



Arthritis Research Centre of Canada
Arthrite-recherche Canada

Leading research.
Finding answers.
Saving lives.

Orienter la recherche.
Trouver des réponses.
Sauver des vies.

Scientific Plan 2014-2017

March 2014

Executive Summary

Arthritis and related conditions make up a group of more than 100 diseases. It is a leading cause of pain, physical disability and health care utilization and is the most costly group of diseases in Canada. Currently, more than 4.6 million Canadians (16%) aged 15 years and older have arthritis. With the aging population, this number is expected to increase to approximately 7 million (20%) by 2031.

This data points to an enormous opportunity: that is, the potential to significantly reduce the burden of physical disability and use of health care resources, and greatly enhance many years of life for a large number of Canadians, through research. The more we can understand about diagnosing and treating these diseases, the bigger the impact.

In recognition of the tremendous potential that research can bring to arthritis treatment in Canada and beyond, the Arthritis Research Centre of Canada (ARC), a not for profit charitable organization, was created in 2000. In the last few years, ARC has added ARC Quebec (at Laval University) and ARC Calgary (at the University of Calgary).

Today, ARC is home to a multi-disciplinary research team comprised of 25 outstanding medical doctors and research scientists. This relatively young organization has quickly earned international attention as a leading arthritis research environment, as reflected in a three-fold growth of external funding over the past decade.

This scientific plan for 2014 to 2017 lays out ARC's high level plan to continue its award-winning efforts in three key domains: research, training, and knowledge exchange. All three benefit from the organization's unique, integrated approach, bringing a range of complementary skills and knowledge to bear around the full range of musculoskeletal diseases that fall under the broad category of arthritis.

To achieve this goal, the plan lays out ARC's intentions to add complementary expertise to the existing team, with a focus on workplace disability and on health psychology. Also identified in the plan are targeted recruitments of researchers focusing on priority disease areas including spondylitis, gout, systemic lupus and related disorders.

Introduction

The term arthritis is used to describe more than 100 conditions that affect joints, the tissues which surround joints, and other connective tissue. These conditions range from relatively mild forms of tendonitis and bursitis to illnesses, such as rheumatoid arthritis, which affect the whole body.

Typically, arthritis conditions are characterized by pain and stiffness in and around one or more joints. However, the pattern, severity and location of symptoms vary depending on the specific form of the disease. Symptoms can develop gradually or suddenly.

Currently, more than 4.6 million Canadians (16%) aged 15 years and older reported having arthritis. Although arthritis is most prevalent among seniors, it is not confined to the elderly population and many are affected in the prime of their lives. There is no known cure for arthritis, but improvements in our understanding of the different conditions continue to lead to better medications and treatments for the disease.¹

Compared with people with other chronic conditions, those with arthritis experience more pain, activity restrictions and long-term disability and are more likely to need help with daily activities. Individuals report worse self-rated health and more disrupted sleep and depression, and more frequently report contact with health care professionals in the previous year. Overall, 19% of Aboriginal people reported having arthritis – equivalent to 27% if the Aboriginal population had the same age composition as the overall Canadian population.

Yet today, compared to high profile diseases like cancer, only relatively small amounts of funding flow to arthritis research. In 1998, the economic burden of musculoskeletal conditions in Canada accounted for 10.3% of the total economic burden of all illnesses but only 1.3% of health science research funding. That's why it is essential to ensure that the money which is available is routed to support the work of scientists and clinicians whose studies can lead to the greatest improvements in quality of life for Canadians living with arthritis. In Canada, one team stands out as presenting the best opportunity for return on investment in arthritis research: the Richmond, BC-based Arthritis Research Centre of Canada.

¹ Public Health Agency of Canada, <http://www.phac-aspc.gc.ca/cd-mc/arthritis-arthrite/index-eng.php> accessed July 2, 2013

About the Arthritis Research Centre of Canada

The Arthritis Research Centre of Canada (ARC) was created in 2000 as a not for profit charitable organization.

At that time, ARC consisted of one scientist (the founding Scientific Director, Dr. John Esdaile), one student (Dr. Diane Lacaille) and a part time administrative assistant. Growth has been rapid, and constant, ever since.

Most recently, ARC activities extended beyond its original British Columbia base (University of British Columbia and Simon Fraser University) by incorporating in Calgary at the University of Calgary and in Quebec at Laval University.

Today, ARC is home to 25 clinical investigators, 16 graduate students, and 11 scientific staff, a 15 member Arthritis Patient Advisory Board, and 6 administrative staff. The ARC team is dedicated to understanding, advancing and sharing knowledge about the causes of arthritis, and addressing issues that are impacting people with arthritis right now. ARC Calgary is affiliated with the McCaig Institute for Bone and Joint Health and the University of Calgary. ARC Quebec City is affiliated with Laval University.

