GTA REHAB Network

Spinal Cord Injury Rehab Definition Framework

This framework applies to individuals who have rehab potential and identified rehab goals

Acute Care Integrated Specialized Units

Transitional Care in Acute Care, LTC or CCC

Not recommended for SCI Patients

Inpatient

Institutional Setting

Inpatient Rehab in Acute Care or Rehab Hospitals*

Mixed Rehab Unit Not recommended for SCI due to specialized knowledge required to provide rehab/medical care to patients with SCI	Dedicated Rehab Unit		Low Tolerance Long Duration (LTLD/slowstream) Rehab Program
	Neuro	SCI	

Outpatient & Community

Home / Residential

Outpatient/Ambulatory Rehab in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics*

Single Service	Dedicated Inter-Professional Team		Mixed Population Inter-Professional Team NOT RECOMMENDED	Wellness Focused Rehab Groups
	SCI	Neuro		

Community* (Rehab provided in home, school or work environment)

Single Service	Dedicated Interprofessional Team

*** Each Rehab sector is defined by:**

- Services Provided
- Degree of Specialization
- Differential Criteria
- Typical Duration
- Key Activities / Nature of Services
- Names Typically Used
- Frequency of Therapy

GUIDING PRINCIPLES

Objectives:

A. Increase clarity and consistency in the forms of cognitive and physical rehab across the continuum by:

1. Clarifying the distinctions between and across institutional and community-based rehab programs.
2. Classifying programs with consistent terminology.
3. Describing the key features of institutional and community-based rehabilitation programs based on the services provided, the degree of specialization, differential/critical criteria, duration, and the primary focus of the rehab program/service.

B. Inform planning and performance measurement through the development of standards for rehab program components against which rehab programs can be benchmarked.

Guiding Principles:

1. The Rehab Definitions Conceptual Framework presupposes the World Health Organization's definition of "rehabilitation" as "a *progressive, dynamic, goal-oriented and often time-limited process, which enables an individual with an impairment to identify and reach his/her optimal mental, physical, cognitive and/or social functional level. Rehabilitation provides opportunities for the individual, the family and the community to accommodate a limitation or loss of function and aims to facilitate social integration and independence.*"

2. The Rehab Definitions Conceptual Framework refers to cognitive and physical forms of rehabilitation across the continuum of care. The rehab conceptual diagram refers to acute care, inpatient rehab programs within institutional settings and outpatient and community-based rehab for clients residing at home or in a residential setting. The use of bi-directional arrows in the schematic reflects the flow of patients and continuity of care across these settings.

3. The framework identifies key features of rehab programs based on evidence-based practices where available to define the "gold standard" of rehab care (e.g. rehab beds are clustered together). In most instances these key features reflect current practices; however, some organizations may be required to implement changes within their organizations to achieve consistency with the criteria set out in the framework.

4. The term "patient" is used for individuals receiving rehabilitation in a hospital setting. The term "client" is used to refer to individuals receiving community rehab services.

5. The Rehab Definitions Conceptual Framework uses categories that have been defined based on the rehab needs of the patient and the typical services provided. Length of stay or the type of facility in which the rehab is provided is not considered essential to defining rehab sectors.

6. The Rehab Definitions Conceptual Framework is based on the assumption that clients participating in the programs described have rehab potential and rehab goals. For criteria regarding rehab potential, medical stability and rehab readiness for inpatient rehab, refer to the GTA Rehab Network's Inpatient Rehab Referral Guidelines (www.gtarehabnetwork.ca).

7. The framework uses terminology that is consistent with the MOHLTC guidelines for inpatient rehabilitation beds and can be applied to community and ambulatory service delivery.

8. While it is appreciated that much of rehabilitation occurs in third-party payer assessment centres or private clinics, the framework refers to publicly-funded rehabilitation. However, it is hoped that the framework will promote consistency in standards of care and equitable access across all rehab programs.

9. Input from healthcare providers representing acute care, regional rehab centres and community-based organizations that provide adult (including geriatric) and paediatric rehab has been obtained to validate the Rehab Definitions Conceptual Framework.

10. The Spinal cord Injury Rehab Definitions Framework will be reviewed every 3 years to incorporate any newly emerging research in spinal cord injury rehab.

Glossary of Rehab Component Terms

Core Team: Core team refers to the team members who are essential, actively involved in the assessment and treatment (if required) of rehab patients on the unit and who participate regularly in team rounds.

Dedicated Interprofessional Team (Community): Rehab provided in the home, school or work environment by an interprofessional team using a coordinated, integrated approach for specific rehab populations or to reduce the impact of a particular disability.

Dedicated Interprofessional Team (Outpatient/Ambulatory Rehab): Outpatient rehab provided by an interprofessional team with expertise in the treatment and assessment of a particular patient population. Outpatient/Ambulatory dedicated interprofessional teams are located in acute care hospitals, rehab hospitals and community health centres/clinics. They provide rehab to patients who require more than one rehab service and a coordinated rehab approach.

Dedicated Rehab Unit: An inpatient rehab unit located in acute care and rehab hospitals that serves a single patient population group and provides intensive rehabilitation. Some units may specialize in more than one diagnosis in related populations (e.g. Cardio/Respiratory, Orthopaedic/Amputation, etc.). A dedicated rehab unit is suitable for individuals who require 24-hour hospital care and who are in need of an interprofessional rehab program using a coordinated rehab approach.

Dedicated Neuro Rehab Unit: An inpatient rehab unit located in acute care and rehab hospitals that serves patients with neurological disorders specifically and provides intensive rehabilitation. Some units may specialize in more than one diagnosis in related populations, but there are committed resources (team and beds) to specialize in the treatment of a variety of neurological disorders.

Low Tolerance Long Duration (LTLD/slowstream) Rehab Program: Suitable for individuals in need of an interprofessional rehab approach to address specific rehab goals who also have chronic/complex conditions requiring 24-hour hospital care and who are expected to benefit from a slower-paced rehab program for a longer duration than is offered in dedicated or mixed rehab programs. LTLD rehab is most commonly delivered in a complex continuing care bed but may also be provided in a designated rehab bed. LTLD rehab programs may be located in acute care, rehab or complex continuing care hospitals.

Mixed Population Interprofessional Team (Outpatient/Ambulatory Rehab)(Not recommended for Spinal Cord Injury): Outpatient rehab provided by an interprofessional team, which typically assesses and treats patients from a variety of patient population groups. Outpatient/Ambulatory mixed population interprofessional teams are located in acute care hospitals, rehab hospitals and community health centres/clinics. They provide rehab to patients who require more than one rehab service and a coordinated rehab approach.

Mixed Rehab Unit (Not recommended for Spinal Cord Injury): Formerly referred to as a General inpatient rehab unit, this type of unit is located in acute care and rehab hospitals, provides intensive rehabilitation and serves a variety of patient population groups. The mixed rehab unit is suitable for individuals who require 24-hour hospital care and are in need of an interprofessional rehab program using a coordinated approach.

