



UNIVERSITY OF OTTAWA
HEART INSTITUTE
INSTITUT DE CARDIOLOGIE
DE L'UNIVERSITÉ D'OTTAWA

THE NEXT STEPS OF THERAPEUTIC HYPOTHERMIA

A Guide for Patients and Families



Table of Contents

About Therapeutic Hypothermia 1

The Healthcare Team..... 2

Possible Symptoms Following Therapeutic Hypothermia 3

Levels of Recovery and How the Family Can Help..... 5

Handling Challenging Behaviours and Emotions 6

Ways to Aid Rehabilitation 10

Coping with Changes in Family Roles 11

Ways to Reduce Anxiety 11

Resources..... 12

Appendix: Ways to Improve Hand Strength and Dexterity 15

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About Therapeutic Hypothermia

Therapeutic hypothermia is an important treatment for a comatose survivor of cardiac arrest—a patient whose heart stopped beating, was restarted with advanced treatment, and who remains minimally or unresponsive after resuscitation. This treatment involves lowering the patient's temperature to about 33 degrees Celsius and then rewarming his or her body back to a normal temperature of 37 degrees. This treatment usually lasts about 72 hours. Hypothermia protects the brain and other vital organs and has been shown to improve neurological outcomes and increase survival after cardiac arrest.

Cardiac Arrest and the Brain

Cardiac arrest can cause a lack of oxygen to the brain. When the supply of oxygen is interrupted for more than a few minutes, brain injury and other serious side effects can occur. These include behaviour changes and changes in motor skills. Oxygen deprivation can be mild, causing the slow onset of symptoms, or severe, leading to rapid changes.

Recovery from brain injury can be a long and challenging process. If someone in your family has a brain injury, you can play an important role in his or her recovery. It is important to remember that individuals with brain injuries recover at their own rates.

The Healthcare Team

At the University of Ottawa Heart Institute, we strive to provide the best possible care to our patients and their families. The nurses, nursing coordinators and doctors at the Heart Institute are dedicated to caring for you and your loved ones. If you have any questions at any time, please feel free to ask our nurses and doctors. Within the hospital stay, it is also possible that our extended healthcare team will be involved with you and the care of your loved one.

Below is a brief description of who may also be a part of the healthcare team.

Our Extended Healthcare Team

Social Work

Social workers are part of healthcare teams throughout The Ottawa Hospital (TOH) and the Heart Institute, offering a broad range of counselling and resources to patients and those who care for them. Social workers provide support while patients are admitted to the hospital.

Physiotherapy

The role of a physiotherapist is to assess, treat and improve overall strength, endurance, movement and function affected by injury, disease or disability.

Occupational Therapy

Occupational therapists assess the patient's cognitive, perceptual and physical functions to identify the impacts on their daily activities and assist the team with discharge planning and recommendations.

Neuropsychology

The neuropsychologist conducts formal tests of the patient's thinking skills, including memory, attention, language, visual perception, organization, planning, reasoning and judgment, to assess the presence, severity and nature of any brain dysfunction. The results are used to assist with planning discharge and determining rehabilitation needs.

Speech Language Pathology

The speech language pathologist assesses, treats and manages swallowing and communication difficulties (including voice disorders, which can occur following the removal of a ventilation tube).

Registered Dietitian

The registered dietitian assesses and helps to optimize the patient's nutritional status. A patient might need a special diet, oral nutritional supplements or a feeding tube to meet his or her nutritional needs. The dietitian may also provide education on nutrition to patients and families.

Possible Symptoms Following Therapeutic Hypothermia

A variety of symptoms can occur following therapeutic hypothermia.

Communication

Some people have difficulty communicating after a brain injury. The problem may be caused by the muscles used for speech (in the lips, tongue and palate) or by aphasia, a condition that may cause a person to have difficulty understanding spoken or written language, difficulty reading or writing, or difficulty forming meaningful words or sentences.