Achievements to Date

The growth in numbers of ARC's scientific staff and the increase in external research funding are just two indicators of ARC's success as a centre of clinical research excellence. Appendix Two provides an overview of the volume of scholarly publications generated by the ARC team.

The Centre's strong, multi-disciplinary research team is comprised of outstanding clinicians and researchers, actively collaborating with peer professionals around the world. This relatively young organization has quickly earned international attention as a leading arthritis research environment.

The ARC website highlights current and completed research, as well as educational videos featuring ARC scientists and trainees.

From 2010 to 2013, ARC trainees won 25 salary or scholarship awards, both on a provincial level and the federal level. Two summer students also won the top prize in Canada for their research.

In the same period, ARC scientists have been awarded more than 11 salary awards, including five Canada Research Chairs. Salary awards are competitive awards given to researchers so they can concentrate full-time on their research. ARC Scientists also received more than 13 prizes, including the Jonas Salk Award for Excellence in Biomedical/Rehabilitation Research and various teaching and mentoring awards.

ARC Today

The team at ARC conducts consumer-driven clinical research related to arthritis diagnosis, prognosis, prevention, care outcomes and quality of life issues. As part of a patient-oriented research centre, the ARC team approaches their work from a wide range of perspectives, including rheumatology, orthopaedics, rehabilitation science, pharmacy, public health, epidemiology, biostatistics, health psychology, health economics and education.

A full listing of ARC faculty and their research foci is presented in Appendix 1. In summary, Figure 1 below illustrates the current complementary disciplinary specialties for scientists affiliated with ARC, with overlapping domains representing the areas where their respective knowledge-base complements and combines to produce new knowledge and translate it to action for prevention, diagnosis and treatment.



Figure 1: ARC Scientists' Principal Discipline Foci

Another way to understand the breadth of scientific expertise at ARC is to look at the distribution of primary scientific interest in various types of musculoskeletal disease. Again, these are listed in Appendix 1, while Figure 2 below summarizes how ARC-Affiliated Scientists cluster according to their focus on a given type or family of diseases.