Single Service (Community): Individual rehab services that are usually provided through Community Care Access Centres. Single rehab services are suitable for individuals who are in need of one or more rehabilitation services in single specialty area(s)/profession(s) provided in the home, school or work environment. Although clients may receive more than one service, a coordinated approach is not used as rehab providers typically work as individual providers. However, some communication with other health providers may occur on an as-needed basis.

Single Service (Outpatient/Ambulatory Rehab): An outpatient rehab service located in acute care hospitals, rehab hospitals and community health centres/clinics that is suitable for individuals who are in need of an outpatient rehabilitation service in a single specialty area/profession. Clients may receive more than one rehab service; however, the services are not provided by way of a coordinated rehab approach. Services may include assessment only or assessment and treatment. Services may be provided during a one-time visit or multiple visits.

Wellness Focused Rehab Groups: These groups are provided in an outpatient/ambulatory setting and led by an individual rehab provider or team or rehab specialists to enhance an individual's ability to cope with a particular disability or impairment. These time-limited groups are publicly-funded although a small fee may be charged for materials.

DEFINITION OF SPINAL CORD INJURY

For the purposes of this framework, Spinal Cord Injury is defined as follows:

Spinal cord injury refers to any pathology or process that impacts spinal cord function resulting in impairment, which can be addressed in a rehab setting. Injury may result from traumatic or non-traumatic causes. For example, traumatic spinal cord injury refers to injuries sustained as a result of a motor vehicle accident, fall, diving accidents etc. Non-traumatic spinal cord injury includes spinal cord impairment resulting from disease or other medical conditions such as tumours, infections and cervical myelopathy etc.

The eligibility for rehab takes into consideration the following conditions:

- The patient's ability to participate in rehab, their identified goals and the potential for improvement. These conditions apply to all patients, including oncology patients whose prognosis for long-term survival may be poor.

- The criteria for rehab candidacy, medical stability and rehab readiness as outlined in the GTA Rehab Network's Inpatient Rehab Referral Guidelines. (See www.gtarehabnetwork.ca)

Spinal Cord Injury Rehab Definition Framework

This framework applies to individuals who have rehab potential and identified rehab goals

ACUTE CARE	
Integrated Specialized Neurology/Neurosurgical Units	
Names Typically Used	• Neurology/Neurosurgical Unit; Trauma Unit; Spine Unit; Orthopaedic Unit; Surgical Spine Unit Note: Some patients with spinal cord injury/disease may be located on general medicine or oncology units
Services Provided	• The unit is staffed by a dedicated interprofessional team. • Core team* consists of: Physician (Neurosurgeon or Orthopaedic surgeon), Nursing , Physiotherapy, Occupational Therapy, Speech Language Pathology, Nutrition, Social Work, Respiratory Therapy; Pharmacy, Psychiatry, Psychology, Chaplaincy/Pastoral Care, and peer support • Orthotist, Chiropody, Physiatry and Intensivist/Respirologist, services available on a consultation basis • Other consult services are available to address co-morbidities and medical complexities of patients admitted to the unit (e.g. Geriatric services)
Specialization vs. Non-Specialization	• The interprofessional team has knowledge and expertise in spinal cord injury • Specialized interprofessional spinal cord injury services are provided[1] • Specialized services include wound care management[2], pain management[3], tracheostomy management, thrombo-embolic management, respiratory management, and neurogenic bowel management.[4] • If evident, management of orthostatic hypotension is recommended to increase the patient's capacity to participate in rehabilitation.[5]
Differentiating Criteria	• Acute spinal cord injury/disease: ► Spinal cord injury refers to any pathology or process that impacts spinal cord function resulting in impairment. Injury may result from traumatic or non-traumatic causes. For example, traumatic spinal cord injury includes injury sustained as a result of a MVA, fall, diving accidents etc. Non-traumatic spinal cord injury includes spinal cord impairment resulting from disease or other medical conditions such as tumours, infections and cervical myelopathy
Typical Duration	• Patients typically remain in acute care until they are deemed medically stable. That is, ► Spine is stable and no longer in need of immediate surgical management ► Wound care, respiratory care, and pain management care plans are in place and ► All co-morbidities are identified, and ► The patient is able to be transferred into alternate level of care (e.g., rehabilitation) or home with/without services.

* Core team refers to the team members who are essential, actively involved in the assessment and treatment (if required) of spinal cord injury patients on the unit and who participate regularly in team rounds.

Spinal Cord Injury Rehab Definition Framework

This framework applies to individuals who have rehab potential and identified rehab goals

ACUTE CARE	
Integrated Specialized Neurology/Neurosurgical Units	
Key Activities/Nature of Service	● Focussed interprofessional assessment to determine breadth of deficits and rehab intensity required. ● Initiation of rehabilitation, education of patient and family regarding function and rehab goals. Education of patients and families (as well as health care professionals) around the early signs and symptoms and risk factors of deep vein thrombosis and other potential complications is provided.[6]

TRANSITIONAL CARE

Traditional Transitional Care is not considered appropriate for Spinal Cord patients.

However, it is recognized that some patients may not have sufficient tolerance to transition directly into an active rehab program in the Dedicated Inpatient SCI Rehab Unit. These individuals may require a period of lower intensity rehab in a Low Tolerance Long Duration Inpatient Rehab program in preparation for an inpatient rehabilitation admission.

Ideally these programs should be offered in the same facility to minimize transitions for the patient.

Spinal Cord Injury Rehab Definition Framework

This framework applies to individuals who have rehab potential and identified rehab goals

