



**Spinal Cord  
Injury Ontario**

# Preventing and Treating Pressure Injuries

A guide for people using wheelchairs for  
daily mobility



## **PRESSURE INJURIES ARE PREVENTABLE.**

This guide covers pressure injuries:

- what they are
- how to prevent them
- how to treat them
- tips for communicating with your team.



**Spinal Cord  
Injury Ontario**

**Lésions Médullaires  
Ontario**

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SCIO is Ontario's largest community of experts in spinal cord injury, serving people with all mobility disabilities. We are the primary source of services for individuals and families journeying from injury to achieving their personal life goals. All of our work is grounded in shared lived experiences and strengthened through relevant research, strategic advocacy, and accessible education. Together we connect, support, and empower our community to thrive, bringing visibility and information about living with a disability to the forefront. Join our community at [sciontario.org/join](https://sciontario.org/join).

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This guide is based on Canadian Best Practice Guidelines for the Prevention and Management of Pressure Ulcers in People with Spinal Cord Injury, A Resource Guide for Clinicians, 2013. Updated versions have been vetted by clinical subject matter experts at spinal cord injury rehab centres across Ontario. The most recent review occurred in 2022.

Images of stage one, two, three and four pressure injuries, deep tissue injury, and unstageable pressure injury used with permission of the National Pressure Injury Advisory Panel, September 25, 2019.

Illustrations on page 22 used with permission from the Canadian Best Practice Guidelines for the Prevention and Management of Pressure Ulcers in People with Spinal Cord Injury: A Resource Handbook for Clinicians, 2013.

Image of E-Stim therapy used with permission of Pamela Houghton, August 15, 2019

## WELCOME

It is my great pleasure to be asked to participate in this document. My experience with pressure injuries and spinal cord injury is as a researcher and educator.

As a researcher I have led several projects that developed therapies that speed the healing of pressure injuries. We have tested these therapies within different health care models that exist in Canada. The stories of individuals with spinal cord injury who were trying to navigate a very fragmented health care system will stay with me for life. Many people I met had been troubled with pressure injuries for years. I will never forget when one of the participants said that the impact of living with a pressure injury was greater than the initial spinal cord injury.

As professor at Western University for the past 25 years I have been involved in the education of numerous exceptional individuals entering the physical therapy profession. I have also worked with experienced clinicians from health care settings across Canada who attended a post professional graduate program specializing in wound care. The quest for excellence and passion for change in these future leaders gives me much hope that improvements to health care delivery are coming.

It is so very important to develop and test new approaches and implement practice change to better serve this group of individuals. I encourage clinicians to provide the knowledge and techniques that enable people with pressure injuries to manage their own care.

This resource highlights key practices and treatments recommended to prevent, assess, and treat pressure injuries in a format that makes sense. By translating current knowledge and encouraging self-management, people will know what to ask for from the health care professionals they encounter in their journey. In this way, it will help people living with pressure injuries, their families and their health care team get *“the right care at the right time.”*

Working together we can reduce the number of people living with this devastating and often preventable condition.

**PAMELA HOUGHTON**, BScPT, PhD Professor Emerita, School of Physical Therapy, Faculty of Health Sciences, Western University

## ABOUT THIS GUIDE

Pressure injuries (also called bedsores, decubitus ulcers, pressure sores or pressure ulcers) can seriously affect people who are living with a spinal cord injury and others who use wheelchairs for daily living. We wrote this guide to explain:

- **WHAT PRESSURE INJURIES ARE**
- **HOW TO PREVENT THEM**
- **HOW TO BEST TREAT THEM IF THEY OCCUR**
- **HOW TO TALK TO YOUR HEALTH CARE TEAM ABOUT YOUR SKIN HEALTH.**

It can be hard to learn to manage your health when you have a spinal cord injury or other chronic condition, especially if you can't find simple and clear explanations of what you can do to look after yourself. Access to health care and related services, especially expertise in spinal cord injury, is often limited for people living outside big cities like Toronto. With this guide we want to increase access to research and education by describing the experts' recommendations in everyday language, and using pictures to explain important points.

We have worked with people who have experienced a pressure injury to review this document and make sure we haven't missed anything important. They have shared strategies learned through experience for preventing and managing pressure injuries and for working with your health care team.

## MY EXPERIENCE: THE GIGANTIC COST OF A LITTLE SORE

At the time of my rehabilitation at Lyndhurst Centre in 2003, I was at my lowest point. I had no interest in doing anything. I barely had the energy to get out of bed. Besides my daily physio and occupational therapy, I took no part in other activities and events hosted by the hospital. Thus, I missed a lot of opportunities to learn about some of the most important knowledge on preventing secondary complications following a spinal cord injury.

While I had heard the word *pressure injury*, I never really understood what it was or how it formed. My only memory was having nurses intruding into my room in the middle of the night, turning me and positioning two pillows to elevate me. I found it annoying and often tossed the two pillows on the floor in protest.

After I was out of the hospital, the opportunity to be educated became even more rare. I gained 60 pounds upon discharge and the only advantage of having a full-figure was having more cushioning on my bottom. Sitting on the wheelchair all day long did not bother me at all. I made no conscious effort to practice pressure relief.

About four years later, I lost a dramatic amount of weight. There was a lot of muscle atrophy on my bum. I noticed increasing discomfort when sitting on the chair full time. I felt like my sit bones were constantly poking me. I didn't know that I was using a foam cushion that was wearing out and desperately needed to be replaced. One day, my mom found an abnormal area on my bum cheek, about the size of a loonie. Before long, the nurse diagnosed it as a pressure injury.

The healing process took about a year. I had nurses coming to my home twice a week to change my dressings. Even when I was out, at the back of my mind I was constantly worried about putting pressure on my injury and worsening my condition. I was also advised to pause my swimming and other exercise routines. Because of these changes, my bowel movement was not ideal. I had to increase the use of laxatives. Also, the lack of exercise made me put on more weight, and my self-confidence and general health declined as a result.

Eventually, with the help of an occupational therapist, I got a Roho cushion, a Roho mattress, and a padded shower bench. I also learned to time myself in pressure relieving, lying down on my stomach during break time, using a special lotion to keep my skin moisturized and, most importantly, checking every vulnerable area on a regular basis.

The pressure injury left an ugly scar on my butt cheek. It's a forever reminder of how important it is to prevent secondary complications by equipping ourselves with knowledge and insights about our condition at all times.

**NANCY XIA** is an Information and Resource Specialist with Spinal Cord Injury Ontario in Toronto, Ontario.



## MY EXPERIENCE: TREATING PRESSURE INJURIES AS A NURSE

My first true experience with pressure injuries came about when I was hired to be a wound nurse at Parkwood Hospital in London, Ontario, 25 years ago. I really was not prepared for what I saw or was dealing with. Most health care professionals receive very little education on pressure injuries and I was one of them. I quickly learned how to assess and manage these very complex wounds.