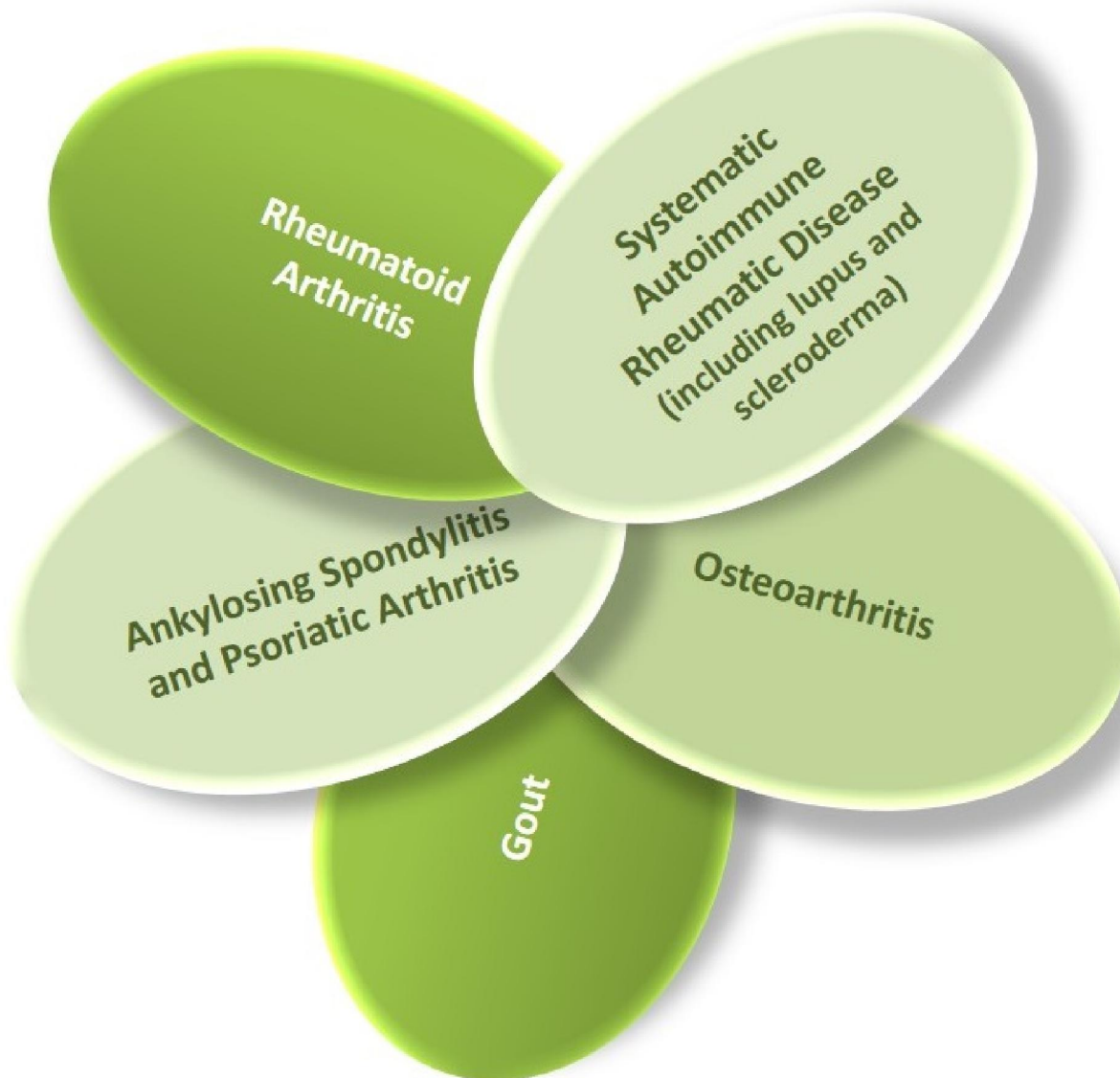


Figure 2: ARC Scientists' Principal Disease Foci

ARC has had an Arthritis Patient Advisory Board since shortly after it was created and was one of the first research centres in Canada to have such a group. They volunteer to collaborate on research projects alongside the scientists. The Arthritis Patient Advisory Board members make a unique contribution to ensure that the research of ARC is relevant to people living with arthritis, and exemplify meaningful collaborations between science & society – no “ivory tower” here. The Arthritis Patient Advisory Board members are involved in the research as part of the research team and assist in disseminating research results to the public through the ARC website, webcasts and a quarterly newsletter.

Whether viewed through the expertise or interest lenses, the ARC team environment thrives on cross-fertilization of methods and knowledge, all combined to address a common focus: practical research for everyday living. To the researchers and clinicians at ARC, that means finding the answers NOW to reduce the burden of arthritis, and giving people with arthritis better, more timely, and cost-effective solutions for living with their disease.

Where We're Going

Today the Arthritis Research Centre of Canada is poised on the brink of an exciting new decade. The table below summarizes the major areas of activity that together comprise the Centre's work in the next three to five years:

Research

- Prevention of work disability due to arthritis
- Prevention of complications by early and aggressive management
- Improving arthritis care by family physicians
- Finding the cause of osteoarthritis of the hip
- Preventing knee osteoarthritis from getting worse
- Working with 5000 pharmacists to diagnose arthritis early
- Improving the benefit of hip and knee replacements
- Creating apps and digital games to help people with arthritis choose the best treatment
- Address arthritis care gaps in the Aboriginal Population of Canada through innovative models of care
- Addressing how the epidemic of people not taking medications they need can be fixed

This Scientific Plan for the next five years proposes to establish the following strategic targets:

Inflammatory Arthritis

- Develop and test a tool to prevent work disability in those with inflammatory arthritis, such as rheumatoid arthritis.
- Increase appropriate management of rheumatoid arthritis to >80% within three months of diagnosis (versus <40% now).
- Increase the early cost-effective use of disease eliminating treatments for inflammatory arthritis, such as rheumatoid arthritis and lupus.
- Prevent the common deadly complications of arthritis including heart attacks, strokes, lung clots, infections and certain cancers.
- Improve arthritis care and treatment results for vulnerable groups such as Aboriginal people, pregnant women and infants.

Osteoarthritis

- Dramatically increase early diagnosis of osteoarthritis of the knee by pharmacists.
- Identify those with early osteoarthritis of the knee at high risk of progressive disease and develop treatment regimens.
- Pioneer protocols to test new agents to prevent osteoarthritis progression.
- Determine the cause of osteoarthritis of the hip.

Training

- Increase the number of new trainees to five per year to accelerate arthritis control and improve the delivery of cost-effective care.

Knowledge Translation and Exchange

- Get research results that will prevent arthritis or arthritis progression into the hands of the public faster and in the way they want.

Filling the Gaps

The ARC team's ability to reach these targets will depend in large part on the ability to recruit scientific talent to fill existing gaps in scientific/methodological expertise. Figure 3 below illustrates the additional domains or areas of methodological specialty that are currently lacking or under-represented at ARC. Domains represented by the arrows are foci for recruitment and/or growth.



