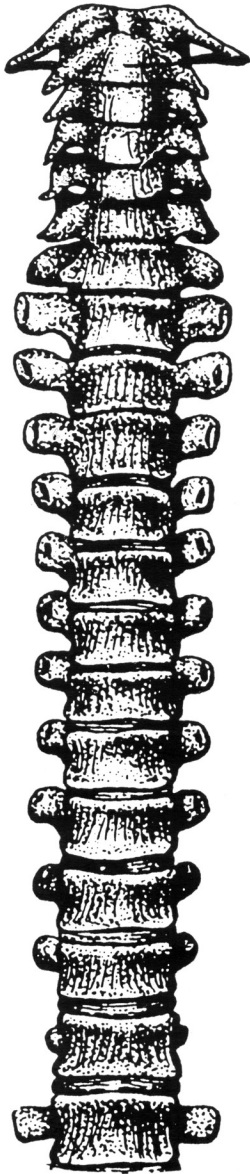


The Halo Thoracic Brace



Orthopedics Department
4480 Oak Street, Vancouver, BC V6H 3V4
604-875-2345 • 1-888-300-3088
www.bcchildrens.ca



The Halo Thoracic Brace

Introducing the halo thoracic brace

What is the halo thoracic brace?	1
What does the brace look like?	2
How is the brace put on?	2
How long will my child have to wear the brace?	2
How does new bone develop?	2

Preparing for the halo thoracic brace

How do we get ready?	3
How can I help my young child understand what is happening?	3

What to expect after the brace is on

How long will my child stay in the hospital?	3
How do I look after the pin sites?	4
Will my child be able to get up and move around?	4
Will my child have much pain or discomfort?	4

Coping at home

How can I help my child move around safely at home?	5
How do I clean my child's pin sites?	5
How do I care for my child's skin under the brace?	5
How do I open the brace to clean my child's skin?	5
Lying on back	6
Lying on front	6
Lying on one side	7
How do I clean my child's skin?	7
What if my child gets itchy?	7
What if the liners need to be changed?	8
How do I clean the sheepskin liners?	8
Where can I get extra liners?	8

Personal care

How can my child take a bath?	8
Sponge bathing	8
Sitting in the tub	8

continued...

Shower9
 How can I wash my child’s hair? 9
 If your child is up and about.....9
 If your child’s activity level is limited9
 Can my child colour or streak her hair?.... 10
 How can I help my child sleep in
 the brace?..... 10
 How will my child eat in the brace? 11
 What can my child wear over the vest?.... 11
 How can I help my child get dressed?..... 11
 How can I get a T-shirt over the brace?.... 12
 Can my daughter still wear a bra and
 makeup?..... 12
 Can my child resume normal activities?... 12

Transportation Issues

Will my child be able to travel? 12
 How can I secure my young child in a car
 seat or booster seat?..... 12
 Rear Facing Car Seat..... 12
 Forward Facing Car Seat 13
 Booster Seats 13
 How can I secure my older child in a seat
 belt? 13
 Vehicle Seats..... 13
 Special Needs 13
 Can my child take public transportation?.. 13

Coping outside the home

Can my child attend school? 14
 How can we prepare my child’s
 classmates?..... 14
 How can I help my child to cope
 emotionally? 14

