SCI IMPLEMENTATION EVALUATION & QUALITY CARE CONSORTIUM

SCI-High Domains Overview
SCI-High Project

SPINAL CORD INJURY REHABILITATION CARE HIGH PERFORMANCE INDICATORS

Domains

https://sites.google.com/view/sci-high
sci-high@uhn.ca
@SCIHightProject
TISSUE INTEGRITY DOMAIN
Working Group

Chester Ho MD
Pamela Houghton PhD
Jane Hseih PhD
Vivian Mushahwar PhD
Ethne Nussbaum PhD
Maintaining tissue integrity after SCI/D involves the prevention and management of pressure injury in areas of the body where sensation is diminished or absent.
Aim

To reduce the overall incidence and severity of pressure injuries among individuals with SCI/D throughout their lifetime.
Impact

Prevalence
✓ Annual prevalence rate reports range from 10.2% to 38%.
✓ There is a 95% lifelong pressure injury prevalence rate.

Health
✓ Pressure injuries may be the direct cause of 7 to 8% of premature deaths in people with spinal cord injury.
✓ Average grade 3 pressure injury takes three years to heal.
✓ Monthly cost of pressure injuries as an outpatient is about $4745.
Proportion of individuals with SCI/D with access to mirror for skin check

Proportion = \frac{\text{number of inpatients with access to mirror}}{\text{Number of non-ambulatory individuals with SCI/D}}
Process Indicator

Proportion of individuals with SCI/D who completed daily head to toe skin checks

Mean of the daily head to toe skin check per month
Intermediary
Proportion of individuals with SCI/D diagnosed with a pressure injury during rehab admission

\[
\text{Proportion} = \frac{\text{number of patients with pressure injury}}{\text{Number of non-ambulatory individuals with SCI/D}}
\]
Final
Proportion of individuals with SCI/D diagnosed with intact skin at 18 months following rehab admission

\[
\text{Proportion} = \frac{\text{number of patients with intact skin}}{\text{Number of non - ambulatory individuals with SCI/D}}
\]
WALKING DOMAIN
Working Group

Jaynie Yang PhD
Kristin Musselman PhD
Molly Verrier P&OT
Sylvie Nadeau PhD
Walking is the ability to move forward over ground using voluntary lower limb movement while controlling one's balance in an upright posture.

Safe and efficient walking allows individuals to move purposefully from place to place to explore and participate in their external environments, with or without the assistance of others and/or assistive technologies – in other words, to be independent moving about their home and community, and in their life activities.
Aim

To maximize the recovery of walking for individuals following SCI/D.
Impact

✔ More than half of individuals who sustain an incomplete spinal cord injury regain some walking ability.

✔ Walking has consistently been identified as an important priority for recovery for people with SCI/D
Driver diagram

Impairment
- Etiology
- Peripheral Nerve Injury
- Concomitant Injury
  - Brain Injury
    - HR
    - BP
  - Autonomic
    - Temperature
    - Respiratory
- Trunk Spasticity Proprioception
- Sensory Score
- Light Touch

Muscle Mechanics
- Age
- Quads, gastroc/soleus
- Tibialis Anterior
- Hamstrings
- Hip Extensor
- Hip Abductor
- Hip Flexor
- Trunk

Drug Therapy for Spasticity
- Clonidine
- 9-AP
- Gabapentin

Training Type
- Overground Walking Training
- Treadmill Training
- Balance Training
- FES/FET

Walking

Comorbidity
- Cardiovascular Integrity
- Osteoarthritis
- Obesity
- Pain

Psychosocial
- Drug/Alcohol Abuse
- PSW
- Self Efficacy

Environmental
- Level of Participation
- Crowding/Over-population
- Weather/Visibility
- Terrain/Floor/Condition

Assistive Device
- Family Support
- Anxiety/Fear of Falling
- Monitoring
- Cane
- Walker
- Community Rehabilitation
Structure Indicator

Number of therapists who demonstrate regular use of evidence-based walking interventions

Proportion = \( \frac{\text{number of specialized walking therapists}}{\text{number of ambulatory individuals with SCI/D}} \)
Process Indicator

Total hours of received interventional therapies contributing to walking

Proportion = \frac{\text{total hours of received interventional therapies contributing to walking}}{\text{Number of ambulatory individuals with SCI/D}}
Outcome Indicators