My patients taught me many valuable lessons. I learned to listen to what they were telling me, as they understood and knew their own bodies better than anyone. I also learned the hard way that patients need to be equal partners in health care. What impacted me the most was the human suffering caused by potentially preventable conditions. I have never forgotten it.

I went on to become a nurse practitioner and to complete my PhD. I studied how to prevent hospital-acquired heel pressure injuries. I have devoted my time to help develop many 'Best Practice Recommendations' for skin and wound management with Wounds Canada, the Registered Nurses' Association of Ontario, and most recently, the Praxis Institute.

My current focus is on education of people with spinal cord injury and health care practitioners on best practices in pressure injury prevention and treatment. I hope one day to mentor more clinicians who understand how to best prevent and treat pressure injuries.

**KAREN CAMPBELL**, RN, PhD, NSWOC, is an adjunct faculty member for the Master's of Clinical Science in Wound Healing at Western University, and a consultant for EO2 and Primacare Living.

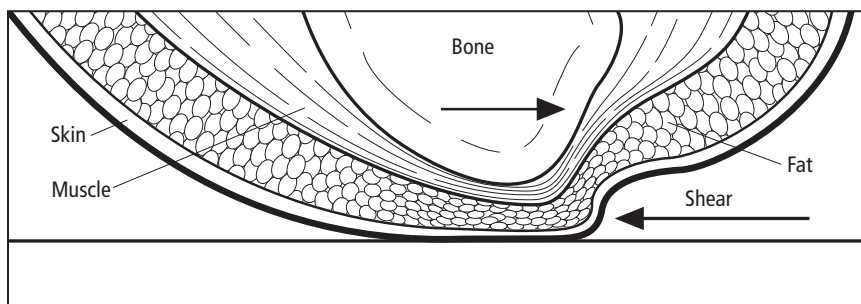


# What are Pressure Injuries?

PART 1



Pressure injuries are skin and tissue damage. They are caused by sitting or lying too long on one part of the body. They can also be caused by pressure combined with shear. Shear is when the skin moves one way, and the tissue underneath moves the opposite way. This can happen when you slide down in bed or transfer your weight from one surface to another.



SHEAR CAUSING SKIN AND TISSUE DAMAGE

The deeper the injury is, the harder it is to treat. That's why it is so important to try to prevent them. You, and those who help with your care, should always watch for signs of pressure injuries. Get them treated right away.

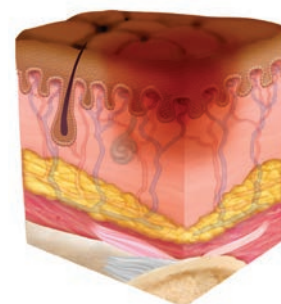
## WHAT THEY LOOK LIKE

Doctors and nurses classify pressure injuries in stages, based on the depth of the skin damage.

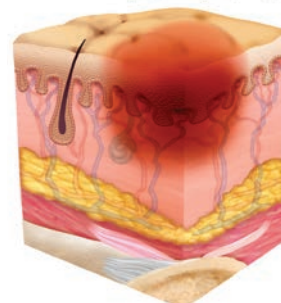
### Stage 1

In a Stage 1 pressure injury, the skin is not broken but the area may be:

- painful or itchy
- pink or red on people with lighter skin, blue or purple on darker skin
- when you press down on the skin, the darker colour does



STAGE ONE, DARKER SKIN



STAGE ONE, LIGHTER SKIN

not go away or turn lighter (blanch) as it would on normal skin

- taut, shiny, or hardened
- warmer or cooler to the touch than the skin around it
- firmer or softer than the skin around it.

## Stage 2

In Stage 2, there is a shallow, open, reddish-pink pressure injury. Or there may be a blister covering the injury, with clear fluid inside.

A Stage 2 pressure injury is different from other types of skin problems, such as tape burns, scrapes and cuts, or rashes caused by incontinence or moisture build-up.

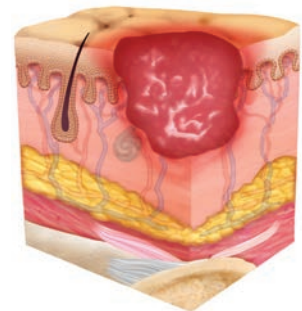
## Stage 3

A Stage 3 pressure injury has gone quite deep, reaching into the fatty layer that lies under the skin. The injury may be covered with a scab or with dead tissue (called “*slough*”), which can be yellow, tan, grey, green, or brown.

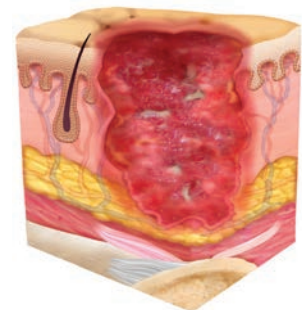
## Stage 4

At Stage 4, the pressure injury has reached right down to the bone, tendon, or muscle that lies under the skin. In places where there is not much fat, such as the ankle bones or the back of the head, the injury may not be deep, but it is still Stage 4 if it has gone right down to the bone.

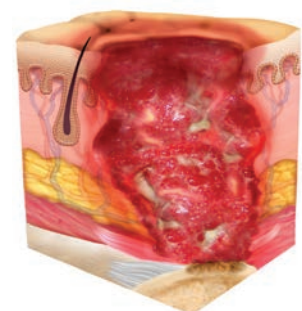
Like in Stage 3, there may be scabs and dead skin which makes it hard to see how serious the damage is until the wound is cleaned.



STAGE TWO



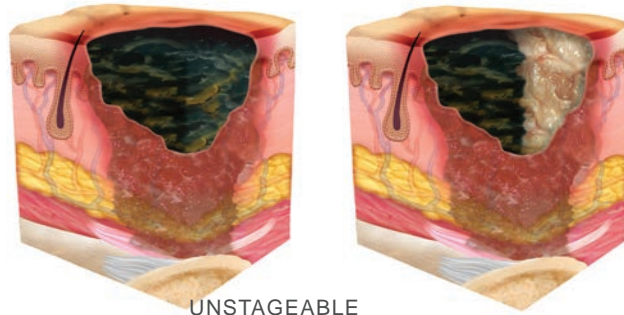
STAGE THREE



STAGE FOUR

## Unstageable

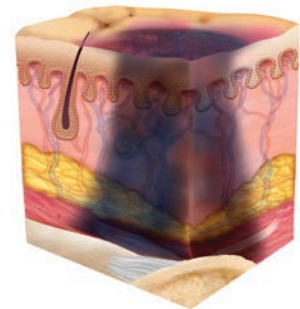
You can't see how deep an unstageable pressure injury is because it is covered with a scab or black, grey, or dead skin. Heel ulcers can be an example of an unstageable injury.



UNSTAGEABLE

## Deep tissue injury

Sometimes, there can be a very deep injury but the skin on top is not broken. The skin is purple or maroon, covering a blood-filled blister, with more dead tissue underneath. Like a Stage 1 injury, the skin may be painful, too soft, or too firm, or too warm or too cool. This is called “*deep tissue injury*.”