In An Emergency 15

Follow up

What happens when the brace is
 removed?..... 15

**Shopping List for the Halo Thoracic
 Brace** 16

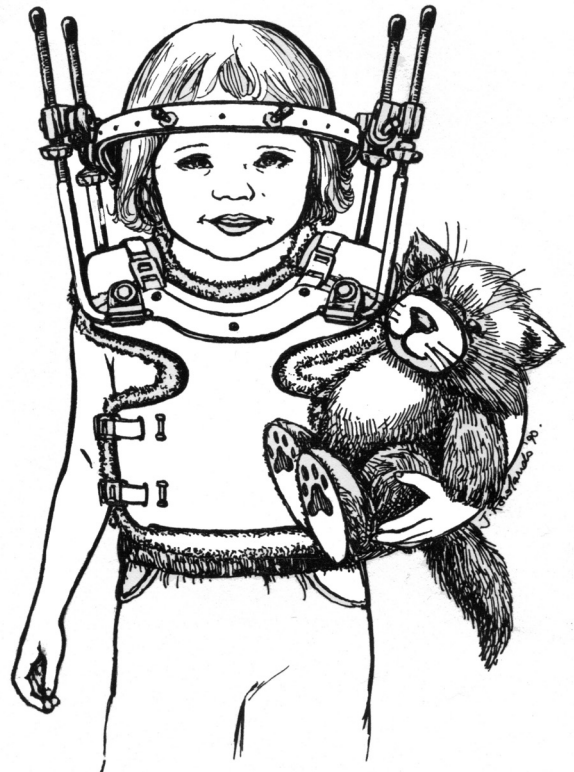
Resource List 16

Editor’s note: We use either he or she, or his or her, in referring to the child in this booklet. The information applies equally to boys and girls.

**Introducing the halo thoracic
 brace**

What is the halo thoracic brace?

The halo thoracic brace is a device that holds the vertebrae (bones) in the neck in the correct position for healing after a spinal injury or surgery. The brace acts like a cast. It prevents the bones from shifting. This makes it possible for your child to be up and about during the recovery period, instead of lying in bed for months.



What does the brace look like?

The brace has 3 parts:

- The halo ring encircles the head. When in place it is about 1/2 to 1 inch from the skull.
- Four bars connect the halo to the vest.
- A molded hard plastic vest fits around your child's chest and back from the shoulders to just below the ribs. The front and back plates of the vest are strapped together under the arms and over the shoulders. The vest is lined with sheepskin to make it as comfortable as possible.

How is the brace put on?

Unless it is an emergency, the doctor or orthopedic technologist will measure your child and prepare the halo thoracic brace in the week before the brace is attached.

The halo is attached to your child's skull with 4 to 8 pins. (The surgeon uses more pins on younger children than on teenagers). This is done in the operating room under general anesthetic. The bone of the skull has two layers (rather like plywood). The pins go just into the first layer of bone above the eyebrows and behind the ears.

The doctor will fit the vest around your child and attach it to the metal bars when your child is on the ward or in the operating room. It's a good idea to mark the buckle positions on the straps right away, so you can always return them to the correct fit if they get loose.

How long will my child have to wear the brace?

Bone that has been broken or damaged in an accident or repaired during surgery heals slowly. On average, young people are in the brace for about 3 months. It may, however, take more or less time for new bone tissue to form.

How does new bone develop?

It takes time to grow new bone tissue. First, the injured bone tissue and the muscles around it bleed. The blood clots at the site of the injury.



Then, new cells form in the clot. They make a web of fibres that begin to knit the broken bone tissues together (a little like darning a hole in a sock).



Slowly, bone cells replace the fibres. At first this new bone is light and spongy, but over time, it becomes as strong and heavy as healthy bone.

The brace will protect and hold the vertebrae in the best healing position while your child's body repairs itself.



Preparing for the halo thoracic brace

How do we get ready?

In the case of an emergency, there may not be time for much preparation. In planned situations, you and your child will come to the pre-admission clinic in the week before the brace is fitted. You will have time to talk with the anesthesiologist, surgeon and orthopedic clinic nurse and ask further questions. You may also see a physiotherapist. You and your child (if appropriate) will sign the consent forms for the brace, as well as for a blood transfusion, if there is a chance that blood may be needed during surgery.

Here are some questions you may like to ask if you have not already had such a discussion with the orthopedic surgeon:

- What are the benefits of a halo thoracic brace?
- Are there other ways to achieve these benefits?
- What are the short and long term risks or losses?
- Will my child have scars from the pins?
- What will happen if we decide against a brace?
- What is involved in the care?
- How will our family be able to manage this at home?
- What supplies will we need and how much will they cost?

It is helpful to write down your questions and concerns so you don't forget them when you have a chance to speak with the orthopedic surgeon. Make notes of the answers. The orthopedic clinic nurse is there to help you review and understand anything that is not clear.

Your visit to the clinic may include blood tests and further X-rays for your child.

A day or two before admission, a nurse from the surgical daycare will call to tell you how to prepare for the anesthetic and what time to bring your child to the hospital.

How can I help my young child understand what is happening?

