

Tele-Rehab 2.0: providing quality rehabilitation services remotely to Albertans through and beyond COVID-19

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SUMMARY

As part of the physical activity continuum, rehabilitation is an important element to get people back to being physically active.

This WellSpring introduces the Tele-Rehabilitation 2.0 project which is a novel approach to increasing access to professional services.

Introduction

We are nearly six months into the COVID-19 pandemic, and to remain safe, everyone has been doing things a little differently. Our healthcare system has been challenged as it adapted to new ways of providing care in these uncertain times. If you have seen a clinician in these last few months, it was likely through a phone or video call. This shift to virtual health has made our project, Tele-Rehabilitation (Tele-Rehab) 2.0, even more relevant than it was before.

The COVID-19 virus has given Tele-Rehab 2.0, a project out of the University of Alberta's Rehab Robotics Lab, a platform we could not have imagined. Rehabilitation helps people of all ages who have medical conditions, illnesses or injuries that limit their regular ability to move and function. A customized program can help individuals return to their prior level of functioning, and it encourages activities and lifestyle changes that can help prevent further injury and improve overall health and wellbeing.

The project was inspired by the need for more equitable healthcare in rural Alberta, and it seeks to improve access to rehabilitation services for rural Albertans.

Why Tele-Rehab 2.0?

Tele-Rehab 2.0 began with an idea in 2015 and has grown into a pilot project poised to change how virtual care is conducted in Alberta. The project is innovating and advocating for equitable and accessible rehabilitation services. Our goal is to see whether specialist assessments can be conducted effectively, with a specialist in Edmonton and a patient in a rural location, using our protocols. Ensuring that virtual appointments and assessments are of the same, or higher, quality than in-person assessments is also a priority to our team.

After years of researching, learning, and thinking about the range of possibilities, the project found its focus in rural health care. Rural health care provides the project with an

opportunity to support patients who struggle to receive quality health care that patients in urban areas may take for granted. Barriers like travel time, poor road conditions, missing work, and extra expenses, such as childcare and hotel stays, can make a trip to see urban clinicians especially difficult for rural patients.

In January 2019, Tele-Rehab 2.0 received funding from Alberta Innovates and Pfizer to put its ideas into action, and the project has progressed significantly. Working on an ambitious two-year timeline, the project began with outreach to further the technology development, consultation, and collaboration.

After 19 months of planning, the project began trials in three rural test sites in four core areas: wheelchair seating, hip and knee post-arthroplasty follow-up, vestibular disorders, and severe shoulder pain.

In early July, our principal investigator made a 1600-km round trip to Jasper, Peace River, and Grande Prairie to deliver and set up the equipment. This road trip was memorable for many reasons, including a washed-away highway, thunderstorms, bumpy roads, and plenty of wildlife. However it also highlighted just how far away these sites are and what travelling to the city can entail. Travelling to drop off the equipment gave us a renewed belief in the project.

What is Tele-Rehab 2.0?

Tele-Rehab 2.0 gives rural patients the opportunity to receive specialist care in their local area that they normally would have to travel to the city to obtain. Patients visit a local generalist clinician, who then connects with a hub, or urban, clinician. The hub clinician conducts the assessment, and sometimes even treatments, remotely. This benefits everyone involved.

Each remote site is equipped with a bundle of technology. More basic equipment include a computer, scanner, and webcam. Also included are more advanced technologies like Kinetisense markerless motion capture software, a 3D camera, Vestibular First goggles, and the Double Robot, a self-driving telepresence robot. This tool kit of cutting edge technologies enables accurate, quality rehabilitation assessments virtually.

The equipment has been curated with patients and clinicians in mind to offer the best care possible. The Double Robot is controlled remotely by the hub clinician, allowing the clinician to form a more personal connection with the patient, as well as navigate the space safely to get the information they need. The Kinetisense software has been especially useful in vestibular assessments as it builds normative data values for balance to provide a comparative basis as more patients are seen. Adding these technologies to video conferencing allows our hub clinicians to get a clearer picture of their patients, even while they are hundreds of kilometres away.

