

The CIHR Institute

CIHR's Institute of Musculoskeletal Health and Arthritis, under the leadership of Dr. Cyril Frank, supports research to enhance active living, mobility and movement, and to address causes, prevention, screening, diagnosis, treatment, support systems and palliation for a wide range of conditions – including arthritis, which is the largest subset of all musculoskeletal disorders. The Institute works in close collaboration with The Arthritis Society (TAS), winner of CIHR's first Partnership Award in 2003 and, with TAS and other partners, has formed the Alliance for a Canadian Arthritis Program (ACAP), an alliance established to address shortfalls in arthritis care, research and education. The Institute of Musculoskeletal Health and Arthritis is also a leading partner in the Bone and Joint Decade, launched by the World Health Organization in 2000 to improve the quality of life for people with musculoskeletal disorders and injury throughout the world. In 2005 Canada will host the Annual Meeting of the International Bone and Joint Decade Committee.

About the Canadian Institutes of Health Research

The Canadian Institutes of Health Research is the Government of Canada's agency for health research. Its objective is to excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health care system. Composed of 13 Institutes, CIHR provides leadership and support to close to 10,000 researchers and trainees in every province of Canada. For more information visit www.cihr-irsc.gc.ca

The Canadian Institutes of Health Research (CIHR) is the Government of Canada's agency for health research. Through CIHR, the Government of Canada invested approximately \$17.7 million in 2004-05 in research related to arthritis across Canada.

The facts

- Arthritis comprises more than 100 conditions including lupus, fibromyalgia, gout and scleroderma.
- The most common type of arthritis in Canada is osteoarthritis, affecting three million Canadians, or 1 in 10. Long-term disability accounted for almost 80% of the economic costs of arthritis in 1998, at nearly \$3.5 billion. The 35-64 year age group incurred 70% of these costs.
- Rheumatoid arthritis is the second most common type of arthritis, affecting 300,000 Canadians, or 1 in 100. It is an auto-immune disorder, in which the immune system attacks healthy joints, resulting in damage to cartilage, bone, tendons and ligaments. Twice as many women as men get rheumatoid arthritis. It most commonly appears between the ages of 25 and 50.
- Two thirds of those with arthritis are women and nearly 60% are under the age of 65.
- Chronic pain and reduced mobility and function are the most common outcomes of long-term arthritis.
- For all age groups, arthritis disables two to three times more workers than all other chronic conditions.
- Epidemiologists predict there will be about 100,000 new cases of arthritis each year for the next 30 years. It is estimated that by 2026, more than six million Canadians over the age of 15 will have arthritis.
- Musculoskeletal diseases (arthritis and osteoporosis) cost Canadians \$16.4 billion every year, the second highest cost of disease after heart disease. Of this total, \$2.6 billion is in direct costs such as physician and hospital care and drugs, and \$13.7 billion is in indirect costs including premature disability and death.
- The economic burden of all musculoskeletal conditions in Canada accounted for 10.3% of the total economic burden of all illnesses.

Research finding solutions to arthritis

- Older Canadians taking the drug warfarin are at increased risk of potentially fatal stomach bleeding if they take common anti-inflammatory drugs for arthritis. Dr. Muhammad Mamdani of the Toronto-based Institute of Clinical Evaluative Sciences analyzed health records of patients over 65 taking warfarin, a blood thinner, during 2000-01. He found that the bleeding problem applies both to over-the-counter drugs such as ibuprofen as well as Cox-2 inhibitors such as Celebrex, which had previously been thought to be safer. About 1 in 10 patients with a serious stomach-bleed dies before making it to hospital for life-saving surgery.
- Biomarkers found in the blood can predict the severity of osteoarthritis progression by measuring collagen degradation. The discovery, by Dr. Robin Poole of McGill University, could point to new ways to help treat patients with osteoarthritis of the knee, and provide targets for pharmaceutical drug discovery. Dr. Poole was awarded the Carol Nachman Prize for 2003 by the Canadian Arthritis Network for his outstanding research.

The researchers ... Dr. John Esdaile: Taking the sting out of arthritis pain

What should you do if you suffer from swollen, painful joints?

Seeing a doctor may come to mind — and, if Dr. John Esdaile has his way, your doctor will be ready for your visit.