Swallowing

Some people are unable to chew or swallow regular foods or drink liquids after a brain injury. This may require a change in diet (e.g., switching to puréed foods or thickened fluids). When people are not able to eat enough to meet their nutritional needs, a liquid diet is given through a tube in the nose or stomach, until they can meet their needs orally. These difficulties are usually temporary (in the early stages of recovery) but can continue for a longer period of time in cases of more severe brain injury.

Bladder and Bowel Control

Following a brain injury, some people may have an overactive or underactive bladder or bowel. The urge to go to the bathroom may not be felt or recognized and responded to as usual.

Pain

Pain and headaches are common after a brain injury. They may go away as the patient improves. Sometimes they can be more chronic and require ongoing pain management.

Sleep

Sleep patterns can be changed after a brain injury. Sometimes people have trouble getting to sleep, staying asleep or getting the right level of sleep.

Fatigue

Fatigue is common. Recovering from a serious injury takes a lot of energy, is hard work and can be draining physically and mentally. When a person tries to focus his or her attention, remembering or thinking become difficult and doing simple things takes more effort.

Only short periods of activity may be possible and reminders to rest may be necessary. Fatigue often is lessened as a person's condition improves, but for some, it will be an ongoing problem. If so, activities and appointments will have to be scheduled accordingly.

Seizures

Seizures can occur after brain injury. They can cause a part of the body or the whole body to shake, or they can cause the person to appear to black out (be unresponsive for a few seconds).

Be sure to let the healthcare team know how your loved one is feeling and if there are any changes.

Levels of Recovery and How the Family Can Help

People with brain injuries move through recovery at different rates. Some people may:

- Move from one level of functioning to another
- Never be at a lower level of functioning
- Never reach higher levels of functioning
- Be at more than one level at the same time

How fast and how much a person recovers is affected by many things, such as:

- Length of oxygen deprivation
- Other injuries (such as cardiac or orthopedic)
- Complications during the recovery process
- Age and general health
- Medication side effects

In general, the more serious the injury, the longer and more intensive the rehabilitation.

Longer periods of unconsciousness lead to an increased chance that some disability will remain, even after a prolonged period of recovery time.

Handling Challenging Behaviours and Emotions

There are several possible symptoms associated with brain injury—some are temporary and others permanent. The following table provides general approaches to address challenging behaviours and emotions. Consultation with a specialist, such as a rehabilitation psychologist or occupational therapist, may be necessary to provide recommendations specifically for your loved one.

Behaviour or Emotion	What You See	How You Can Help
Agitation	<ul style="list-style-type: none">• Alternates between being hyperactive and sleeping• Cries, yells, flails arms or thrashes in bed• Hits others• Is self-destructive	<ul style="list-style-type: none">• Touch or talk to the person during periods of attention.• Ask simple, short questions.• Limit the number of distractions to create a quiet setting.• Know your loved one will likely have reduced tolerance for stress; think about how to reduce stressors before episodes happen.
Confusion	<ul style="list-style-type: none">• Is inattentive• Is forgetful• Asks questions over and over again	<ul style="list-style-type: none">• Give one-step instructions.• Use memory tools, such as a calendar or date book.• Repeat answers patiently.
Denial	<ul style="list-style-type: none">• Does not admit to changes or problems• Believes he or she is ready and able to do things the same as before• Makes excuses for not completing certain tasks• Manipulates others into performing tasks	<ul style="list-style-type: none">• If it is not dangerous, let the person try a desired activity.• Once you feel the person is ready, show that a seemingly “impossible” activity is simple to do.• Make sure that lack of confidence or ability is not the real root of the problem.