INPATIENT REHAB			
	Dedicated Neuro Rehab Inpatient Units in Acute Care and Rehab Hospitals	**Dedicated Inpatient SCI Rehab Units in Rehab Hospitals**	**Low Tolerance Long Duration Inpatient Rehab Program in CCC and Rehab Hospitals**
	Suitable for individuals in need of an interprofessional rehab program who also require 24-hour hospital care.	Suitable for individuals in need of an interprofessional rehab program and who also require 24-hour hospital care.	Suitable for individuals in need of an interprofessional rehab program who may also have a chronic/complex condition requiring 24-hour hospital care over an extended period of time and who are expected to benefit from low intensity, long duration rehab
ALL SERVICES MUST BE WHEELCHAIR ACCESSIBLE Referral to a Mixed Rehab Unit is not recommended due to the specialized knowledge required to provide rehab and medical care to patients with spinal cord injury. The majority of individuals will make significant functional gains during inpatient rehabilitation. [7] Early admission to specialized, interprofessional spinal cord injury is recommended to reduce overall length of stay and onset of medical complications and maximize rehabilitation gains. [8]			
Names Typically Used	• Neuro Rehabilitation Program	• Specialized Spinal Cord Rehabilitation Program	• LTLD rehab; Slow-Stream; Slow-to-Recover, Neuroactivation
Services Provided	• Intensive neurological rehab program. The program provides a minimum of 2-3 hours of therapeutic/rehab activity per day as tolerated by the patient. Therapeutic activity includes professional therapy (e.g. Occupational Therapy, Physiotherapy, OTA/PTA services under the guidance of an OT/PT and/or Speech Language Therapy) and nursing activities. • Staffing ratios support, at minimum, the amount of therapy recommended. • Patients have the opportunity to participate in as much therapy as is appropriate to their needs and as	• Intensive rehab program. The program provides a minimum of 2-3 hours of therapeutic/rehab activity per day as tolerated by the patient. Therapeutic activity includes professional therapy (e.g. Occupational Therapy, Physiotherapy, OTA/PTA services under the guidance of an OT/PT and/or Speech Language Therapy) and nursing activities. • Staffing ratios support, at minimum, the amount of therapy recommended. • Patients have the opportunity to participate in as much therapy as is appropriate to their needs and as they are able and willing to tolerate.	• Low to moderately intensive rehab program. • Rehab program provides a minimum of 30 minutes of therapy per session at least twice per day for a minimum of 5 hours of therapeutic activity per week related to their goals under the direct supervision of a regulated health professional. Therapeutic activity includes professional therapy (e.g. Occupational Therapy, Physiotherapy, OTA/PTA services under the guidance of an OT/PT and/or Speech Language Therapy) and nursing activities. • Staffing ratios support, at minimum, the amount of therapy recommended.

INPATIENT REHAB			
Dedicated Neuro Rehab Inpatient Units in Acute Care and Rehab Hospitals		**Dedicated Inpatient SCI Rehab Units in Rehab Hospitals**	**Low Tolerance Long Duration Inpatient Rehab Program in CCC and Rehab Hospitals**
	they are able and willing to tolerate. • A dedicated interprofessional team provides rehab and has expertise* in the treatment of neurological disorders. • Core team+ typically includes: Physician, Nursing, Physiotherapy, Occupational Therapy, Social Work, Pharmacy, Speech-Language Pathology, Clinical Dietician, Therapeutic Recreation and Chaplaincy/ Pastoral Care. • Services may be supplemented by OTA/PTA/CDA/PSW† under the direct supervision of respective health care professionals (e.g., OT directing OTA, PT directing PTA, etc.) as legislated by their respective colleges. Assistants can provide support to the therapists, but the overall care is directed by the regulated health professional. (OTA/PTA/CDA/PSW usually does not exceed 50% of total therapy time) • Able to access specialized services of a dedicated Spinal Cord Injury Rehabilitation Program on consult basis or through ambulatory clinics • Access to Canadian Paraplegic Association Ontario (CPAO) for peer support and other core services of	• A dedicated interprofessional team provides rehab and has specialized knowledge and expertise in the care of the spinal cord patient. • Core team+ typically includes: Physician, Nursing, Physiotherapy, Occupational Therapy, Social Work, Pharmacy, Speech-Language Pathology, Clinical Dietician, Psychology, Respiratory Therapy, Therapeutic Recreation and Chaplaincy/ Pastoral Care. • Services may be supplemented by OTA/PTA/CDA/PSW† under the direct supervision of respective health care professionals (e.g., OT directing OTA, PT directing PTA, etc.) as legislated by their respective colleges. Assistants can provide support to the therapists, but the overall care is directed by the regulated health professional. (OTA/PTA/CDA/PSW usually does not exceed 50% of total therapy time) • Skin & Wound services for the prevention & management of pressure sores including access to Plastic Surgery consultation. • Pain management[10] • Exercise rehab is provided to slow the progression of multiple risk factors for cardiovascular disease and other chronic diseases[11]	• An interprofessional team provides rehab and has expertise in the treatment of neurological disorders, including competence in skin, nutritional, bowel and bladder and seating management • Core team+ typically includes: Physician, Nursing, Physiotherapy, Occupational Therapy, Social Work, Pharmacy, Speech-Language Pathology, Clinical Dietician, Therapeutic Recreation and Chaplaincy/ Pastoral Care. • Consultation from Physiatry and Psychiatry is available. • Patients have the opportunity to participate in as much therapy as is appropriate to their needs and as they are able and willing to tolerate. • Services may be supplemented by OTA/PTA/ CDA/PSW† under the direct supervision of respective health care professionals (e.g., OT directing OTA, PT directing PTA, etc.) as legislated by their respective colleges. Assistants can provide support to the therapists, but the overall care is directed by the regulated health professional. (OTA/PTA/CDA/PSW usually does not exceed 50% of total therapy time) • Able to access specialized services of a dedicated

* Clinical expertise is defined as "the proficiency and judgment that clinicians acquire through clinical experience and clinical practice." (*British Medical Journal* 1996; 312:71-2) Clinicians rely on their expertise to balance the patient's clinical state and circumstances, evidence-based research and patient preferences in their clinical decision-making and provision of treatment. (*Evidence-Based Medicine* 2002; 7:36-38). Rehab providers must carry a caseload of SCI patients on a regular basis to develop/maintain clinical skills to address physical and psychosocial problems associated with spinal cord injury.

+ Core team refers to the team members who are essential, actively involved in the assessment and treatment (if required) of spinal cord injury patients on the unit and who participate regularly in team rounds.

† OTA = Occupational Therapy Assistant; PTA = Physiotherapy Assistant; CDA = Communication Disorders Assistant; PSW = Personal Support Worker