As Scientific Director of the Arthritis Research Centre of Canada, Dr. Esdaile is committed to building a strong multidisciplinary research team of outstanding medical doctors and research scientists who will collaborate with medical professionals around the world to improve the prevention, diagnosis and treatment of arthritis.

As it stands, only 12% of medical schools have mandatory training in musculoskeletal medicine in the clinical years of undergraduate study.

As Professor and Head of the Division of Rheumatology at the University of British Columbia, Dr. Esdaile focuses on chronic disease epidemiology. As someone who first trained as a general practitioner, however, he keeps his eyes on the needs of his individual patients. He believes that, by staying focused on helping patients, he opens the door to opportunities for discovery — enabling him to better help them.

“The clinical interactions with patients feed my research,” he says.

Dr. Esdaile’s ‘bench to bedside to community’ research process has been validated by CIHR’s Institute of Musculoskeletal Health and Arthritis, which has aggressively supported multidisciplinary research. Through an Institute-funded New Emerging Team (NET) grant, Dr. Esdaile is focusing on the joint damage caused by very early osteoarthritis, while working with and training up-and-coming researchers from various research fields. Three million Canadians have osteoarthritis and, for most, the diagnosis comes too late for prevention.

True to his focus on the patient, Dr. Esdaile has made research discoveries that improve the lives of people with arthritis. In the 1990s, for instance, he determined that the health of people with lupus deteriorated if they stopped using a drug called hydroxychloroquine. Along with CIHR-funded student Dr. Jolanda Cibere, he determined that glucosamine isn’t as effective in treating those suffering from osteoarthritis as was previously thought.

For the past 20 years, Dr. Esdaile has watched as new research methods have opened the door to discoveries never thought possible. He has also seen his career evolve from general practitioner to clinical researcher to professor. Throughout, he has remained steadfast in his dedication to developing better answers for arthritis sufferers who need treatment.

- Patients who receive artificial hip transplants, often required due to arthritis, often have the implant fail after 20 years or more due to severe loss of bone surrounding the implant. Drs. Helen Burt and Tim Durance of the University of British Columbia have developed a tiny sponge made of biodegradable material and stuffed with stem cells that grow human bone, preventing the bone loss that makes a second surgery necessary. The sponge could be a major breakthrough for hip-replacement patients.
- With several prescription drugs for arthritis recently removed from the marketplace, arthritis sufferers are left with few options. Many people already take glucosamine, derived from crab shells, to relieve their pain. Now, Dr. Tassos Anastassiades, a CIHR-funded researcher from Queen’s University, has developed a series of new synthetic compounds based on glucosamine. The ‘lead compound’ has been shown to be effective in reducing inflammation and protecting against bone loss in tissue cultures and animal models. Dr. Anastassiades is conducting further research that should lead to approval for human use.
- Early diagnosis of arthritis can help prevent irreversible joint damage. CIHR-supported researcher Dr. Jolanda Cibere of Vancouver’s Arthritis Research Centre of Canada has developed a standardized physical examination of the knee to diagnose early osteoarthritis. Her exam has been adapted for use in the United States by the National Institutes of Health.

In the pipeline ... Focusing on pain and fatigue

Pain and fatigue are among the most common — and debilitating — problems faced by people suffering from chronic diseases such as arthritis. In fact, pain can actually be considered a disease in itself, according to research by Dr. James Henry of McMaster University and Dr. Alex Jadad of the Centre for Global e-Health Innovation in Toronto. They found that chronic pain, lasting more than six months, leads to physiological changes.

The Institute of Musculoskeletal Health and Arthritis (IMHA) has identified the study of pain, disability and chronic disease as one of its three research priorities. One exciting research project that IMHA is supporting in this area is Dr. Gillian Hawker’s examination of the determinants and consequences of pain and fatigue in osteoarthritis. Dr. Hawker, of Sunnybrook and Women’s College Hospital in Toronto, is leading a New Emerging Team that is taking a biopsychosocial approach to exploring the relationships among pain, fatigue, sleep and mental health. They are also focusing on the role of coping strategies, family support and the use of established treatments to deal with pain and fatigue. Their work could lead to the development of new treatments targeted to individuals in the context of their families and the community as a whole.