

Department of
Rehabilitation Medicine
Integrated Care Hub (ICH) Rehab Allied Health
Specialty Nursing

Spinal Cord Injury (SCI) Recovery and Management



Objectives of this booklet

Having a spinal cord injury can be a challenging experience. This book is designed to equip you with the information you need to guide you through the early phases of this journey.

Ask questions when you see this



To promote further understanding, we encourage you to ask yourself questions when you see these icons on the pages.

This is a note from the SCI
Rehabilitation team.

When you see this icon, do pause to take a read. The SCI Rehabilitation team has something to share with you. It could be an instruction or simply a gentle reminder.



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- How does SCI affect my body?
- How does SCI affect my mental health?

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My Rehabilitation Journey

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- Goal Setting
- Management
- Preparing for Home

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Support In Your Recovery Journey

- Financial resources
- Social support
- Sports & home based exercises

The SCI Rehabilitation Team

Meet the people who will be supporting you and your family through this SCI Rehabilitation journey.



Nurse



Rehabilitation
Doctor



Dietician



Physiotherapist



Psychologist



Medical
Social Worker



Occupational
Therapist



Speech
Therapist



Share your goals and concerns with the SCI Rehabilitation team so that we know how to best support you.

Part 1: Understanding Spinal Cord Injury (SCI)

What is Spinal Cord Injury (SCI)?

The spinal cord is a bundle of nerves that runs from the base of your brain down to the lower part of your back. It carries messages between the brain and the body.

Damage to the spinal cord after a spinal cord injury can affect your bodily functions in the following ways:

- how we move (mobility and body positions)
- how we feel the environment (sensation of temperature)
- how our body systems function (breathing and toileting)



Spinal cord rehabilitation aims to empower/teach you how to manage these complications in order to achieve the highest level of function and independence possible.

What is Spinal Cord Injury (SCI)?

Injuries may occur at different locations of your spine, which will affect you differently, and in turn influence your treatment plan.

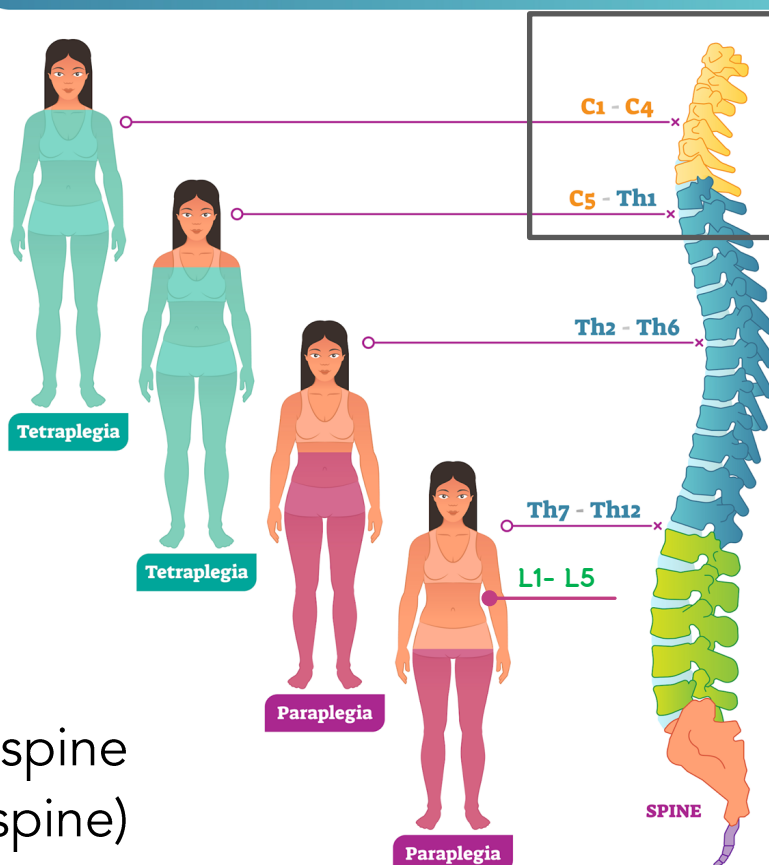


Consult your doctor about the level of your injury.

TETRAPLEGIA AND PARAPLEGIA

Tetraplegia

Injury at cervical spine level may cause paralysis of all 4 limbs to varying degrees.



Paraplegia

Injury at thoracic spine and below (lumbar spine) area may result in paralysis of both lower limbs to varying degrees.

C: Cervical Spine
Th: Thoracic Spine
L: Lumbar Spine

What is Spinal Cord Injury (SCI)? (edited)

Injuries may occur at different locations of your spine, which will affect you differently, and in turn influence your treatment plan.



Consult your doctor about the level of your injury.

TETRAPLEGIA AND PARAPLEGIA

Cervical Spine

Injury at cervical spine level may cause paralysis of all 4 limbs to varying degrees (tetraplegia).



Cervical Spine

C1 - C4

C5 - Th1

Thoracic Spine

Th2 - Th6

Th7 - Th12

L1 - L5

Lumbar Spine

SPINE

Thoracic & Lumbar Spine

Injury at thoracic and lumbar spine area may result in paralysis of both lower limbs to varying degrees (paraplegia).

Paraplegia

Paraplegia

Part 1(a): SCI and its impact on my body

How does SCI affect my body?

Due to nerve damage, you may experience:



Weakness and numbness

- The most obvious symptom after a SCI is feeling weakness and/or numbness in your body.
- You may have difficulty walking, sitting up or even caring for yourself, depending on your level of injury.



Spasticity

- Spasticity is the uncontrolled contraction of muscles.
- You may experience reflex muscle spasms including twitching, jerking or stiffening of the muscle.

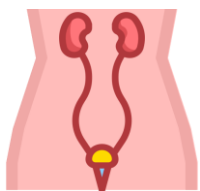
Pain

- Neuropathic pain: pain in your nervous system
- Musculoskeletal pain: pain in the bones, joints, ligaments, tendons and muscles, usually due to
- Visceral pain: pain in your internal organs, usually due to urinary and/or bowel dysfunction

*Refer to pages 35-37 for further management of mobility and spasticity

How does SCI affect my body?

Due to nerve damage, you may experience:



Bladder and/or Bowel Dysfunction

The nerves responsible for controlling your bladder and bowel function may be affected after a SCI.



You may experience:

- Urinary Incontinence (loss of control over your bladder) or Retention (inability to pass urine)
- Bowel Incontinence (leaking of stools due to loss of control over your bowels)
- Constipation



Lung Complications

You are likely to be more prone to:

- Breathlessness
- Chest Infections, such as pneumonia
- Difficulty in clearing phlegm

There are various ways to cope with the bladder and bowel malfunction. Please refer to pages 40-45 for management. Otherwise, do check in with the SCI Rehabilitation team to discuss bladder and bowel management strategies.



How does SCI affect my body?

Due to weakness following an SCI, you will likely find it difficult to move about. Reduced movement can cause the following complications:



Postural Hypotension

- Low blood pressure when changing between positions too quickly
- Symptoms include lightheadedness, nausea, blurred vision and sweating

Thromboembolism

- Formation of a blood clot in your deep veins
- Symptoms include swollen legs, and shortness of breath

Pressure Sores

- Damage to your skin due to poor blood circulation over a pressure point for long periods of time
- Common sites for pressure sores
 - Heel, Anterior knee, Elbow, Shoulder, Side of head



Rehabilitation aims to manage these side effects. Please refer to pages 38-39 and 64-65 for management strategies for these conditions.

Early stage



Late stage



How does SCI affect my body?

Autonomic dysreflexia (AD) is an exaggerated response of the body to certain triggers, such as a blocked bladder. Most of the time, this condition occurs after a spinal cord injury at or above T6 level.

Symptoms of AD include:

- High blood pressure
- Low heart rate
- Sweating
- Flushing
- Headache
- Blurred vision



It is crucial to identify and address the trigger causing this response to prevent potential complications. If left untreated, the rise in blood pressure can result in a stroke, heart attacks or seizures.

*Refer to page 59 for the management of AD.

A Note from the SCI Rehabilitation Team

Although the effects of spinal cord injury on your body and life can feel daunting, there are ways to manage the various effects to allow you to live a fulfilling life.



Here at Tan Tock Seng Hospital - Rehabilitation Centre, we hope to assist you to manage these medical complications, achieve the highest level of function and independence possible, and return to life with SCI in the community.

It is important to keep a healthy mindset and look out for your emotional and mental health changes.

Part 1(b): SCI and its impact on my mental health

How does SCI affect my mental health?

Recovery is a challenging process which may affect you mentally and emotionally.



It is common/normal to experience a range of emotions as a part of your recovery process. It is important to address these emotions adequately to prevent significant mental health issues.

Learn to identify the warning signs early so that you can reach out for support when needed.

We will go through these emotions in the next few pages:

- Grief
- Depression
- Adjustment difficulties
- Anxiety
- Post traumatic stress disorder (PTSD)

Often, these emotions will overlap with each other in different situations

Grief

Grief is a common emotional response following the loss of physical functions and the associated changes that follow.

There are 5 stages of grief, including:

1. Shock and Denial

Patients tend to experience shock and denial in the early phase of their injury. They may find it difficult to believe and accept the reality.



When you are overwhelmed by these concerns, it may be hard to concentrate on therapy. Do clarify any questions you may have with the healthcare staff.