A Tele-Rehab 2.0 assessment begins with introductions and some discussion of the patient's background. This discussion allows for the hub clinician and patient to start building a relationship. Once everyone is ready to begin the assessment, the hub clinician guides the rural clinician through a series of tests. These tests are either visual only or make use of the technology. The session is streamed in real time through the Double Robot or Zoom for Health, and sometimes the hub clinician can even facilitate a treatment. Once the assessment is complete, the team then discusses future treatment and any questions the patient may have. To help with continuity of care, the patient is discharged to the local clinician for care after the assessment.

Patient Impact

The patient impact has been immense. Over the summer, we interviewed patients with various medical conditions about their experiences with virtual health in general. It was amazing to hear from patients about the challenges they have had and to know that Tele-Rehab 2.0 had already considered and overcome many of these issues.

Less travel

A number of issues stemmed from the burden of travelling to appointments. Travelling for one, five, or more hours comes with a lot of associated expenses. Many rural residents would choose to spend a night or two in a hotel, which means missed work or school for themselves, as well as family members or friends who accompany them to appointments. This travel incurs not only the cost of the hotel, but fuel, food, and hidden costs like childcare.

Tele-Rehab 2.0 reduces the need to travel in poor road conditions, and there are no associated equipment expenses. There is also no waiting room as patients can see their clinician right away. This eliminates the need for extensive planning, driving, and waiting for hours, particularly for a 10- or 15-minute appointment, and thus it makes better use of a patient's time.

Better communication

Having both the hub and rural clinician in the same "room" helps patients to understand their care and get their questions answered more easily. Patients also feel more confident having a clinician in the room, and they no longer have to carry information between their specialist and local clinician. In addition, the local clinician is better informed of the assessment and/or treatment and is able to provide better care to their patient.

Better care

Tele-Rehab 2.0 differs from at-home tele-health appointments where patients are not physically examined at all. Additionally, by coming into a local clinic, patients do not have to have computer or Internet services at home, reducing the individual costs of accessing this care.



Clinician Impact

Tele-Rehab 2.0 has greatly impacted the work of both rural and hub clinicians. For rural clinicians, the project is a game changer. In a recent webinar, one of our Peace River physiotherapists remarked on the way the project improves care and patient outcomes. In rural communities, there are limited opportunities for mentorship and often a need for specialist support. This support is not readily accessible, which means rural clinicians need to rely on their own research and may not have anyone in their network. Through Tele-Rehab 2.0, rural clinicians are supported by the hub clinician, increasing their confidence and allowing them to try new treatments and techniques. Client care is also improved as clinicians can be more flexible and use their time more efficiently.

For urban clinicians, the technology of Tele-Rehab 2.0 enables them to connect with their patients much more thoroughly than through a simple phone or video call. The Double Robot provides a more personal connection, and measurement tools, like Kinetisense markerless motion capture and the Vestibular First Goggles, are able to give the clinician the information they need with precision. Tele-Rehab 2.0 introduces an objectivity that

in-person appointments do not have. This can lead to better communication between clinicians and makes patient progress easier to track. Tele-Rehab 2.0 expands the reach of a hub clinician by enabling them to reach patients they may not have been able to before.

How you can Support Tele-Rehab 2.0

We need your help to ensure our project continues. Collaborate with us, share your story, and help us advocate for better care for rural patients! Please visit [the Tele-Rehab 2.0 website](#) for more details.

Conclusion

Tele-Rehab 2.0 is focused not only on improving **access** to rehabilitation services for rural Albertans, but also on improving the **quality** of rehabilitation assessments. The project aims to continue the benefits observed from basic tele-health used during the pandemic, as well as demonstrate that tele-rehab can be the preferred method for care, and not just used out of necessity. Tele-Rehab 2.0 is transforming health care for patients and clinicians alike. Virtual care is likely the future, and with our technologies, it will continue to be easy and effective. All Albertans deserve equitable care, and virtual health can help us provide it.

About the Author

Emily Young is a research assistant on the Tele-Rehab 2.0 project. She is currently working to complete her degree in Honors Psychology at the University of Alberta. Upon graduation, she plans to pursue a Master's degree in Occupational Therapy.



Emily is passionate about working to remove barriers, helping those in need, and creating positive change.