

Alberta Doctors' Digest

Innovation alone is insufficient

I vividly recall the day I watched a lipid travel across my computer screen and searching various pockets of the cardiac ion channel, KCNQ1. It happened after months of working in a computer simulation research lab.

This microscopic event, which unfolds in just 20 microseconds contributes to each heartbeat, with disruptions leading to cardiac arrhythmia and long-QT syndrome. Witnessing how slight chemical modifications in the lipid I tested could profoundly influence its potential as a treatment sparked my fascination with drug design and inspired me to pursue a Masters in Biomedical Technology.

For my master's capstone project, I designed a first-in-class therapeutic for a rare and life-threatening blood disorder called paroxysmal nocturnal hemoglobinuria (PNH). This project was informed by discussions with hematologists, scientists, and industry professionals, which guided my design of a small molecule that could potentially treat PNH without compromising immune function. However, the realization that I would need millions to continue development through preclinical stages underscored an essential truth: innovation alone is insufficient; advocacy is essential to ensure treatments are accessible and patient-centered.

Understanding the complexities of translating ideas into practice, I joined the Ward of the 21st Century (W21C). There, I supported physicians, start-up companies, and academics seeking to introduce their products and services into the health care. From coordinating with regulatory bodies like Health Canada and training medical staff on emerging technologies to creating educational materials for clinical trial participants, I witnessed first hand how multidisciplinary efforts are needed to navigate the complex, decade-long journey from concept to patient impact.

One project that exemplified this challenge involved partnering with XSENSOR to evaluate a pressure-sensing mattress overlay aimed at preventing pressure injuries in hospitals and long-term care facilities. Initial pilot studies revealed low efficacy. A deeper dive into the data showed that the problem lay not in the device but in its usage – health care teams were underutilizing it. To bridge this gap, I conducted targeted training sessions, demonstrated the device's benefits on units, and developed educational materials, such as this:

These initiatives improved adoption, ultimately demonstrating the efficacy of the device in patient care.

These experiences taught me that research is only one part of the equation; addressing the systemic challenges in each phase is essential for ensuring patient-centered solutions. As a medical student, I am now gaining the clinical insights needed to appreciate the multifaceted challenges my future patients will face. I aim to leverage my

experiences to not only understand these challenges but to work collaboratively with diverse stakeholders to address them and ensure that new treatments reach those who need them most.

My passion for advocacy extends beyond the lab and clinic into community programs where I can make a direct impact. Leading the Start2Finish Reading & Running Program, I worked closely with children in at-risk communities to support their literacy and physical activity. Many of these children lack the same resources and opportunities as their peers. As a first-generation immigrant, I deeply relate to the challenges of adapting to a new environment while parents work long hours. This role helped me understand the strong link between health and socio-economic factors, reinforcing the need for holistic, community-based approaches to health care.

The joy of seeing a child complete their first 5K race or move up a reading level highlighted the value of empowering students with skills they can carry with them beyond the program. As a medical student studying social determinants of health, I am committed to treating patients in a way that empowers them to take charge of their health, make informed decisions, and feel confident in their care.

Whether through designing therapeutics, translating scientific breakthroughs into practical applications, or empowering at-risk communities, I have learned that patient care extends beyond individual treatment. Rather, it encompasses a holistic approach that considers the wider systemic factors. In pursuing medicine, I am driven by the belief that health care innovation and patient advocacy must go hand in hand to create lasting, meaningful change.

Banner image credit: Theo Crazzolara, Pixabay.com