2. Anger

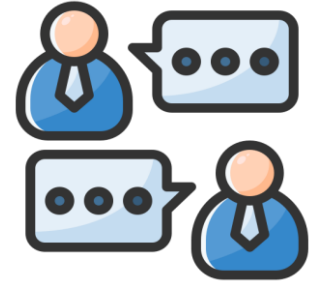
While coming to terms with the incident, you may be angry and frustrated. Remember to be patient with yourself and others as you make plans ahead.

If you need additional support or resources, do check in with the SCI Rehabilitation team on who may be able to join you in this planning.

Grief (edited)

3. Bargaining

It is normal to hope for things to be different or even to go back to how it used to be.



Do discuss your goals with the SCI Rehabilitation team.

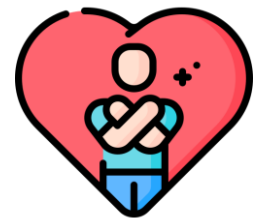


4. Depression

Please refer to page 19 for more details.

5. Acceptance

Understanding your current abilities is important to ensure you are prepared for the journey ahead. Through acceptance, you start to find yourself more able to make plans for the future.



Depression

Experiencing sadness and frustration after a spinal cord injury is a common emotional response. However, prolonged sadness and complex grief may lead to depression.

Symptoms of depression may include:

- Feeling sad nearly most of the day
- Loss of interest and pleasure in daily activities
- Sleep difficulties (e.g. sleeping too much or too little)
- Difficulty paying attention
- Feeling tired and a lack of energy
- Feeling worthless
- Loss of appetite or eating too much
- Thoughts of hurting yourself or ending your life



If you find that your sadness is prolonged and you may be experiencing depression, do inform the SCI Rehabilitation team so that we can provide the necessary interventions.

Adjustment Difficulties

Adjustment difficulties may happen after a stressful event such as spinal cord injury.

You may experience adjustment difficulties due to:



- Changes in your ability to perform activities of daily living (e.g., eating, showering, toileting).



- Changes in the accessing the physical environment and getting use to new mobility equipment (e.g., wheelchair and usage of ramps)

Adjustment difficulties can result in a range of emotions such as anxiety, frustration, sadness and helplessness.



It is common to face difficulties while adjusting to changes in the beginning. As with learning anything new, there will be challenges. Be patient with yourself and others to make adjustments and improve things along the way.

Anxiety

Anxiety, especially worrying about your ability to adapt to current conditions or future livelihood, is a common emotional reaction following a spinal cord injury.

Symptoms of anxiety may include:

- Restlessness
- Being easily fatigued
- Difficulty concentrating
- Irritability
- Muscle tension
- Sleep difficulty (e.g. sleeping too much or too little)
- Palpitations
- Shortness of breath



If your anxiety results in significant physical discomfort and inability to focus on your rehabilitation or affects your daily life, do inform the SCI Rehabilitation team so we can provide the necessary interventions.

Post-Traumatic Stress Disorder (PTSD)

Sometimes, SCI can be the result of a traumatic event, such as a road traffic accident or a fall from a height. Such events may lead to Post Traumatic Stress Disorder (PTSD).

Symptoms of post-traumatic stress may include:

- Having disturbing memories, nightmares and flashbacks
- Avoiding people, places, and things that remind you of the event
- Feeling on guard or jumpy
- Feeling irritable or angry
- Trouble thinking clearly
- Having trouble sleeping
- Feeling of social isolation or difficulty being close to family and friends



If the symptoms interfere with your daily functioning and cause you significant distress, do consider seeking professional help.

Suicide Risk and Management

As individuals cope and adjust to their spinal cord injury, they may contemplate ending their life as they think it is easier than facing reality.

Often, these individuals may not have real intentions of ending their life, but struggle with the losses and inconveniences faced.

It is important to receive support and care to get through this tough period.



If you or someone you know is expressing suicidal intent and require immediate attention, you can

- Call the 24-hour hotline (Samaritans of Singapore at **1800-221-4444** or call **1767**) to receive support
- Head to the emergency department at your nearest hospital.

Common Interventions for Mental Health Issues



Medication

Medication such as anti-anxiety drugs or anti-depressants are often prescribed by a doctor or a psychiatrist to manage your symptoms.

You are advised to consult your doctor for more information regarding appropriate mood medications.



Psychotherapy

Psychotherapy, or talk therapy, is usually conducted by psychologists. During the sessions, you are provided a safe space to share your emotions.

Your psychologist may focus on strategies for relaxation and management of emotions, challenging thoughts or behaviours.

What can I do to help myself?



Pace yourself

- Do not expect your symptoms to improve immediately.
- Give yourself time to recover and take regular rest breaks.



Self-care

- Practice good lifestyle habits such as having enough sleep, eating healthily and exercising.
- Engage in relaxing activities like watching your favourite drama.



Reach out for support

- Speak to someone you trust and share your concerns with them.
- Join support groups to learn from others who have gone through similar experiences as you.



Seek professional help

- Speak to a doctor or psychologist to discuss your symptoms and treatment options.
- Ensure you comply to the proposed treatment plan.

How can caregivers help?

As a caregiver, your support and presence means a lot to your loved ones with SCI.

You can consider the following strategies:

Offer regular check-ins

How are you today?
How would you like me to support you?

Include them in the plans

"We have been discussing Option A and B. We like to hear your views about it."

"I have been worried about you. Can we discuss what is troubling you?"

Do not be afraid to start difficult conversations

"You seemed uncomfortable just now. How would you like it to be done next time?"

Open to feedback to improve caregiving process

A Note from the SCI Rehabilitation team

Dear Caregivers, we recognise that this is a stressful period for you too.



Let the SCI Rehabilitation team know if you or someone else in the family need support.

Remember that you do not need to bear this burden on your own.



Part 2: My Rehabilitation Journey

My Rehabilitation Journey

Rehabilitation is a journey, and it starts with your transfer to TTSH Rehabilitation Centre.

Being familiar with the journey gives you a sense of assurance and helps you to better prepare for the next stage.

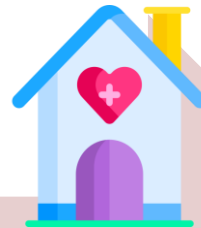
There are **4 main stages** in rehabilitation.



Assessment



Rehabilitation



Getting
ready for
home



Discharge
and post
discharge
treatment

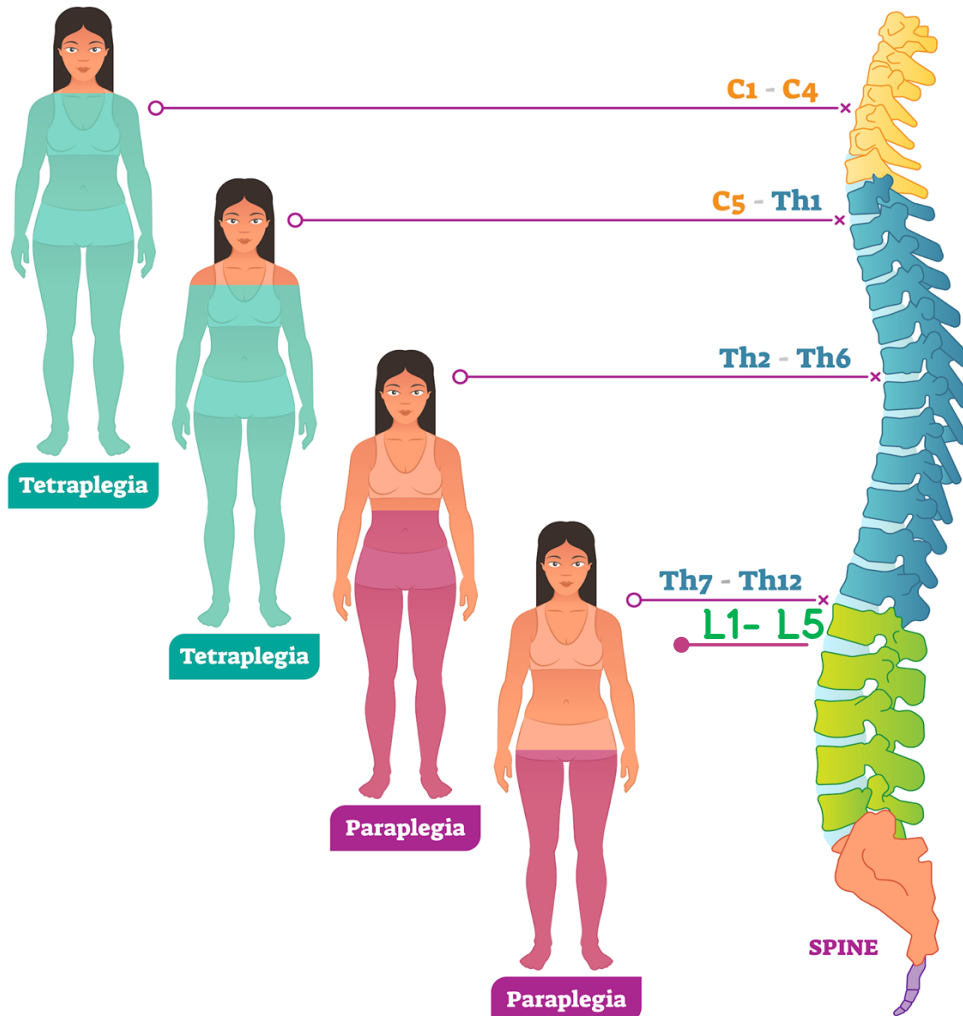
Admission (to TTSH
Rehab) Date:

Expected discharge
date:

Assessment: What is my level of injury?

