

Centre for the Study of Pain

Case for Support
February 2021



UNIVERSITY OF
TORONTO

Contents

Introduction: Understanding & Treating Pain 2

Pain: A Growing Crisis 3

An Integrated Model: UTCSP 5

Research 6

Knowledge Translation & Education 8

Funding Opportunities 9

Conclusion 11

Introduction: Understanding & Treating Pain

Pain, the body's response to real or perceived danger, is a universal experience. We all know what it is and feels like, but we all have our unique experience of pain. At its root it is an unpleasant experience associated with potential tissue damage. In Canada, approximately one in five people live with chronic pain, and worldwide, chronic pain disabilities account for five of the top 10 non-fatal diseases.

The causes of pain are diverse, from cancer to diabetes to neurological illnesses and other ailments. But they share a common source of suffering: physical agony that disrupts lives, sporadically or continuously. Chronic pain also has links to mental health, addiction and other secondary ailments that wreak havoc on human lives and the health of our communities.

“We are at a critical juncture where research of pain mechanisms and pain management strategies require effective translation to ensure optimal outcomes for individuals who suffer from pain. UTCSP will play an important role in linking researchers and clinicians through education.”

Assistant Professors Rachael Bosma,
Faculty of Dentistry and **Rob Bonin,**
Leslie Dan Faculty of Pharmacy,
Co-Directors, U of T Centre for the
Study of Pain

The University of Toronto Centre for the Study of Pain

The University of Toronto is uniquely positioned in Canada to be the leader in pain research, education and knowledge transfer. U of T's Centre for the Study of Pain (UTCSP) brings together outstanding scientists, clinicians, educators and trainees working in the faculties of dentistry, pharmacy, medicine and nursing to address the chronic pain crisis.

UTCSP scientists are tightly integrated within U of T's vast network of nine fully-affiliated hospitals and community partners to generate knowledge that will change the lives of those living with chronic pain. The same seamless integration between research and clinical practice provides a conduit to educate, create and disseminate knowledge to clinicians. It is unique because it puts information from researchers directly into the hands of practitioners working in clinical settings. This knowledge is also transferred to educators who are training the next generation of health care professionals to shape the way that pain is managed.

We see opportunities to increase funding to UTCSP in order to strengthen this critical ecosystem of research, education and training. Increased investment to UTCSP will attract even more top researchers and students to help address the crisis of pain and alleviate the toll it takes on our societies. Building on UTCSP's already stellar reputation, more funding will lead to even better understanding of the causes of pain and treatments, thus reducing deaths from secondary conditions such as opioid addiction, mental health challenges, lost productivity and more.



Pain: A Growing Crisis

Pain is the most common reason for seeking health care and accounts for 78 per cent of hospital visits. The consequences of uncontrolled pain are vast. Most of the health-related issues inflicting society today are linked to poorly managed pain, our aging population, mental health, the opioid crisis, vaccination hesitancy, and burgeoning healthcare costs. These societal ills have only been worsened by the COVID-19 pandemic.

In our aging society, the prevalence of chronic pain is increasing. Poorly managed pain compromises immune function, promotes tumour growth and compromises healing with increased morbidity and mortality following surgery. While most currently available medical pain treatments are effective in only 50 per cent of individuals and often offer partial relief, many treatments for various diseases can actually cause chronic pain. For example, while a larger proportion of cancer, HIV, and cardiac disease survivors are living longer, many of them experience poor quality of life due to chronic pain from disease-related damage to the body or disease treatments.

Chronic pain is also accompanied by a number of mental health issues (depression, anxiety, PTSD, insomnia) and substance misuse (alcohol, cannabis, opioids). Individuals with chronic pain have double the risk of suicide and mental health crisis. Further, the majority of people who misuse drugs and alcohol report struggling with chronic pain.

Vaccine hesitancy is also a pain issue, as the fear of injection-related pain is a major contributor to delaying or abstaining from vaccinations. This is a major health concern as it directly affects public health and remains a critical issue now that COVID-19 vaccines are available.

