AT-A-GLANCE | Arthritis Foundation Scientific Strategy 2015-2020

Arthritis and Related Diseases in the U.S. Population

- Statistics show that arthritis and related diseases probably affect every family in the United States. Approximately 22 percent of U.S. adults (more than 50 million people) aged 18 years or older self-report doctor-diagnosed arthritis.[1]
- An estimated 294,000 U.S. children under age 18 (or one in 250 children) are diagnosed with arthritis or another rheumatologic condition.[2]
- Arthritis kills people of all ages as the primary and associated cause of death. In addition, complications from treatment of arthritis can result in death. During the 20-year period of 1979-1998, 146,377 deaths were recorded with an underlying cause of arthritis and other rheumatic conditions.[3] Deaths occurred among all age groups, including children; 12 percent of deaths occurred among persons aged 15–44.[3]
- Forty-eight million U.S. adults (22 percent) report a disability.[4]

The facts presented here are serious, and finding a cure for arthritis and related diseases is, and always will be, a priority for the Arthritis Foundation. We believe that science is advancing every day, and the optimism and energy we pour into scientific discovery are helping pave the way toward scientific progress. From pharmaceuticals to holistic practices, small steps to large breakthroughs, we're always finding ways to improve your quality of life.

Scientific Discovery

The wise words of Walter Barr,[5] "science has arthritis on the run," inspire research for arthritis and related diseases. Scientific research and development holds the key to finding better diagnostics and treatments—and one day a cure—for more than 50 million Americans who face the daily challenges of arthritis and related diseases.[6] For almost 70 years, the Arthritis Foundation initiated and supported scientific discoveries that improve the lives of people with arthritis and related diseases. The Arthritis Foundation continues to lead the way in advancing scientific discoveries and seeking solutions that will positively impact the lives of those who suffer. Our commitment to finding a cure is unwavering.

Scientific Strategy Goals

The scientific strategy is the direction the Arthritis Foundation Science Department is going over the next five years. The scientific strategy has three pillars.

Pillar #1: Delivering on Discovery

- Improved decision making and better lives through improved prevention, earlier diagnosis and new treatments to prevent, control and cure arthritis and related diseases

Pillar #2: Decision Making With Metrics

- Fact-based metrics for decision making and guiding actions to improve the health of people across the lifespan with arthritis and related diseases

Pillar #3: Building Human Capital

- Scientific research pipeline is strengthened and scientific discovery is catalyzed and accelerated for arthritis and related diseases

SCIENTIFIC PILLAR #1

Delivering on Discovery

The Delivering on Discovery pillar is the focus of the scientific strategy. In the past, it took an average of 17 years for only 14 percent of new scientific discoveries to be available to the people in need.[7] Scientific and technological advances are progressing at an increasingly rapid rate, making it possible to speed up the process for finding a cure.[8] To accelerate our progress toward finding a cure, we are building and strengthening interdisciplinary teams to facilitate scientific research and development for every stage of scientific discovery.[8]

The Arthritis Foundation is well positioned to understand and engage people with arthritis in the scientific discovery continuum. Whether we are facilitating better evidence-based decision making regarding complementary and alternative medicine use[9] or providing leadership in the development of new diagnostics and western treatment approaches, collaboration and cooperation with other organizations and experts are helping us navigate the realities of human biology and troubleshoot the complexities of clinical research and practice, as well as the many other challenges that occur on the scientific discovery continuum.[8]

An example of how the Arthritis Foundation is delivering on discovery includes:

- Biomarkers Consortium.[10] In this consortium, the Arthritis Foundation is a partner in accelerating the development of biomarker-based technologies, medicines and therapies for the prevention, early detection, diagnosis and treatment of disease.[19] Biomarker-based technologies can define disease remission and indicate timing for medication dosage to maintain disease remission.