You should be aware of your level of injury by now. If not, do check in with the SCI Rehabilitation team.

TETRAPLEGIA AND PARAPLEGIA



Assessment:

How does my injury affect me?

The level and severity of your SCI will affect the medical complications you face and your ability to care for yourself:

The team will assess for the presence of medical complications as a result of your SCI (Refer to pages 9-13).



Feeding

Generally, a patient with high cervical spinal cord injury (C1 to C4) is dependent on others for feeding. If your injury is C5 and below, you may be able to explore independent feeding with or without modifications.

Grooming includes tasks such as brushing your teeth, combing and shaving. Patients with C5 spinal cord will still require assistance to varying degrees. Your therapists will explore the tasks you are able to perform.



Grooming

Assessment:

How does my injury affect me?

Your level and severity of injury affects your ability to self-care:



Dressing

Dressing and showering are activities which require more coordination of your body. It includes both upper body dressing and lower body dressing. Generally patients with SCI at C6 and above will require some level of assistance.



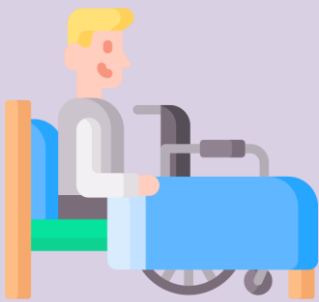
Showering

Rehabilitation focuses on maximizing what you can do for yourself.

Assessment:

How does my injury affect me?

Your level and severity of injury affects your ability to self-care:



Transferring

Transfers training is an important rehabilitation component which can enhance independence. Persons with SCI at C6 and below can work towards some independence in transferring.

Toileting includes both bladder function and bowel movement. Patients with SCI at C6 and below can work towards independence in managing bladder and bowel dysfunction with or without assistive devices



Toileting

Rehabilitation: Setting common goals

Rehabilitation for spinal cord injury focuses on:

- Minimising medical complications
- Enabling you to achieve the highest level of function and independence possible
- Maximising your quality of life

It is important to discuss your goals with the team so that we can work towards achievable goals together and rehabilitation efforts can be targeted.



I want to be able to:
e.g. be able to cook for my family...
e.g. take care of my grandchildren...

- _____
- _____
- _____
- _____

Rehabilitation: Mobility

Mobility is the main goal for everyone in spinal cord injury rehabilitation. We understand the unique challenges you face and the aspirations you hold.

For you to be able to walk, you minimally need to meet the following conditions:

- ☐ Able to tolerate sitting and standing
- ☐ Able to position your legs
- ☐ Have sufficient active strength on both legs

Do go through the checklist with your therapists to ensure you meet the following criteria for walking training.



Rehabilitation: Mobility- with devices

The purpose of mobility is to get to places to do what you need to. As we continue to aim towards walking independently, alternative ways of mobility such as **wheelchair mobility** can be used.

Wheelchair training and customization is a big part of mobility rehabilitation.

Your wheelchair should fulfil the following criteria:

☐

Evenly distribute pressure

☐

Minimise abrasion

☐

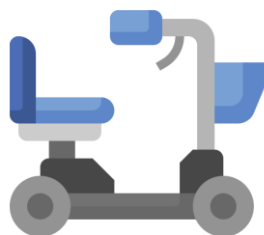
Provide comfort and stability

☐

Enhance activities

☐

Easy to maintain



Your occupational therapists will work with you to recommend a suitable mobility device in the course of your rehabilitation journey.

Rehabilitation: Spasticity

Spasticity is uncontrolled tightening or contraction of muscles. During rehabilitation, spasticity can be useful but also have associated problems

Usefulness



- Maintain muscle bulk
- Improve independence in activities of daily living such as transferring and dressing
- Increase in spasticity as warning signs to identify problems such as urinary tract infection

Problems



- Interfere with rehabilitation
- May pose a danger during activities of daily living
- Discomfort during sleep

Do monitor how spasticity is affecting you.

If it is interfering with your life, there are some management strategies to consider, such as:




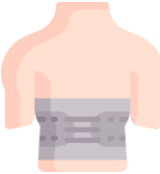




- Daily exercises or stretching
- Medication (oral or injection)
- Look for triggers e.g. UTI



Rehabilitation: Low blood pressure when upright

The goal of blood pressure management is to increase the duration you can sit upright without your blood pressure dropping. This allows you to perform activities while seated on a wheelchair or on a bed.

Here are some management techniques:

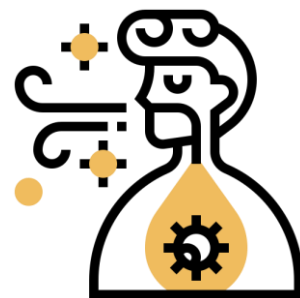
 <p>Take in adequate fluids</p>	 <p>Eat frequent small meals</p>	 <p>Take your medication</p>
 <p>Put on your abdominal binder</p>	 <p>Put on ted stockings</p>	 <p>Use a leg pump</p>
 <p>Slowly train yourself to sit upright for longer periods of time.</p>	 <p>Avoid sudden changes in position, especially when you first wake up in the morning</p>	

Rehabilitation: Respiratory care

Good respiratory care is important because SCI often results in weakened respiratory function. Lung infections may also occur more often and easily.

Depending on your ability to cough and clear phlegm, we will recommend the following approaches for management:

- ☐ Self breath stacking vs lung volume recruitment via manual resuscitator
- ☐ Manual assisted cough
- ☐ Cough assist machine
- ☐ Suction



Poor respiratory care may reduce your quality of life and reduce your ability to self-care. Recovery may be prolonged

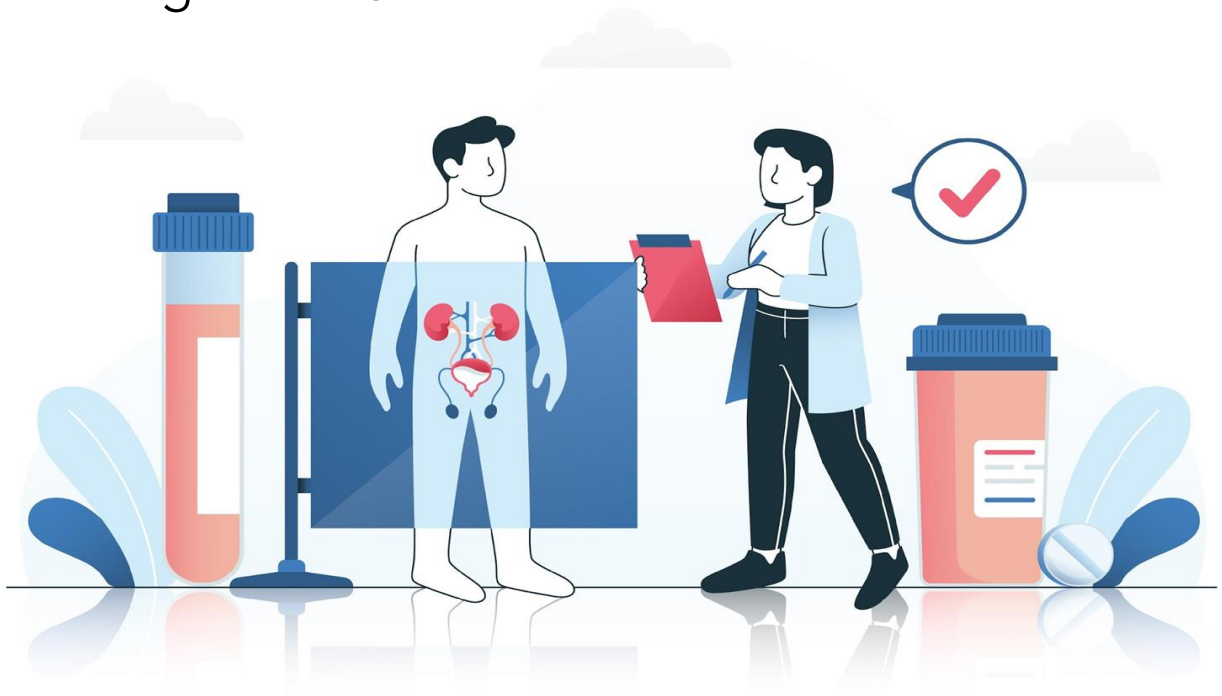
Rehabilitation: Bladder

The main aim of bladder management is to:

- Maintain control over your bladder and achieving regular bladder emptying
- Prevent urinary tract infections (UTI)
- Prevent damage to the kidney



If you are admitted with an **indwelling catheter (IDC)**, our team will monitor your urine output and for any signs of urinary tract infection before planning for a trial of removing the IDC when appropriate. You may be asked to limit your fluid intake prior to removing the IDC.



Rehabilitation: Bladder

After the catheter is removed, the nurses will get you to:

- Pass urine every 4 hours.
- Measure the amount of urine passed out.
- Scan your bladder and monitor the amount of urine left after passing urine.



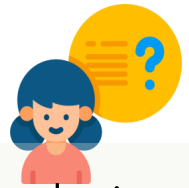
Please report any feelings in your bladder such as full bladder or leakages during the trial phase.

Bladder management cannot fix the problems caused by SCI, but it can help to improve your health and maintain your quality of life.

