

# ***The Who What Why Where and How of TeleNeuroRehab: Remotely Delivered Cognitive & Mental Health Interventions***

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No Conflicts of Interest

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# Overview

- 1) **WHY**    **TeleNeuroRehab?**
- 2) **WHO**    **Can Receive TeleNeuroRehab?**
- 3) **WHAT**    **Interventions can be delivered?**
- 4) **HOW**    **is TeleNeuroRehab delivered**
- 5) **WHERE**    **Can we deliver treatments?**

## Q&A

# Why TeleNeuroRehab?

# General Benefits of TeleNeuroRehab

- ✓ **Eliminates need for travel**
  - reduced time (e.g., off work) and costs of appointments
  - no need for finding transportation or **caregiver** escort
- ✓ **Cost savings for healthcare facilities (e.g., overhead)**
- ✓ **Reduced stressors for patient**
  - Stigma
  - “Appropriate” attire
- ✓ **(Reduces infection risk)**

# General Benefits of TeleNeuroRehab

## ✓ **Increased options**

- Allows for 'intensivity' of treatment (e.g., need for daily sessions)
- Delivery is in patient's home environment – easier implementation of strategies

## ✓ **Non-inferior to in-person**

- Evidence of feasibility

Boulos et al., 2024; Maggio et al., 2024; Lawson et al., 2020

- Extensive evidence of non-Inferiority to in-person

Nowrouzi-Kia et al., 2024; Papola et al., 2023; Cacciante et al., 2021, 2022; Laver et al., 2020; Sarfo et al., 2018

## ✓ **Allows for group-based care as well as one-to-ones**

# Taken Together, Telerehab Confers:

## *Equity of access*

- Care regardless of geographical location, financial status and/or mobility issues

## *Opportunities to fill gaps in care*

- Provide expertise to regions where there is a gap
- Provide treatment to patients in **chronic** stages of injury
  - Rehab is "frontloaded" in early weeks and months
  - Yet, moderate-severe TBI is chronic and progressive



## *Scalability and increased sustainability*

- Potential to reach *all* of those in need, across the province (and beyond)
- Reduced costs (patient and provider) with ease of access aid sustainability



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## WHO Can Benefit?



# Who can be treated remotely?

**All patients with ABI with cognitive, mental health and/or physical disability (exceptions noted in next slide):**

- Mild to severe cognitive and/or physical impairments
- Wide-ranging mental health disorders
- Any geographic location with internet connectivity
- Equity-deserving populations

# Who Can **Not** be Treated remotely?

*Every treatment will have its own inclusion/exclusion criteria*

Examples of general barriers to access:

**Technical:** No access to reliable internet

**Psychiatric:** Certain disorders - including active psychosis and mania (group-based care)

**Psychosocial:** Major interpersonal skills limitations or behavioural issues (group-based care)

**Cognitive:**

- (i) Lack of awareness of targeted impairment/condition
- (ii) Inability to retain information from session to session (e.g., organic amnesia)

# Who benefits most? Least?

## Our Research findings: Which factors influenced outcome?

Age	No
Education	No
Time Since Injury	No
Pre-treatment symptom burden	<b>Yes</b>

Meusel, Colella, Ruttan, Tartaglia, Green, 2023  
Ruttan, Colella, Meusel, Niculescu, Jeffay, Green, 2025

WHAT treatments can be delivered?

# Remotely Deliverable Approaches

## **Therapist-delivered**

- One-to-one and group-based
- Video-conferencing and telephone

## **Self-administered**

- Asynchronous (e.g., observing clinical groups)
- Cognitive interventions (e.g., Brain HQ)
- Mental health interventions— e.g., Cognitive Behavioural Therapy
- (Generative AI?)

# Treatments with remote 1:1 and Group-Based Efficacy in ABI

## Examples of remote interventions with 1:1 efficacy and/or group-based efficacy

**Cognitive-Communication:** Combined Aphasia and Apraxia of Speech Treatment

**Cognitive Behaviour Therapy** (*a psychological intervention focused on developing skills and strategies to manage emotions and improve coping*)

**Mindfulness-based Interventions** (*education and meditation practices promoting present-moment awareness & increased self-awareness; helpful for stress management; emotional well-being; pain; fatigue.*)

**Goal Management Training** (*cognitive intervention for reducing absentminded slips and forgetfulness, and improving planning and organization to increase goal attainment*)

Kallhoff et al, 2023   Cacciante et al, 2021   Boulos et al, 2024   Bradbury et al 2008   Arundine et al, 2012

The logo for 'kite' is displayed in white lowercase letters on a blue background. The background consists of overlapping geometric shapes, including a dark blue trapezoid and a lighter blue parallelogram.