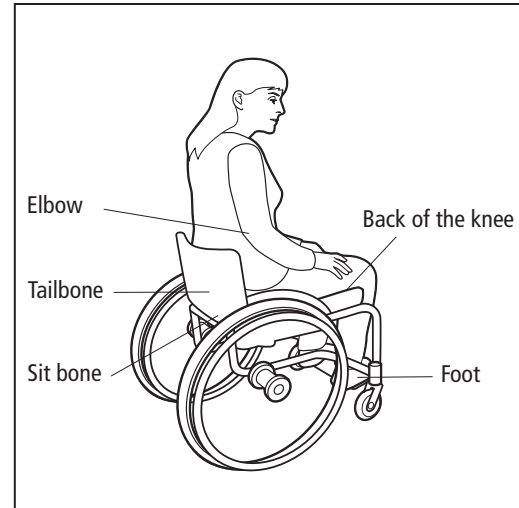
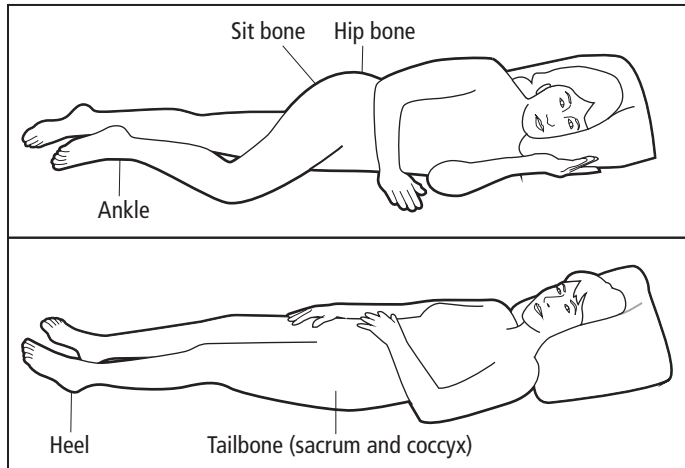
DEEP TISSUE INJURY

## WHAT CAUSES PRESSURE INJURIES

Sitting or lying in the same position for too long can cause a pressure injury. Medical devices like casts and tight-fitting clothing can cause them as well. Sliding over surfaces, or pulling your skin in opposite directions, can also cause pressure injury. About 95 percent of people with a spinal cord injury will have a pressure injury at some point in their lives.

The injuries can develop where bony parts of your body make contact with surfaces you are sitting, leaning or lying on, such as a bed or wheelchair. That is why it is so important to keep shifting position. Pressure injuries can also occur in areas that are too moist.

This picture shows some common sites of pressure injuries:



COMMON SITES OF PRESSURE INJURIES

## Why people with spinal cord injury have a greater risk of getting pressure injuries

People with spinal cord injury go through physical changes that make it easier to get pressure injuries and harder to treat them. Here are some of the additional risks:

### Changes to the body

**COMPLETENESS OF THE SPINAL CORD INJURY:** The less you are able to move (or the more body parts that are affected by your spinal cord injury), combined with how much feeling you have below your level of injury, will affect your risk of developing a pressure injury. Very active people with paraplegia are still at risk. The longer you have lived with your injury, the more likely it is you will develop pressure injuries. People who have had a brain injury that affects their thinking are also at higher risk because they may forget to change positions or eat properly.

**MUSCLE ATROPHY:** When sensation is lost and muscles are unused, they get smaller and weaker. That reduces the natural protective cushioning that muscles provide over bony areas.

**BODY WEIGHT:** Being overweight is common in people with spinal cord injury, and weight increases the risk of pressure injuries. Very thin people, on the other hand, are also at risk. They have less cushioning between their bones and the surfaces they come into contact with. Also, some people may have poor nutrition, which can weaken skin tissues.

**SIT BONES FLATTENING:** The ischial tuberosities are the sit bones under the muscles of your bum. The shape of the sit bones gets flatter over time. For people with spinal cord injury who use a wheelchair, this area has the greatest risk of developing deep pressure injuries.

**LOSS OF CONNECTION BETWEEN NERVE AND SKIN:** When the nerves are blocked from sending messages between the brain and the skin, the flow of blood and oxygen decreases. The skin also makes less of a healthy connecting protein called collagen. These changes to the skin make it harder for pressure injuries to heal.

**SKIN THAT IS TOO DRY OR TOO MOIST:** If a spinal cord injury causes problems with bowel and bladder control, it is harder to keep the area between the legs clean and dry. When there is a spinal cord injury above the T6 neurologic level, the body is unable to cool itself by sweating and can easily overheat. Dry skin is a risk factor for pressure injury.

**LOWERED ABILITY TO FIGHT INFECTION:** Spinal cord injury weakens the immune system, which helps us to fight off infection. That makes it easier for pressure injuries to become infected.

**AGING:** Everyone's skin gets more fragile as we get older and our muscles and movement decreases.

**OTHER HEALTH PROBLEMS:** People with spinal cord injury who have other health problems, such as kidney disease, heart disease, other infections, poor nutrition, and iron-poor blood are at greater risk for pressure injuries.

## Other things that can increase the risk

Lifestyle and personal choices as well as quality of life and mental health all play a role in maintaining healthy skin. Here's how some of these things could increase or decrease the risk of pressure injuries:

**PAIN:** Chronic pain can be a big problem for people with spinal cord injury. Many people experience more than one type of pain—muscle pain and nerve pain, for example. If it is painful to shift and move your weight, you may not be doing it enough to avoid the risk of pressure injuries. Ask your health care team for more help with pain management. They may know techniques for keeping pain under control while you move.

**DEPRESSION:** Depression is common in people with spinal cord injury, especially in the first few years after the injury. Chronic pain can also lead to depression. A person with depression may not be able to take care of themselves in the same way. Sadness that does not go away may mean clinical depression. Talk to your health care team. Treatment can involve speaking to a trained mental health professional, taking medication, or both.

### COMMON SIGNS OF DEPRESSION

Sleep changes – you can't sleep, or you sleep too much

Appetite changes – you have lost your appetite or you can't stop eating

Trouble concentrating or doing things you normally find easy

Trouble controlling negative thoughts

Feeling hopeless and helpless

Feeling more irritable or aggressive than usual

Not taking care of yourself – e.g., you are drinking more alcohol than normal, taking risks, gambling out of control

Thinking life is not worth living (seek help immediately if this is the case)

**NOT ENOUGH MONEY AND LACK OF ACCESS TO CARE AND EQUIPMENT:**

Limited money is connected to many of the risks for pressure injuries. People with spinal cord injury may have a fixed income, such as a disability pension. Having a disability is expensive. There are extra costs for things like medication and equipment. Bad or poorly maintained equipment can lead to pressure injuries. Having enough hours of support and consistent support (someone who knows you and your body) makes a huge difference in preventing or managing pressure injuries. If you don't have enough money for healthy food, your skin health can suffer. Not having enough money can isolate people and make it harder to reach out for help.