Talk with your child about the brace. Show your child the picture on this booklet and explain why the doctor is going to put the brace on his head. Describe how it will be put on while he is in a special kind of sleep. You can get a videotape, *All About Your Operation*, from the Family Resource Library at the hospital. The videotape shows a child having a general anesthetic.

Talk about how the brace may feel – you can explain that it won't hurt but it will feel heavy. Show your child how it will hold this head so he can't turn it. Explain what he will and won't be able to do with the brace on. There is more information about activities and limitations further on in this booklet.

Reassure your child that after a week or two he can go back to school. You and your child can look at the photobook, *Ryan's Halo Brace Story*, together. If you need help talking with your child, ask to see a child life specialist when you come to the pre-admission clinic.

What to expect after the brace is on

How long will my child stay in the hospital?

Your child will stay in the hospital for 3 to 8 days. During this time, the nurse will teach you how to clean the pin sites and many other aspects of caring for your child in the halo brace. Together you, your child, and the health care team will review and plan for your child's care while he is in the brace.

How do I look after the pin sites?

In the hospital, the nurses will show you how to care for the pin sites once you are at home with your child. (Also see **Pin site** care in the section on **Coping at home** later in this booklet.) In addition, the nurses or doctors will check the skull pins for tightness. If necessary, a qualified member of the hospital staff will use a special torque wrench to adjust the pins.

Will my child be able to get up and move around?

A physiotherapist will teach your child some exercises to do in bed to keep her legs and feet moving well. The physiotherapist will also teach your child how to get up from bed using a technique called log rolling. By lying on either her left or right side and pushing up using her elbow and hand at the same time, your child can raise herself to a sitting position.

Soon after the brace is on, your child can sit up on the bed. She may feel a little dizzy or awkward at first until she gets used to having her head and neck moving together as one. The halo will feel heavy and she will not be able to see all around and up and down in the usual way.

When your child is comfortable, she can move to a chair and, when she is ready, she can start to walk. Make sure your child has a support person until she finds her new balance. This person can make sure there is nothing in her path to trip on. Once your child is steady on the flat ground, the physiotherapist or nurse will help her practice using stairs.

As the brace limits movement, it can be a difficult adjustment and frustrating moments may occur. In a few weeks most young people are doing well with the halo and vest. Although safety and caution are important in all activities, there will still be many things your child can do.

Never allow anyone to use the metal frame/ vest to turn or lift your child up. When lifting, always support your child's weight with your arm under her thighs. Also, make sure your child continues to use the log rolling technique when getting out of bed, as sitting straight up puts additional stress on the front pins.

Will my child have much pain or discomfort?

For the first few days, your child may have a headache, tenderness around the pin sites, and pain at the site of his operation if spinal surgery was needed. The nurse will give your child some pain medication if needed. If your child had pain in the neck before the brace, it will slowly go away. If your child has any neck pain that doesn't go away or is new, please contact the orthopedic clinic.

Ask your child to tell you or the nurse if he has any "funny" feelings in his arms or legs like pins and needles, burning, or heaviness, or if he is unable to move his arms or legs or has numbness (no feeling) as this will need to be reported to the doctor.

Your child may feel cranky for a few days. Of course, it will take a while to get used to wearing a device that holds his head in this way.

If things knock the metal bars, the sounds will be very loud in your child's ears. If your child hears noisy clicking or clanking sounds when he moves, this may be a sign that part of the frame is loose. **Tell the nurse or orthopedic doctor about these noises as soon as possible.** A member of the orthopedic team will tighten what has become loose. Pain may occur if a pin becomes loose or infected or if there is skin breakdown under the vest.

Parent suggestion:

"Bring some of your child's favourite games, music and books to the hospital. Keeping busy will help to pass the time in hospital more quickly and easily."

Coping at home

How can I help my child move around safely at home?

Your child will be unable to bend her neck down to see the floor or look to either side of her. Help your child to plan routes for moving through your home and remind her to look ahead. When she is in a familiar place, she will get to know certain obstacles. In other places, remind your child to go slow.

Make sure your child holds onto the stair rail when using the stairs. Teach your child to count the stairs and keep count as she goes up or down so she doesn't miss a step.