# Group treatment more complex, but...

“The social aspect actually counted much more for me because I could talk about some of the things I could not talk about outside because I know people wouldn’t understand.”

“[The program] made me feel that **it wasn’t the end of the world for me**, that other people shared the same thing and things could improve.”

“I learned that I am **not alone** with my inability to cope with different circumstances”

“The benefits of partaking are the **information and resources** provided as well as **the community**. Feeling like you're **not alone** is important.”

People who suffered a brain injury...**could understand where I was coming from** when ...I’d have a bad day...whereas people in my everyday life they just kind of think ... ‘you’re just complaining’...These women in the group, they **really understood how devastating it is to have days like that**...it was wonderful to just have a peer to understand.”

# Evidence of Feasibility – group-telerehab








## Our findings...

Group	Therapy Retention (completed therapy)	Weekly Therapy Adherence (number of sessions completed)	Outcome Adherence
Cognitive Behaviour Therapy	84.9%	76.9 %	83.4%
Goal Management Training	86.6%	92.9% (*has make-up sessions)	92.7%
Mindfulness Program	89.3%	83.3%	86.1%
Concussion education	94.3%	85.7%	89.5%
<b>OVERALL</b>	<b>90 %</b>	<b>85%</b>	<b>88%</b>



# Evidence of Efficacy and Retention – group-telerehab

## Our findings...

Group	Primary Outcomes	Efficacy	Retention
Cognitive Behavioural Therapy	DASS-21 (Anxiety, Depression & Stress) Q-LES-Q (Quality of Life)		
Goal Management Training	Cognitive Failures Questionnaire Q-LES-Q (Quality of Life)		
Mindfulness Program	Mental Fatigue Scale DASS-21 (anxiety, depression & stress) Q-LES-Q (Quality of Life)		
Concussion education & Symptom Management	Confidence to Self Manage DASS-21 (Anxiety, Depression & Stress) Q-LES-Q (Quality of Life)		N/A

# How To Deliver TeleNeuroRehab?

# Determining Whether Client is Appropriate

## ***Intake Process***

- ☐ Does client want to move forward with the intake process?
- ☐ Does client meets basic admission criteria for program ?
- ☐ Collect enough information about the client that will allow you to determine appropriateness for telerehab and whether the services offered meet client needs/goals (e.g., Intake interview, outcome measures - cognitive screen, self report of symptoms, etc.)
- ☐ Determine treatment plan based on clinical needs
- ☐ If appropriate have regular case-review meetings

# Determining Whether Client is Appropriate

## ***Practical/Logistical Considerations for Intake and Treatment Planning:***

### **Therapist-delivered, Self-directed**

- ☐ Level of computer literacy; access to computer/internet
- ☐ Nature of cognitive impairments
- ☐ Location of patient: home, public health facility, group-home

### **Groups only**

- ☐ Composition of group (differences in age, impairments, etiology, other)
- ☐ Nature of mental health, psychosocial and behavioural issues
- ☐ Communication difficulties
- ☐ Group size

# Informed Consent to Participate in TeleNeuroRehab

***Clients must be informed of and consent to the following (can be written or verbal consent):***

- ☐ Use of email communication
- ☐ Use of specific videoconferencing platform
- ☐ Associated privacy and security risks of email communication and videoconferencing platform
  - how these risks are mitigated by organization
  - what is expected of the client (e.g. must be in private quiet space, use a secure internet connection, ensure nobody else can see screen or hear session)
- ☐ How emergencies are managed (calling 911 and/or emergency contact in the event of an emergency)

# Preparation for TeleNeuroRehab Sessions: Providers

- ☐ Be proficient in the use and functionality of the videoconferencing platform you are using
- ☐ Consider how you appear/sound
  - Take time to set up your camera, headset, microphone, etc.
  - Consider background, lighting, environmental noise
- ☐ Enhance facial animation and prosody (about 10%)
- ☐ Look into the camera as much as possible, not at the image of client