**FINDING TIME FOR SKIN CARE:** It takes someone with a spinal cord injury more time and energy to do everyday tasks, like getting dressed. If time and energy are limited some people may see it as a trade-off—taking added time for skin-checking and weight-shifting routines or just getting on with the day's activities. You may feel you simply don't have time for both. That's why it is so important for you and your health care team to come up with ways to make these routines part of your daily life. You need your own plan—one that fits your life and schedule.

**ALCOHOL, RECREATIONAL DRUGS AND SMOKING:** Alcohol, recreational drug use, and smoking can affect your overall health in a negative way. They can also be addictive. Speak with your health care team if you need help with these habits.

**A BREAK IN ROUTINE:** Sometimes a life event, such as a death in the family or a sudden illness, causes a break in your daily routines. It helps to be aware of this danger so that you do not neglect checking your skin regularly.

**CONTINENCE ISSUES:** Incontinence increases the risk for pressure injury. To reduce the risk try and better manage your continence and use a protective skin barrier to prevent skin breakdown.

Some medications can impact wound healing/skin integrity, check with your health care team.





# Preventing Pressure Injuries

Preventing pressure injuries involves:

- taking good care of your skin
- checking your skin often
- shifting or moving your weight regularly to prevent pressure from building up
- using the best possible equipment to minimize pressure
- choosing healthy foods and drinking enough fluid
- changing personal habits that put you at greater risk.



LIQUID,  
PH-BALANCED  
CLEANSER

These are the guidelines that experts agree on.

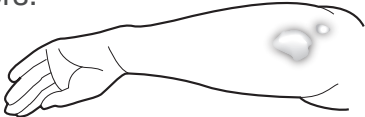
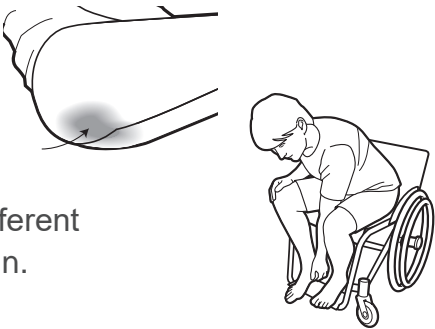
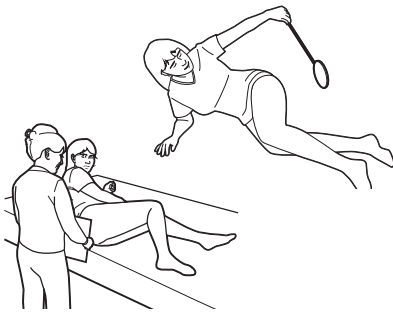
SKIN CARE GUIDELINES	
USE	AVOID
Warm water and liquid, pH-balanced cleanser.	Perfumes and other ingredients that may bother your skin; bar soap.
Gentle wash cloth.	Rubbing or scrubbing, which can damage blood vessels and tissue.
pH-balanced moisturizer, fragrance, and alcohol free.	
Keep skin clean and dry.	Moisture, sweat and urine. If you are having problems with your bowel or bladder routine get help from a member of your health care team, who is trained to deal with bowel and bladder issues.

## SKIN CHECKS

You should check your skin often—twice a day is good. Checking often means that you know what is normal for your skin. That helps you to spot changes.

If you need help checking your skin, try to have the same person help you all the time, so that they know what is normal for your skin too.

A skin check involves looking at and touching your skin, paying special attention to areas where pressure could build up.

HOW TO CHECK YOUR SKIN	
<b>LOOK FOR</b>	<ul style="list-style-type: none"> <li>• redness, bruising, or any change of colour</li> <li>• changes in texture, such as rashes, dryness or swelling</li> <li>• cracks, scabs, and blisters.</li> </ul> 
<b>FEEL FOR</b>	<ul style="list-style-type: none"> <li>• a difference in skin temperature from surrounding areas</li> <li>• hardness or softness different from the surrounding skin.</li> </ul> 
<b>USE A MIRROR OR PHONE</b>	<ul style="list-style-type: none"> <li>• use long-handled mirror to check parts of your skin you can't see</li> <li>• ask someone else to hold the mirror</li> <li>• some people use their phones to check places on their skin they cannot see, by having someone take photos.</li> </ul> 

Do skin checks even more often:

- any time you are not moving as much as usual (e.g., if you are in bed during the day with a virus)
- if you have already identified a skin problem
- when you are trying out new equipment
- when your lifestyle changes and you are sitting more often, or for longer stretches of time, with a new job for example
- if your medical condition is getting worse.

## PRESSURE MANAGEMENT

*Pressure management* is the term used for taking care of all of these things:

- redistributing or shifting your weight
- avoiding friction and shear
- eating healthy food and drinking enough liquids
- keeping your skin clean and dry.

The members of your health care team who are best equipped to help you with pressure management are the nurse, the occupational therapist and the physiotherapist. They will take a “24-hour approach” to assessing your pressure management needs. This means looking at all of the positions that your body will be in over the course of a 24-hour day, both waking and sleeping. These assessments should happen from the time of your injury and be repeated regularly after that.

## WHAT HAPPENS DURING AN ASSESSMENT

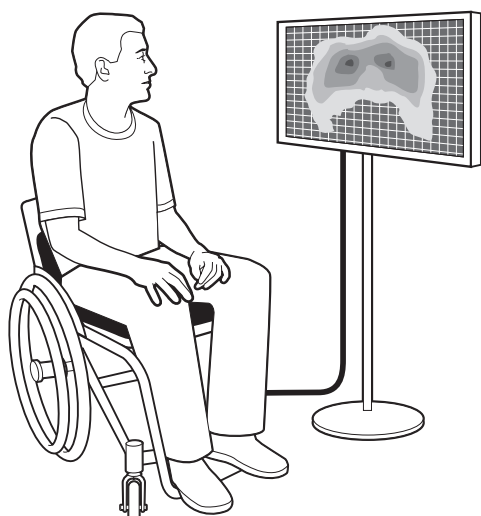
You, your family and your attendants or personal support workers know your body and your daily routine best. Your job is to communicate all that specific information about yourself to your health care team. Your health care team will start by getting to know you. They will ask questions about your injury, your goals, abilities, lifestyle, and personal preferences. They will need to know what you are able to do to help manage pressure on your own (for example, by shifting your weight).

The purpose of the assessment is to work with you to make sure you are comfortable in all positions over the course of your day and night. They will want to find out:

- what kind of help you will need to change positions

- what positions are best for you
- what kind of support surfaces are best for you
- what kind of equipment you need.

The therapists will want to observe you moving into and out of each of the positions you assume each day and, on every surface, (for instance, your bed, wheelchair, and commode). They will need to know the amount of time you spend in each position and on each surface. They will also want to watch you performing typical tasks in each position.