INPATIENT REHAB			
Dedicated Neuro Rehab Inpatient Units in Acute Care and Rehab Hospitals		**Dedicated Inpatient SCI Rehab Units in Rehab Hospitals**	**Low Tolerance Long Duration Inpatient Rehab Program in CCC and Rehab Hospitals**
	CPAO is facilitated.[9] • Provision of education to patients and families and access to specialized SCI education programs • Access to pain and wound management services • Family/significant others are recognized as key to enabling client function and attainment of rehab goals and are involved throughout the rehab process: ► Families/caregivers, with patient consent, are included in discussions around key treatment decisions ► Families (and patients) are encouraged to participate in team meetings ► Mechanisms for communication of goals and plans to patients and families/caregivers are established. • Wellness-focused education is offered to provide health education, goal setting, behaviour change principles and practices to promote health and wellbeing of the individual. • Comprehensive discharge planning with access and referrals to specialized services and community support programs is provided (e.g., Canadian Paraplegic Association Ontario core services, outpatient/ambulatory rehab etc.) ▪ Discharge planning activities are initiated and include, but are not limited to, the following as outlined in the GTA Rehab Network's ***Discharge Planning Guidelines for Inpatient Rehabilitation***:‡	• On-site access to Canadian Paraplegic Association Ontario (CPAO) for peer support and other core services of CPAO is facilitated.[12] • On-site access to Ontario Works Program and Ontario Disability Support Program • Services include assessment and prescription of assistive equipment needs.[13] • Assistive Technology Program • Specialized SCI education programs & resources • On-site access to specialized services, e.g. neurogenic bowel & bladder training, urology clinic, gynaecology, sexual/fertility counselling, seating clinic, bone densitometry, bone loss assessment, interventions and ongoing monitoring is available to prevent bone mineral loss[14],hydrotherapy, orthotist, chiropody, diabetic education • Screening for and treatment of depression is provided.[15] • Access to specialized programs including community integration, sport & leisure including public transportation training, patient apartment, and access to accessible exercise equipment • Family/significant others are recognized as key to enabling client function and attainment of rehab goals and are involved throughout the rehab process: ► Families/caregivers, with patient consent, are included in discussions around key treatment decisions	spinal cord rehabilitation program on consult basis or through ambulatory clinics • Access to Canadian Paraplegic Association Ontario (CPAO) for peer support and other core services of CPAO is facilitated.[20] • Provision of education to patients and families and access to specialized education programs • Access to pain, wound management and bowel/bladder management services • Family/significant others are recognized as key to enabling client function and attainment of rehab goals and are involved throughout the rehab process: ► Families/caregivers, with patient consent, are included in discussions around key treatment decisions ► Families (and patients) are encouraged to participate in team meetings ► Mechanisms for communication of goals and plans to patients and families/caregivers are established. • Wellness-focused education is offered to provide health education, goal setting, behaviour change principles and practices to promote health and wellbeing of the individual. • Comprehensive discharge planning with access and referrals to specialized services and community support programs is provided (e.g., Canadian

‡ Discharge Planning Guiding Principles and Standards in the GTA Rehab Network's Discharge Planning Guidelines for Inpatient Rehabilitation, available from the Network's Tools for Professionals menu at http://www.gtarehabnetwork.ca/home.asp.

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	► Within 7 days of admission, an estimated date of discharge and provisional destination is determined ► Within 7 days of admission, screening for factors that may delay discharge is conducted and a plan of care for addressing the identified barriers to discharge is developed. ► The first patient/family team meeting for patients at risk for a delayed discharge is held by the second week of admission. ► Weekly team meetings are conducted to promote consistency in the treatment approach by identifying and reviewing the patient's care plan, treatment goals, progress and discharge plans. ► Discharge readiness indicators are considered throughout the admission to determine the appropriate timing for ALC designation.	► Families (and patients) are encouraged to participate in team meetings ► Mechanisms for communication of goals and plans to patients and families/caregivers are established. • Wellness-focused education is offered to provide health education, goal setting, behaviour change principles and practices to promote health and wellbeing of the individual.[16 17 18 19] • Comprehensive discharge planning with access and referrals to specialized services and community support programs is provided (e.g., Canadian Paraplegic Association Ontario core services, outpatient/ambulatory rehab etc.) • Discharge planning activities are initiated and include, but are not limited to, the following as outlined in the GTA Rehab Network's ***Discharge Planning Guidelines for Inpatient Rehabilitation***:‡ ► Within 7 days of admission, an estimated date of discharge and provisional destination is determined ► Within 7 days of admission, screening for factors that may delay discharge is conducted and a plan of care for addressing the identified barriers to discharge is developed. ► The first patient/family team meeting for patients at risk for a delayed discharge is held by the second week of admission. ► Weekly team meetings are conducted to promote consistency in the treatment approach by identifying and reviewing the patient's care	Paraplegic Association Ontario core services, outpatient/ambulatory rehab) • Discharge planning activities are initiated and include, but are not limited to, the following as outlined in the GTA Rehab Network's ***Discharge Planning Guidelines for Inpatient Rehabilitation***:‡ ► Within 7 days of admission, an estimated date of discharge and provisional destination is determined ► Within 7 days of admission, screening for factors that may delay discharge is conducted and a plan of care for addressing the identified barriers to discharge is developed. ► The first patient/family team meeting for patients at risk for a delayed discharge is held by the second week of admission. ► Weekly team meetings are conducted to promote consistency in the treatment approach by identifying and reviewing the patient's care plan, treatment goals, progress and discharge plans. ► Discharge readiness indicators are considered throughout the admission to determine the appropriate timing for ALC designation.

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Dedicated Neuro Rehab Inpatient Units in Acute Care and Rehab Hospitals		**Dedicated Inpatient SCI Rehab Units in Rehab Hospitals**	**Low Tolerance Long Duration Inpatient Rehab Program in CCC and Rehab Hospitals**
		plan, treatment goals, progress and discharge plans. ► Discharge readiness indicators are considered throughout the admission to determine the appropriate timing for ALC designation.	
Specialization vs. Non-Specialization	• Rehab providers assess/ treat patients with a variety of neurological diagnoses/conditions. • Rehab providers have neurological rehab expertise to treat SCI patient with high ISCSCI (International Standards for the Classification of Spinal Cord Injury) Motor Scores (e.g. Total UE ≥ 35, Total LE ≥ 35 [70% motor functional]) and/or who have less complex mobility deficits and no complex assistive device needs. • Specialization within the neuro rehab program in spinal cord injury is encouraged where there is a sufficient critical mass (i.e. 50 SCI cases per year) to support the development and maintenance of clinical expertise among nursing, allied health and medical staff and the acquisition of special equipment and other resources required to treat this population. • Mechanisms have been established to access as needed spinal cord specific services and education for patients	• Rehab providers have SCI rehab expertise to treat SCI patients with any ASIA (American Spinal Injury Association) Impairment Scale Score (AIS A – D) who may also have complex mobility and assistive device needs. • Programs are specialized to treat SCI including the management of complex pain and spasticity, bowel and bladder dysfunction, specialized seating and assistive technology needs • All rehab professionals have expertise in spinal cord rehab. • The program is able to address, through direct intervention or consultative services, related co-morbidities and complexities in the spinal cord injury population (e.g. diabetes, brain injury, depression, substance abuse)	• Specialization is encouraged in spinal cord injury where there is a sufficient critical mass (i.e. 15 - 20 SCI cases per year) to support the development and maintenance of clinical expertise among nursing, allied health and medical staff and the acquisition of special equipment and other resources required to treat this population. • LTLD program does not need to be SCI specific; however, the program should be specialized in treating persons with severe disability arising from neurological conditions. • The program must demonstrate competence in skin, nutritional, bowel and bladder and seating management
Differentiating Criteria	• Program serves a variety of neurological population groups. • Patients with spinal cord injury admitted to a dedicated neuro rehab program have: ○ No neurogenic bowel and bladder dysfunction as part of their impairment ○ High ISCSCI (International Standards for the	• Designated interprofessional team, including physician, with specialization in spinal cord injury. • Patients requiring specialized SCI rehab services include SCI patients with any ASIA Impairment Scale Score (AIS A – D) who may also have complex mobility and assistive device needs (including specialized seating), complex pain and spasticity, and bowel and bladder	• Patients require a slower-paced rehab program for a longer duration to maximize rehab potential and achieve rehab goals • Dedicated interprofessional team, including physician, with specialization in neuro rehab population group served by the program • Patient centred, goal-oriented approach with regular