# Preparation for TeleNeuroRehab Sessions: Providers

- ☐ Have clients' contact information accessible and secure: current location, phone number, emergency contact
- ☐ Before the start of the session, confirm client identity using photo ID, or two unique identifiers (e.g., full name and date of birth)
- ☐ Ensure you have access to any materials needed during session
- ☐ Understand the end-user experience (especially true for groups)
- ☐ Have a plan for managing connectivity/technical disruption resulting in disconnection (phone number back-up)

# Preparation for TeleNeuroRehab Sessions: Providers

## ***Practical Considerations For Group-based TeleNeuroRehab Sessions***

- ☐ Meet with each client one-on-one *before* starting the group sessions (and again at the end of the intervention)
- ☐ Have a tech back-up for every session to help troubleshoot with clients “offline”
- ☐ Have a clinical back-up for every session to assist with possible clinical emergencies
- ☐ In first session spend time
  - Discussing features/functionality of video-conferencing software
  - Remind all of “group rules” (especially privacy, confidentiality)
- ☐ Keep everyone on mute
- ☐ Provide a copy of any slides to clients



# Sample Group Rules

## Confidentiality/Privacy

- ☐ Do not forward or share the email or the group meeting link with anyone.
- ☐ Do not record (i.e. audio, photo, or video) during group sessions.
- ☐ Maintain confidentiality of the other group members. Do not share the names of group members or any other personal information about them with anyone outside of the group.
- ☐ Please only use your first name on MS Teams
- ☐ If possible, participate in a quiet, private room or space where no one else is around;
- ☐ If you're unable to participate from a completely private space, you must wear headphones/earbuds during each group session, and you must ensure nobody else in the room can see your screen (i.e., by sitting with your back against a wall).
- ☐ Be aware of your surroundings and of who may be able to see or overhear the group session.
- ☐ You must ensure any smart speakers in the vicinity are turned off (e.g., Alexa, Google Home, Siri, etc.)

# Sample Group Rules

## **Punctuality and attendance**

- ☐ Arrive on time for each session & attend all sessions as outlined
- ☐ Notify the group facilitator if you are going to be late for a session or if you are going to miss a session.

## **Change of Location**

- ☐ For emergency purposes, if you are going to be participating in a session at an address different to what we have on file for you (i.e., your home address), please let us know before that session.

## **Keep your video on for the duration of the session**

- ☐ No virtual backgrounds
- ☐ Reasons related to privacy
- ☐ Improves group dynamic
- ☐ Increases comfort level of other members of the group

## **Respect for others**

- ☐ Give everyone a chance to share and contribute
- ☐ Comments and questions welcome
- ☐ Facilitators may redirect an individual or cut short a discussion

# Preparation for TeleNeuroRehab Sessions: Clients

- ☐ **Schedule a tech setup appointment for each client before they start therapy**
  - Determine suitability of device
  - Orient client to the videoconferencing platform and functionality
  - Ensure camera and microphone are working and lighting is adequate.
  - Troubleshoot connectivity issues
  - Provide client with a tip sheet for use of the videoconferencing platform.
- ☐ Suitability of space
- ☐ Provide client with schedule of therapy sessions and you contact information

# Sample – MS Teams Tip Sheet

## Using Microsoft Teams

### On the day of an appointment or group session:

You will receive an email from someone at the Telerehab Centre 20-30 minutes before your scheduled appointment or group session.

You will need to open the email, and click on the link in the body of the email: **Join Microsoft Teams Meeting**

Once you have the MS Teams app installed, your virtual meeting should open automatically through the app. If a webpage opens instead, select: **Launch with the App**

***We request that you always use the MS Teams app to connect to your virtual meetings.  
Do not connect through the web browser.***

On an MS Teams meeting page, you should see your webcam image appear, and you will be prompted to enter your name.

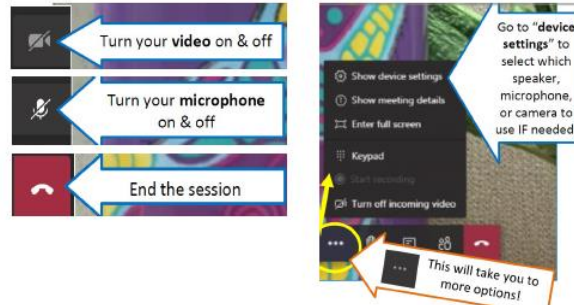
Enter your first name and then select: **Join Now**

You will be placed in a virtual waiting room and will be accepted into the meeting at the scheduled appointment time.

### Meeting Options:

During a virtual meeting, access the navigation bar by moving your mouse, tapping on your touchpad, or tapping the touchscreen.