**Intermediary**
Proportion of ambulatory individuals with SCI/D* that completed a mTUG or 10MWT

**Final**
SCIM III Self-Report, Mobility subscale
WHEELED MOBILITY DOMAIN
Working Group

Mark Bayley MD, FRCPC
R. Lee Kirby MD, FRCPC
Laura Titus PhD OT Reg(Ont)
Cher Smith BScOT, MSc
Patricia Stapleford PT, MPT
Dany Gagnon PT, PhD
François Routhier PEng, PhD
Wheeled mobility refers to the skilled use of any personal device with wheels (including power wheelchairs, manual wheelchairs, scooters or walkers), by individuals with physical impairments such as spinal cord injury (SCI/D), in order to allow full participation in daily life.
Aim

To maximize community wheelchair mobility through the implementation of routine standardized wheelchair mobility assessments.
SCI-HIGH Wheeled Mobility Service Delivery Flow Diagram

Referral & appointments
- Accessibility of resources
- Availability of services
- Scheduling & Waiting list
- Regional differences

Assessment
- Impairment
- Individual
  - Physical condition
  - Lifestyle
- Environmental assessment
- Equipment
- Trained Assessor
- User & caregiver skills

Assessment of Impairment
- Etiology
  - UEMS
  - LEMS
  - NL
- Motor Function
  - Trunk
  - Spasticity
  - AIS
  - Age at Injury
  - Comorbidities
    - Obesity
    - Diabetes
    - Arthritis
    - Cardiovascular Disease
    - Mental Health
    - Pain

Sensory Scores
- Vibration
- Temperature
- Respiratory
- Brain Injury

Autonomic
- HR
- BP

Motor Function
- Time Post Injury
- Peripheral Nerve Injury

Concomitant Injury

Prescription
- Wheelchair & seating type
- Wheelchair & seating size
- Special features & modifications

Funding & Ordering
- Calculation of direct & indirect costs
- Government & donor funding
- Insurance coverage
- Order wait time
- Suppliers

Product Preparation
- Manufacturing
- Assembly
- Quality Check
- Rechecking of measurements
- Delivery

Fitting
- Skin Tolerance
- Pressure mapping
- Seating system set up
- Postural support
- Adjustments
- Programming
- Assessment of skills & ability to use in various

Training
- User & Caregiver training
  - Transfers
  - Handling of wheelchair
  - Indoor/outdoor training
  - Maintenance of equipment

Follow-up, Maintenance, Repair
- Assessment of device usage & functionality
- Fit
- User & caregiver skills
- Retraining
- Maintenance & repair

Based on World Health Organization Guidelines
Structure Indicator

Number of therapists/professionals in the program who have specialized training in wheelchair mobility and skills development
Process Indicator

Total hours of wheelchair service provision (WHO Steps 1-7) provided per patient
Intermediary
Wheelchair Skills Test Questionnaire (WST-Q)* - number of manual or power wheelchair users with WST-Q total capacity scores ≥ 80%
Outcome Indicators

Final

A) Average Life Space Assessment (LSA) questionnaire score

B) Wheelchair Use Confidence Scale (WheelCon)
SCI-HIGH Project

SPINAL CORD INJURY REHABILITATION CARE HIGH PERFORMANCE INDICATORS

https://sites.google.com/view/sci-high

sci-high@uhn.ca

@SCIHighProject
URINARY TRACT HEALTH DOMAIN
Working group

Sandi Disher RN  Karen Ethans MD  Jerzy Gajewski MD  Magdy Hassouna MD  John Shepherd PhD (C)  Blayne Welk MD  Raj Parmar RN
UTI’s - most common hospital acquired infection in the SCI/D population.

UTIs extend length of stay (mean ≥7 days) or result in service interruptions.

Sepsis induced immune deficiency syndrome (IDS) results in increased UTI incidence.

IDS affects neurorecovery & rehab outcomes at 5 years.


Urinary Tract Infection refers to significant bacteriuria among individuals with SCI/D and Lower Urinary Tract Dysfunction with symptoms or signs of infection.
Aim

To reduce inappropriate antibiotic prescription for UTI in order to reduce the rising incidence of antibiotic resistance and the associated complications among individuals with chronic SCI/D living in the community.
**Impact**

- UTI’s - most common hospital acquired infection in the SCI/D population.
- UTIs extend length of stay (mean ≥7 days) or result in service interruptions
- Sepsis induced immune deficiency syndrome (IDS) results in increased UTI incidence
- IDS affects neurorecovery & rehab outcomes at 5 years
- Preventing UTI is everyone’s business – RN, MD, Patient, Family etc.

