ACTIVATE!VAUGHAN
HEALTH INNOVATION CHALLENGE

Care Without Walls

Imagine a healthcare system that anticipates individuals' needs, improves communication between patients and care providers, and delivers as much care as possible to people in their homes, workplaces and communities. The future of healthcare is one where powerful technology allows for parts of the hospital or clinical experience to happen beyond traditional physical spaces, improving healthcare systems for both providers and patients.

The ***Activate!Vaughan*** Health Innovation Challenge is calling on entrepreneurs to help advance a more technology-enabled healthcare system by presenting solutions to some of our most important healthcare and data challenges.

CHALLENGE ONE:

How can we enable care providers, technicians and administrators to work closely to provide a seamless and exceptional patient experience?

PROBLEM STATEMENT

Communication is the cornerstone of healthcare. Effective communication is not only critical to meeting patient needs and providing safe, high-quality and patient-centred care, it is necessary in a hospital's management of healthcare delivery. Every interaction – whether it's among care providers or between care provider and patient – involves an exchange of information.

Currently, effective communication among healthcare professionals in hospital and clinical environments is challenging for several reasons, including significant differences in care delivery practices. Healthcare is complex, and patients receive care from numerous professionals in different disciplines throughout a single day or hospital visit. Further complicating effective communication, professionals are often dispersed among several locations, limiting opportunities to easily share information with one another, or to discuss patient care as a group.

Care providers often have their own disciplinary view of a patient's needs, with each provider prioritizing the activities in which he or she may act independently. For example, a nurse might be tasked with the responsibility of documenting patient information and status at regular intervals. This provides the physician with real-time updates on the patient which can help determine future treatments. However, if the nurse is unable to communicate a patient's status in a timely and accurate manner, the treatment process may be delayed or hindered.

Decreasing knowledge gaps between providers and within care teams is essential to providing patients with a seamless care experience. Some metrics that can be used to measure effective communication among healthcare providers may include: decreased time for treatment; increased nurse satisfaction with communication from other practitioners; near real-time information sharing across care teams and consistent understanding of treatment plans.

BRAINSTORMING QUESTIONS

How can we use technology to improve real-time information sharing in clinical environments, without reducing or compromising human connection in care delivery?

How can we reduce knowledge gaps among healthcare providers of different disciplines to create a more seamless care experience and improve patient satisfaction ratings?

FACTORS TO CONSIDER:

Proposed solutions might strive to:

- demonstrate proof of concept
- allow for easy integration of communication solutions within an existing network, such as a hospital network, pending feedback and collaboration with the surrounding environment

- incorporate a simple user interface with minimal training requirements for end users
- be fast, reliable and quickly available for effective communication
- avoid repackaging solutions that already exist
- target a broad audience of potential healthcare providers beyond physicians, including administrative and nursing staff
- be compliant with Canadian privacy and security laws and guidelines regarding personal health information

CHALLENGE TWO:

How can we use technology to keep patients and their families informed before, during and after their hospital visit?

PROBLEM STATEMENT

Miscommunication in healthcare environments can, at best, be frustrating and at worst, life-threatening. In order to ensure effective care and successful health outcomes, it is imperative that healthcare providers are able to keep patients and families informed throughout the care journey.

Patient health and safety can be severely compromised if communication barriers prevent providers from communicating essential information, such as pre- and post-operative instructions, or patients from communicating their health histories or symptoms. Additionally, visiting hospital and clinic environments can be stressful for patients, and the ability to effectively communicate what to expect during their visit can help improve a patient's experience while receiving care. While volunteers are often available for navigation assistance, sometimes patients and visitors are left to navigate hospitals or clinical environments without direct assistance.

Possible solutions to communication challenges faced by healthcare providers might focus on engaging family members in a patient's care journey to ensure they are equipped to support and aid in their care. Providing patients and families with the right information about hospital facilities, care plans and treatment progress in a timely manner before, during and after their hospital visit can reduce any stress or anxiety and thus manage their expectations. There is a need for an optimized communication solution that can ensure both patients and their families provide, receive and understand essential information at different stages of care.

An additional factor challenging effective communication between providers and patients is language. In the city of Vaughan, residents speak more than 105 different languages and for many, English is not their first language. Information, such as directions to appointments or important instructions regarding a patient's care, is often communicated in English verbally or by physical signs. Potential solutions might also focus on overcoming language barriers by creatively communicating essential information.

BRAINSTORMING QUESTIONS

How can we use technology to provide patients with more information about what to expect and when, perhaps before they even enter the hospital environment?

How can patients understand which area of the hospital to visit when they arrive, or learn what process they will move through, while visiting the hospital for their care (i.e. imaging, surgery preparation, registration, etc.)?