Behaviour or Emotion	What You See	How You Can Help
Depression	<ul style="list-style-type: none"> • Cries frequently • Lacks interest in life in general • Exhibits changes in appetite and sleep patterns • Lacks motivation • Withdraws from social contacts • Talks about dying 	<ul style="list-style-type: none"> • If symptoms persist or suicidal thoughts are expressed, seek professional help. • Give praise for progress made. • Try to engage the person in activities that he or she can tolerate
Disorientation	<ul style="list-style-type: none"> • Talks in a disorganized, disconnected way • Mixes fact and fantasy • Isn't aware of location, date, own identity or identity of others • Mixes up time periods 	<ul style="list-style-type: none"> • Review details like who and where you are, date and so on. • Talk about familiar things and people. • Use calendars, pictures and favourite music to orient the person.
Egocentricity	<ul style="list-style-type: none"> • Is self-centred and insensitive • Misinterprets other people's responses or actions 	<ul style="list-style-type: none"> • Do not allow the person to get everything he or she wants. • Do not expect the person to understand your point of view and respect your rights; you may have to demand them. • Get the person involved with a brain injury support group.
Emotional Instability	<ul style="list-style-type: none"> • Can't control emotions • Expresses emotions at the wrong time and in the wrong place • Has mood swings 	<ul style="list-style-type: none"> • Do not criticize. • Praise the person when he or she shows self-control. • Do not confront the person about this behaviour; it may cause embarrassment. • Model calm behaviour yourself.
Excessive Eating	<ul style="list-style-type: none"> • Constantly eats • Secretly eats • Doesn't remember eating • Frequently complains of hunger despite having recently eaten 	<ul style="list-style-type: none"> • Seek medical advice. • Provide other activities, such as exercising or hobbies.

Behaviour or Emotion	What You See	How You Can Help
Excessive Talking	<ul style="list-style-type: none"> • Talks constantly • Doesn't remember previous discussions • Can't come to a conclusion or solution • Can't break the cycle • Can't take turns in a conversation 	<ul style="list-style-type: none"> • Redirect the person's attention to a task. • If the talking seems related to anxiety, tolerate some talking. • Do not feel obligated to respond. • Suggest listening to music.
Memory Problems	<ul style="list-style-type: none"> • Forgets to complete tasks • Can't remember events since the injury or certain periods of time before it • Recalls information slowly • Has trouble remembering things like names and appointments • Often misplaces things • Repeats the same things over and over again • Has a hard time learning new things 	<ul style="list-style-type: none"> • Provide a quiet, calm setting. • Correct wrong answers gently. • Give reminder clues (e.g., "Was it this or was it that?") • When clues don't work, provide the forgotten information. • Use signs or other visuals to reinforce what needs to be remembered, including a memory book, calendars, and clocks or watches. • Exercise the person's memory by asking for a recap of events or activities. • Try not to interrupt; this could cause the person to forget what he or she wanted to say. • Try to maintain a consistent routine. • Label cupboards and drawers.

Behaviour or Emotion	What You See	How You Can Help
Change in Sexual Interest	<ul style="list-style-type: none"> • Makes inappropriate sexual remarks or advances • Manipulates partner for the sake of physical contact • Becomes threatening when partner is not willing to be sexually involved • Has a decreased libido 	<ul style="list-style-type: none"> • Tell the person that his or her behaviour is not acceptable. • Make him or her aware of the consequences of such behaviour. • Do not feel obligated to respond to the person's sexual demands. • Inquire into medication and counseling. • Discuss self-gratification options. • If necessary and where possible, remove yourself or the person.
Lack of Awareness (Anosognosia)	<ul style="list-style-type: none"> • Seems unaware of the existence of his or her disability • Lacks insight into the effects of personal actions • May not be able to fully appreciate or understand the effect that the brain injury is having on his or her life 	<ul style="list-style-type: none"> • Be as active as possible in the rehabilitation process. • Do not let the person drive a car or operate any dangerous equipment unless approved by a doctor. • Help him or her set realistic goals.
Apathy	<ul style="list-style-type: none"> • Diminished initiation, motivation or interest 	<ul style="list-style-type: none"> • Provide a routine by structuring daily activities. • Set up multi-step procedures so that one step leads directly to and cues the next step. • Seek professional help.
Impulsivity	<ul style="list-style-type: none"> • Tends to speak or act first and think later • Acts on inappropriate or confused thoughts • Is excessively demanding 	<ul style="list-style-type: none"> • Set short-term rewards for brief periods of self-control. • Suggest more acceptable behaviour.