INPATIENT REHAB			
	Dedicated Neuro Rehab Inpatient Units in Acute Care and Rehab Hospitals	**Dedicated Inpatient SCI Rehab Units in Rehab Hospitals**	**Low Tolerance Long Duration Inpatient Rehab Program in CCC and Rehab Hospitals**
	Classification of Spinal Cord Injury) Motor Scores (e.g. Total UE ≥ 35, Total LE ≥ 35 [70% motor functional]) and/or less complex mobility deficits and no complex assistive device needs. • Designated interprofessional team, including a physician with expertise in the treatment of neurological conditions • Patients and families are encouraged to participate in team meetings and mechanisms for communication of goals and plans are established. • Patient centred, goal-oriented approach with weekly team meetings/conferences. • Geographically clustered beds/teams. • Expectation is that patients will either be discharged home or to their preferred accommodation in the community or to a more specialized rehabilitation program.	dysfunction. • Patient centred, goal-oriented approach with weekly team meetings/conferences. • Patients and families are encouraged to participate in team meetings and mechanisms for communication of goals and plans are established. • Geographically clustered beds/teams. • Expectation is that patients will either be discharged home or to their preferred accommodation in the community.	team meetings/conferences (every 2 – 3 weeks). May be a combination of team meeting and family conference. • Geographically clustered beds/teams. • Expectation is that patients will either be discharged home or to their preferred accommodation in the community or to a higher tolerance program. • Patients are exempt from co-payment when in the LTLD program located in CCC and while the realistic goal for them remains returning to the community.
Typical Duration	• As strong evidence regarding LOS does not currently exist, benchmarks for duration are not being included in this framework. Ideally, the length of stay is not constrained by a maximum duration, but is linked to the patient's needs and goals.[§] • If a patient with rehab goals is not able to tolerate an intensive rehab program of 2- 3 hours of therapy per day, it is recommended that the patient be	• 49-101 days[21] is the current range for different SCI diagnostic groups. • As strong evidence regarding LOS does not currently exist, benchmarks for duration are not being included in this framework. Ideally, the length of stay is not constrained by a maximum duration, but is linked to the patient's needs and goals.[**]	• Typical duration is usually around 3-6 months. • As strong evidence regarding LOS does not currently exist, benchmarks for duration are not being included in this framework. Ideally, the length of stay is not constrained by a maximum duration, but is linked to the patient's needs and goals.[††] • If a patient with rehab goals is able to tolerate 10 or

[§] In the current environment, length of stay is at times extended due to the lack of community supports or housing resources needed by this population.
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Spinal Cord Injury Rehab Definition Framework

This framework applies to individuals who have rehab potential and identified rehab goals

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Dedicated Neuro Rehab Inpatient Units in Acute Care and Rehab Hospitals		**Dedicated Inpatient SCI Rehab Units in Rehab Hospitals**	**Low Tolerance Long Duration Inpatient Rehab Program in CCC and Rehab Hospitals**
	considered for transfer to a LTLD inpatient rehab program.	• If a patient with rehab goals is not able to tolerate an intensive rehab program of 2- 3 hours of therapy per day, it is recommended that the patient be considered for transfer to a LTLD inpatient rehab program.	more hours of therapy per week, it is recommended that the patient be considered for transfer to a higher tolerance neuro rehab or dedicated inpatient SCI rehab unit, dependent on needs.
Key Activities / Nature of Service	• Rehab providers have neurological rehab expertise to treat SCI patient with high ISCSCI (International Standards for the Classification of Spinal Cord Injury) Motor Scores (eg. Total UE ≥ 35, Total LE ≥ 35 [70% motor functional]) and/or who have less complex mobility deficits and no complex assistive device needs. • These rehabilitation programs are suitable for individuals requiring an intensive interprofessional neuro rehab program. • Access to specialized SCI rehab services as required.	• Specialized SCI rehabilitation addresses all aspects of SCI (complex psychosocial, physical, bowel and bladder, sexuality, complex pain, community reintegration, and patient safety) to allow SCI client to reach maximum potential from an emotional, physical and vocational perspective. (See Appendix for a listing of SCI rehab components). • Program is suitable for SCI patients with any ASIA Impairment Scale Score (AIS A – D) who may also have complex mobility and assistive device needs (including specialized seating), complex pain and spasticity, and bowel and bladder dysfunction and require an intensive interprofessional specialized spinal cord injury rehab program. • Program is suitable for individuals requiring an intensive interprofessional specialized spinal cord injury rehab program.	• LTLD rehab is suitable for individuals who may also have a chronic and a complex condition, are in need of an interprofessional rehab program and who require an extended period of less intensive rehab to maximize recovery. • Access to specialized SCI rehab services as required.

OUTPATIENT/AMBULATORY REHAB PROGRAMS				
	Single Service in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics	**Dedicated SCI Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Dedicated Neuro Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Wellness Focused Rehab Groups**
	Single Service**:** Suitable for individuals who are in need of an outpatient rehabilitation service in a single specialty area/profession. Services may include assessment only or assessment and treatment. Services may be provided during a one-time visit or multiple visits.	Outpatient Rehab: Suitable for individuals in need of an interprofessional rehab program	Outpatient Rehab: Suitable for individuals in need of an interprofessional neuro rehab program	Groups offered in an outpatient setting.
	ALL SERVICES MUST BE WHEELCHAIR ACCESSIBLE **Referral to a Mixed Rehab interprofessional team is not recommended due to the specialized knowledge required to provide rehab and medical care to patients with spinal cord injury.** **Provision of routine, comprehensive, specialist follow-up services may result in perceived improvements of health, independence and less feelings of depression.[22]**			
Names Typically Used	• Outpatient + profession (e.g., Outpatient Physiotherapy, Outpatient Occupational Therapy). • Outpatient specialty area (e.g. Outpatient Hand Program, Seating Clinic, Augmentative Communication Clinic, Gait Clinic or Hearing Clinic).	• Specialized Spinal Cord Injury Rehabilitation Program, Therapeutic Day services or Day Hospital	• Neurological Day Treatment Program, Neuro Rehab Day Hospital Program	• Self-Management Groups • Living with Spinal Cord Injury
Services Provided	• Varies depending on specialty areas within institution. • Health professionals provide: (a) a specialty service for a specific impairment or disability (e.g. gait, mobility, hearing) including the assessment and prescription of assistive equipment needs.[23] (b) general profession-specific assessment,	• Program provides a minimum of 45 - 60 minutes of therapy per session. • Rehab is provided by an interprofessional team. • Core team[++] typically includes two or more of the following: Physician, Nursing, Physiotherapy, Occupational Therapy • Consultation available from to Social Work, Pharmacy Consultation Speech-Language	• Program provides a minimum of 45 - 60 minutes of therapy per session. • Rehab is provided by an interprofessional team with neuro rehab expertise. • Core team[++] typically includes one or more of the	• Groups are led by an individual rehab provider or team of rehab specialists • Classes offered include education and/or an exercise program or a combination of both

[++] Core team refers to the team members who are essential, actively involved in the assessment and treatment (if required) of spinal cord injury patients on the unit and who participate regularly in team rounds.