Do note that further investigations are required to determine the management approach for you.

Rehabilitation: Bladder

If you are unable to empty your bladder naturally and sufficiently, there are 2 common methods we will suggest to help empty your bladder: Indwelling catheter or intermittent catheterisation. Do discuss these bladder management strategies with your team.



A rubber tube inserted directly into and left in the bladder to drain urine. It and is connected to an external urine bag. The tube is expected to be changed every 2 to 10 weeks.

Indwelling Catheter (IDC)

Pros	Cons
<ul style="list-style-type: none">• No need for catheter to be inserted and removed several times a day• No need to limit the amount of water you drink• Easy care	<ul style="list-style-type: none">• High risk of urinary tract infection and bladder stones• Bladder capacity may reduce over time as it is being drained constantly• Sexuality issues due to catheter in the urethra.

Rehabilitation: Bladder



Intermittent catheter
for intermittent
catheterisation (IMC)

A rubber tube is inserted into your bladder to drain the urine and removed immediately after. This procedure is repeated at regular intervals, 4 to 6 times a day. No urine bag is required.

Pros	Cons
<ul style="list-style-type: none">• Lower risk of urinary tract infection compared to IDC• Reduced barrier to sexual activity compared to IDC• Freedom from external devices	<ul style="list-style-type: none">• Inserting and removing catheter may be uncomfortable• Need to be conscious of how much you drink to prevent overstretching your bladder

Rehabilitation: Bowel

A bowel program can minimise disruptions in your daily life and free up time and energy to pursue your goals. It will improve your quality of life and empower you to have the confidence to go out into the community.



The goals of the bowel program are to:

- Encourage regular opening of bowels at a consistent time
- Complete emptying of bowels
- Prevent bowel accidents (unplanned bowel movements)



Your pre-injury bowel habits and day-to-day activities will be taken into account when planning your bowel programme.

Rehabilitation: Bowel

To optimise bowel management, here is what you can do:



Adopt a well-balanced diet with sufficient fluid



Stay physically active



Take your medications as prescribed



Either lie on your right, or sit up during bowel clearance



Take time to be comfortable



Start bowel regime at least 30 mins after meals

There are some physical techniques to help bowel clearance, eg digital rectal stimulation and manual evacuation. Do discuss with the SCI Rehabilitation team the suitability of the various methods.



Rehabilitation: Pressure Sore Management- Skin Care

Skin care is a key aspect of SCI management. Poor skin care can lead to pressure sores which limit your mobility, or even more serious complications such as life-threatening infections.

Here is how you can care for your skin:



Practice good hygiene

- Always keep your skin clean and dry.
- Clean urine and bowel immediately.
- Change out of wet diapers or clothes immediately.



Do daily skin checks

- Do daily skin checks, especially on the bony areas on your back and buttocks.
- Watch out for skin changes such as bruises, broken skin, swelling, blisters, rashes or burns.
- Manage signs of skin breakdown immediately

Rehabilitation: Pressure Sore Prevention - Skin Care

Practice the following skin care techniques **daily**:



Wash your skin with soap and warm water



Use a moisturiser to prevent dry or cracked skin



Pat your skin dry instead of rubbing, as it may cause your skin to tear



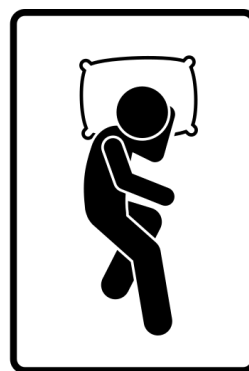
Practice proper positioning and regular pressure relief
(pg 51-54)

Rehabilitation: Pressure Sore Prevention - Skin Care

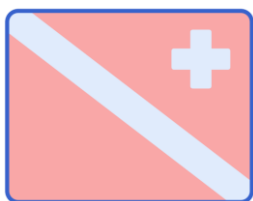
Do the following when you have signs of a skin breakdown:



Take pressure off the affected area



Relieve pressure regularly when seated or lying in bed



Keep sore clean and covered



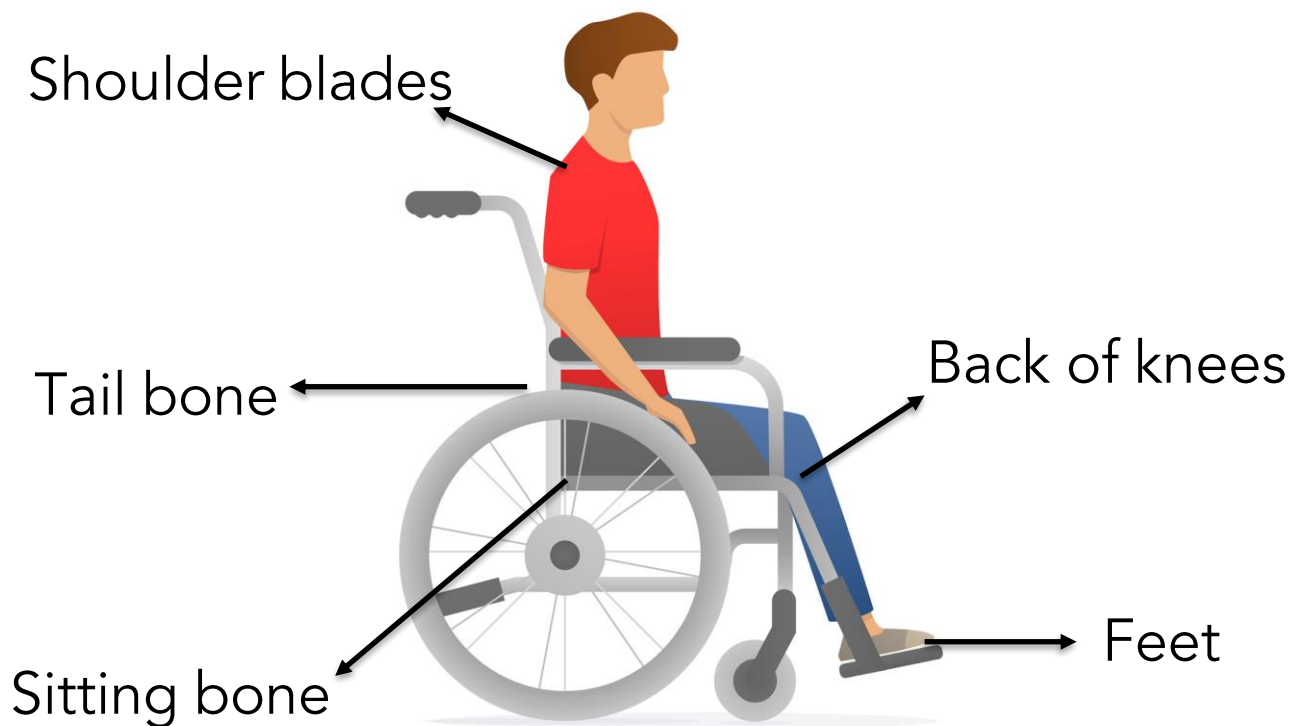
Seek medical attention as soon as possible

Rehabilitation: Pressure Sore Prevention – Pressure Points

Apart from good skin care, you need to be careful of parts of your body which may be prone to skin breakdown.

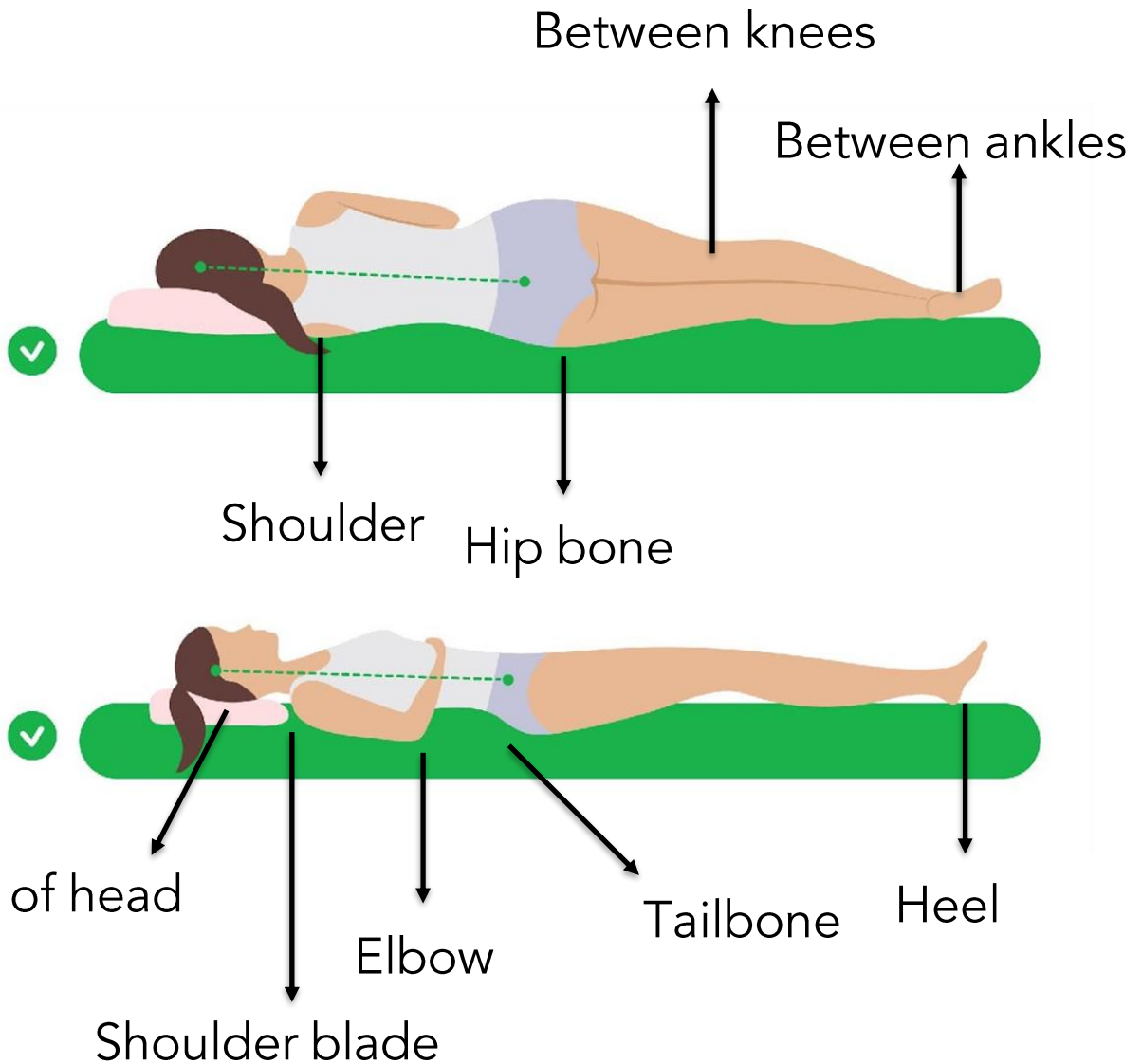
The following areas are referred to as the common pressure points:

While seated



Rehabilitation: Pressure Sore Prevention- Pressure Points

While lying down



Rehabilitation: Pressure sore prevention – Pressure relief

If you need to sit for a long duration, practice these few techniques for pressure relief. These techniques will help to relieve pressure from your buttocks and thigh.

Cross leg method



Place one knee over the other.

Do the same with your other leg.



Place one ankle over the knee of your other leg.

Do the same with your other leg

Rehabilitation: Pressure Sore Prevention – Pressure Relief

Side to side method



Bend to your side till your finger touches the ground.
Do the same on your other side.



Bend sideways and rest on a flat surface.
Do the same on your other side

Rehabilitation: Pressure Sore Prevention – Pressure Relief

Vertical method



Lean forward till you touch your toes.



Use both arms to push yourself up and away from the chair.

Note: Hold the same position for 1 minute.

Rehabilitation: Pressure Sore Prevention - Pressure Relief

Backward method



There are two ways you can do this:

- Have your caregiver tilt your wheelchair backwards
- Recline the backrest of wheelchair if your wheelchair has a recline function

Note: Hold the same position for 1 minute.

Rehabilitation: Pressure Sore Prevention - Cushion

An ideal cushion helps spread your weight more evenly over your buttocks and thighs to provide stability while seated. On top of making sitting more comfortable, it also helps to prevent pressure sores.



Different cushions provide relief to different part of your body and levels of pressure relief. Do check in with your Occupational Therapist for your cushion recommendation.



Rehabilitation: Positioning

Proper positioning is important because it helps to prevent complications such as pressure sores, discomfort and contractures (fixed tightening of muscle or skin resulting in a deformities).

Lying down, face up



Shoulder
slightly
open, away
from body

Forearm
facing up

Elevate leg
using pillow
to relieve
pressure
from heel

Rehabilitation: Positioning

Lying down, sideways

Arm
supported
by pillow

Shoulder slightly open and
bent. Do not lie on own arm.



Turn the
body
slightly to
remain
stable

Pillow in
between legs
to maintain
neutral
position

When lying sideways, do take note of the above pointers.

Rehabilitation: Positioning



Use resting ankle-foot-orthoses (AFO) where possible to prevent ankle contracture.



Under normal circumstances, you are advised to change positions after every 2 hours.

However, if you have a pressure sore, you should avoid direct pressure with the area.

Rehabilitation: Autonomic Dysreflexia (AD)

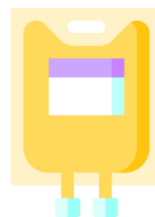
If you experience symptoms of AD (Pg 13), do the following to reduce blood pressure and remove triggers.



Sitting upright



Loosening tight
fitting clothes &
devices



Checking for
blockage and
or perform IMC



Applying lubricating gel (if
available) to rectum and
clear any bowel that may
be present



Monitoring blood
pressure and pulse every
2 - 5 minutes until it
returns to normal

If blood pressure does not decrease after the
above attempts, **call 995** and take rescue
medication.

Rehabilitation: Therapy Retraining

You will be encouraged to practice the following therapy activities:



Upright tolerance

Increase time duration
to perform tasks while
seated



Balance in sitting and standing

To promote safety in
movement



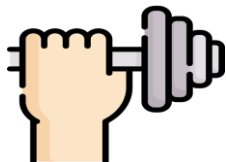
Stretching

To maintain muscles and
joint flexibility



Transfers training

To enable movement
between places to
carry out activities

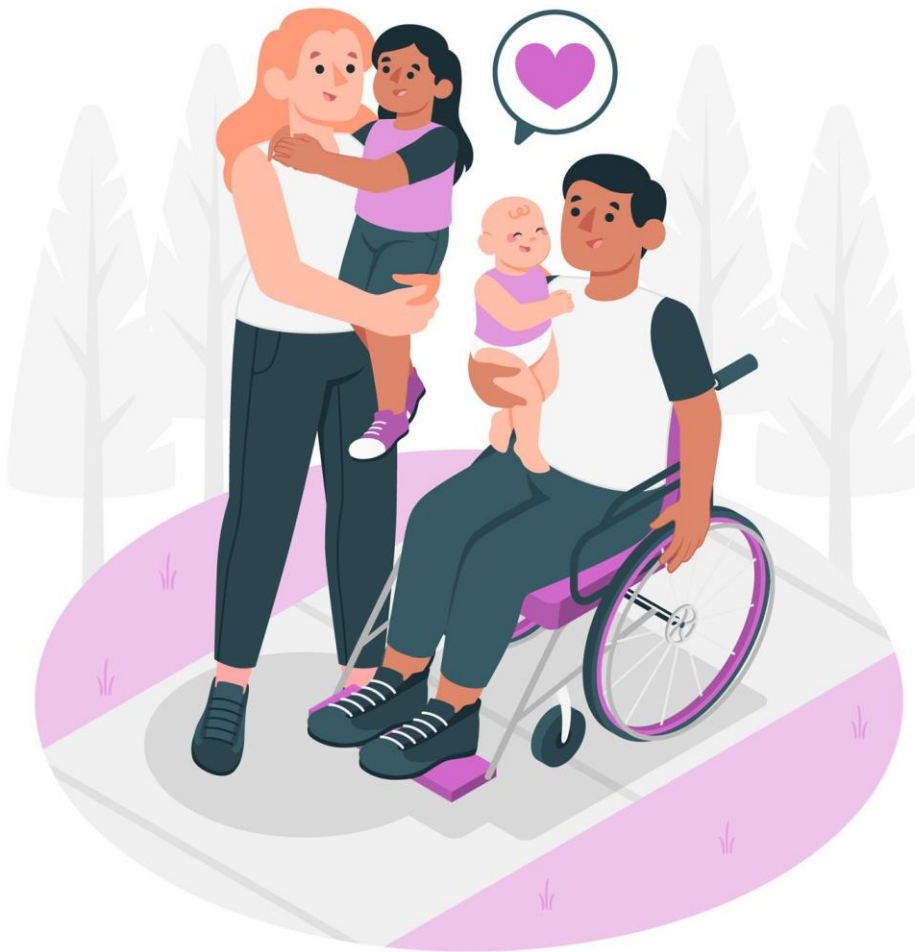


Strengthening and endurance

To improve strength for
functional activities

Rehabilitation: Sexuality & Sexual Functioning

Persons with spinal cord injury (SCI) have the same capacity to develop relationships, express affection and sexuality in the same ways as others.



Sexuality is an essential part of you, and it should be respected within the context of your current physical function.

Rehabilitation: Sexuality & Sexual Functioning

Sexuality is a state of mind that represents:

- How individuals feel about themselves.
- How they relate to others from the same and opposite gender.
- How relationships are established and how they express themselves.

It is also about warmth, comfort and the feeling of closeness.

Having a spinal cord injury may impact sexuality in the following ways:



Negative Body Image

You may feel unattractive and develop a negative sense of self-worth.

Do know that you are still the same person and can learn new ways to enjoy intimacy.

Rehabilitation: Sexuality & Sexual Functioning

Having a spinal cord injury may impact sexuality in the following ways:



Relationships

Negativity about our body image may cause us to shy away from our friends and loved ones. However, relationships are important to make us feel whole.

Do stay involved with people you already know and share feelings for, take part in support groups, and communicate your own feelings.



Intimacy

The way we express loving feelings and emotions. It includes both emotional and physical intimacy such as:

- Having deep conversations
- Communication to share feelings
- Feelings of arousal, expressed by touching, kissing and caressing
- Sexual intercourse



Do discuss with you team about any issues with sexuality or sexual functioning you may face. Sexual counselling or medication may help with these issues.

Rehabilitation: Pain Management

Having pain is common after spinal cord injury (SCI), and it can be sudden and intense (acute) or long-term (chronic).