INTERFACE PRESSURE MAPPING

They will inspect your skin, before and after each move, by looking at it and touching it. This helps them see where the pressure areas are and how well your skin can tolerate these movements without them causing friction, shear, or injury.

The therapists may use a tool called *interface pressure mapping*. This is a flexible mat that measures the pressure between your body and its support surfaces. They may also take photos and video records to help them see how you are doing over time.

## MAKING AN ACTION PLAN

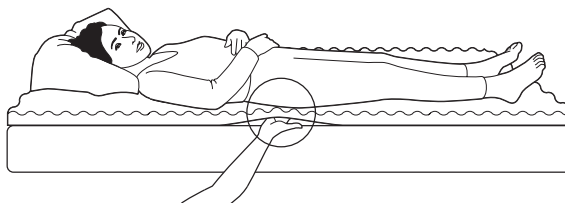
The therapist will use all of this information to work with you on making an action plan, which could include things like:

- getting you equipment or changing the equipment you are using
- planning an equipment trial to make sure it suits your needs
- helping you change the way you do some of your daily tasks to reduce pressure
- extra rehab to help you build up skills
- training for a person helping with your skin care routine.

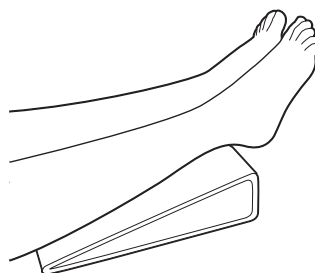
Make sure your plan states times for follow-up and for the next complete assessment. Spending most of the day in bed (“*bed rest*”) is usually not recommended, unless directed by an expert in wound care.

**PREVENTING INJURIES WHILE LYING DOWN****CHECK UNDER THE SIT BONES**

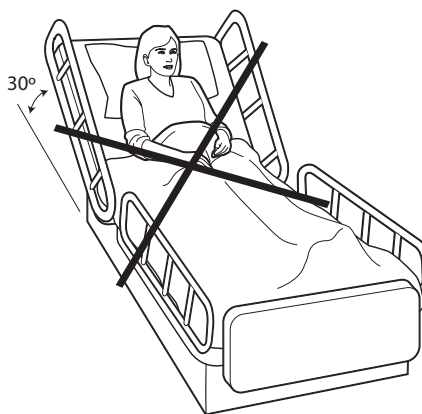
- Make sure your mattress isn't wearing down in the places where your bones make contact

**PROTECT YOUR HEELS**

- Lift your heels up with a wedge cushion
- Or let them rest over the edge of the mattress

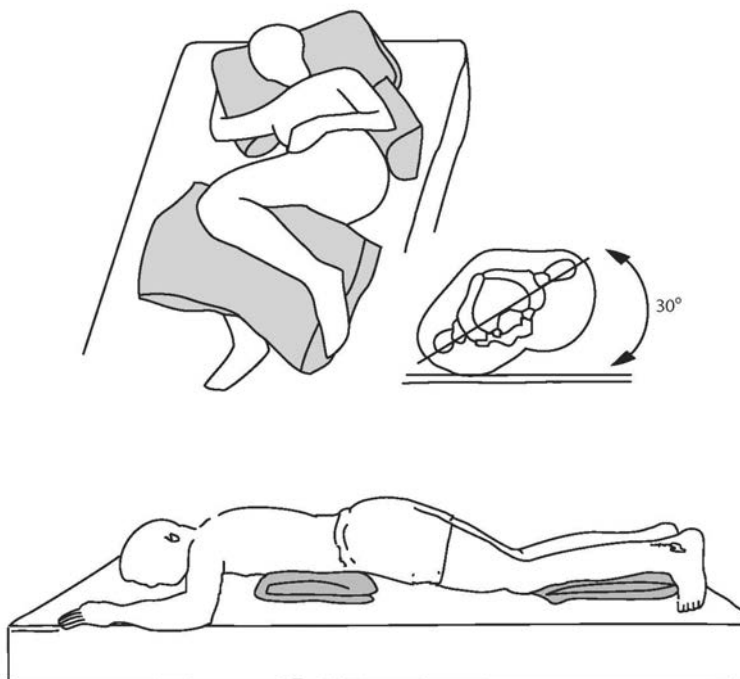
**SIT UP IN A CHAIR, NOT IN BED**

- Don't raise the head of the bed more than 30 degrees. Transfer to a chair with proper support for your bottom



**PREVENTING INJURIES WHILE LYING DOWN****USE  
PILLOWS  
FOR  
SUPPORT  
ON YOUR  
SIDE AND  
STOMACH**

- *Take pressure off your knees and hips with cushions or pillows*
- *Make sure you feel comfortable*

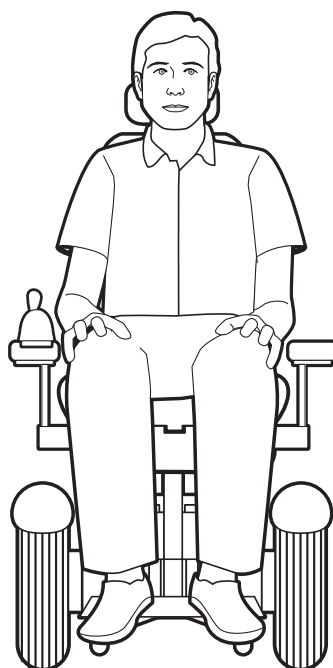


There are many kinds of support mattresses and seating surfaces. Your occupational therapist or physiotherapist can help you figure out what is best for you.



**PREVENTING INJURIES WHILE SITTING****MAINTAIN  
GOOD  
POSTURE**

- Keep your posture in a neutral pelvic position
- Your sit bones should lie flat along the sitting surface
- Your weight should be supported along your bottom and thighs
- Check your posture throughout the day, especially when you start getting tired

**USE  
COMMODOES  
CAREFULLY**

- Commodes often don't have enough surface area to distribute weight
- If it takes a long time to finish your bowel routine, talk to your health care team about changing your commode or your position to one that redistributes pressure better

## CHOOSING CLOTHING MATERIALS

CHOOSE THESE MATERIALS	AVOID THESE MATERIALS
Wick away moisture and don't build up too much heat.	
Breathable	
Soft and stretchy	Tight
Smooth	Thick seams and buttons, zippers, and pockets can all become pressure points. Watch out for buttons on the back pockets of jeans.
Shoes a size bigger than before your spinal cord injury	Tight shoes. Check your feet often when wearing shoes.

## WEIGHT SHIFTING AND MOVEMENT

To be successful in preventing pressure injuries, your routines for redistributing your weight should be built into in your daily activities so that it is impossible to forget them.