These are some useful features in the navigation bar:



# Delivering TeleNeuroRehab Safely

- ❑ In the context of cognitive and mental health interventions, we need to be alert to:
  - psychiatric emergencies (e.g., suicidal ideation, symptoms of mania, symptoms of psychosis)
  - medical emergencies (e.g., cardiac arrest, stroke, seizure)
- ❑ Security risks associated with IT systems could also result in privacy breaches that cause psychological and social harms.

# Delivering TeleNeuroRehab Safely

## ***Establish Emergency Procedures/Protocols for the following:***

- ☐ What to do in the event of a medical or mental health emergency during the session, particularly if group session
- ☐ What to do if there is a privacy breach (e.g., group therapy session and a patient's family member walks into the room and sees/hears participants)
- ☐ What to do if there is a technical failure on the part of the therapist, or a broader system failure with the platform (e.g., Service provider has an outage – no phone, email, video communication possible)

# Program Evaluation & Client Progress

- ☐ Evaluate and monitor patient progress – appropriate outcome measures (feasibility, efficacy and retention)
- ☐ Monitor Technical Issues & Failures
- ☐ Monitor Safety Events

# Challenges of Remote Care Delivery

## The experience will be different compared to in-person treatment!

- provider has less control overall, including patient environment Reduced capacity to make behavioural observations/ read body language
- reduced capacity to make behavioural observations/ read body language
- some clients may be less engaged
- challenges around divided attention (e.g., temptation for them to check email, twitter, internet browsing, etc.)
- technical issues: internet disruptions/speed, software glitches, poor audio/video, screen clarity, reduced control presentation of materials

### ***For Groups***

- clients may take the group less seriously
- greater concern for privacy (non-group members able to see/hear group members)



## Where Can a Practitioner Based in Ontario Practice?

# Internet Speed Required for Video-conferencing

*Video-conferencing requires a stable and responsive internet connection for smooth video and audio quality.*

## Some Specifics...

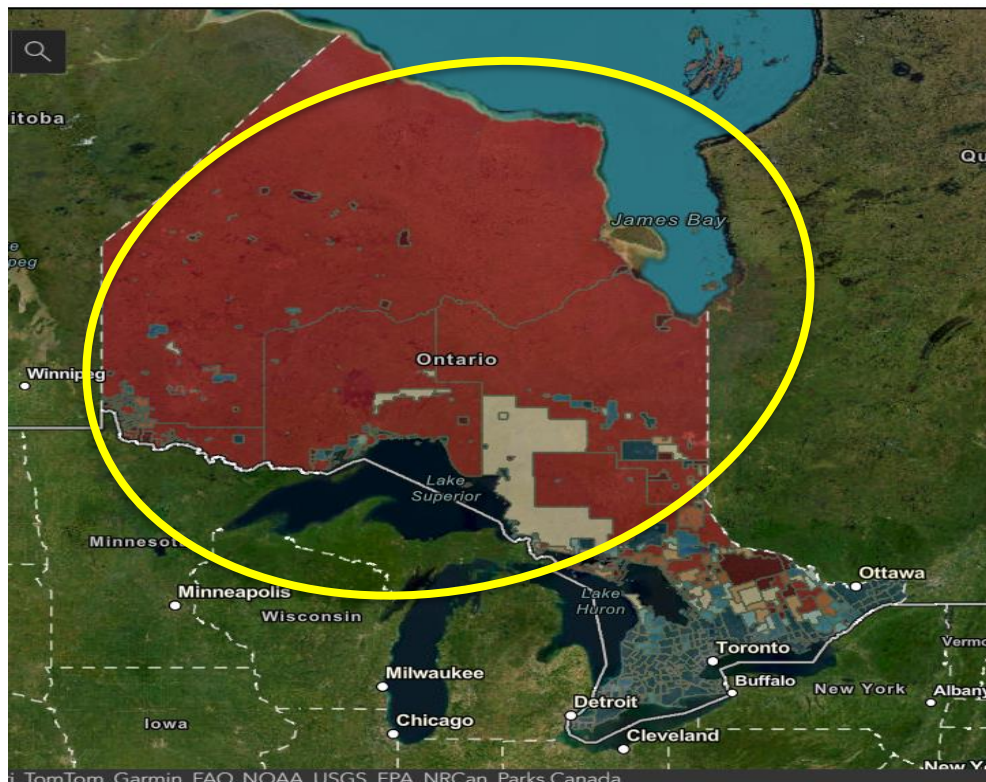
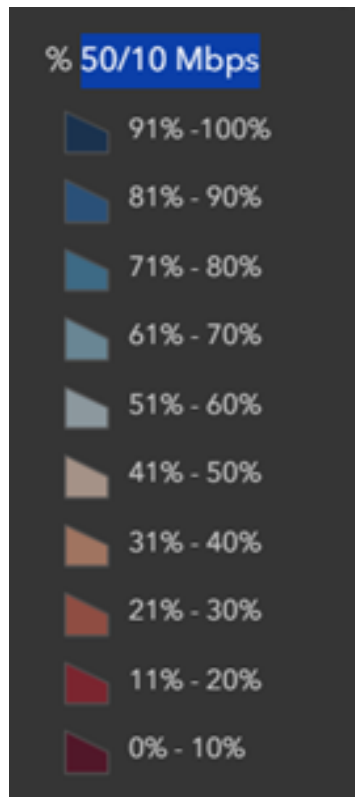
Recommended internet (download) speeds based on household