Pain, especially chronic pain, can impact one's well-being if not properly managed.

If you are experiencing pain, here are some helpful tips to manage it.



Positive distractions

Divert your attention to something you like, such as reading, watching television or chatting with a friend.



Positive self-talk

Tell yourself that you can manage the pain using positive statements. For example, "I can deal with this, and the discomfort will pass soon".

Rehabilitation: Pain Management



Re-interpret the pain

Consider looking at the pain differently such as warmth or tickling sensation versus pain



Relaxation activities

Deep breathing can also be effective in reducing the pain experience



Spiritual faith

If you have a religion or faith, you can engage in prayer to help cope with the pain experience, for example: "I pray to God to help me overcome the pain".



Medications and therapy treatment can help to manage pain too. Do speak with the SCI Rehabilitation team about this.

Getting ready for home: Care Planning

After rehabilitation, you are almost ready for home.

To determine if you can be independent or require care, we will assess the level of support you require to do these Activities of Daily Living (ADLs).

Check in with your SCI Rehabilitation team on the level of support you need.

☐

Feeding

☐

Dressing

☐

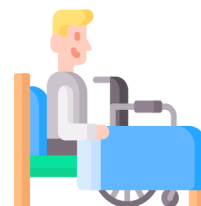
Toileting

☐

Walking

☐

Showering

☐

Transferring

Getting ready for home: Care Planning

Depending on the level of assistance you need, there are some care options you can consider.

Family caregivers

Family members know their loved ones well and caregiver's training can be provided to equip them with the necessary skills.



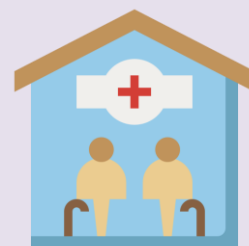
Migrant Domestic Helper (MDW)

A MDW can be trained to care for you or your loved ones. You can refer to the Ministry of Manpower (MOM) website for the eligibility criteria and ratings of employment agencies.



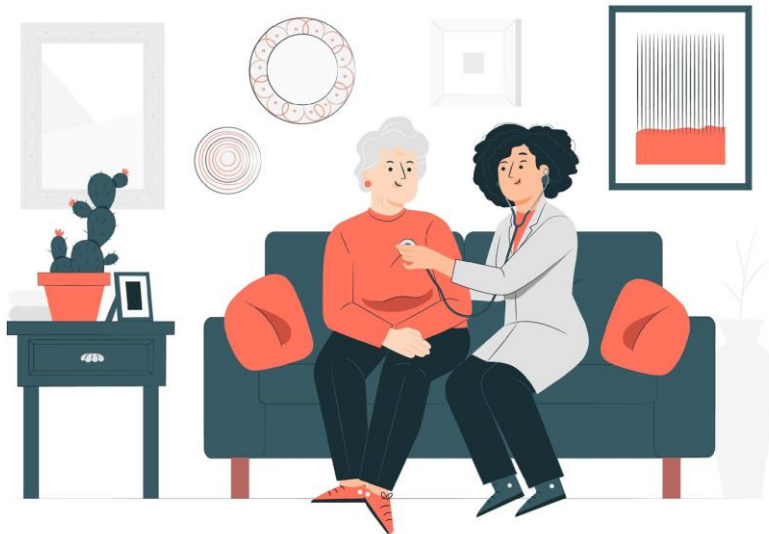
Senior Care Centres / Integrated Home and Day Care*

This is usually paired with the above options to help complement the care given to you. These centres operate on weekdays, in the daytime.



Care Planning: Home-based services

If you have a permanent caregiver at home, you can consider some of these supplementary care services.



Home Medical and Home Nursing Service*

This is a service where a doctor, usually GP, and/or nurse visits your place on an appointment basis. Services include:

- Prescription of medication
- Simple medical procedure
- Monitor blood pressure and blood sugar levels
- Wound dressing
- Change feeding tubes
- Change of urine catheter
- Caregiver training and medication packing

* Refer to Agency for Integrated Care website for more information.

Care Planning:

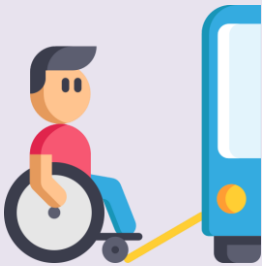
Home-based services

If you are staying alone and have difficulties getting help, you can consider these additional services:



Meals-On-Wheels
Service*

A service where meals, lunch and dinner, can be delivered to your doorstep daily, with a nominal fee.



Medical Escort and
Transport Service*

A specialised transport service from home to medical appointments and back. A part-time caregiver will assist you in getting around the hospital too.



Home Personal
Care*

A part-time caregiver would visit your place one to three times a week. They can provide personal care tasks such as showering.

Getting ready for home: What can I expect?



The idea of going home after your spinal injury can be an exciting, yet stressful event.

It is normal to feel uncertain or worried about how you will cope with your altered abilities.

We have come up with a list of important things for you to take note of as you prepare to go home.

What to do when:

- Skin Breakdown
- Equipment Breakdown
- Medical Emergency



Getting ready for home: Skin Breakdown

Before you go home, the SCI Rehabilitation team would like to emphasise the importance of skincare.

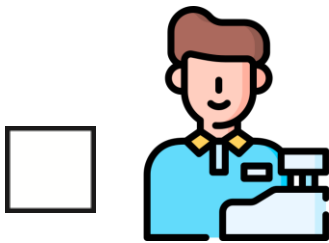
Lack of proper skincare may lead to pressure ulcers which increase medical cost, physical pain, reduced quality of life, hospitalization, and even life-threatening conditions.



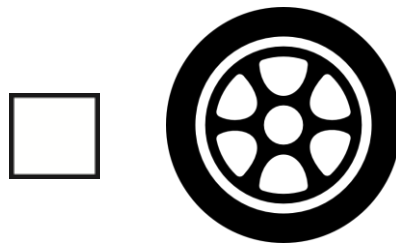
If you lead an active lifestyle, it is important to factor in regular pressure relief amid your busy schedule.

Getting ready for home: Equipment maintenance

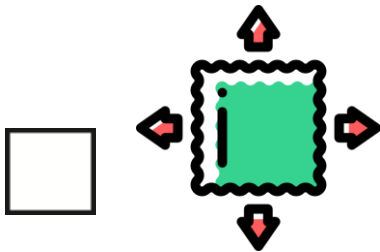
Equipment may breakdown just as we may fall sick at times. It is important for you to take note of the following:



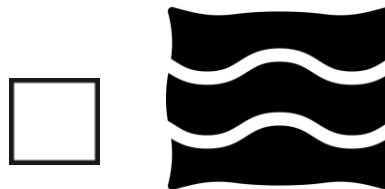
Know your vendor
contact numbers



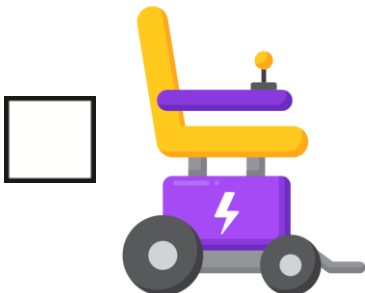
Maintain air pressure
for wheelchair tyre



Cushion- If gel cushion,
knead cushion daily for
optimal seating



Cushion- If air cushion,
check for air pressure to
ensure optimal seating



For electric devices, ensure the
battery life can sustain the
duration of your outing

Getting ready for home: Medical Emergencies – AD

Autonomic dysreflexia (AD) has been identified as the most common medical emergency after SCI.

It is important to know the symptoms to know when to seek help. These include:

- High blood pressure
- Low heart rate
- Sweating
- Flushing
- Headache
- Blurred vision



(Please refer to pages 13 and 59 on Autonomic Dysreflexia)

When you have an episode of AD,



1. Identify triggers



2. Remove source of trigger



3. Seek medical attention, if not resolved

Getting ready for home: Medical Emergencies - AD

Causes	Actions	Outcome
Full bladder	Do IMC or check IDC for blockage	If AD is resolved by draining urine, monitor your blood pressure and no further action.
Constipation	Check rectum and remove any uncleared stools manually	If AD is resolved by clearing stools, to monitor blood pressure and no further action.
Skin irritation (such as pressure ulcer, ingrown toenails)	Seek medical attention	While waiting for medical attention, <ul style="list-style-type: none"> • Remove tight clothing • Sit upright to avoid blood pressure from rising.

*If your AD is caused by other unpleasant stimulus such as poor sitting position for prolonged duration, it will likely be resolved with adjustments.

Getting ready for home

Finally, are you ready? Use this checklist to do one final check before heading home.

☐ My home modification has been completed or is in progress



☐ I have equipment ready or am in process of getting them



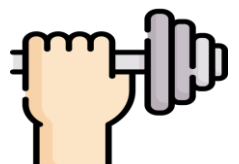
☐ I know what medical complications to look out for and what to do to resolve them



☐ I have a caregiver that can look after my needs



☐ I have a home exercise and pressure relief regime established



Post discharge follow up

Being discharged marks the beginning of a new chapter in your recovery.

You may be advised on some of the following options for **post discharge therapy program**. Do discuss with the SCI Rehabilitation team about this.