In Canada and throughout the world, a large share of monetary and human resources is devoted to avoiding or eliminating pain. The impact of pain on mental health, unemployment and lost productivity also creates a significant economic burden estimated at more than \$50 billion in Canada alone. All of these realities have resulted in major health crises with deep implications on quality of life and population health.

Treating and Eliminating Pain

While much progress has been made in understanding and treating pain, the growing pain crisis in Canada provides an impetus to continue to advance scientific research and innovation to enhance our understanding of pain and identify novel treatments. It also spurs our need for knowledge translation to integrate these findings into clinical practice. Pain also demands comprehensive clinical education to address inadequate training regarding pain among health-care practitioners.

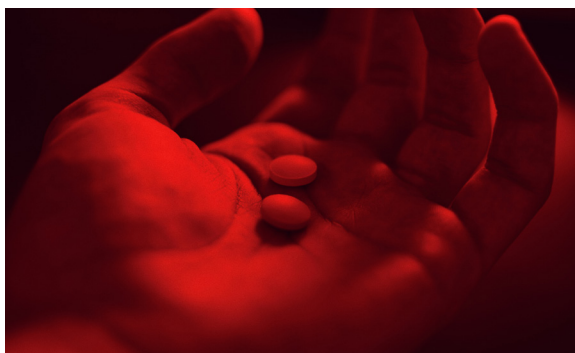
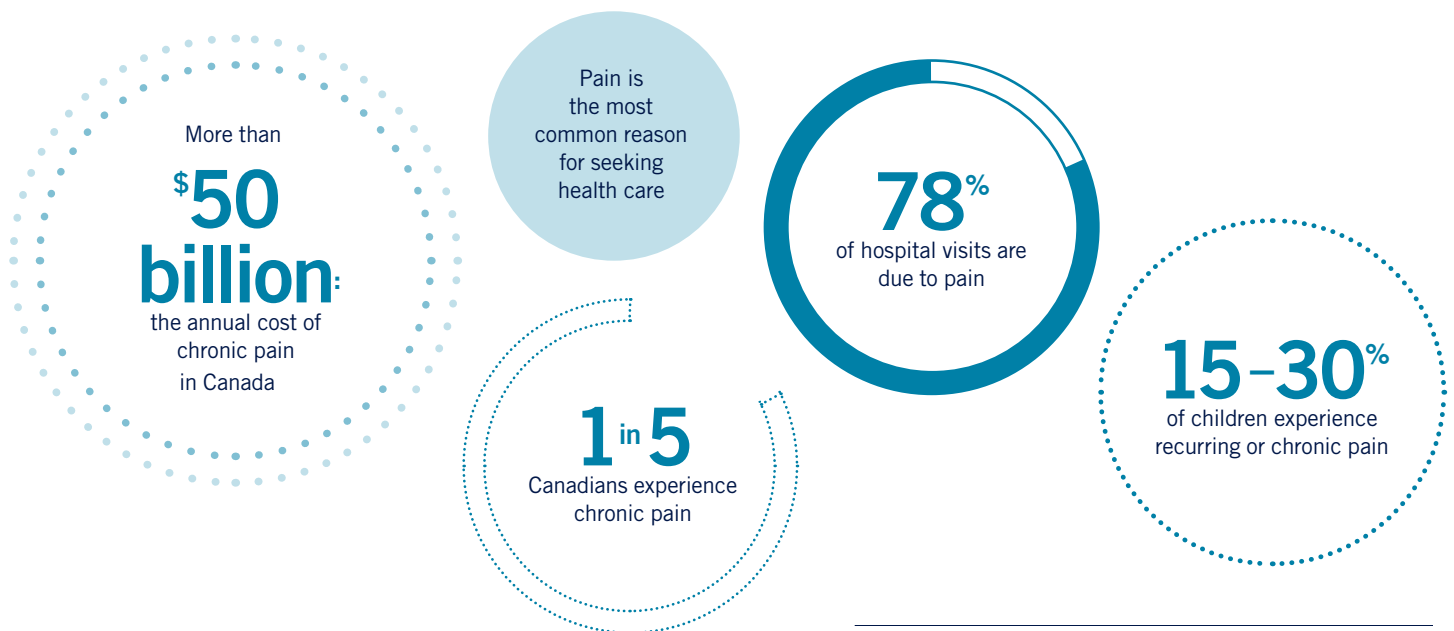
The University of Toronto Centre for the Study of Pain has played an important role in linking researchers and clinicians through education to confront the pain crisis in Canada. UTCSP scientists are at the forefront of every major issue in pain research, and have been instrumental in current issues related to pain, including developing guidelines on overprescribing, understanding cannabis for chronic pain management, and tackling the myriad issues with respect to opioid use for pain. In all of its activities, UTCSP acts as a vital, internationally focused centre addressing the research-to-practice gap.

