010*.

The nation will not be able to achieve its goal of increasing years of healthy life unless we are able to address arthritis, the leading cause of disability. It is essential

to include arthritis objectives in *Healthy People 2010*, future versions of this document, and other long-term projections of health policy issues.

- Submit arthritis objectives to be included in *Healthy People 2010*.
- Monitor success in achieving *Healthy People 2010* arthritis objectives.

D. System Strategies

A strong public health infrastructure is essential to carrying out the strategies outlined in this Plan. Specific strategies follow for strengthening the infrastructure to effectively support arthritis prevention and intervention activities.

1. Build arthritis capacity and competency into the public health infrastructure.

Public health agencies are just beginning to turn their attention to the public health implications of arthritis. An investment of time and human resources will ensure that an infrastructure is in place for managing effective public health programs.

- Devise programs to attract a variety of professionals to the arthritis field.
- Support activities to attract professionals to rheumatology-related specialties.
- Expand training in health education, prevention research and translation.
- Establish an arthritis office or program at CDC.
- Build capacity at the state level for professional and public education, linkages with external partners, data collection and analysis, technical assistance and training, and strategic planning to address all subpopulations (especially minorities and women).
- Support comprehensive statewide public programs to implement strategic plans in collaboration with managed care and other health delivery systems and with other public health prevention programs.
- Develop a resource manual and slide presentation on how to define the arthritis problem in a community.
- Provide financial and technical assistance to states for data collection and analysis, training, and strategic planning.

2. Modify health care systems to better meet the needs of people with arthritis.

Existing health care systems, which were built around the need for acute care, are not well structured to meet the needs of people with arthritis and other chronic diseases. These systems must be modified to ensure that people with arthritis get the care they need at the appropriate time and place. They also must be staffed with sufficient numbers of qualified health care professionals, including primary care practitioners and specialty care providers.

- Develop arthritis indicators for performance measurement as used by the Health Plan Employer Data and Information Set (HEDIS) and the Foundation for Accountability (FACCT).
- Gather and evaluate data to identify critical performance indicators that can help track progress toward improved health outcomes from clinical care.
- Establish standard reportable outcome measures.
- Establish guidelines or standards of care for arthritis.
- Ensure that adequate numbers of primary care and specialty providers are trained to deliver quality care.
- Ensure that providers are reimbursed for effective intervention strategies, including nonpharmacological, educational, and support strategies.
- Link provider compensation with good arthritis outcomes.
- Educate the health care system about the true costs of arthritis, both the direct medical costs and the indirect personal and societal costs, including lost wages and productivity.
- Improve standard methodologies to measure the indirect costs of arthritis.
- Build self-management education programs, such as the Arthritis Self-Help Course, into routine arthritis care.
- Implement population-based arthritis surveillance and intervention strategies in managed care organizations.
- Encourage the development and implementation of appropriate physical activity programs for people with arthritis.
- Facilitate access to care for medically underserved people with arthritis.

3. Build state and local interagency alliances to address arthritis.

Addressing arthritis will require the coordinated work of multiple organizations, including governmental, public, and private organizations; public health, medical care, and social service agencies; and a variety of nontraditional partners including Area Agencies on Aging, American Association of Retired Persons, Arthritis Foundation chapters, faith communities, and other community groups. To optimize the use of resources, these efforts should be coordinated by a unified vision.

- Build collaborations between managed care organizations and public health agencies.
- Strengthen alliances among community organizations (e.g., state health departments, Arthritis Foundation chapters, Medicaid agencies, voluntary health agencies, American Association of Retired Persons, Area Agencies on Aging, senior centers, and churches).

E. Research Questions

Research on the following priority questions would further strengthen programs, policies, and systems related to arthritis prevention.