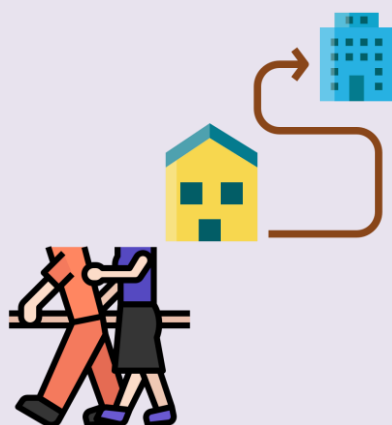
Home Therapy

Therapists go to your home once a week for your session.

Home therapy makes use of an environment you are familiar with to enhance your rehabilitation program.

This service may be suitable for you if you or your caregiver have difficulty getting to community rehabilitation centres for therapy.

Post discharge follow up



Community Rehabilitation Centre

These therapy sessions are conducted at a centre located within your community.

They can provide more regular sessions as compared to home therapy. Transport services are also available if required.

Return to Work program is available at some specialised centres too.

* Refer to Agency for Integrated Care website for more information.

Centre for Advanced Rehabilitation Therapeutics



Tan Tock Seng
HOSPITAL

Patients with more complex rehabilitation conditions will be recommended for follow up at TTSH- CART.

Part 3: Support in my SCI recovery journey

A Note from the SCI Rehabilitation team

As SCI rehabilitation is a long journey, we recommend seeking additional support during this process to make it easier.



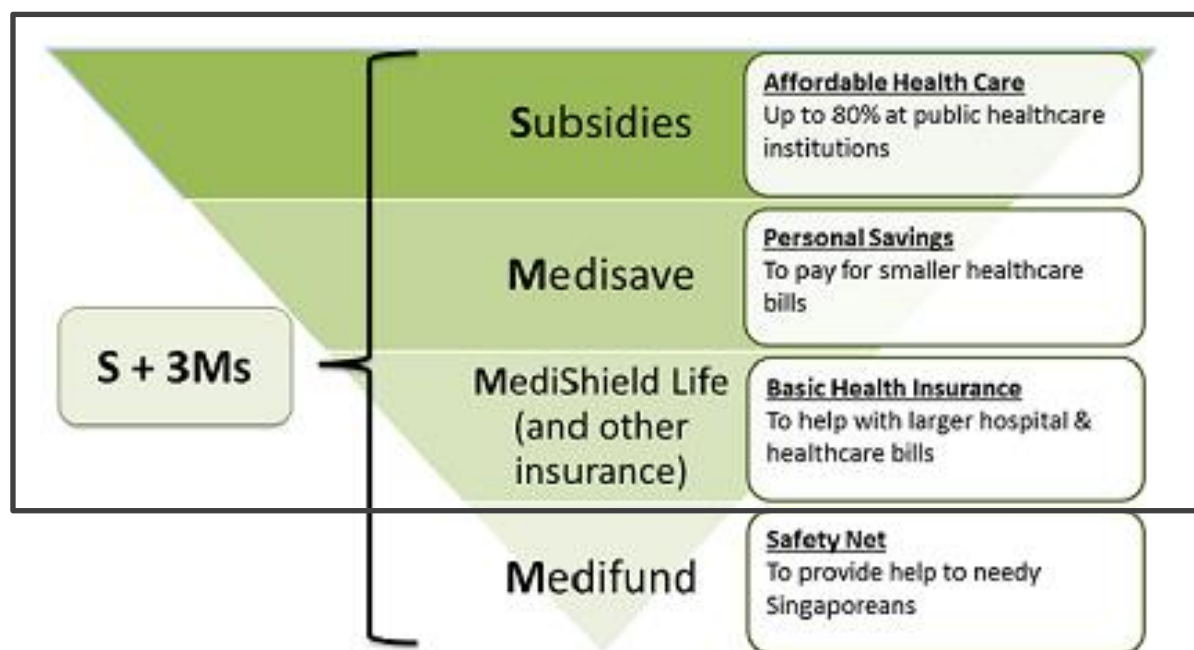
In this chapter, you will find these resources in the following categories.

1. Financial resources
2. Social support
3. Lifestyle Integration
 - Sports/ Hobbies
 - Driving
4. Continued exercise at home

1. Financial Resources

After a spinal cord injury, you may be worried about the cost of medical bills as well as other charges needed for continual post discharge therapy and care.

The Singapore healthcare system is kept affordable through a range of subsidies you can tap on.



For financial concerns, you may approach our care team from Business Office, Financial counsellor or Medical Social Worker for further advice.

A. Financial Resources

Apart from medical bills, you may be worried about the other financial burdens.

Agency for Integrated Care (AIC) provides financial grants and subsidies that can help relieve your financial burden.

Home Caregiving Grant



Who: Singapore Citizens (SC) or Permanent Residents with an immediate family member who is a SC.

What: Monthly cash payout of \$250 or \$400 to support someone who always needs help with 3 or more Activities of Daily Living (ADLs) and is living in the community.

Migrant Domestic Worker (MDW) Levy Concession



Who: Singapore Citizens (SC) or Permanent Residents with an immediate family member who is a SC.

What: Instead of the usual rate of \$300, a concessionary rate of \$60 is to be paid monthly.

A. Financial Resources

There are subsidy schemes for different needs, such as cost incurred arising from need for equipment and home modifications.

Senior Mobility Fund (SMF)



Who: Singapore Citizens (SC), aged 60 years old and above, who meet the subsidies criteria.

What: Subsidies of up to 90% for the cost of equipment prescribed by a therapist, to support elderlies who live at home.

Assistive Technology Fund (ATF)



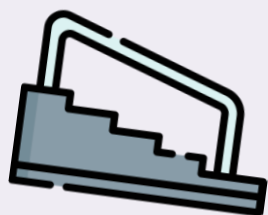
Who: Singapore Citizens (SC) or Permanent Residents (PR), age 59 and below.

What: Administered by SG Enable, ATF provides of up to 90% subsidies on the cost of the required equipment, with a lifetime cap of \$40,000.

A. Financial Resources

There are subsidy schemes for different needs such as cost incurred arising from need for equipment and home modifications.

Enhancement for Active Seniors (EASE)



Who: Flat owners who are Singapore Citizens (SC), living with a family member who is either 65 years old and above or who require help with at least 1 Activities of Daily Living.

What: Heavy subsidies granted according to housing type for the following home modifications:

- Slip-resistant treatment to floor tiles in up to two bathrooms or toilets
- Grab bars in the flat (eight or 10 grab bars for the first toilet, and six grab bars for the second toilet)
- Up to five ramps in the flat, and/or at the main entrance – if it is doable

A. Financial Resources

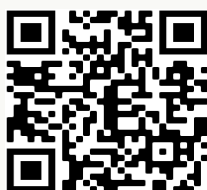
Disability insurance pays for the loss of income as a result of accidents or illnesses. and can help to ease your financial stress.

All Singaporeans with a Central Provident Fund Board (CPF) account are offered the following disability insurance.



You may refer to the list below to verify if you are insured under any of the following.

- Eldershield** **Who:** Singapore Citizens (SC) or PR, aged 40 years old and above, who meets the subsidies criteria.
What: claim of \$300 or \$400 per month
Duration: Up to 60 to 72 months



<https://www.aic.sg/financial-assistance/eldershield>

A. Financial Resources

Careshield

Careshield Life was introduced in 2020 to replace Eldershield, and it offers better protection than Eldershield.

Who: Singapore Citizens (SC) or PR, born 1980 or later

What: claim of \$600 per month onwards

Duration: Life long



<https://www.careshieldlife.gov.sg/careshield-life/about-careshield-life.html>

Dependant Protection Scheme

Who: Singapore Citizens (SC) or PR aged between 16 years and 65 years old, upon making your first CPF contribution.

What: Between \$55,000 to \$70,000

Duration: One-time



<https://www.cpf.gov.sg/Members/Schemes/schemes/other-matters/dependants-protection-scheme>

A. Financial Resources

If you require further financial assistance after the various subsidies, grants and insurance payouts, you may consider reaching out to Social Service Office (SSO) for additional support.



Medical Assistance



Cash Assistance



To find the nearest SSO, please visit the website or scan the QR code:
<https://www.msf.gov.sg/dfcs/sso/>

Kindly approach the nearest SSO or call the ComCare hotline for further assistance in finding the most suitable scheme.

ComCare hotline: 1800-222-0000



If you have further questions on the grants and subsidies you can qualify for, do check in with the SCI Rehabilitation team.

B. Social Support

In the process of recovery, you may face challenges which you find overwhelming. Having social support, especially from others who share similar conditions, can be empowering.



Tan Tock Seng Hospital Rehabilitation Centre organises regular Spinal Support Group (SSG) meetings and befriending sessions.

It aims to:

- Provide a network for SCI survivors to share their experiences and resources.
- Promote adjustment and coping.

B. Social Support

Activities conducted include:

- Regular social-recreational outings
- Psycho-education talks
- Befriending sessions



"Feel connected to a community with shared experiences"

"Seeing how others overcame their problems provided me with renewed hope for my future"

C. Lifestyle Integration: Sports

Increased fitness through physical exercise or sports is beneficial for anyone, and even more so for persons with spinal cord injury.

Apart from improved fitness, regular participation in sports has the following advantages:

- Strengthen social network through sports
- Provides a more structured routine in life
- More effective control of adaptive devices such as wheelchair or walking aids

To find out how you can get involved in sports, you may contact **Singapore Disability Sports Council (SDSC)** to find out more.



C. Lifestyle Integration: Driving

Whether you own a valid driving licence or are keen to get one, persons with spinal cord injury have the potential to drive again.