Pain: A Growing Crisis

The Cost of Pain

Uncontrolled pain continues to be the single most common cause of disability among working-age adults in Canada. Sixty per cent of people with chronic pain eventually lose their job, incur loss of income or will have a reduction in responsibilities as a result of their pain. For people who are still employed, it is anticipated that they will have a mean of 28.5 lost work days per year.

Chronic pain costs more than cancer, heart disease and HIV combined. Estimates place direct health care costs for Canada at more than \$6 billion per year, and productivity costs related to job loss and sick days at \$37 billion per year.



The Opioid Crisis and Pain

The widespread misuse of opioid pain relievers over the past two decades has created rampant substance abuse disorders in millions of Canadians, with devastating effects. Since 2016, there have been more than 17,000 apparent opioid-related deaths. In the first six months of 2020 alone, there were more than 2,700 deaths, a 54 per cent increase from the same time in 2019. Also in 2020, hospitalizations due to opioid overdoses more than doubled. The crisis has made the quest to find more effective ways to treat pain and understand the biology of pain more urgent than ever before. UTCSP researchers are at the heart of this effort.

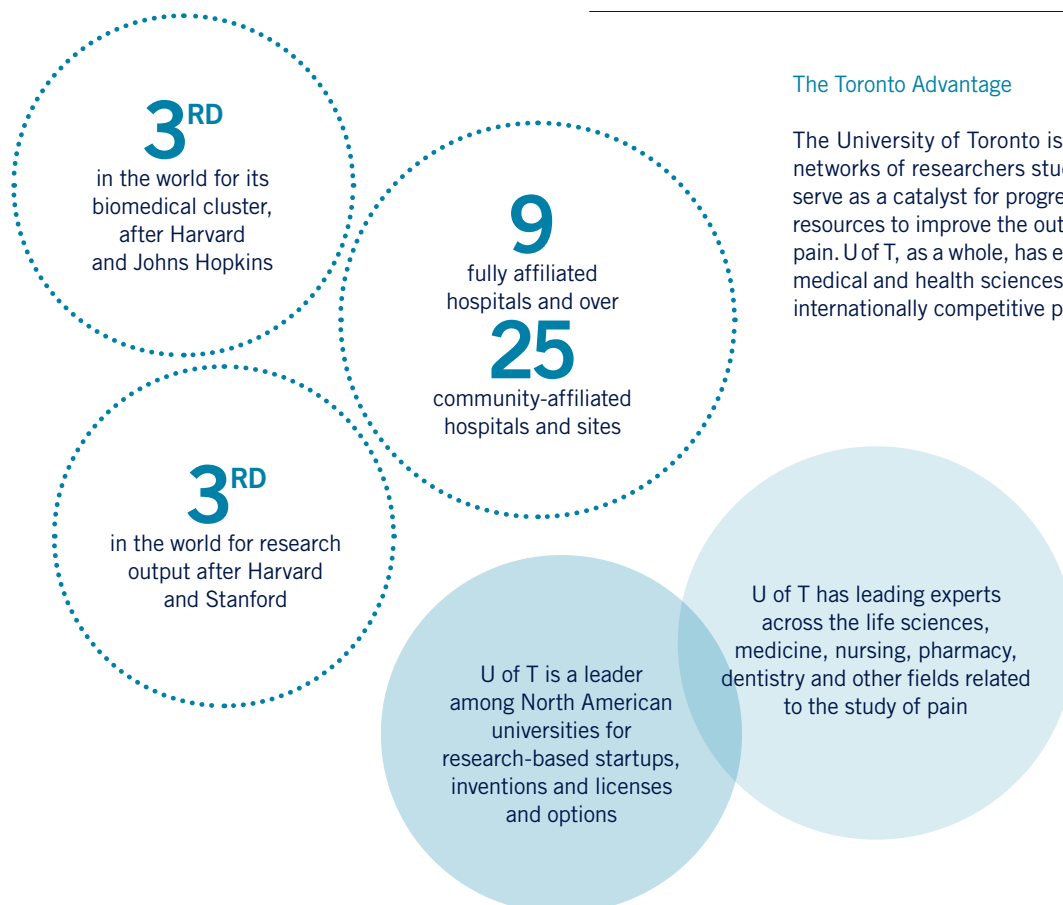
Source: Government of Canada Health Infobase