OUTPATIENT/AMBULATORY REHAB PROGRAMS				
Single Service in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics		**Dedicated SCI Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Dedicated Neuro Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Wellness Focused Rehab Groups**
	treatment plan recommendations or implementation of treatment plan and/or referral to other service providers Note: Specialty service may use an interprofessional approach.	Pathology, Clinical Dietician, and Therapeutic Recreation. • Spasticity management • Specialized rehabilitation specific to spinal cord injury (e.g., KAFO, FES training[‡‡], advanced wheelchair skills for spinal cord injured patients) • More complex wound management issues that have not been managed in the community • Access to specialized SCI services including neurogenic bowel & bladder training; urology clinic; gynaecology; sexual/fertility counselling; seating clinic; bone densitometry; expanded AAC clinic for assistive technology • Referrals made to specialized programs in the community including community integration, sports and leisure, including public transportation training and accessible exercise equipment • Wellness-focused education is offered to provide health education, goal setting, behaviour change principles and practices to promote health and wellbeing of the individual.	following: Physician, Nursing, Physiotherapy, Occupational Therapy • Consultation available from Social Work, Pharmacy Consultation Speech-Language Pathology, Clinical Dietician, and Therapeutic Recreation. • Referrals made to specialized programs in the community including community integration, sports and leisure, including public transportation training and accessible exercise equipment • Wellness-focused education is offered to provide health education, goal setting, behaviour change principles and practices to promote health and wellbeing of the individual.	
Specialization vs. Non-	• Some services serve a particular specialty area (e.g. Seating Clinic or Gait Clinic).	• Programs are specialized to treat SCI including the management of complex pain and spasticity,	• Rehab providers assess/treat patients with a variety of	• Groups focus on enhancing an individual's

[‡‡] KAFO = Knees, Ankle, Foot, Orthosis; FES = Functional Electrical Stimulation

OUTPATIENT/AMBULATORY REHAB PROGRAMS				
	Single Service in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics	**Dedicated SCI Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Dedicated Neuro Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Wellness Focused Rehab Groups**
Specialization	• Seating Clinic has skilled staff with ability to manage complex seating. • Services provide focus on particular deficits which may or may not be related to the spinal cord injury specifically, i.e., a neurological deficit or weakness secondary to myelopathy. • Patients with more complex spinal cord injury have access to service providers with expertise in spinal cord injury for their single service need (e.g. gynecology, complex seating, sexual/fertility counselling)	bowel and bladder dysfunction, specialized seating and assistive technology needs • Core dedicated interprofessional team has specialized knowledge and expertise in the care of the spinal cord patient • The program is able to address, through direct intervention or consultative services, related co-morbidities and complexities in the spinal cord injury population (e.g. diabetes, brain injury, substance abuse)	neurological diagnoses • Services provide a focus on particular deficits which may or not be related specifically to the spinal cord injury, i.e., any neurological deficit or weakness secondary to myelopathy.	ability to cope and live with a particular disability or impairment.
Differentiating Criteria	• Patients are residing in the community with a specific rehab need which may be an impairment or a participation issue that requires assessment and/or treatment by a health professional. • Patients may not have required an inpatient rehab program or other outpatient rehab programs. • Some patients may be discharged from an inpatient rehab program or from acute care and require ongoing rehab to achieve higher functional goals. • Appropriate referral may be required. Frequently, the service is only available for patients of the referring institution and their physicians.	• Suitable for patients already residing in the community who no longer need 24-hour hospital care. • Dedicated interprofessional team, including physician, with specialization in SCI. • A patient centred, goal-oriented approach with regular team meetings/conferences is used. • Typically, these are community patients who are responsible for arranging their own transportation to and from their outpatient appointments. • Patients require access to specialized services, e.g. neurogenic bowel & bladder training, urology clinic, gynaecology, sexual/fertility counselling, seating clinic, bone densitometry, expanded AAC clinic for assistive technology.	• Program serves a variety of neurological population groups residing in the community who no longer require 24-hour hospital care. • Dedicated interprofessional team including physician. • A patient centred, goal-oriented approach with regular team meetings/conferences is used. • Typically, these are community patients who are responsible for arranging	• These groups are led by one or more professional rehab providers. • Groups are time-limited and goal-oriented to increase coping with an impairment or disability. • Groups are publicly funded through the healthcare system.

OUTPATIENT/AMBULATORY REHAB PROGRAMS				
	Single Service in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics	**Dedicated SCI Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Dedicated Neuro Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Wellness Focused Rehab Groups**
			their own transportation to and from their outpatient appointments.	
Typical Duration	• Varies depending on the type of service/program. • Specialty clinics may provide one or a few visits until the problem is resolved or managed. Other profession specific treatment programs may occur once or several times a week for 6 – 12 weeks or longer.	• 6-12 weeks, 2-3 times per week	• 6-12 weeks, 2-3 times per week	• 8 – 16 weeks
Key Activities / Nature of Service	• Specialized focussed assessment and/or treatment to address a functional or psychological issue and to promote re-integration to normal living or to maximize functional level.	• Specialized focussed assessment and treatment to address a functional or psychological issue and to promote re-integration to normal living or to maximize functional level. • Specialized SCI rehabilitation addresses all aspects of SCI (complex psychosocial, physical, bowel and bladder, sexuality, complex pain, community reintegration, and patient safety) to allow SCI client to reach maximum potential from an emotional, physical and vocational perspective. (See Appendix for a listing of SCI rehab components). • Programs are time limited and goal directed. • The program is delivered in a group format or on an individual basis. • Activities include re-education about urinary	• Programs are time limited and goal directed. • The program is delivered in a group format or on an individual basis.	• Groups provide health education, goal setting, behaviour change principles and practices to promote health and wellbeing of the individual • Education includes nutritional counselling.[25] • Education may be provided in a group format around the importance of leisure and strategies to overcome problems in participating in leisure activities.[26]

OUTPATIENT/AMBULATORY REHAB PROGRAMS				
Single Service in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics		**Dedicated SCI Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Dedicated Neuro Interprofessional Team in Acute Care Hospitals, Rehab Hospitals and Community Health Centres/Clinics**	**Wellness Focused Rehab Groups**
		tract infections.[24]		• Group therapy to support spouses of individuals with spinal cord injury may be offered.[27] • Secondary prevention may be offered.