A pressure-relieving movement should last 1-2 minutes to be effective. Ideally you should redistribute your weight every 15 minutes. There are three ways that people using wheelchairs for daily mobility relieve pressure on parts of the body:

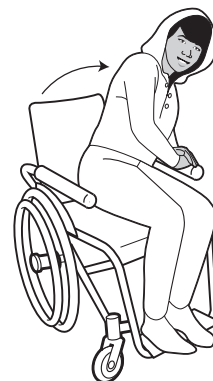
**FUNCTIONAL MOVEMENT:** This means that you have enough control over your own movement to keep shifting your weight over the course of your daily activities, without even thinking about it too much. An example of this might be leaning forward to wash the dishes in the sink.

**ACTIVE WEIGHT SHIFTS:** This means that you have enough movement and strength in your upper body to shift your weight, following a planned schedule. This includes side-leaning, forward-leaning, and whole-body lifts.

**WEIGHT SHIFTS WITH ASSISTANCE:** This means that you use equipment to shift your weight. For instance, you or your support person might adjust the back of your wheelchair. Or, there might be a power tilt or recline function on the wheelchair that you or your support person can control.

**COMMON WAYS TO SHIFT WEIGHT****LEANING TO THE SIDE**

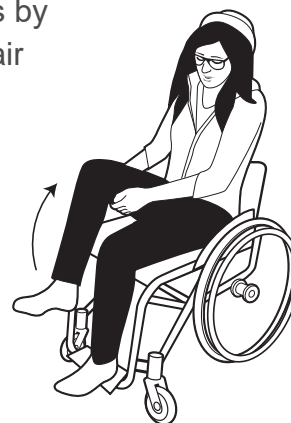
For people who have enough muscle control, this is a good way to get pressure off one buttock at a time.

**LEANING FORWARD**

This is fairly easy for many people to do, and it is effective in relieving sitting pressure. It also looks quite normal to be in this position for two minutes, so you don't have to be self-conscious about it. You can support yourself if needed with a table in front of you.

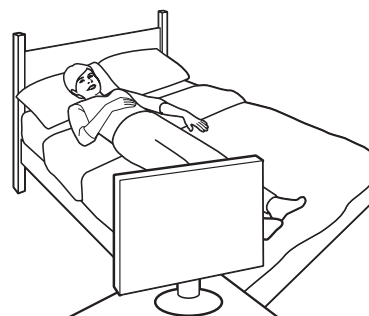
**LEG LIFT**

Take pressure off the back of the knees by lifting each leg away from the wheelchair surface.



**COMMON WAYS TO SHIFT WEIGHT****LYING DOWN**

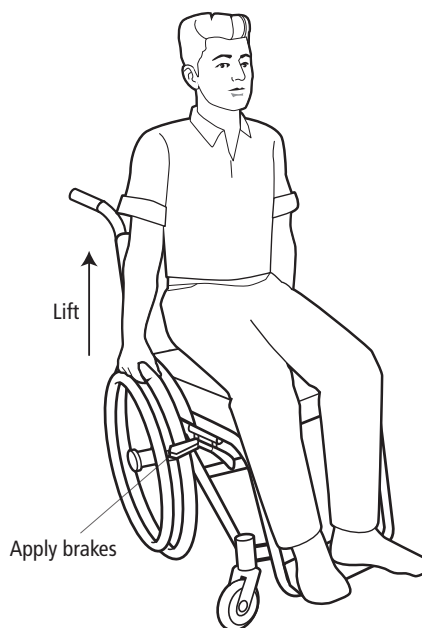
People who do not have enough muscle control to do active weight shifts should lie down regularly over the course of the day to take the weight off pressure points.

**STANDING AND WALKING**

Some people are able to stand with support as part of their daily routine. This greatly reduces their risk of getting pressure injuries. People who are able to walk with support should be careful to have shoes that fit well and do not damage skin.

**PUSH UP**

If you are able to, using your wheels to push up from your chair is a good way to change your position for comfort, for stretching, and to correct your posture.



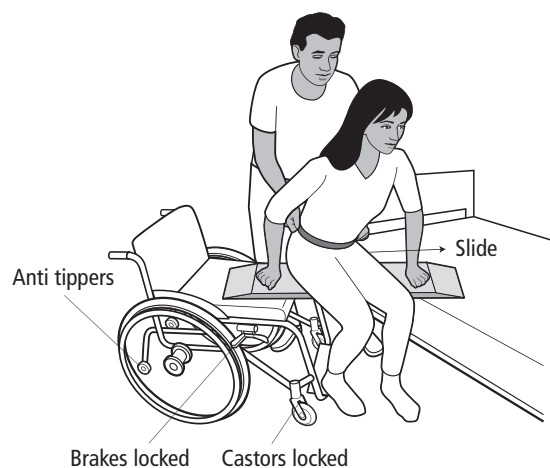
## GROSS MOTOR SKILLS TRAINING

People with a spinal cord injury need to keep building strength, endurance, balance and coordination. You need to watch carefully to see how moving around is affecting your skin. For example, if you are getting in and out of your wheelchair often, there is the risk of falls or bumps.

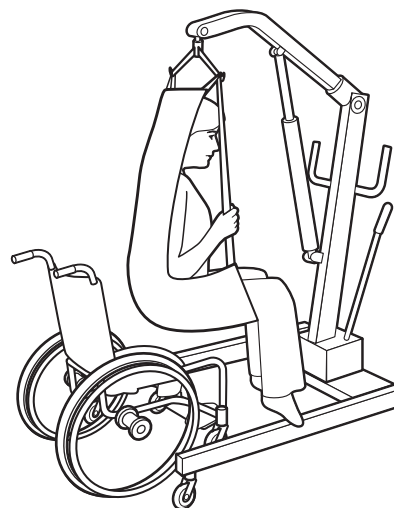
Gross motor skills training means that you work with an expert on your health care team to learn or re-learn how to use muscles to change position, relieve pressure, improve muscle tone, and increase blood circulation. If you use a manual wheelchair this training will help you learn how to move without putting too much strain on your arms.

*Transitional movements* mean learning how to safely move from one position to another. You can use equipment such as sliders, bed rails, or trapeze bars to help you lift, rather than drag, your body. Rolling into or out of the lying down position or moving from sitting to standing are examples of transitional movements.

*Transfers* are movements from one surface to another, such as from a bed to a wheelchair. The most common ways to do this are using a sliding board or a mechanical lift for people with higher spinal cord injuries.



TRANSFER USING SLIDING BOARD



TRANSFER USING MECHANICAL LIFT

## Transfer tips

- Keep the distance between the two transfer surfaces as short as possible. For instance, placing your wheelchair parallel or at a slight angle to the transfer surface creates the smallest gap.
- Be aware of all parts of your body to prevent bumps, scrapes, and other damage to the skin.
- Lift your body away from the support surface, try not to drag it.
- Keep the space between the transfer surfaces free of obstacles such as arm and footrests.
- It is easier if the surface you are transferring to is slightly lower than the one you are coming from.
- Choose smooth, low-friction, breathable materials for sheets, pajamas, mechanical lifts, and slings.
- Once you have finished your transfer, check your skin to make sure that it is not stretched or folded together.