Household	1-person	2-4 people	4+ people
Web Browsing	Yes	Yes	Yes
Streaming	Yes	Yes	Yes
Gaming/Video-conference Calls	No	Yes	Yes
Minimum Speed	15 Mbps	50Mbps	150 Mbps

According to the Canadian Radio Television and Telecommunications Commission (CRTC):

*“Internet networks are essential for Canadians to participate and take full advantage of the opportunities of the digital economy. All Canadian homes and businesses should have access to Internet speeds of at least 50 Mbps for downloads and 10 Mbps for uploads.”*

# Ontario: Where is there adequate Internet speed/access?



[Ontario Access Map developed by Blue Sky for Connectednorth.ca](#)

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# Expanding services outside of Ontario

- ❖ Each province regulates telehealth practices within its jurisdiction for many providers
- ❖ Importantly, there are variations across provinces and across professions.

## *For example:*

For Ontario OTs:

✓ NB, NS, PEI, Alberta

Vs.

For Ontario psychologists:

✓ Quebec, NB, NS, Nunavut

# Some Considerations for out of province telerehab...

## *Check with provincial regulator!*

### Some specifics

- If regulator does not require registration in province to which you are delivering telehealth services, you are viewed as practicing in your own jurisdiction of registration (e.g., handling complaints)
- You must still determine and abide by relevant out-of-province jurisdictional rules (e.g., personal information privacy; child protection reporting; knowledge of local emergency services, etc.)
- Beyond jurisdictional issues, you must determine value of service to potential clients including considering alternatives in their own communities

# RECAP

## Who?

- Most patients can be treated, even with severe cognitive/mental health disorders
- But different treatments and treatment modalities may have specific exclusions

## What?

- Therapist vs self-administered; one-to-one vs group
- Many cognitive/mental health treatments show non-inferiority to in-person

## Why?

- Far reaching, scalable, convenient, cost-effective, reduces treatment access barriers, added treatment benefits (e.g., allows greater intensivity; strategies delivered in context of use)

## How?

- Extensive guidelines on determining appropriateness of client, obtaining informed consent, clinician and client preparation, technical issues, confidentiality & privacy and patient safety,

## Where?

- In Ontario – where there is connectivity; out of province possible – check with regulators

# Resources

<https://kite-uhn.com/tools/tr-telerehab-toolkit>

Association of Canadian Psychology Regulatory Organizations - [ACPRO-Model-Standards-for-Telepsychology-Service-Delivery.pdf](#)

OPA/CAPDA guidelines, 2020

[ACOTRO Notice about Cross Jurisdiction Telehealth Services – Association of Canadian Occupational Therapy Regulatory Organizations](#)

<https://crpo.ca/practice-standards/client-therapist-relationship/electronic-practice/>

[Virtual Counselling Resources | Canadian Association of Social Workers](#)

Blacquiere D, McGuff R, Gubitz G, Yu AYX, Wein T et al. Canadian Stroke Best Practice Recommendations, 7th Edition: Virtual Stroke Care Implementation Toolkit. 2022; Heart and Stroke Foundation of Canada. Available at [www.strokebestpractices.ca/resources](http://www.strokebestpractices.ca/resources)

[Virtual TG Report for Member.pdf](#)

APA Telepsychology Best Practice 101 Series <https://apa.content.online/catalog/product.xhtml?eid=15132>

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Thank you

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# Questions?