

Specialized Pediatric Rehabilitation

BACKGROUND:

As Ontario's health care system transitions to an integrated care model, Ontario Health Teams (OHTs) will be responsible for providing a full and coordinated continuum of care for all but the most specialized conditions and procedures, which will be delivered by existing specialized providers.

The provision of rehabilitation occurs at different points in the continuum of care and may require a general or a specialized approach depending on the patient population requiring treatment. The University of Toronto's Physical Medicine and Rehabilitation group alongside the GTA Rehab Network identified the following rehabilitation populations that require a specialized approach. These populations include acquired brain injury (ABI), amputee, burn, cardiovascular, complex trauma, oncology, pediatric, pulmonary, spinal cord injury and stroke. These specialized rehabilitation programs should continue to be provided regionally and/or provincially and be part of system-level planning and capacity building.

The need for specialized expertise and the lower volumes of patients for some populations may preclude the provision of rehabilitation close to home. However, rehabilitation for high volume populations (e.g., older adults with frailty, patients with progressive neurological conditions, musculoskeletal issues, or with injuries from minor trauma) should be provided as part of care that is close to home across all OHTs.

This document provides rehabilitative care best practice guidance for Ontario Health Teams to assist in determining when the expertise of a specially trained interprofessional team with a focused skill set is necessary to provide safe, effective and efficient care. It was developed by the GTA Rehab Network's Specialized Rehab Advisory Group and local rehabilitation expert working groups.

PURPOSE:

The purpose of this document is to provide a guide that:

- delineates what services and resources are required to provide specialized rehabilitation
- differentiates when specialized rehabilitation services are needed to support one of the ten rehabilitation populations (acquired brain injury, amputee, burn, cardiovascular, complex trauma, oncology, pediatric, pulmonary, spinal cord injury and stroke)

GUIDING PRINCIPLES:

There are a few guiding principles of specialized rehabilitation service provision that are common across all ten populations addressed in this document:

- Service is provided by a specially trained interprofessional team with a focused skill set. Rehabilitation professionals include audiologists, dietitians, kinesiologists, occupational therapists, physical medicine and rehabilitation specialists (physiatrists), physiotherapists, psychologists, rehabilitation nurses, respiratory therapists, social workers and speech-language pathologists, as well as other regulated health professionals.¹

¹ Rehabilitative Care Alliance. (Nov 2020). [Patient and System-Level Benefits of Rehabilitative Care A primer to support planning by OHTs and Ontario Health.](#)

Note: The Ontario Ministry of Health provides [additional information](#) on other regulated health providers.

- Expertise is demonstrated in programs that see higher volumes of patients. A critical mass of patients must be seen to maintain expertise and clinical efficiency and effectiveness.
 - Critical mass is a threshold for the volume of cases that must be seen by a rehabilitation program to maintain expertise.
- Service provision requires clinical coherence with other programs or services across the continuum of care.
 - Clinical coherence is a relationship between specialized rehabilitation program/service and a complementary service(s) across the continuum that support comprehensive integrated patient care. For example, inpatient ABI rehabilitation has clinical coherence with acute neuro/neurosurgery, outpatient ABI clinics and community care.
- Service provision requires specialized resources including extensive capital and/or operating resources.
- Specialized rehabilitation programs should be funded equitably across the province to ensure there is sufficient capacity to meet evidence-based requirements for rehabilitative care.

HOW TO USE THIS RESOURCE:

The tables that follow provide a description of what specialized rehabilitation provides for the population (Table A) and a description of the patient profile to facilitate determining the optimal rehabilitation sector/location (Table B). This resource will be used for the following rehabilitation populations:

- Acquired brain injury (ABI)
- Amputee
- Burn
- Cardiovascular
- Complex trauma
- Oncology
- Pediatric
- Pulmonary
- Spinal Cord Injury (SCI)
- Stroke

To find specialized rehabilitation programs, see [Rehab Finder](#).

KEY ASPECTS OF SPECIALIZED REHABILITATION PROGRAMS FOR PEDIATRIC POPULATIONS

Table A

The following section describes the four guiding principles for specialized rehabilitation programs. In order to be considered a specialized rehabilitation program, all aspects of these principles need to be in place and should not be considered in isolation.