Ways to Aid Rehabilitation

Things that could help with **familiarity**:

- Preferred music/TV shows/movies/books
- Pictures of family and friends to display in your loved one's hospital room
- Familiar items from home (e.g., a favourite blanket, pajamas, stuffed animal or pillow)
- A watch (if your loved one is able to read time)

Things that could help with **thinking skills**:

- Notepad or diary to keep track of new medical information/people/therapist
- Calendar/date book to keep track of appointments and events
- Crossword/word search/sudoku puzzles
- A deck of cards
- Board games
- Other activity books/games from the newspaper (e.g., find the seven differences, dot-to-dot)

Things that could help with **mobility**:

- Proper footwear (e.g., running shoes)
- Comfortable clothing for exercise
- Glasses, if applicable
- Walking aid as per physiotherapist recommendation (e.g., cane or walker)
- Log book to keep track of exercises

Things that could help with **dexterity**:

- See Appendix for suggestions about items you can bring from home and activities that can help with dexterity. Additional exercises are available from the occupational therapist.

Check with the healthcare team for more activities and instructions.

Coping with Changes in Family Roles

Adjusting to changes in family roles as a result of your family member's injury may require that you learn new ways of coping. For example:

- Share the work.
- If the injured person can no longer perform his or her usual role, each family member should step in and fill part of the person's role as best as possible. This can help your family adjust to the new day-to-day reality.
- Protect your own physical health and mental well-being. If not, you may become emotionally overwhelmed by the uncertainty of your future.
- Find a focus outside of the family. Leisure activities, hobbies and friendships can provide the balance you need in your life.
- Get help and support. If you need assistance adjusting to all of the changes prompted by your loved one's injury, contact the hospital social worker. You may want to talk to other family members, a close friend, your religious leader or other staff at the hospital. Changes in the roles of family members do not come easily. They are often emotionally and physically stressful.
- Some changes are temporary, while others may be permanent.
- Accept all the help you can get.

Ways to Reduce Anxiety

While your family member is in the hospital, there are ways to reduce your anxiety:

- Ask questions and state your worries to the healthcare team. Use your time in family-team meetings to its full advantage. Write down your questions before the meetings so that you are prepared.
- Know that you are considered part of the team because you know your family member better than anyone else.
- Where possible, accompany your family member to therapy sessions. You will be better able to understand the problems and their solutions.
- Take part in outings and special activities.

Read what you can to stay informed. You may find the following resources to be helpful.

Resources

Websites

- Brain Injury Association of the Ottawa Valley:
www.biaov.org
- MedlinePlus, U.S. National Library of Medicine, National Institutes of Health (“Cerebral Hypoxia”):
www.nlm.nih.gov/medlineplus/ency/article/001435.htm
- Mount Sinai Hospital (“Anoxic Brain Damage”):
www.mountsinai.org/patient-care/service-areas/neurology/diseases-and-conditions/anoxic-brain-damage
- TRAC Group (Rehabilitation):
www.tracgroup.ca

Treatment Programs

The Ottawa Hospital Rehabilitation Centre Acquired Brain Injury Program

The Acquired Brain Injury (ABI) Inpatient Service is an eight-bed inpatient program that focuses on teaching those who have suffered an acquired brain injury how to manage any difficulties in thinking skills, such as memory, attention, learning, planning and problem solving. The program’s goal is to help patients return to the community with the support they need.

The ABI Inpatient Service team is made up of different members of the healthcare team who offer education and support to not only the patients but their friends and families as well. Involvement from family members and significant others is highly encouraged.

Self-referrals are accepted. Referrals are also accepted from hospitals, physicians, healthcare providers, family members, community services and insurance companies.