Spinal Cord Injury Rehab Definition Framework

This framework applies to individuals who have rehab potential and identified rehab goals

COMMUNITY (Rehab is provided to client in home, school or work environment)		
	Community – Single Service	**Community Based – Dedicated Interprofessional Team**
Names Typically Used	Community Care Access Centre (CCAC)	Examples: Outreach (Behavioural, Geriatric, School), ABI CCAC

Services Provided	• May include OT, PT, SLP, SW, Nursing (including specialization in wound care), Case Management and consultation with Physician (referring MD or family MD) as needed.
	• Clients may receive more than one service.
	• Services include: assessment; treatment; discharge planning to community activities, attendant services, SCI-specific wellness programs and referral to appropriate specialized community services (e.g. Canadian Paraplegic Association of Ontario, March of Dimes etc.)
	• Rehab providers typically work as individual providers; however, communication with other health providers occurs on an as-needed basis.
	• CCACs provide in-home rehab services through contracts with Provider Agencies and manage clients through a Case Management collaborative model.
		• Currently CCAC does not use an interprofessional team model
		• A specialized spinal cord injury dedicated interprofessional team is recommended in the community comprised of OT, PT, SLP, Dietician, SW, Nursing, including specialization in wound care, Case Manager and Vocational Rehab. May include: MD, Psychology, Palliative services as required
		• The dedicated interprofessional team model would include:
		  ◦ Co-ordinated team conferences.
		  ◦ Assessments
		  ◦ Individualized programs
		  ◦ Brief interventions
		  ◦ Consultative assistance
		  ◦ Educational sessions to parents, families and professionals
		• These interprofessional services would be consistent across the province regardless of the client's home community.

Specialization vs. Non-Specialization	• Specialization in spinal cord injury is recommended for this patient population. • Currently, health professionals may have experience in related diagnostic groups or areas (e.g. Neuro, Oncology) • Current CCAC services provide general rehab to the spinal cord injury population.	• Specialized spinal cord injury interprofessional teams with specialized knowledge and expertise in the care of the spinal cord patient are recommended for this patient population.
Differentiating Criteria	• Service is provided in the environment that is most appropriate to meet client needs and maximize functioning (e.g. client is home-bound; services are focussed on school re-integration or vocational return). • Currently, CCAC provides in home assessment and treatment within	• It is recommended that care be provided by a dedicated interprofessional team. This would include focussed assessment, intervention or consultation within natural environment (e.g. home, school or work). • These teams should interact with other specialty services such as ADP, Government agencies such as Ontario Works, return-to-work, education personnel, etc.

COMMUNITY (Rehab is provided to client in home, school or work environment)		
	Community – Single Service	**Community Based – Dedicated Interprofessional Team**
	the first two weeks for those who can't access outpatient services	• There should be regular team meetings/conferences.
Typical Duration	• Varies depending on service. Typically 1 -2 visits per week • CCAC involvement typically offered for 6 weeks – 12 weeks	• Dedicated interprofessional teams for SCI do not currently exist. The duration and intensity of recommended services should be geared towards needs of the client and last until the goals are met (e.g., incomplete paraplegic with goal of getting up stairs, vs. ventilated client who wishes to live at home)
Key Activities/Nature of Service	• Assessment, treatment, linking to community activities, attendant services and other services required in the community. (Note: Some of these services do not exist or are very limited.)	• Coordinated and specialized assessments • Treatment according to treatment plan • Consultation, with regular team meetings • Linking to community activities, attendant services and other services required in the community.

APPENDIX - SPINAL CORD INJURY REHAB PROGRAM COMPONENTS[§§]

The following areas are addressed in spinal cord injury rehab			
Medical/Physiological Sequelae	**Functional**	**Psychosocial**	**Health Promotion**
a. Autonomic dysreflexia b. Bladder function c. Bowel function d. Circulation e. Depression f. Dysphagia g. Infectious disorders h. Medication i. Musculoskeletal complications j. Neurological changes k. Nutrition l. Pain m. Respiration n. Sexual function and fertility o. Skin integrity p. Spasticity	a. Activities of daily living b. Assistive technology c. Behaviour d. Cognition e. Communication f. Community integration g. Driving h. Durable medical equipment i. Emergency preparedness j. Environmental modifications k. Leisure and recreation l. Mobility m. Orthoses n. Personal care assistants o. Prostheses p. Seating q. Vocational	a. Behavioural health b. Chemical use/abuse/dependence c. Family/support system counselling d. Peer support e. Sexual adjustment f. Resource education and management for independent living and community integration g. Aging with a disability h. Transition planning	a. Prevention related to potential risks and complications due to impairments, activity limitations, participation restrictions and the environment b. Education to promote wellness (e.g. bladder/bowel management, cardiovascular risk factors, diabetes prevention, edema management, nutrition planning, pulmonary care, sexuality/fertility, use of leisure time) c. Safety for persons served and the environments in which they participate

[§§] Adapted from CARF International, Medical Rehabilitation Standards Manual, 2008

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Mary Ann Neary, University Health Network *(Chair)*
Tracy Anthony, Sunnybrook Health Sciences Centre
Peter Athanasopoulos, Canadian Paraplegic Association Ontario
Dr. Anthony Burns, Toronto Rehab
Karen Davies, Toronto CCAC
Andrea Dyrkacz, University Health Network
Heather Flett/Kristina Guy, Toronto Rehab
Dr. Chantal Graveline, Toronto Rehab
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Linda Nasturzio, St. John's Rehab Hospital
Tracy Paulenko, Toronto Rehab
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Kevin White, University Health Network
Meredith Burley, Canadian Paraplegic Association Ontario

Charissa Levy, Executive Director, GTA Rehab Network
Judy Moir, Executive Director (Acting), GTA Rehab Network
Sue Balogh, Project Coordinator/Planner, GTA Rehab Network

ENDNOTES

Levels of Evidence
(Used to assess research findings in Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 3).* 2006)

Level 1: Findings supported by results of a randomized controlled trial (RCT) with Physiotherapy Evidence Database (PEDro) score ≥ 6
Level 2: Findings supported by RCT, PEDro score <6; prospective controlled trial (not randomized); or cohort research design
Level 3: Findings supported by a case control research design with a retrospective study comparing conditions, including historical controls.
Level 4: Findings supported by pre-post, post-test, or case series research design.
Level 5: Findings supported by observational, clinical consensus or case report research design.

[1] There is Level 3 evidence that specialized, interprofessional acute Spinal Cord Injury care is associated with faster transfers to rehabilitation and fewer complications in rehabilitation. There is Level 4 evidence that individuals also make more efficient functional gains during rehabilitation and have reduced mortality. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 3).* 2006.

[2] Pressure ulcers are a common, serious, lifelong complication of spinal cord injury that can interfere with physical and psychosocial functioning and overall quality of life and can account for approximately 25% of the cost of care, including hospitalizations and longer lengths of stay. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 20).* 2006.