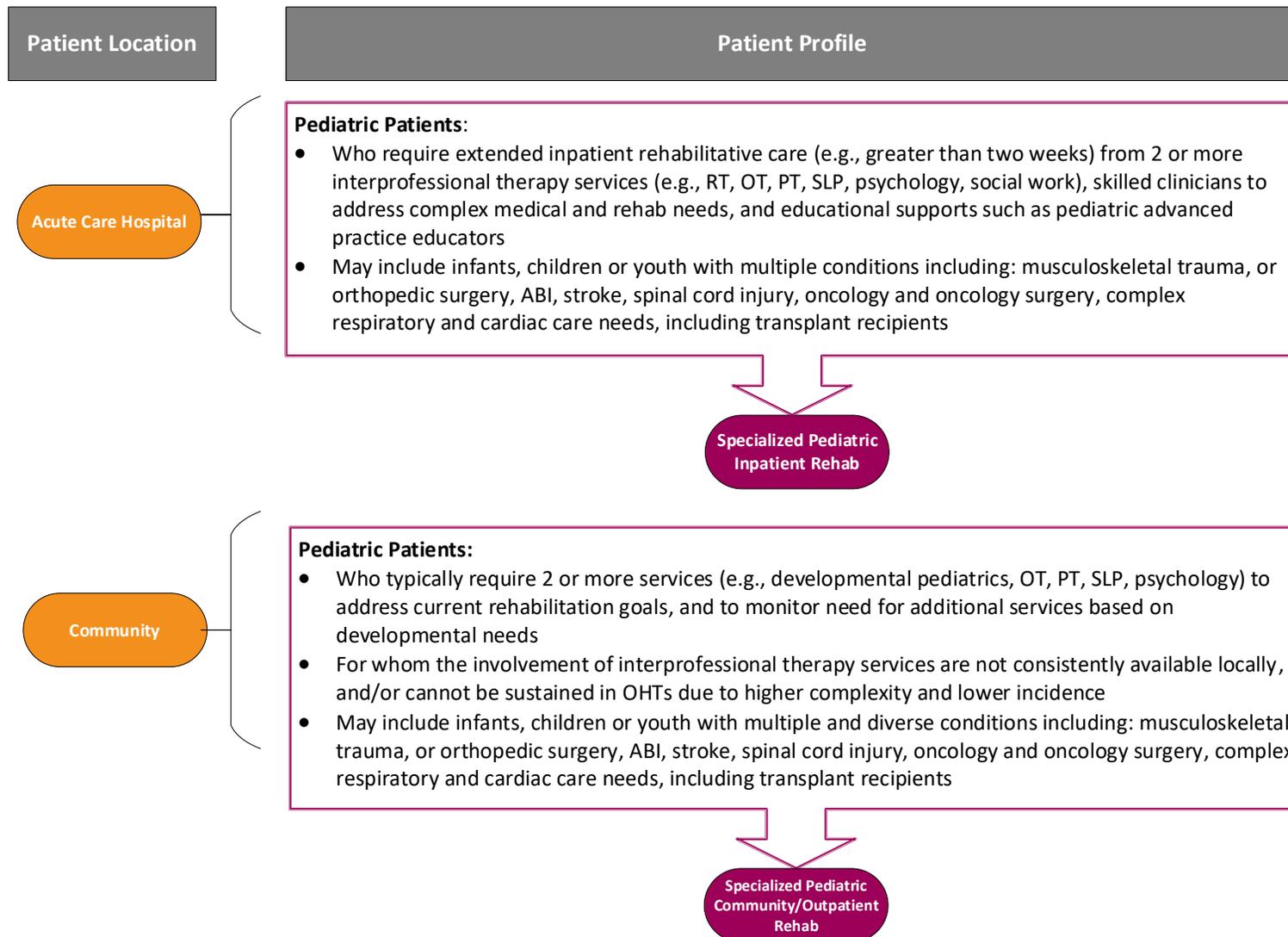
Guiding Principles for Specialized Services	REHABILITATION PROGRAM: PEDIATRIC REHABILITATION
<p>Requires team expertise and competency</p>	<p>All members of the interprofessional team demonstrate ongoing competency and application of evidence-based pediatric-specific practices in:</p> <ul style="list-style-type: none"> • Developmental milestones and assessment and treatment of infants, children and youth of varying cognitive and physical developmental levels • Addressing mental health and psychosocial issues related to pediatric injuries or medical conditions (including supporting parents/caregivers) • Assessment and treatment of cognitive impairments related to pediatric conditions of injury (e.g., ABI, stroke, spinal cord injury) • Supporting identification of goals towards return to school, play, self-care, social activity, and (for older youth) employment preparation • Established protocols and standards of care for managing pediatric wounds, pain, bowel and bladder function, spasticity, positioning, splinting, range of motion, functional mobility and gait, psychosocial needs, and age and developmentally appropriate activities of daily living • Specialized expertise and resources to support the preparing of youth and families for transition to adult services, and adult life • Established protocols for the management of infants, children and youth whom are technology dependent for such things as ventilation, tracheostomies, and feeding, and provide specialized education to family/caregivers to support technology use at home and in the community • Specialized expertise in supporting augmentative communication devices, and assessment and prescription of seating and mobility devices for a developing child • Interprofessional team provides rehabilitation program tailored to the child, youth and family goals, provides education, and partners in goal setting and attainment that is appropriate to developmental level, impairment or injury, and abilities, • Interprofessional team members may include, but are not limited to, the following: physicians - including developmental pediatricians and physical medicine and rehabilitation specialists,