Contact:

505 Smyth Road, Ottawa ON K1H 8M2
Phone: 613-737-7350 ext. 75685

Robin Easey Centre

The Robin Easey Centre (REC) provides community-based life skills instruction, cognitive rehabilitation and education services to adults who have sustained a brain injury. Some examples of skills taught at the REC include social skills, household management, memory strategies, impulse control, stress management, anger management, vocational preparation and public transit use. The goal of the centre is to provide patients and their families with the information, skills and experience needed to help them return to living in their communities.

The REC offers three specific programs—residential, day and outreach—designed to meet the particular needs of each individual. A combination of one-on-one sessions and group sessions are used as part of the rehabilitation process.

For patients admitted to the REC, there is a family/spousal support group, which provides a secure and supportive environment to help individuals understand brain injuries and enhance their ability to cope. Involvement from family members/loved ones is highly encouraged to optimize the success of the program.

Self-referrals are accepted. Referrals are also accepted from hospitals, physicians, healthcare providers, family members, community services and insurance companies.

Contact:

125 Scrivens Street, Ottawa, ON K2B 6H3
Phone: 613-726-1558

References

Toronto ABI Network:

“A Handbook for Families about Brain Injury.” Produced by the healthcare team of the Acquired Brain Injury Program Hamilton Health Sciences Hamilton, Ontario.

Appendix: Ways to Improve Hand Strength and Dexterity

Object	Activity Ideas
Pencil	<ul style="list-style-type: none">• Sharpen pencil in a hand-held sharpener.• Rotate pencil in your hand for erasing. Rotate back for writing. Repeat.• Twirl five to 10 times in each hand.• Crawl your fingers up and down the pencil.• Pick up pencil and adjust it in your hand for proper use.• Complete “mazes” on paper—stay between the lines.
Cards	<ul style="list-style-type: none">• Shuffle, place on the table one at a time, flip, pass, hold
Dice	<ul style="list-style-type: none">• Pick up a die, place it in the palm of your hand, and shake and roll it.• Rotate two dice around one another in one hand.
Paper Clips	<ul style="list-style-type: none">• Hold paper clips and secure them to papers.
Coins	<ul style="list-style-type: none">• Pick up a specific coin from a mix of coins (e.g., pick up the dime among the other change) in your wallet. Using a piggy bank or cutting a small slot in a container lid, place the coins in the slot.
Belt	<ul style="list-style-type: none">• Buckle a belt.
Shoe with Laces	<ul style="list-style-type: none">• Lace a shoe. Tie shoe laces.
Dough (e.g., Play-Doh)	<ul style="list-style-type: none">• Using toothpicks and Play-Doh, assemble a structure.• Roll, make a ball and squeeze the Play-Doh
Nuts and Bolts	<ul style="list-style-type: none">• Place nuts and washers onto bolts.
Ziplock-Type Bags	<ul style="list-style-type: none">• Seal a ziplock bag.

Object	Activity Ideas
Twist Ties	<ul style="list-style-type: none"> • Close a bread bag using twist ties.
Key Ring with Keys	<ul style="list-style-type: none"> • Hold key ring and select one key for use (e.g., to open door).
Puzzles and Games	<ul style="list-style-type: none"> • Connect Four and Rubik's Cube, for example. • Place bingo chips on game card. • Make a puzzle.
Tongs/Tweezers/Chopsticks	<ul style="list-style-type: none"> • Use tongs, tweezers or chopsticks to pick up items.
Buttons	<ul style="list-style-type: none"> • Pick out a specific colour of button from a bag or container of buttons (e.g., pick out all the blue buttons). • Sort out buttons according to size and colour.
Rubber Bands/Elastics	<ul style="list-style-type: none"> • Put around thumb and forefinger. Stretch the rubber band as far as you can. • If applicable, braid/use elastic to tie your hair.
Threading Beads	<ul style="list-style-type: none"> • Thread beads onto a shoe lace or use them to make a small necklace

Remember: You can alternate four to five items at a time (e.g., every two weeks) depending on the activity your family member wishes to work on that day/week. **Patients should pace themselves. For example: two to three sessions a day for 10 minutes a session.**