Figure 3: Targeted Growth Areas for ARC by Principal Discipline Focus

Health Psychology

ARC has hired scientists with a diverse group of skills, including epidemiologist Jacek Kopec, who is recognized as a world authority on assessing quality of life at the societal level. His new instrument for doing so provides unparalleled information. But, this is not the same as detecting the impact of a disease on an individual's psychological health, or the impact of their psychological state on their disease. "Doing well" is not the same as living well. Most research assesses the medical model of disease (a germ causes a disease) but it is clear that although poorly studied, the psyche has a role in the development and outcome of many diseases including arthritis. This cries out for high-level scientific investigation. ARC needs to hire a scientist in this area.

Workplace Disability

For every dollar spent on treating arthritis whether it be doctors' visits, drugs, or surgery, two dollars are lost because people with arthritis lose their jobs due to their disease. No group of diseases approach the work loss costs of arthritis and musculoskeletal diseases. The economic burden of arthritis impacts particularly those from age 35 to 64 and affects women twice as much as men. Losing one's job because of a disease has implications that go far beyond just the economic costs. ARC is a world leader in focussing on work loss due to rheumatoid arthritis. Research into work loss due to osteoarthritis is an area that ARC would like to expand.

Appendix One – ARC Staff March 2014

Research Scientists and their principal discipline/disease foci

John Esdaile, Scientific Director	Clinical epidemiology; osteoarthritis
Antonio Aviña-Zubieta	Systematic autoimmune rheumatic diseases
Aslam Anis, Senior Scientist	Health economics; osteoarthritis
Catherine Backman	Occupations of daily life; rheumatoid arthritis
Nick Bansback	Decision making
Cheryl Barnabe	Aboriginal health; diagnostic imaging
Hyon Choi	Clinical epidemiology; gout
Jolanda Cibere, Senior Scientist	Clinical epidemiology; osteoarthritis
Ann Clarke	Health economics; systemic lupus erythematosus
Mary De Vera	Pharmacoepidemiology and maternal-fetal health
Jan Dutz, Affiliate Scientist	Psoriasis
Paul Fortin	Genetics; lupus
Donald Garbuz	Clinical epidemiology in orthopaedics; osteoarthritis
Charles Goldsmith	Maureen and Milan Ilich/Merck Frosst Chair in Biostatistics
Nelson Greidanus	Clinical epidemiology in orthopaedics; osteoarthritis
Michael Hunt, Affiliate Scientist	Biomechanics; osteoarthritis
Jacek Kopec, Senior Scientist	Epidemiology and quality of life; osteoarthritis
Diane Lacaille, Senior Scientist	Clinical Epidemiology; rheumatoid arthritis
Linda Li, Senior Scientist	Knowledge translation and exchange; rheumatoid arthritis
Matthew Liang, Emeritus	Rheumatoid arthritis and systemic lupus erythematosus
Carlo Marra	Pharmacoepidemiology; rheumatoid arthritis
Deborah Marshall	Health economics and health systems technology (wait times)
Kam Shojania	Health outcomes research
Anne Townsend, Affiliate Scientist	Sociology, bioethics, e-health
Ian Tsang	Traditional Chinese medicine

Trainees

Samuel Antonie	Adriana Loza
Arun Agha	Natalie McCormick
Claire Barber	Mushfiqur Rahman
Cam Clayton	Behnam Sharif
Gillian Hatfield	Tim Schmidt
Glen Hazelwood	Marie Westby
Jimmy Guo	Kateryna Vostretsova
Alexandria Klemm	Irina Zinovyeva

Administration

Shauneen Kellner, Executive Director
Patti Nakatsu, Director of Development
Lenny Kishi, Administrative Coordinator
Lisa Singh, Executive Assistant
Patricia Webb, Executive Research Secretary
Louise Walker, Fund Development Assistant

Arthritis Patient Advisory Board

Erin Carruthers
Ruta Cummings
Martina Franchi
Lianne Gulka
Linda Hirukawa
Alison Hoens
Sheila Kerr
Wendy Lum
Joyce Ma
Pam Montie
Marilyn Muldoon
Sharan Rai
Nadia Prestley
Gerry Sheanh
Karen Tsui

Research Support

Research Coordinators:

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Aliya Haji
Helen Prlic
Pam Rogers

Statistical Team: Eric Sayre

Research Assistants:

Morgan Barber
Erin Carruthers
Jenny Leese
Sharan Rai
Kathryn Reimer
Joanna Ye

Appendix Two – Publications