Guiding Principles for Specialized Services	REHABILITATION PROGRAM: PEDIATRIC REHABILITATION
	<p>psychologists, neuropsychologists, nurse practitioners, nurses, physical therapists, occupational therapists, occupational therapist assistants/physical therapist assistants, speech-language pathologists, communication disorders assistants, social workers, dietitians, pharmacists, recreational therapy specialists, recreation therapy assistants, behavioural specialists, spiritual care practitioners, child life specialists, child and youth workers, life skills coaches, music therapists, art therapists, early childhood educators, respiratory therapists, orthotists and prosthetists.</p>
<p>Provides services to a critical mass</p>	<ul style="list-style-type: none"> • To be considered experts, pediatric rehabilitation clinicians should carry a caseload of infant, children and youth requiring specialized pediatric rehabilitation on a regular basis to develop/maintain the needed clinical skills to address this population’s needs. Further specialization within the pediatric rehabilitation is also typical with distinct teams for specialized rehabilitation in such areas as ABI, orthopedics and spinal cord injury, neuromotor conditions, and neuromuscular conditions. • The volume of patients seen in specialized inpatient and/or outpatient rehabilitation programs should be inclusive of all pediatric-related levels of complexity and needs to be sufficient to maintain expertise in the pediatric rehabilitation population, resulting in effective and efficient care. • Specialized pediatric rehabilitation has the capacity to offer specialized services across multiple sectors/locations of care (e.g., inpatient rehabilitation, community-based rehabilitation (e.g., home and school settings), and outpatient rehabilitation. Rehabilitation services may be delivered in-person, virtually, or a hybrid of both).
<p>Services require clinical coherence with other programs</p>	<p>Access to consultative services:</p> <ul style="list-style-type: none"> • Medical/Surgical services (with pediatric specialization): neurology, neurosurgery, respiratory, orthopedic surgery, psychiatry, psychology, urology, plastic surgery, oncology, gastroenterology, ENT and related diagnostic imaging • Established mechanisms and pathways to support community integration and provide long-term follow up; reassess goals, health and services as the individual ages • School/education services

Guiding Principles for Specialized Services	REHABILITATION PROGRAM: PEDIATRIC REHABILITATION
	<ul style="list-style-type: none"> • Exercise equipment, mobility devices and assistive devices of varying size to support all pediatric populations from 0-18 years of age • Funding for ongoing professional development of team members, which may include travel for sub-specialized topics
<p>Services require specialized resources</p>	<ul style="list-style-type: none"> • Broad variety of family education resources and child- and youth- oriented skills development programs • May require access to specialized resources including: <ul style="list-style-type: none"> – Multi-sensory environments (Snoezelen rooms and/or pools), toys and games – EMG and ultrasound machines for procedures – Access to diagnostic imaging (X-ray, ultrasound) and laboratory services – Specialized beds, mattresses, pressure reducing surfaces, cribs of varying sizes – Wide variety of mobility equipment and assistive devices of varying sizes to support all pediatric populations from 0-18 years of age

DETERMINING THE OPTIMAL SPECIALIZED REHABILITATION LOCATION BASED ON PATIENT PROFILE: PEDIATRIC

Overview – Pediatric Rehabilitation (see Table B for details)



PATIENT PROFILE FOR THOSE REQUIRING SPECIALIZED PEDIATRIC REHABILITATION

Table B

The following section describes the patient profile for those who require specialized rehabilitation. It is not meant to reflect comprehensive admission criteria.