[3] Pain is common following spinal cord injury with over 50% of patients with spinal cord injury developing chronic pain. Pain has been identified as the most important factor affecting quality of life and most often begins within the first 6 months following spinal cord injury. Neuropathic and musculoskeletal pain are the most common types of pain experienced. Pain may be worsened by medical factors, anxiety, depression and psychosocial factors. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 14).* 2006.

[4] The Consortium for Spinal Cord Medicine guidelines for neurogenic bowel management state that a thorough evaluation of bowel function, impairment and possible problems be completed at the onset of spinal cord injury and at least once on an annual basis. There is Level 4 evidence that a multi-faceted approach to bowel management is effective and includes consideration of diet, medicine, fluid intake and evacuation schedules. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 12).* 2006.

[5] Orthostatic hypotension (OH) may be evident in the post-injury acute period and may persist over time. Standard mobilization treatment during physiotherapy may induce OH in up to 74% of patients with spinal cord injury, and symptoms of OH in up to 59%, adversely affecting a patient's capacity to participate in rehab. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 16).* 2006.

[6] Deep venous thrombosis (DVT) and pulmonary embolism (PE) are a significant cause of morbidity and mortality following spinal cord injury. Deep venous thrombosis most frequently occurs in the first 2 week post injury, which can lead to PE and death. Patients can at times be asymptomatic. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 15).* 2006.

[7] There is Level 4 evidence that approximately 50% initially assessed as Asia Impairment Scale (AIS) B and C will improve by at least 1 AIS grade in the first few months post-injury concomitant with inpatient rehabilitation. Approximately 10% assessed as AIS A and D will improve by 1 AIS grade. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 3).* 2006.

[8] There is some evidence that earlier admission to specialized interprofessional care is associated with reduced length of total hospital stay, greater and faster rehab gains with fewer medical secondary complications. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 3).* 2006.

[9] There is Level 4 evidence that having contact with an individual who has a spinal cord injury has a positive impact on attitudes towards disability. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 4).* 2006.

[10] Pain is common following spinal cord injury with over 50% of patients with spinal cord injury developing chronic pain. Pain has been identified as the most important factor affecting quality of life and most often begins within the first 6 months following spinal cord injury. Neuropathic and musculoskeletal pain are the most common types of pain experienced. Pain may be worsened by medical factors, anxiety, depression and psychosocial factors. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 14).* 2006.

[11] Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 7).* 2006.

[12] There is Level 4 evidence that having contact with an individual who has a spinal cord injury has a positive impact on attitudes towards disability. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 4).* 2006.

[13] There is Level 5 evidence that assistive equipment may contribute to increased activity and participation to support community reintegration. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 4).* 2006.

[14] Bone loss assessment, interventions and ongoing monitoring is recommended to prevent bone mineral loss. Persons with spinal cord injury are at an increased risk for low-trauma or fragility fractures due to rapid bone mineral loss in the first 4-6 months post injury and continual bone mass with time. There is Level 1 evidence of the benefits of pharmacological interventions. There is limited evidence of non-pharmacological interventions for treatment and prevention of bone less at present. See Eng, JJ; Teasell, R;

Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 9).* 2006.

[15] Depression is a common consequence of spinal cord injury that is most likely to appear during the first year post-injury. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 10).* 2006.

[16] There is Level 2 evidence that wellness and health promotion programs can reduce depression symptoms. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 10).* 2006.

[17] There is Level 1 evidence that educational intervention about urinary tract infections improves bladder health and increases a patient's perception of control over their own health behaviours. These benefits may translate to early detection and action resulting in less impairment and lost time. See Eng, JJ; Teasel, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 13).* 2006.

[18] There are several nutrition-related complications than can occur post injury affecting quality of life. These may include altered glucose metabolism (increasing the risk for obesity, dyslipdemia, cardiovascular disease and diabetes mellitus), neurogenic bowel and bladder, pressure ulcers and osteporosis. There is no clear evidence about effective health promotion activities, including nutrition interventions that can promote long-term wellness post spinal cord injury. However, there is Level 1 evidence (based on 1 RCT) that participation in a holistic wellness program is positively associated with improved eating and weight-related behaviours in patients with spinal cord injury. There is Level 4 evidence that an intervention program combining diet and exercise is effective for reducing weight among overweight persons with spinal cord injury. There is Level 2 evidence for the benefits of standard dietary counseling to reduce total and LDL cholesterol. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 19).* 2006.

[19] Research by Forsythe and Horsewell (2006) found that women want sexual counseling to be offered as part of the rehab phase and after. Women have also found peer counseling to be helpful in promoting sexual adjustment. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 11).* 2006.

[20] There is Level 4 evidence that having contact with an individual who has a spinal cord injury has a positive impact on attitudes towards disability. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 4).* 2006.

[21] According to 2000 – 2004 data from the Canadian Institute Health Information, the median length of inpatient rehabilitation stay for traumatic Spinal Cord Injury is 59 days with longer stays for those with complete injuries or tetraplegic injuries or incomplete paraplegia. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 1).* 2006.

[22] Level 4 evidence. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 3).* 2006.

[23] There is Level 5 evidence that assistive equipment may contribute to increased activity and participation to support community reintegration. . See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 4).* 2006.

[24] There is Level 4 evidence that outpatient re-education from a nurse to patients with spinal cord injury who are at high risk for developing urinary tract infections may be a cost-effective method of reducing the incidence of such infections. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 13).* 2006.

[25] There are several nutrition-related complications than can occur post injury affecting quality of life. These may include altered glucose metabolism (increasing the risk for obesity, dyslipdemia, cardiovascular disease and diabetes mellitus), neurogenic bowel and bladder, pressure ulcers and osteporosis. There is no clear evidence about effective health promotion activities, including nutrition interventions, that can promote long-term wellness post spinal cord injury. However, there is Level 1 evidence (based on 1 RCT) that participation in a holistic wellness proram is positively associated with improved eating and weight-related behaviours in patients with spinal cord injury. There is Level 4 evidence that an intervention program combining diet and exercise is effective for reducing weight among overweight persons with spinal cord injury. There is Level 2 evidence for the benefits of standard dietary counseling to reduce total and LDL cholesterol. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 19).* 2006.

[26] There is Level 2 evidence from 1 non-RCT study to support the benefit of a 2-week leisure education program using a group format to improve leisure satisfaction. There is Level 5 evidence that assistive equipment may contribute to increased activity and participation to support community reintegration. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 4).* 2006.

[27] There is Level 2 evidence to support the benefit of group therapy to spouses of individuals with spinal cord injury to decrease symptoms of depression, anxiety and psychosocial distress. See Eng, JJ; Teasell, R; Miller, WC; Wolfe, D; Townson, AF; Aubut, J; Abramson, C; Hsieh, J; Connolly, S (Eds.). *Spinal Cord Injury Rehabilitation Evidence. Volume 1: Systematic Reviews (Chapter 4).* 2006.