Driver Diagram

Impairment
- Etiology
- Peripheral Nerve Injury
- Concomitant Injury
- Brain Injury
- Autonomic
  - Temperature
  - Respiratory
  - Light Touch

Leadership Management
- Age
- Time Post Injury
  - UEMS
  - LEMS
  - NLI
- Motor Function
  - Trunk Spasticity
  - Proprioception
  - AIS
  - Vibration
  - Sensory Score
- Debriefs on UTIs
- UTI Huddle

People/Team/Staff
- Standardized Knowledge, Skills & Practice
- Collaboration
- Communication
  - PT
  - OT
  - MD
  - Nurse
  - Coordination

Process & Policy
- Intermittent catheterization
- Void/Leaking
- Indwelling
- Straining

Patient
- Clean
  - Technique
  - Sterile
  - Antiseptic
  - Prophylaxis
  - Antibiotic
- Fluid Intake
- Hand Dexterity
- Education
- Functional Independence
- Cognition

Environment/Equipment
- Handwashing Sink
- Hydrophilic Catheter
- Private Room/Washroom
- Hand Hygiene Prompting System

Monitor UTI Incidence & Prevalence

Urinary Tract Infection
A) Proportion of patients with SCI/D with a health care professional (family MD, PMR/urology)

B) Proportion of patients with SCI/D with a health care professional able to follow-up regarding urine culture and sensitivity within 48-72 hours of collection
Process Indicator

Proportion of SCI/D rehabilitation inpatients with UTI as defined by the UTI diagnostic checklist/definitions
<table>
<thead>
<tr>
<th>Inpatient Sub-acute Setting (&lt;90 days post admission)</th>
<th>Outpatient Chronic Setting (&gt;90 days post admission)</th>
<th>Bladder Management Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check all that apply:</td>
<td>Check all that apply:</td>
<td>Check all that apply:</td>
</tr>
<tr>
<td>□ Fever (Tympanic temperature of &gt;37.6C in the subacute hospital setting)</td>
<td>□ Bladder Symptoms (at least one)</td>
<td>□ Indwelling Catheter (IC)</td>
</tr>
<tr>
<td>□ Bacteriuria – With one primary organism</td>
<td>□ New/increased incontinence</td>
<td>□ Urethra</td>
</tr>
<tr>
<td>□ Bladder Symptoms (at least one)</td>
<td>□ Unprovoked new gross hematuria</td>
<td>□ Stoma</td>
</tr>
<tr>
<td>□ Unprovoked new gross hematuria</td>
<td>□ New gross pyuria</td>
<td>□ Suprapubic</td>
</tr>
<tr>
<td>□ Change in urine odor and clarity</td>
<td>□ Change in urine odor and clarity</td>
<td>□ Clean Intermittent Catheterization (CIC)</td>
</tr>
<tr>
<td>□ Other: ____________</td>
<td>□ General Symptoms (at least one)</td>
<td>□ Urethra</td>
</tr>
<tr>
<td></td>
<td>□ Fever (Tympanic temperature of &gt;36.8C in the community setting)</td>
<td>□ Stoma</td>
</tr>
<tr>
<td></td>
<td>□ Pending sepsis (Tympanic temperature of &lt;35.8 or a temp &gt;37.6 &amp; at least on other SIRS criteria)</td>
<td>□ Voiding</td>
</tr>
<tr>
<td></td>
<td>□ New/changing severity in orthostatic hypotension</td>
<td>□ Voluntary</td>
</tr>
<tr>
<td></td>
<td>□ Acute autonomic dysreflexia (systolic BP greater than 30 mmHg above baseline)</td>
<td>□ Involuntary</td>
</tr>
<tr>
<td></td>
<td>□ New fatigue/persistent malaise</td>
<td>□ Initiated Reflex Bladder Emptying</td>
</tr>
<tr>
<td></td>
<td>□ Acute increase in spasticity interfering with ADL/ iADL</td>
<td>□ Bladder Expression</td>
</tr>
<tr>
<td></td>
<td>□ Acute vomiting</td>
<td>□ Condom Drainage (CD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Diapers / Incontinence Underwear</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Other: ____________</td>
</tr>
</tbody>
</table>

A UTI is diagnosed by the presence of fever, hematuria, and bacteriuria.

A UTI is diagnosed by having at least one checkmark from each category.

If performing ICs, specify catheter type:

□ Hydrophilic
□ Non-Hydrophilic
□ Coude Tip
□ Straight Tip
□ Latex/Rubber
□ Latex-Free (Silicone/plastic/other)
□ Silastic
□ Other: ____________
Outcome Indicator

Proportion of SCI/D rehabilitation inpatients with inappropriate antibiotic prescription
SEXUAL HEALTH DOMAIN
Working Group

Stacy Elliott MD
Siva Gulasingam MD
Shea Hocaloski RN
Anita Kaiser
Sandra Mills MED
Colleen O’Connell MD

UHN Toronto Rehabilitation Institute
Rick Hansen Institute
Ontario Neurorecovery Foundation
CIHR TRSC

SCI-HIGH
The World Health Organization (WHO) defines sexual health as a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence.