AREA	QUESTIONS
Programs	<ul style="list-style-type: none"> • What motivates people with arthritis to participate in physical activity and other self-management programs? • Which self-management programs are most effective in community settings? • Which interventions are most effective in moving individuals with arthritis through the stages of behavior change needed to increase the frequency of physical activity and other self-management behaviors? • What are appropriate outcome indicators? • What community, environmental, and worksite modifications can best help people with arthritis maintain or improve their function, independence, and quality of life?
Policies	<ul style="list-style-type: none"> • How well does the Americans with Disabilities Act serve people with arthritis? • Do determinations of disability by the Social Security Administration, as well as other federal policies, meet the needs of people with arthritis for independence, employment, and community involvement? • To what extent are rheumatic diseases included in the Social Security Administration's list of disabilities? • What policy modifications will help people with arthritis remain in the workforce? • What medication reimbursement plans facilitate optimal arthritis care?
Systems	<ul style="list-style-type: none"> • How can collaborations between public health and medical care systems be fostered? • Does the continuity of care in managed care settings differ from that in other health care delivery settings? • What is the optimum continuum and organization of care and who are appropriate providers? • What nonpolicy barriers prevent people with arthritis from participating in the workforce? • What referral patterns are commonly used for people at risk of arthritis? For people with arthritis? • How can we use arthritis as an indicator condition for quality of care in managed care?

SUMMARY OF PROGRAMS, POLICIES, AND SYSTEMS STRATEGIES

Programs

1. Develop and disseminate primary, secondary, and tertiary prevention intervention programs.
2. Develop and disseminate arthritis management education programs for health professionals.

Policies

1. Create awareness of arthritis as a public health issue.
2. Incorporate arthritis objectives into *Healthy People 2010*.

Systems

1. Build arthritis capacity and competency into the public health infrastructure.
2. Modify health care systems to better meet the needs of people with arthritis.
3. Build state and local interagency alliances to address arthritis.
4. Target state and local efforts to those at greatest risk of arthritis.



VI. IMPLEMENTATION

A. General Considerations

Critical to the ultimate success of any strategic plan are indicators with which to gauge progress. These should be established, along with a system for measuring them. Indicators drawn from the activities outlined in this Plan might include the following:

Surveillance, Epidemiology, and Prevention Research

- Incidence and prevalence rates of specific types of arthritis.
- Early diagnosis rates.
- Percentage of people with arthritis symptoms who have not received an arthritis diagnosis.
- Percentage of people with diagnosed arthritis who can identify their specific type of arthritis.
- Obesity, lack of physical activity, and other risk factor rates in the general population and among people with arthritis.
- Percentage of people with arthritis changing their behavior in ways that will alleviate arthritis symptoms (e.g., adopting regular physical activity).
- Percentage of population covered by arthritis surveillance.
- Sentinel events such as joint replacement and nursing home admission among people with arthritis.
- Percentage progressing from risk factors to disease and from disease to disability in key populations.

Communication and Education

- Percentage of the public knowledgeable about arthritis symptoms, prevalence, impact, outcomes, and prevention.
- Percentage of health professionals knowledgeable about the prevention, differential diagnosis, early diagnosis, and appropriate management of arthritis.
- Percentage of people with arthritis who are aware of two or more arthritis interventions.

Programs, Policies, and Systems

- Percentage of federal health funds dedicated to arthritis.
- Number of federal staff dedicated to arthritis at CDC, the National Institutes of Health, the Agency for Health Care Policy and Research, and the Veterans Administration.

- Number of state and local public health staff dedicated to arthritis.
- Incorporation of arthritis issues into other areas, such as disability, aging, and women's health.
- Percentage of people with arthritis who are satisfied with health services.
- Percentage of health research budgets dedicated to arthritis.
- Percentage of health maintenance and managed care organizations offering arthritis self-management strategies as part of their benefit package.
- Percentage of people with arthritis who maintain their desired level of participation in the workforce.

B. Priority Strategies for Early Implementation

Of all the recommended strategies, the following can be viewed as high priority — either because of their potential impact or because they can be implemented quickly with minimal cost:

Surveillance, Epidemiology, and Prevention Research

- Determine arthritis prevalence using accepted, standardized definitions and describe the natural history of these diseases.
- Validate self-report measures.
- Evaluate prevention interventions.
- Define risk factors for arthritis.

Communication and Education

- Determine the level of knowledge of public health professionals regarding arthritis prevention, early diagnosis, and appropriate management.
- Educate providers and the public that arthritis is not a normal part of aging, that there are different types of arthritis, that arthritis affects people as early as infancy, and that treatment interventions are available.
- Promote the value of early diagnosis and appropriate management, including self-management.
- Facilitate the collection and dissemination of information about existing state and local arthritis programs.

Programs, Policies, and Systems

- Establish focal points for arthritis programs in state health departments (e.g., in chronic disease and health promotion program areas).

- Encourage health systems, such as managed care organizations and Medicaid and Medicare programs, to adopt arthritis prevention recommendations and to know when to seek expert consultation.
- Develop public-private arthritis education programs for people with arthritis and health professionals.

