



The Escalating Burden of Osteoarthritis

Osteoarthritis, the most prevalent kind of arthritis, afflicts 3 million Canadians.

Although the prevalence of osteoarthritis increases in direct correspondence with age, people of working age (20-64) comprise close to 60% of Canadians with arthritis. Arthritis disables two to three times more workers than all other chronic conditions.

There is no cure for arthritis. The only effective long-term treatment for hip osteoarthritis is joint replacement.

Identifying Risk Factors and Early Detection

The key challenge to minimizing the impact of hip osteoarthritis (OA) is discovering the risk factors for the disease. CHH is the first research centre in the world to use a combination of genetic, biochemical, and medical imaging screening to identify patients at-risk for hip OA. This work will allow us to reduce the impact of OA by identifying modifiable risk factors that can be targeted, just as cancer reduction has targeted smoking.

UBC Professor **Alex Mackay** and Associate Professor **David Wilson** will use CHH's weightbearing MRI scanner to study how hip joint mechanics influence who gets hip osteoarthritis, when it develops and how it can be treated. This scanner has the unique capability to image the hip while subjects are standing and moving their hips, which gives CHH investigators an unprecedented opportunity to study biomechanical risk factors. Director of Arthritis Research Centre of Canada, and Head of the Division of Rheumatology, UBC Professor

John Esdaile is collaborating with these scientists to develop "superimaging" techniques that combine images from different scanners to show arthritic changes in different parts of the hip much earlier than was previously possible.

John Esdaile and his CHH colleagues will identify the first large-scale cohort of patients with early hip osteoarthritis. In collaboration with the BC Ministry of Health, they will develop a BC-wide OA database including more than 500,000 cases. What makes this a unique resource for un-raveling the determinants of hip osteoarthritis is the large size of the database and the specific arthritis-relevant data.

By applying imaging, biochemical and genetic innovations to the large-scale osteoarthritis cohort, CHH researchers will produce an un-paralleled description of the hip OA trajectory—the variable and poorly-understood rate and sequence of symptom progression. This description could be the "Rosetta Stone" for osteoarthritis that is necessary to improve detection, risk reduction and treatment for its many sufferers.

Innovative Laboratories for Early Detection of Osteoarthritis

Canada's First Weightbearing Open MRI Scanner
Advanced Medical Image Processing Lab
Population Health Research Lab

Innovative approaches for Early Detection of Osteoarthritis

Lifetime Disease Map
Superimaging
New Strategies to Identify Early OA