An Integrated Model: The U of T Centre for the Study of Pain

The University of Toronto Centre for the Study of Pain plays a critical role in linking researchers and clinicians through education to study the phenomenon of pain – a condition that concerns all of the health sciences.

The Centre integrates multiple faculties to address pain and bridge the gap between research and practice to ensure optimal outcomes for individuals who suffer from pain. This knowledge translation is a critical activity that sets UTCSP apart from other similar research hubs focused on pain – our scientists and clinicians form a unique link that ensures the learnings and insights on pain are immediately used in clinical settings.

With investment, the UTCSP will be able to move the needle in terms of understanding the mechanisms of pain, finding ways to alleviate it and bringing these discoveries directly to practice to benefit populations in Canada and worldwide. Investment in the Centre will provide leadership to accelerate research discoveries to combat pain, and develop innovative educational programs in pain at undergraduate, graduate and post-graduate levels. Funding will also ensure that UTCSP's unique, multidisciplinary approach can be expanded, bringing together multiple partners under one umbrella to increase collaboration and amplify impact.



The Toronto Advantage

The University of Toronto is home to one of the largest networks of researchers studying pain worldwide. We serve as a catalyst for progress by mobilizing partners and resources to improve the outcomes of those living with pain. U of T, as a whole, has excellence across the biological, medical and health sciences, and is situated within an internationally competitive partner hospital system.

Research

As a multi-faculty research powerhouse within the University of Toronto's academic health sciences network, UTCSP is fortunate to have an innovative and talented group of researchers working on pain, many of whom are among the top minds in their field. These researchers are exceptionally accomplished and include:

Faculty of Dentistry

Dr. Barry Sessle is an internationally-renowned expert in pain research. His expertise in orofacial pain and neuromuscular function and dysfunction has been supported for over 40 years by both the Canadian Institutes of Health Research and the U.S. National Institutes of Health.

Dr. Massieh Moayed's research focuses on understanding how pain is processed in healthy individuals and how this is altered by chronic pain. He is among the leading researchers selected for a jointly funded program between University College London and U of T. With colleagues from SickKids, Dr. Moayed is examining childhood chronic pain, and how and why it happens. His team will examine pain after exposure to trauma in children, and how to untangle the links between brain trauma, stress, pain and brain function.

Temerty Faculty of Medicine

Dr. Hance Clarke is an Associate Professor in the Department of Anesthesiology and Pain Medicine and is the director of pain services and the pain research unit at Toronto General Hospital. His research focuses on identifying the factors involved in the transition of acute pain to chronic pain and the health-related risks associated with continued opioid use after major surgery. He is also leading the Medical Cannabis Real-World Evidence trial to look at the effects of medical cannabis on chronic pain, sleep and the potential effects on anxiety, depression and quality of life.