## Wheelchair training

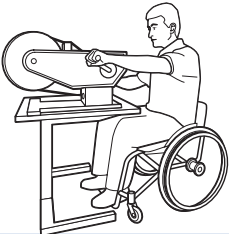
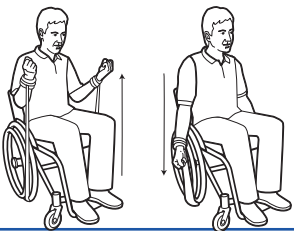
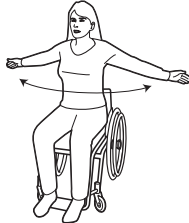
Using a wheelchair puts you at high risk of pressure injuries on your bottom. Research has shown that special training in using a wheelchair really improves people's skills and helps them to avoid problems such as pressure injuries. Sometimes this training is available during rehabilitation right after your injury, or you can get training in your community.

There is a wheelchair skills training program at Dalhousie University in Halifax. They have published videos of wheelchair skills online available here: <https://wheelchairskillsprogram.ca/en/>.



## Regular exercise

Canada's Physical Activity Guidelines for Adults with Spinal Cord Injury recommend moderate or vigorous exercise and strength training. This chart shows a summary of the guidelines.

	HOW MUCH	HOW OFTEN
<b>EXERCISE</b>	<p>The exercise should last at least 20 minutes.</p> 	<p>You should have both exercise and strength training sessions twice a week.</p>
<b>STRENGTH</b>	<p>Strength training should include three sets of 8 to 10 repetitions for each major muscle group. It should also last 20 minutes.</p> 	
<b>STRETCHING</b>	<p>People who use wheelchairs need to pay special attention to doing exercises for flexibility, because sitting for a long time can make muscles get tighter and shorter. Stretching exercises can be done alone or with help if needed.</p> 	

SCI Action Canada has published Physical Activity Guidelines for People with spinal cord injury in 11 different languages: learn more at <https://sciactioncanada.ok.ubc.ca>.

## NUTRITION AND FLUIDS

Poor nutrition and not getting enough fluids (dehydration) can both lead to pressure injuries and prevent them from healing properly. People who are not able to eat and drink without help are at the greatest risk.

Weight loss is a warning sign for poor nutrition and pressure injury development. Gaining too much weight can also increase the risk.

A dietitian can help you develop a nutrition plan that will ensure you have a healthy diet and get enough fluids. The plan should consider:

- if you have a spinal cord injury, your level of injury and swallowing ability
- your dental health
- any food allergies you have
- your personal and cultural food preferences, and any religious restrictions
- your budget.



# Treating Pressure Injuries

PART 3

## MY EXPERIENCE: DEALING WITH CHALLENGES IN THE HEALTH CARE SYSTEM

Unfortunately, pressure injuries are very common. Research shows that 95 percent of people with a spinal cord injury will experience a pressure injury in their lifetime, so if you have one, you are not alone. Pressure injuries are expensive, both for the health care system and for the people affected. The average cost of treating a pressure injury is about \$5,000 per month for each person living in the community. Pressure injuries can impact your ability to go to work or school, limit your social life and, in very bad cases, they can be deadly. For all these reasons it is essential that preventing and treating pressure injuries be taken very seriously.

We are fortunate to have a publicly funded health care system in Ontario, however, our health care system is under strain. People with a spinal cord injury experience this strain first hand. If you have a pressure injury, you may have to wait several months for service. Our health care system does not currently have enough specialized outpatient rehabilitation clinics where you can access a team of experts trained in spinal cord injury. Another challenge you may face is securing enough support in the community when you return home after rehabilitation to continue your healing. Without the right support in place some people with a spinal cord injury resort to visiting hospital emergency departments to get help. This is not an efficient solution.

So what can you do? Resources like this guide can help you learn to spot the early signs of pressure injury. Sharing and discussing this guide can help you make sure your health care team is aware of the recommendations for preventing and treating pressure injury. Telephone and videoconferencing are good ways to link your health care team up with experts who live in other communities. These conferences can be used to discuss your treatment, to teach you about your care, to help you learn from other people with spinal cord injury, and to share best practices for treating you.

**PETER ATHANASOPOULOS** is the Director of Public Policy with Spinal Cord Injury Ontario.

## THE HEALTH CARE TEAM

Ideally, you and your family should be working with a team of experts who know how to prevent and treat pressure injury. When people with spinal cord injury have access to a team of experts like this, research shows lower rates of pressure injuries and, if people have a pressure injury, they heal faster. The members of the team should include:

- a physiatrist (a rehabilitation doctor who treats illnesses or injuries that affect how you move)
- a team member who specializes in wound care
- an occupational therapist who helps with seating and daily activities
- a physiotherapist who helps with movement and transfers
- a nurse who helps with medical care for your body
- a psychologist who helps with how you think and feel
- a social worker who helps with accessing the health care system and services, funding and talking about how you think and feel
- a dietitian who helps with nutrition, hydration, and meal planning.

Many Ontario communities do not have all these experts in one place, you may need to travel to see a physiatrist, or to ask for a health care team that uses technology to include professionals in other communities.

Many people find the support of someone who listens, shares their own experiences, and provides practical information a helpful contribution to the professional services provided by their health care team.

## OPTIONS FOR TREATING PRESSURE INJURIES

Contact your doctor as soon as you see any sign of a pressure injury. They are much easier to treat in the early stages. Stay off the area completely until you have an assessment.

Your health care team will thoroughly check all your skin. They will look at your medical history and your daily routines, to try to find out what has caused the injury. They will likely order diagnostic tests, such as blood tests and tissue cultures. If you have an infection, they will prescribe antibiotics.

There are many options for treating pressure injuries, ranging from letting the area heal itself to performing surgery. The treatments that you and your health care team choose will depend on how serious the pressure injury has become. Your treatment choices are also affected by your general state of health, and whether you have an infection.

## ELECTRICAL STIMULATION THERAPY (E-STIM)

Health care providers with advanced training may prescribe Electrical Stimulation therapy, referred to as E-Stim, to help your pressure injury heal. E-Stim involves applying low levels of electrical current through a small electrode placed on the wound and surrounding skin. It produces a comfortable pins and needles sensation.

For people with spinal cord injuries, E-Stim therapy can increase the rate of healing and improve the likelihood of completely closing your pressure injury. E-Stim also works to improve healing of other causes of wounds, including diabetes-related foot ulcers and leg wounds that occur when circulation through arteries and veins is compromised.



For E-Stim to work:

E-STIM THERAPY

- the treatment needs to happen at least 3 – 5 days per week;
- the equipment needs to be in place for 45 – 60 minutes per treatment; and
- this treatment plan continues until the pressure injury is closed.

E-Stim treatment can take place at home. With help from a family member or other support person, some people have been shown how to treat their own pressure injuries with E-Stim. It is also available free in some locations across Canada. Tell your doctor, nurse, or physical therapist about this treatment. Ask if the specialized E-Stim equipment and supplies are available near you, and if anyone in your area can provide it.