The Driving Assessment and Rehabilitation Program (DARP) at Tan Tock Seng Hospital (TTSH) aims to assist persons with medical conditions to learn or to return to driving.



Your DARP therapist will:

- Conduct an on-road and off-road assessment
- Recommend vehicle modifications to suit your needs
- Advise you on driving license application process
- Provide a report on your suitability to drive

For more information on returning to driving, you may speak to the SCI Rehabilitation team or refer to Tan Tock Seng Hospital, Occupational Therapy Department.

C. Lifestyle Integration: Driving

Whether you drive or are a regular passenger of your family's car, you may apply for the **Carpark Label Scheme** administered by SG Enable which allows you to park at wheelchair accessible lots.

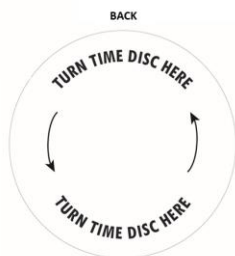
The accessible lots provide more space to allow the vehicle door to fully open for boarding and alighting.

There are 2 types of parking labels:



Class 1

Meant for drivers with mobility impairment.



Class 2

Meant for passengers with mobility impairment. Drivers can take up to 1 hour to assist passenger with alighting and boarding the vehicle safely.

D. Home-based exercise

Practicing home-based exercises regularly are the most sustainable way to maintain your physical health. We have listed a series of physical activities which you can continue at home

If the activity is labelled [Assisted], it means that you likely require assistance from a caregiver for that activity. Please take note of where your caregiver should be positioned.



Your therapists will go through and recommend exercises most suitable for you. Do check in with them too.

1. Shoulder [Assisted]

Shoulders Protraction and Retraction



1) Have your caregiver assist you to move your shoulders downward and squeeze your shoulder blade.

2) Have your caregiver assist you in moving your shoulders upwards.

Note: Keep your elbows straight during this activity.

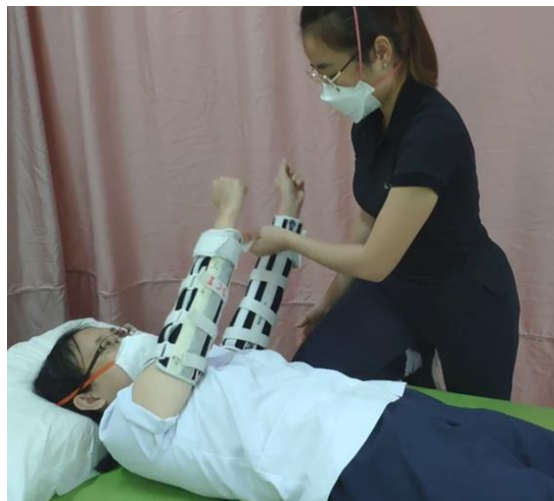
D. Home-based exercise

Shoulders Flexion Exercise



Have your caregiver pull both of your arms up, reaching close to the ear.

Shoulders Abduction and Adduction Exercise



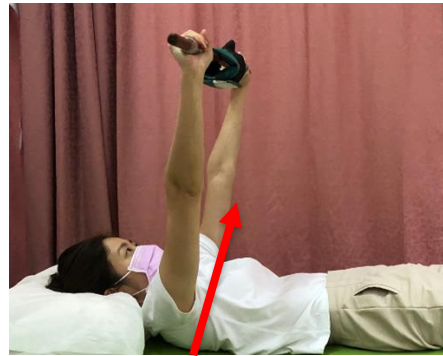
Have your caregiver pull both of your arms to one side, then the other.

Note: Keep your elbows straight during this activity.

D. Home-based exercise

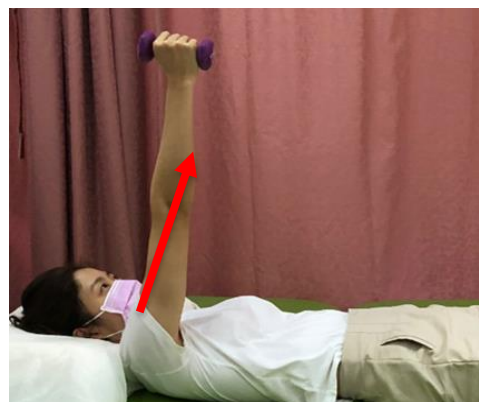
2. Upper Limb [Unassisted]

Shoulders Protraction and Retraction
(with wooden stick and weight)



Hold the weight with both hands and move your shoulder blades up.

Shoulders Protraction and Retraction
(with dumbbell)



Hold weight with one hand and move your shoulder blade up. Do the same on the other side.

Note: Keep your elbows straight during this activity.

D. Home-based exercise

2. Upper Limb [Unassisted]

Positioning in Prone



Lie down facing down. Place your elbows under your shoulders while keeping your hips and legs flat.

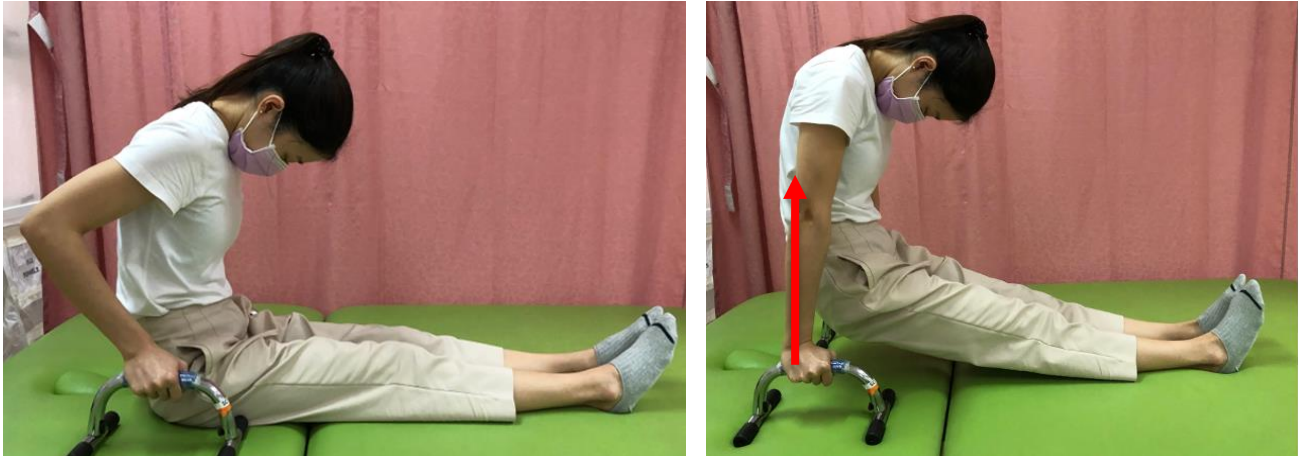
Push up in Prone Position



Use pillow/ wedge to support the push up.

D. Home-based exercise

Push Up with Push Up Bar (Long Sitting)



Sit with your legs extended, and place push up bars on both sides. Push upwards against the bar.

Note: Have your caregiver to supervise this exercise to prevent your from falling off the bed.

Progressive resistance training is the most common form of strength training. It is most effective when:

- Weights or resistance bands are used
- The intensity of these exercises are slowly increased as you get stronger

D. Home-based exercise

3. Lower Limb [Suitable for assisted and unassisted]

Assisted Inner Thigh Stretch



Have your caregiver to separate your lower limbs to stretch your thighs using wedge or pillow to prevent muscle tightening.

You may get into the above position independently too using wedge or pillow



Do check in with the SCI Rehabilitation team on what other exercises may be suitable for you at home.

D. Home-based exercise

3. Lower Limb [Unassisted]



Place a rolled towel under your knee. Raise your leg. Take turns lifting each leg.



Rest both of your legs on the wedge. With your legs lifted, lift your buttock up.



Rest both of your feet on a flat surface. Lift your buttock up.

Hold for at least 3-5 seconds for each movement.

Repeat 5-10 sets. Proceed to hold for 10 seconds as you get stronger progressively.

D. Home-based exercise

3. Lower Limb [Unassisted]

Stretching in long sitting position



Loop a resistance band around your foot. Pull the band to stretch your leg. Repeat on the other side.

Stretching in lying down position



Attach the resistance band on your ankle and loop it through the frame. Ensure the frame is firmed on the ground by using weights. Pull on the band to lift your leg. Do the same on the other side

What will happen to me in the long-term?

As we come to a close in this booklet, you may be preparing for your discharge or have already been returned home.

Thank you for letting the SCI Rehabilitation team be part of your SCI journey. We hope that you will continue to use this booklet to help manage some of the issues you may face after SCI.

Remember, there is life after SCI and living with SCI can still be fulfilling and rewarding!

Important Contact Numbers

Name	Contact numbers	Remarks

Helpful Resources

1. NHS Checklist

<https://scireproject.com/wp-content/uploads/2022/07/Adult-NAC-revised-Jul-08.pdf>

2. Agency for Integrated Care

<https://www.aic.sg>

3. SG Enable:

<https://www.sgenable.sg>

Notes

TTSH Integrated Care Hub (ICH) Allied Health Services

Contact:
6357 7000 (Central Hotline)



Scan the QR Code with your smart phone to
access the information online or visit
<http://bit.ly/TTSHHealth-Library>.

Was this information helpful?
Please feel free to email us if you have any
feedback regarding what you have just read at
patienteducation@ttsh.com.sg



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