Dr. Andrea Furlan is an Associate Professor in the Department of Medicine and is a Staff Physician and Senior Scientist at the Toronto Rehabilitation Institute. Her research is focused on treatments of chronic pain and the development of clinical practice guidelines. She was a leader in the development of the Canadian Opioid Guideline and is now involved in the dissemination and implementations of the guidelines across Canada. She is a national leader in clinical pain education through her work as co-chair of ECHO Ontario Chronic Pain and Opioid Stewardship, a tele-mentoring project that aims to teach clinicians in rural and underserved areas how to help patients with chronic pain to live a better life.

Research

Leslie Dan Faculty of Pharmacy

Dr. Rob Bonin conducts research concerning the molecular mechanisms of pathological pain and cognitive disorders. His group explores nervous system plasticity or “rewiring,” and how neuronal activity maintains and modifies plastic changes in the nervous system. Through this work, they aim to reverse disorders such as chronic pain or post-traumatic stress disorder.

Dr. Anna Taddio's research involves the clinical pharmacology of analgesics in infants and children, and the long-term effects of untreated pain in childhood. She is currently leading a national working group that is studying and promoting effective pain management strategies during childhood immunization.

Lawrence S. Bloomberg Faculty of Nursing

Dr. Craig Dale is a Scientist with the Tory Trauma Program at Sunnybrook. In this position, Dr. Craig conducts his research to improve fundamental care delivery experiences and outcomes for Canadian adults treated in intensive care units. Specifically, his research focuses on oral hygiene, pain and communication in acute and chronically ill patients requiring mechanical ventilation.

Dr. Lindsay Jibb holds the Signy Hildur Eaton Chair in Pediatric Nursing Research at SickKids and U of T. She is also a certified pediatric hematology/oncology nurse. Dr. Jibb's research program focuses on enhancing quality of life and improving psychosocial care for children, adolescents and young adults with cancer and their families.



Knowledge Translation & Education

Focussing on both basic and clinical science, UTCSP is a leader in knowledge translation – the ability to conduct research, translate it to clinicians and apply it directly to patients. In most pain research centres in Canada, clinicians across the disciplines receive little training in pain management, whereas UTCSP actively facilitates the sharing and discovery of knowledge, disseminating the ever-changing findings and insights into the mechanisms of, and treatments for, pain for use in clinical settings.

UTCSP conducts a number of initiatives to facilitate knowledge translation in pain, including the Annual Toronto Summer Institute in Pain, the UTCSP Translational Seminar Series, and a number of networks, collaborations and partnerships with the Toronto Academic Health Science Network hospitals and their pain centres and initiatives.

Pain education, especially for undergraduate clinical training programs, has been identified as important to changing problematic pain practices across the disciplines. In response to this, UTCSP launched the unique Interfaculty Pain Curriculum (IPC) for undergraduates to develop, implement and evaluate an integrated pain curriculum. Launched in 2002, 16,752 students from dentistry, medicine, nursing, pharmacy, physical therapy and occupational therapy have participated since the inaugural program, reporting a significant improvement in pain knowledge and how to treat patients. More funding could offer this unique and valuable learning opportunity to more students.

Building the Bridge from Knowledge to Education

“It takes an average of 17 years for scientific evidence to go from publication in a journal to influencing practice. One of the things that differentiates the UTCSP from other pain centres around the world is that we bridge this knowledge-to-translation gap. We generate knowledge through basic and clinical research and invest heavily in sharing those insights and information by training the next generation of practitioners.”

Assistant Professor Rachael Bosma,
Faculty of Dentistry, Co-Director,
U of T Centre for the Study of Pain



Funding Opportunities

With investment, the Centre for the Study of Pain can become a leading, international hub in research, education and knowledge translation in pain – helping the millions of patients worldwide who are suffering from pain, as well as addressing the critical societal crises of opioid addiction. Opportunities for funding include:

Leadership

A dedicated Centre director will lead all aspects of the Centre and its interfaculty activities.