- Accelerating Medicines Partnership (AMP). The Arthritis Foundation is a founding member of AMP, which brings together the National Institutes of Health, 10 biopharmaceutical companies and several nonprofit organizations to accelerate the development of new diagnostics and pharmaceutical treatments.[12]

Delivering on Discovery: Objectives

- Develop a virtual rolodex of subject matter experts across the scientific discovery continuum who can be invited to provide expertise when needed to achieve a specific scientific task within a defined period of time
- Issue requests for letters of interest and requests for proposals that require the candidates to:
  - Plan for translation of scientific knowledge into the products people need to prevent, control and cure arthritis and related diseases
  - Measure metrics that matter
- Provide leadership and oversight in building collaborative, interdisciplinary teams who achieve meaningful results and accelerate scientific discovery to find a faster cure for people with arthritis and related diseases
- Engage people with arthritis and related diseases in the scientific discovery process

SCIENTIFIC PILLAR #2

Decision Making With Metrics

Metrics are used to inform decisions and to prioritize our efforts to deliver on discoveries. Understanding baseline information, trends over time and being able to measure change after an intervention is implemented are examples of information needed to identify needs and demonstrate impact. There is an ongoing need for updated and new data collection and analytics approaches to produce arthritis statistics and scientific facts for decision making.

Every day, the Arthritis Foundation receives internal and external requests for scientific arthritis facts that are used for decision making regarding prevention, treatment, advocacy and other actions. Many of our responses are based on public health surveillance data and other information that can be viewed at websites such as the Centers for Disease Control and Prevention.[13] Inquiries we receive are answered with a combination of metrics, but not enough data are available to fully answer the questions.

The Arthritis Foundation is collaborating with the Centers for Disease Control and Prevention and other partners such as the National Institutes for Health to find ways to answer questions that have not yet been answered, as well as continuing to update existing facts as new information becomes available.

The Arthritis Foundation is a Healthy People Consortium Partner to take actions to strengthen policies and improve practices that are driven by the best available scientific evidence and knowledge.[14] Healthy People works across the U.S. Department of Health and Human Services (HHS) to attain high-quality, longer lives free of preventable disease, disability, injury and premature death.[15] The Healthy People 2020 objectives track a variety of pain, function and intervention measures that are important for monitoring progress in addressing arthritis as a public health problem.[16]

Decision Making With Metrics: Objectives

- Facilitate the updating of priority arthritis statistics
- Prioritize questions yet to be answered and determine options to answer these questions
- Collaborate with Healthy People to achieve and measure progress on 2020 objectives
- Collaborate with Healthy People to develop new 2030 objectives
- Collaborate with international efforts to measure and compare arthritis statistics across geographies
- Convene interdisciplinary subject matter experts across organizations to standardize and validate core metrics for registries that are patient-driven
- Convene interdisciplinary subject matter experts to develop a pain index for people with arthritis

SCIENTIFIC PILLAR #3

Building Human Capital

To assure that the field of scientific research for arthritis and related diseases has a strong interdisciplinary pipeline of scientists to implement our first two pillars, the third pillar is focused on building human capital for today and for the future. Scientific research for arthritis and related diseases lacks a critical mass of investigators to sustain the scientific pipeline.[17, 18]

The Arthritis Foundation seeks to strengthen the pipeline of talent conducting scientific research and development for arthritis and related diseases by recruiting 1) trainees who are experts in arthritis research but would benefit from training in interdisciplinary scientific research and development skills, and 2) trainees who have never worked in the field of arthritis research but are experienced investigators interested in applying their talents to arthritis research, and would benefit from understanding the history and current needs in the field of arthritis research.

This training approach is unique and filling a much needed scientific research and development gap.

Building Human Capital: Objectives

- Develop an implementation plan for the training program
- Identify existing curriculum and/or develop new curriculum for the training program
  - Arthritis research history and current needs
  - Interdisciplinary skills to turn scientific discoveries into real-world uses
- Pilot test the training program
- Evaluate the pilot training program
- Revise the training program based on evaluations

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We are collaborating with other organizations and

building upon the legacy of existing research

for arthritis and related diseases.

Amanda Niskar, DrPH, MPH, BSN
National Scientific Director
1330 West Peachtree Street NW, Suite 100, Atlanta, GA 30309

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www.arthritis.org