



BRIGHTER WORLD



## 2023 Juravinski Research Institute Themes

### Theme 1: Severe maternal morbidity and its long-term physical and mental health implications

Background: Severe maternal morbidity (SMM) refers to unexpected outcomes related to pregnancy, labour, childbirth and the postpartum period resulting in severe illness, prolonged hospitalization and long-term disability. In high-income countries where maternal mortality is low, SMM is now recognized as the most appropriate marker of quality of pregnancy care. Recent Canadian data indicate that the incidence of SMM in Canada is extremely high and increasing (16.1 per 1000 births in 2016 as opposed to 13.7 per 1000 in 2007) and further that Hamilton and the surrounding regions are outliers, with disproportionately higher rates of SMM compared with other regions in the country. While epidemiologic data tell us about the trends in these events, little is known about the root causes for this trend. SMM results in serious and long-term negative impact not only to the physical health of those experiencing it, but also to the mental, social and functional wellbeing, as well as negatively affecting relationships, the ability to parent and return to work, and the burden to health systems from repeated hospital visits and admissions. Reducing SMM has therefore become not only a Canadian, but also a global health priority. Maternal mental illness is one of the most common complications of pregnancy. It includes mood (e.g., depression) and anxiety disorders as well as more severe illness such as postpartum psychosis. In 2019, Statistics Canada reported that almost one-quarter (23%) of Canadians who recently gave birth reported feelings consistent with either postpartum depression or an anxiety disorder. The COVID-19 pandemic led to increased levels of maternal anxiety and stress in the worldwide; Canadian data suggests a doubling of depression scores. Maternal mental health disorders go beyond the health of the mother and confer increased risk of psychological and developmental disturbances in children. Untreated perinatal depression is associated with an increased risk of preterm birth, poor maternal-infant attachment, behavioral problems and poor academic performance in childhood, and an increased risk for depression during adulthood. Maternal suicide an important direct cause of maternal death. The commonest cause of death in developed countries is suicide and 1/5 of women experience problems with their mental health during the perinatal period,<sup>1</sup> with adverse effects for the mother, her family, and the health-care system These effects are exaggerated in indigenous communities and women of colour.

Problem: McMaster has the scientists embedded in all the key areas needed to move the mark in this area, including: epidemiology, basic sciences, social science and environmental science, healthcare policy/utilization. However, these scientists are often working in isolation, functioning effectively in siloes of the University or the Partner Hospital (Hamilton Health Sciences, St. Joseph's Healthcare Hamilton). They do not commonly interact and often fundraising between Foundations is competitive instead of synergistic.

Solution/Project: Researchers at McMaster are currently leading global initiatives along with the International Network of Obstetric Survey Systems (INOSS) in establishing enhanced obstetric survey systems in various low- and middle-income countries. Collaboration and integration of this National surveillance system with the Hamilton mental health leaders in perinatal mental health at St Josephs Health Care and HHS, will integrate with the surveillance system resulting in early detection and treatment. Early identification of mothers at high risk and for mental health conditions can minimize adverse outcomes for both mom and baby. The goal is to form an overarching Maternal research program including all three institutions to align research and synergistically collaborate.

## **Theme 2: Healthcare of Tomorrow**

With the disruptions to healthcare delivery, introduced so dramatically and rapidly by the COVID Pandemic, and accepted as successful innovations by most, we have an opportunity to explore, in a more extensive way, different models of care that will best meet the needs of the community while ensuring quality and efficiency are prioritized. A number of Canadian constituencies have undertaken such developments, and an example is demonstrated in a recent presentation from the International Centre for Translational Digital Health at UofT showing that strong initiatives are needed to prepare for these changes.

<https://www.thinkresearch.com/ca/2022/07/21/healthcare-of-tomorrow-hospitals-at-home/>

The intent is to develop and deliver a number of innovative solutions to patients at to improve health outcomes, which could include “hospital at home” innovations, virtual support models for health professionals and team-based care, among other ideas. There is a need to develop systems and processes to evaluate the social and economic benefits and quality impact of these innovations as well as the potential for adverse impact. This would serve both patients and providers, otherwise utilizing crowded facilities in hospitals and clinics, and bring sustainable and transformative health system change to Hamilton and Ontario.

We have successful local examples of advances in remote patient monitoring, such as ongoing efforts at integrated care in Hamilton for cardiac, respirology and renal treatments outside of hospital, which are decreasing direct hospital utilization. A similar notable effort is MEDLY at UHN Toronto.

<https://www.canhealth.com/2023/02/01/boehringer-ingelheim-helps-promote-uhns-medly/>

Artificial Intelligence with machine learning has also brought some amazing solutions to many fields outside of healthcare.

The Juravinski Research Institute is looking for concepts and research projects that capture the data and expertise available at McMaster and within the healthcare system in Hamilton to further develop approaches that effectively explore alternative models of care. These projects should involve health advances, social integration and health policy issues and must include input from health professionals, patients and caregivers.