How can we use technology to make healthcare processes, information and instructions more accessible to patients who do not speak or understand English well?

FACTORS TO CONSIDER

Proposed solutions might strive to:

- incorporate a user interface that will be intuitive and accessible for an audience mostly comprised of patients
- be accessible to patients who do not own or use a smartphone
- communicate key information that is most important and relevant to the patient's care journey
- allow for frequent and rapid updates to information
- present information in a concise and digestible manner
- incorporate engaging content or design
- enable multiple language options

CHALLENGE THREE:

How can we use technology to optimally and dynamically schedule and transport home care workers from patient to patient, in order to maximize the time they spend providing direct care?

PROBLEM STATEMENT

As the number of older adults grows and healthcare trends toward enabling older adults to age in their homes, home care workers across the country are experiencing greater demands on their time. This demand for home healthcare services, coupled with a challenging shortage of home care workers, is a growing concern for older adults, their families and the healthcare system at large.

Today, home care worker visits are often scheduled manually through an arduous and labour-intensive process. In the current process, a co-ordinator connects with each worker to understand their availability, location, existing schedule, clinical competencies and other parameters important to determining their placements. Considering these parameters, many of which change from hour to hour, co-ordinators attempt to match home care workers having the right clinical competencies to clients needing their care, with the intent to minimize travel time and maximize utilization.

Current scheduling practices are not only inefficient and labour-intensive, they challenge the system's ability to provide reliable, timely and consistent care to those who need it. An opportunity exists to improve scheduling by leveraging mobile platforms, real-time data collection, artificial intelligence and/or gamification with the goal of improving patient care by enabling home care workers to spend more of their time providing direct care to patients.

BRAINSTORMING QUESTIONS

How can a digital solution, such as a mobile platform or artificial intelligence technology, help collect, process and communicate data to simplify the home care visit scheduling process for home care companies, workers and patients?

How can we use technology to enable time- and cost-efficient transport of home care workers from patient to patient?

FACTORS TO CONSIDER

Proposed solutions might strive to:

- incorporate a mobile interface for both patients and home care workers to view their schedule and input their scheduling parameters
- incorporate a simple user interface with minimal training requirements for end users, including older adults
- enable co-ordinators to manage schedules and all scheduling parameters
- be compliant with Canadian privacy and security laws and guidelines regarding personal health information
- allow for frequent and rapid updates to information

CHALLENGE FOUR:

How can we use innovative medical devices to improve medical practices by enhancing safety, efficiency and patient outcomes in clinical or home care environments?

PROBLEM STATEMENT

Medical devices are a diverse group of products used to enhance patient care by restoring function, aiding in the diagnosis, prevention, treatment and management of diseases and disabilities. Medical devices play an important role in modern healthcare. They improve treatment outcomes and promote less invasive procedures, reduce patient recovery time, shorten the length of hospital stay, reduce costs and enhance health system sustainability.

The goal of medical device innovations should be to reduce the burden on health systems while providing Canadians access to the best care for managing their health and wellness. Medical device innovations offer opportunities for care providers to bring the best quality of care options efficiently to patients, while improving treatment outcomes, reducing costs and increasing the capacity of healthcare systems to meet growing demands.

As the demand for healthcare services continues to grow in Canada, along with the costs of healthcare service delivery, the market for innovative medical devices grows in economic and social significance. In particular, Canada's aging population is expected to further propel health costs upward while presenting greater demands on health systems and increasing the need for cutting-edge medical devices. There is increasing demand for innovative solutions which allow patients to access healthcare beyond hospital walls, and which enable seniors to age in place.

BRAINSTORMING QUESTIONS

How can we use medical devices to improve patient and/or healthcare provider safety, such as preventing injuries from falling or walking, detecting conditions that could lead to injury or by reducing ergonomic injuries in clinical environments?

How can medical devices help automate aspects of patient care, including largely human-delivered tasks such as delivery of goods and equipment, aiding patients with mobility and other tasks or sanitation of clinical spaces?

How can medical devices improve diagnosis and treatment of medical conditions, for example by improving imaging solutions, automating the detection of symptoms or increasing ease-of-use of diagnostic tools?

How can medical devices integrate into a telehealth system or participate in the Internet of Things to enable greater access to healthcare or to make healthcare services more efficient?

FACTORS TO CONSIDER

Proposed solutions might strive to:

- demonstrate the solution solves an identifiable medical challenge and that there is a pressing market need for the solution
- demonstrate the solution has been validated by medical experts, potential end users and/or strategic partners
- produce prototypes of the device and evidence of proof of concept
- demonstrate access to the funds necessary to execute on immediate milestones
- demonstrate ownership of the intellectual property that is essential to the presented solution