C. Next Steps

The impact of arthritis on Americans, both now and in the decades ahead, is clear and profound. A variety of effective prevention interventions, if applied appropriately and effectively, could significantly improve the quality of life of people with or at risk for arthritis and their families. Arthritis prevention has the potential to become a model for collaboration between public health and clinical care professionals in addressing a chronic condition of significant magnitude and cost.

It is no accident that the development of the *National Arthritis Action Plan: A Public Health Strategy* coincides with the fiftieth anniversary of the Arthritis Foundation. To date, the Foundation has been the primary voice and advocate for people with arthritis and their families. The time has come to strengthen that voice by applying the collective energy and resources of the public and private sectors. This strategic plan sets in motion a course of action for establishing partnerships, making arthritis a prominent public health issue, and preparing society for concerted efforts to prevent arthritis and many other chronic conditions.

The Plan's development was a collaborative effort of public health, medical, and voluntary health organizations and agencies under the leadership of the Arthritis Foundation, the Association of State and Territorial Health Officials, and the Centers for Disease Control and Prevention. Similarly, implementing the Plan will require ongoing collaboration and partnership because no single organization can effectively address the burden of arthritis alone. To capitalize on the specialized knowledge and expertise of various collaborating partners, public-private partnerships, some established through requests for proposals, contracts, and cooperative agreements, will be used to implement discrete elements of the Plan.

With the Plan as a guide, and with dedication and persistence, we can indeed lessen the burden of arthritis on the health of our nation.

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Society for Public Health Education
Spondylitis Association of America

Proposed *Healthy People 2010* Arthritis-Related Objectives

September 15, 1998

Chapter 16. Arthritis, Osteoporosis, and Chronic Back Conditions

1. Increase mean days without severe pain for U.S. adults with arthritis to more than 20 of the past 30 days. (Baseline: 16.0 days in 1995)
2. Reduce to no more than 15 percent the proportion of people with arthritis who experience a limitation in activity due to arthritis. (Baseline: 18.4 percent in 1990)
3. Reduce the proportion of all people with arthritis who have difficulty in performing two or more personal care activities, thereby preserving independence.
4. Increase the proportion of people with arthritis aged 18 and older who seek help in coping with personal and emotional problems.
5. Increase the proportion of the working-age population with arthritis who desire to work (i.e., both those who are employed and those who are unemployed but looking for work, called the labor force participation rate) to 60 percent. (Baseline: 45 percent in 1994)
6. Reduce racial differences in the rate of total knee replacement for severe pain and disability.
7. Decrease to 5 percent the proportion of individuals who report they have arthritis but have not seen a doctor for it. (Baseline: 16.4 percent in 1990)
8. Increase the early diagnosis and appropriate treatment of individuals with systemic rheumatic diseases.
9. Increase the proportion of people with arthritis who have had effective, evidence-based arthritis education (including information about community and self-help resources) as an integral part of the management of their condition.
10. Increase the proportion of hospitals, managed care organizations, and large group practices that provide effective, evidence-based arthritis education (including information about community and self-help resources) as an integral part of the management of their condition.
11. Increase the proportion of overweight people with arthritis who have adopted some dietary practices combined with regular physical activity to attain an appropriate body weight.

Chapter 1. Physical Activity and Fitness

12. Increase to 85 percent the proportion of people aged 18 and older who engage in any leisure time physical activity. (Baseline: People with arthritis symptoms—65 percent in 1991; People without arthritis symptoms—72 percent in 1991)
13. Increase to at least 30 percent the proportion of people aged 18 and older who engage regularly, preferably daily, in sustained physical activity for at least 30 minutes per day. (Baseline: People with arthritis symptoms—21 percent in 1991; People without arthritis symptoms—22 percent in 1991)
14. Increase to at least 25 percent the proportion of people aged 18 and older who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion. (Baseline: People with arthritis symptoms—11 percent in 1991; People without arthritis symptoms—16 percent in 1991)

Chapter 2. Nutrition

15. Increase to at least 60 percent the prevalence of healthy weight (defined as a BMI equal to or greater than 19.0 and less than 25.0) among all people aged 20 and older. (Baseline: males and females with and without arthritis)
16. Reduce to less than 15 percent the prevalence of BMI at or above 30.0 among people aged 20 and older. (Baseline: males and females with and without arthritis)

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