Research & Innovation

A Chair in Pain Research together with support for graduate students, clinician-scientist trainees, fellows and other positions will create a robust research component for the Centre.

Sponsoring of a UTCSP Flagship Project and will leverage the existing research capacity, will allow us to embark on a collaborative, multi-modal, multi-disciplinary large scale research project that could revolutionize our understanding of pain mechanisms and management.

Education

Investment in education will allow UTCSP to expand and enhance the Interfaculty Pain Curriculum, and improve opportunities to develop further initiatives such as:

- Supporting the Pain Medicine sub-specialty residency training program
- Developing an advanced clinical specialty
- Creating training and certificate programs in pain management for clinical disciplines
- Developing and maintaining a Virtual Training Hub for pain science trainees (such as workshops, webinars, certifications, and career training in pain research and management)

- Developing a curricular Mapping Study and an Interprofessional Curriculum Design Workshop
- Other initiatives including a possible Massive Open Online Course (MOOC) accessible to alumni and practitioners.

Support will increase opportunities to create more undergraduate scholarships, bursaries and awards focused on pain research and clinical knowledge across disciplines.

Knowledge Translation

Philanthropy can provide expanded opportunities to enhance UTCSP's activity in facilitating knowledge translation initiatives, including:

- An annual symposium to address how we translate knowledge and share with clinicians, produce publications, etc.
- A Toronto Summer Institute
- Mentorship opportunities and other critical peer-to-peer initiatives to share knowledge and bridge the gap between scientists and clinicians.
- Developing the Pain Portal – designed to connect Canadians with chronic pain to clinical professionals and peer support workers to support chronic pain management and health system navigation.

Funding Opportunities: Summary

Centre for the Study of Pain	
	Donor Investment
Leadership	
Centre Director (endowed)	\$4 million
Director's Priority Fund (expendable)	\$1 million
Subtotal	\$5 million
Research & Innovation	
Chair in Pain Research (endowed)	\$4 million
UTCSP Pain Scientists/Professorships (expendable)	
Three term-professorships funded for ten years	\$3 million
Innovation and Catalyst Fund (expendable)	\$2 million
Subtotal	\$9 million
Education	
Graduate Fellowships & Undergraduate Scholarships (expendable)	\$2 million
Post-doctoral Scholarships/Trainee Awards (expendable).....	\$1 million
Subtotal	\$3 million
Knowledge Translation	
Outreach and Knowledge Translation Fund (expendable)	
To support annual symposium, mentorship programs, summer institute, community and patient education outreach program	\$3 million
Subtotal	\$3 million
Total	\$20 million

Conclusion

Chronic pain is a critically urgent issue in the lives of Canadians and individuals around the world. With an aging population, an opioid crisis caused by frequent prescribing and lack of knowledge about pain and alternative treatments for pain, now is the time to increase funding to U of T's Centre for the Study of Pain.

UTCSP is an established research powerhouse bringing together researchers from multiple faculties with links to Toronto's vast healthcare network and affiliated hospitals. With investment, the Centre can have an even deeper impact in understanding and treating pain and its co-morbidities, as well as the urgent issue of addiction. Investment will also enhance the education of future pain researchers and clinicians across the health disciplines, and at the undergraduate, graduate and post-doctoral level.

Solutions to complex issues like pain most commonly arise at institutions with the resources — people and tools — to solve the problem. U of T is where leaders are made, where ideas are tested and where solutions are found. With funding, it is possible for the UTCSP to achieve measurable progress toward our goals of understanding pain in all its complex forms. With support, we can break the trajectory of chronic pain and its effects, improve education in pain across multiple disciplines and build on our unique ability to transfer knowledge from basic science to clinical practice. We are at a critical moment to build on our stellar reputation to solve the mysteries of pain so that Canadians can lead more healthy and productive lives.

For more information, contact:

Selina Esteves
Director of Advancement
Faculty of Dentistry

T. (416) 864-8201
selina.esteves@dentistry.utoronto.ca



UNIVERSITY OF
TORONTO