For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled. In this context, sexuality encompasses: sexual activity, gender identity, gender roles, sexual orientation, eroticism, pleasure, intimacy, contraception and reproduction. Sexual health rehabilitation requires a positive and respectful approach to sexuality, self-esteem, sexual relationships, and reproductive wishes, as well as the potential to have consensual, pleasurable and safe sexual experiences.
Aim

To create a permissive environment to enable open discussion and individual sexual health enquiry.
Impact

✓ Individuals with SCI rate sexual functioning as either the first or second priority with respect to quality of life.
Driver diagram

Impairment
- Etiology
- Peripheral Nerve Injury
- Concomitant Injury
- Brain Injury
- Autonomic
  - Temperature
  - Respiratory
  - HR
  - BP
- Sensory Score
  - Light Touch

Equipment
- Age
- Motor Function
- Positioning Aids
- Toys/Sexual Aids
- Assistive Devices
  - Upper Extremity Orthosis

Environment
- Privacy
- Distance to Health Care
- Attitude
- Contraception
- Accessibility
- Barriers
- Indoor/Outdoor Mobility

Fertility
- Fresh
- Cryo
- Surgical Aspiration (MESA, TESA, PESA)
- Prostatic Massage
- Testicular Sperm Extraction
- Sperm Retrieval
- Hormonal* IUD/Hormonal Screen
- Conception
- Lactation
- Delivery
- Labor
- Pregnancy Monitoring
- Ovulation Prediction

Sexual Health
- ED/Incontinence
- AD
- Spasticity
- Bowel Incontinence
- Bladder Incontinence
- Medication Alteration

SCI-HiGH

UHN
Toronto Rehabilitation Institute
Rick Hansen Institute
Institut Rick Hansen
Proportion of SCI/D rehabilitation program staff (regulated health care professionals) who have completed the sexual health video module + SCI-High self-assessment tool
Process Indicator

Proportion of SCI/D inpatients having a documented introduction to available local sexual health resources
Outcome Indicator

Individual response to the SCI-High Sexual Health Questionnaire

- Interest
- Sexual expression
- Sexually active
- Information received to date
- Learn more about: satisfaction
- Global sexual satisfaction
- Link of service with sexual adjustment
Conversation

• Structure above all else!!!
• Fishbone Masterpiece merging of 4 into 1
• Strategies to allay staff discomfort
• Multiple portals of entry to relevant expertise
• Use limited sexual rehabilitation resources wisely
• Self-image and intimacy
SCI-HIGH Project

SPINAL CORD INJURY REHABILITATION CARE
HIGH PERFORMANCE INDICATORS

https://sites.google.com/view/sci-high
sci-high@uhn.ca
@SCIHighProject
EMOTIONAL WELL-BEING DOMAIN
Emotional well-being is a state of mind in which the individual realizes his or her own abilities, is able to cope with the normal stresses of life and can interact and contribute in the community.

Enhanced emotional well-being can positively contribute to coping ability, self-esteem, productivity and longevity.
Aim

The aim is to improve the screening, and management of depression and anxiety early post-injury in order to maximize long-term outcomes.
Impact

Prevalence

✓ The incidence of depression among SCI individuals ranges from 7% to 31%.

✓ Rates of depression vary over time, with some showing improvement & others showing emotional decline over time.

Health

✓ Emerging evidence suggests that those individuals are not being diagnosed or treated, indicating the need for more intensive depression screening.
Proportion of staff with appropriate education/training in emotional well-being & access to experts/resources.

Proportion = \frac{\text{number of staff with appropriate education and training}}{\text{total number of staff}}
Proportion of inpatients who were screened for depression & anxiety at rehab admission & rehab discharge.

\[
\text{Proportion} = \frac{\text{number of inpatients who were screened for depression and anxiety}}{\text{total number of inpatients}}
\]
Intermediary
Proportion of individuals at risk for depression or anxiety at rehab discharge.

Proportion = \frac{\text{number of inpatients at risk for depression or anxiety}}{\text{total number of inpatients}}


**Outcome Indicators**

**Final**

A) Proportion of individuals **identified** with depression or anxiety.

\[
\text{Proportion} = \frac{\text{number of individuals with depression or anxiety}}{\text{total number of screened individuals}}
\]

B) Proportion of individuals who **received intervention or referral**.

\[
\text{Proportion} = \frac{\text{number of individuals who received intervention or referral}}{\text{total number of screened individuals}}
\]
Thank you