To achieve optimal functional outcomes, pediatric rehabilitation requires a coordinated and collaborative interprofessional team approach that should be holistic and person-centred addressing the specific needs of the patient. Patients and families are viewed as partners in service delivery and the interprofessional team works in collaboration with them to deliver care.

LOCATION OF REHABILITATION	PATIENT PROFILE: PEDIATRIC REHABILITATION
<p>Inpatient Rehabilitation</p>	<p>Patient profile:</p> <ul style="list-style-type: none"> • Pediatric patients requiring extended inpatient rehabilitative care (e.g., greater than two weeks) from an interprofessional team <p>Consistent with evidence around tiered pediatric networks², it is expected that community OHTs may be able to manage shorter, less complex inpatient rehabilitation stays allowing families to remain closer to home; however, specialized rehabilitation services are recommended when the pediatric patient requires inpatient rehabilitation from 2 or more interprofessional therapy services (e.g., RT, OT, PT, SLP, psychology, social work), skilled clinicians to address complex medical and rehabilitative care needs, and educational supports such as pediatric advanced practice educators.</p> <ul style="list-style-type: none"> • Inpatient pediatric populations may include infants, children or youth with multiple conditions including: musculoskeletal trauma, or orthopedic surgery, ABI, stroke, spinal cord injury, oncology and oncology surgery, complex respiratory and cardiac care needs, including transplant recipients
<p>Community-Based/Outpatient Rehabilitation Specialized pediatric rehabilitation can be</p>	<p>Patient profile:</p> <ul style="list-style-type: none"> • Pediatric populations requiring specialized rehabilitation in an outpatient setting with an interprofessional team of specialized rehabilitation providers will typically require 2 or more services (e.g., developmental pediatrics, OT, PT, SLP, psychology) to address current rehabilitation goals, and to monitor need for additional services based on developmental needs

² Waibel, S., Williams, J., Tuff, Y., Shum, J., Scarr, J. & O'Donnell, M. (2021). Development of the Tiers of Service framework to support system and operational planning for children’s healthcare services. *BMC Health Services Research*, 21(693), 1-13. <https://doi.org/10.1186/s12913-021-06616-9>

LOCATION OF REHABILITATION	PATIENT PROFILE: PEDIATRIC REHABILITATION
<p>provided in-person, virtually or as hybrid of both.³</p>	<ul style="list-style-type: none"> • It is expected that community OHTs may be able to provide appropriate local access to rehabilitation services for populations for which there are sufficient numbers (a critical mass) that clinical capacity is consistently available (e.g., outpatient neuromotor therapy for children with cerebral palsy), or where local expertise can be effectively developed and sustained to support longer term needs. • Specialized rehabilitation services are recommended when the pediatric outpatient or rehabilitative care requires the involvement of interprofessional therapy services that are not consistently available locally, and/or cannot be sustained in OHTs due to higher complexity and lower incidence • Pediatric populations requiring outpatient and community care may include infants, children or youth with multiple and diverse conditions including: musculoskeletal trauma, or orthopedic surgery, ABI, stroke, spinal cord injury, oncology and oncology surgery, complex respiratory and cardiac care needs, including transplant recipients <p>In many cases, providers in specialized pediatric rehabilitation environments may partner with regional/local pediatric providers to support successful transition of care to local outpatient services and community services – providing consultation and capacity building in local communities</p>

³ See Appendix A for key considerations for virtual rehabilitation.

APPENDIX A: KEY CONSIDERATIONS ON VIRTUAL REHABILITATION

There are several benefits of providing virtual rehabilitation for patients and clinicians. These include: reducing travel time for patients and increasing the ability to reach patients in more remote communities.¹ There are also challenges with providing virtual rehabilitation. These may include the lack of equipment and/or comfort with using technology, the absence of contextual factors that are more available during in-person sessions, limitations around safety (e.g., hands on assistance with exercises), and limitations in the ability to conduct some assessments and interventions.^{1, 2, 3} The following are key considerations for conducting virtual rehabilitation:

- Select patients carefully. Not every patient or every patient's goals are suitable and the decision to use a virtual format should be considered on a case-by-case basis using professional clinical judgment.⁴
- Confirm that the patient has the required technology and the needed support/assistance for virtual rehabilitation and that the patient's setting is in a safe, secure and confidential environment.⁵
- Follow professional regulatory college guidelines about obtaining consent; the collection, use and retention of personal health information; safety considerations and emergency planning, and having the proper skills and training to provide virtual rehabilitation.^{2, 4, 5}
- Use the most effective and secure virtual platform to provide high quality and confidential virtual rehabilitation (e.g., use high speed internet, a confidential setting, and a platform that is compliant with the [Personal Information Protection and Electronics Document Act \(PIPEDA\)](#)).⁵
- Have support processes in place to provide technical support and address technical issues for both the patient and provider and to address language, communication or other accessibility issues.⁴
- Consider use of virtual, in-person or a mix of the two formats (e.g., hybrid model) depending on the patient's resources, needs, and goals.
- Use indicators to evaluate the impact, effectiveness, quality and safety of virtual rehabilitation.⁴

References:

¹ Bland, K., Bigaran, A., Campbell, K., Trevaskis, M., & Zopf, E. (2020). Exercising in isolation? The role of telehealth in exercise oncology during the COVID-19 pandemic and beyond. *Physical Therapy, 100* (10), 1713-1716. <https://doi.org/10.1093/ptj/pzaa141>

² McGuff, R., Cotie, L., Harris, J., Baer, C., Brisco, K., Chipperfield, D., Moran, B., Pike, R., Ross, M., Yeung, C., Blacquiere, D., Mountain, A., Gierman, N., Lindsay, P. (Eds.), on behalf of Heart and Stroke Foundation of Canada in collaboration with the Canadian Association of Cardiovascular Prevention and Rehabilitation. (2021). *Virtual Cardiovascular Prevention and Rehabilitation Implementation Toolkit*. Heart and Stroke Foundation of Canada. Available from <https://www.heartandstroke.ca/-/media/1-stroke-best-practices/vcr-toolkit-final-2021.ashx?rev=e2d73b476e6e4ef1abc09624992566d0>

³ Turolla, A., Rossetini, G., Viceconti, A., Palese, A., & Geri, T. (2020). Musculoskeletal physical therapy during the COVID-19 pandemic: Is telerehabilitation the answer? *Physical Therapy, 100* (8), 1260-1264. <https://doi.org/10.1093/ptj/pzaa093>

⁴ Rakover, J., Laderman, M., & Anderson, A. (2020). [Telemedicine: Centre Quality and Safety](#). *Healthcare Executive, 35*(5), 48-49.

⁵ O'Neil, J. (n.d.) [Tele-Rehabilitation in times of COVID-19](#). Canadian Physiotherapy Association. <https://physiotherapy.ca/times-covid-19>

APPENDIX B: STAKEHOLDER ENGAGEMENT

UNIVERSITY OF TORONTO, TEMERTY FACULTY OF MEDICINE, DIVISION OF PHYSICAL MEDICINE & REHABILITATION ^a		
PM&R Specialist	Job Title and Affiliation	Specialized Rehab Population
Dr. Mark Bayley	Medical Director and Psychiatrist-in-Chief, University Health Network/Toronto Rehab and Altum Health Professor, University of Toronto ^a Vice-Chair, Coordinating Council, GTA Rehab Network Adjunct Scientist, Institute of Clinical and Evaluative Sciences, Sunnybrook Health Sciences Centre	All Populations
Dr. Larry Robinson	Program Chief, Rehabilitation Services, Sunnybrook Health Sciences Centre Director and Professor, Division of Physical Medicine and Rehabilitation, University of Toronto ^a Senior Scientist, Evaluative Clinical Sciences, St. John’s Rehab Research Program, Sunnybrook Research Institute	All Populations
Dr. Golda Milo-Manson	Developmental Paediatrician, Holland Bloorview Kids Rehabilitation Hospital and The Hospital for Sick Children Vice-President Medicine & Academic Affairs, Holland Bloorview Kids Rehabilitation Hospital Associate Professor, Department of Paediatrics, University of Toronto	Pediatric Rehab

SPECIALIZED REHAB ADVISORY GROUP	
Organization	Member
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Sunnybrook Health Sciences Centre/St John’s Rehab	Dr. Larry Robinson (Co-Chair) Siobhan Donaghy
Unity Health Toronto/Providence Healthcare	Anna Marie Sneath

SPECIALIZED REHAB ADVISORY GROUP	
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Specialized Pediatric Rehabilitation: Tables A and B are based on information provided by *Joanne Maxwell and her team at Holland Bloorview Kids Rehabilitation Hospital.