To learn more about E-Stim visit <https://estim4wounds.ca/>.

## CHALLENGES YOU WILL FACE DURING TREATMENT

While you are being treated for a pressure injury, you will have to sit and lie in positions that always keep the pressure off it. Your lifestyle and level of independence may have to change for some time. If you will have to be in bed for a long time, ask a therapist on your health care team for an exercise routine you can do to help prevent your body from getting *deconditioned* or weak from lack of use.

Many experts do not support the use of full-time bed rest to treat pressure injuries. Prolonged bed rest can seriously affect your health and strength and may lead to depression. Watch for signs of depression and ask for help from your team.

While you are recovering, there is always the risk of developing a new injury in a different place, even if you have been using a special support surface. That makes it even more important to check all your skin surfaces often.

Another challenge you will face is getting your support surfaces and equipment upgraded, if they helped to cause the injury. Wait times can be long for getting an assessment with an occupational or physiotherapist who has the right training. The costs of upgrading surfaces and equipment are also a challenge. Ask your health care team for advice on getting financial help.

## NUTRITION WHILE YOU ARE HEALING

### Calories

Having pressure injuries increases your need for energy. Your body needs more when you are trying to heal a wound. Talk to a dietitian to figure out how many calories you need.

CHOOSE THESE	AVOID THESE
Nuts	White flour
Avocados	White sugar

CHOOSE THESE	AVOID THESE
Whole grain bread and pasta	Foods with a lot of added salt
Brown rice	Soft drinks
Legumes	
Potatoes	

### Protein and amino acids

Meats, fish, lentils and beans, eggs, and cheese have lots of protein. Protein supplements are often helpful in healing pressure injuries. Ask your dietician if they would be right for you. Your health care team may also suggest that you supplement your diet with the amino acids arginine and glutamine, which help with pressure injury healing. Skim milk powder is a cheap protein supplement and can easily be added to lots of things.

### Vitamins and minerals

Doctors may recommend vitamin and mineral supplements, such as Vitamin C and zinc, for people with pressure injuries. These supplements are only helpful for people who are low or deficient in them. Broccoli, red and green pepper, strawberries, orange, pineapple, and papaya are high in Vitamin C. Pumpkin seeds, red meat, yogurt, sesame seeds, oats, and oysters are high in zinc.

Vitamin A can help with healing in people who have other health problems such as diabetes. Sweet potato, kale, spinach, and carrots are high in Vitamin A. Vitamin E can interfere with wound healing and should not be taken. Work with your doctor to figure out whether you need supplements.

### Fluids

Your body needs enough fluids for healing and making new skin. Drinking fluids also helps your body fight infection because it helps get rid of waste.





# Working with your Health Care Team

## PART 4



Your relationship with your health care team is built on communication and trust. Your team are experts in prevention, diagnosis, treatment, and recovery. But you are the only one who has personal knowledge about your body and how it reacts and feels.

Here are some tips on communicating effectively with your team:

## BEFORE YOU VISIT

To get the most out of your medical appointments it is good to prepare before each visit.

- Think about the questions you want to ask. Write them down and highlight the ones that are most important to you.
- Bring a printout from your pharmacy of the medications you are taking.
- Know your medical history – do you have other health issues, or have you had other treatments in the past?
- Know what you are allergic to.

## DURING YOUR VISIT

Keep your visit focussed, but don't be afraid to ask questions. You may want to bring a close friend or relative who can help you address issues or make notes about the conversation to help you remember later.

### Examples of questions you might want to ask

- What do you think caused my pressure injury?
- How is it going to be fixed?
- What should I do in the meantime?
- What can I do to help it heal?
- What should I do if my symptoms get worse?

Make sure your health care team listens to you. Keep in mind you may not be able to solve everything right away. When you are between appointments and trying to heal a pressure injury the experts say you should focus on nutrition.

## RESOURCES FOR LOOKING AFTER YOUR HEALTH

Connecting with other people who have experienced a pressure injury — or prevented them! — is a great way to get support and tips on how to prevent pressure injury and other problems. Here are some useful resources that can help:

### Spinal Cord Injury Ontario

Spinal Cord Injury Ontario offers services for people with spinal cord injury and other mobility disabilities across Ontario. If you need help finding a seating expert near you, or help finding funding or equipment, SCIO's Service Navigation Coordinators can help. To learn more, contact our provincial intake at [referrals@sciontario.org](mailto:referrals@sciontario.org) or call 1-877-422-1112.

The Peer Support program at SCIO matches people with spinal cord injuries and their family members to those who have faced similar challenges and want to share what they know. Support includes one-on-one peer matching with trained mentors, Peer Connections and Family Connections workshops across the province and online portals to connect as a group. Learn more at [sciontario.org/peer-support](https://sciontario.org/peer-support) or contact [peerconnections@sciontario.org](mailto:peerconnections@sciontario.org).

### Spinal Cord Essentials

UHN Toronto Rehab Spinal Cord Rehabilitation Program has made a series of handouts called Spinal Cord Essentials to help you manage spinal cord injury. The handouts cover information about your rehab stay, medical complications, self-care and financial resources. These handouts do not replace your health care team and are meant only as a written reference and general guidelines. They are available in English, French, Chinese, Farsi and more languages here: [www.spinalcordessentials.ca](http://www.spinalcordessentials.ca).

## Cortree

Cortree is the premier destination for everyone looking to grow their knowledge, empathy and understanding of living and working with a mobility disability.

Cortree's content, free for anyone to engage with, shines a light on the unique experiences of living with a mobility disability. The platform features expert content crafted by creators with real, lived disability experience and the insight of users of the health care system.

In 2019, Spinal Cord Injury Ontario (SCIO) recognized our community's lived experiences had value for older adults well beyond the traditional spinal cord injury community. People with disabilities live in communities across Ontario with geographic disparities in access to care. Our goal is to support you to take an active role in your care and prevent the health problems that can limit your access to your home community.

Cortree is the platform for everyone to learn from and engage with SCIO's seven decades of health care, mobility, and disability experience. For more information visit [cortree.sciontario.org](https://cortree.sciontario.org).

## Advocacy

The need to modernize service delivery and change the scope of practice is vital for our diverse community and SCIO has been active in leading opportunities and facilitating partnerships that address these gaps and solicit positive change.

We rely on our community's collective voice to amplify our needs and guide knowledge transfer. Your lived experience is paramount to our cause and is essential in decision making and policy change. Want to know more or become involved? Visit [sciontario.org/advocacy](https://sciontario.org/advocacy).

# Thank You

Many people worked together to create this guide. We would like to thank the project team, on the original and 2019 and 2022 version, including:

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[sciontario.org](http://sciontario.org)

 **Spinal Cord Injury Ontario** | **Lésions Médullaires Ontario**

**Cortree**  
 From the SCIO community