Parent suggestion:

"Before your child comes home you should tour your home looking for possible dangers for someone who cannot easily see to the sides and down. Clear away as many hazards as you can. Take small mats off the floor. Remove hooks and shelves that jut out of walls in narrow passages and move breakables that are close to the edge of furniture. Move all toys out of the main rooms and keep the floor clear of clutter."

How do I clean my child's pin sites?

Clean the pin sites on your child's skull 2 times each day to prevent infection. You will need:

- cotton swabs (Q-tips)
- full strength peroxide

1. Wash your hands before you start.
2. Dip a cotton swab into the peroxide.
3. Clean around each pin to remove any crusting or discharge. When cleaning around the pin sites, it is important to press down with some pressure to ensure your skin doesn't "tent up" around the pins.

Use as many swabs as necessary to remove

any drainage/crusting, and change swabs frequently. Always use a new swab when going on to the next pin site. Using the same swab will spread germs. Crusting can shelter bacteria – try to remove it all.

Do not use creams or ointments on the pin sites unless your doctor has instructed you to. Creams keep the site moist and provide a place for germs to breed.

Contact the orthopedic doctor or clinic nurse if:

- your child has pain at the pin site without redness or discharge.
This could mean that a pin is loose.
- there is redness, pain and/or discharge at the pin site. Increase the pin site care to 4 times a day. If the condition doesn't improve, it may mean there is an infection.
- there is tracking of a pin site (widening of the skin around the site).

How do I care for my child's skin under the brace?

The skin under the brace needs special care to prevent irritation and sores. You or your child's caregiver will need to check the skin in this way each day. You will need:

- a flashlight
- rubbing alcohol
- a clean, damp washcloth (not dripping wet)
- a dry towel
- extra pillows or folded sheets for positioning your child face down

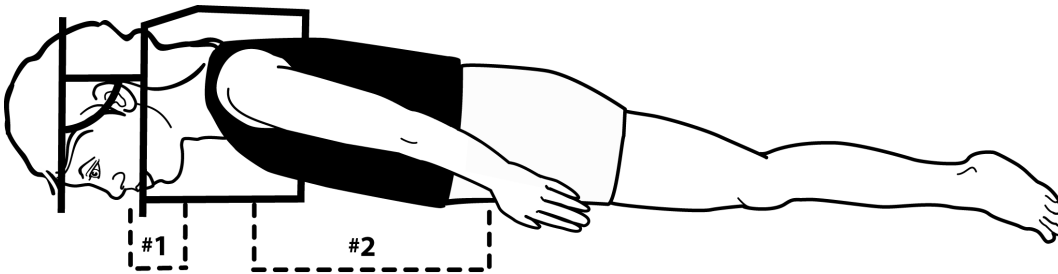
How do I open the brace to clean my child's skin?

Front/back Position: This position is preferred and easier for the parents however, depending on your child, you may need to use the side lying approach to start with.

Lying on back

1. Have your child lie on his back on a firm surface with **no pillows**. Tell him to keep very still. If this is a challenge, have another person with you to either hold him still or to read to him or distract him in some other way. If your child is unable to understand the need for absolute stillness, then do NOT open the vest.
2. If the buckle positions on the straps have not been marked, mark them before you undo them, so you will have a reference point for a snug fit when doing them up.
3. Using the wrench attached to the front of vest, loosen the shoulder bolts.
4. Release the waist straps and shoulder straps of the vest. You will now be able to lift up the front of vest enough to wash your child's front.
5. Following the instructions below for cleaning the skin under the brace, clean your child's chest and tummy.
6. When you have finished, do up the straps and tighten the shoulder bolts. Now you are ready to clean your child's back.

Lying on front



1. Lay your child on his front. This position may not be comfortable to begin with. Keep a close watch on your child's level of comfort. If he seems to have had enough, then give him a rest and finish later.
2. Place 1 or 2 folded sheets or a pillow above your child's forehead and another under his belly. This will create an open area under his face. (See diagram.) Please ensure that pillow #1 is positioned under the forehead or well below your child's nose. Place another pillow or roll under her feet or shins.
3. Release the waist straps again and loosen off the back nuts with the wrench attached at the front of the vest.
4. Lift up the plate just enough to see the skin and wash it.

Lying on one side

This position may be more comfortable to begin with but does not open enough to have a good look at skin nor to have a good wash.

1. Unbuckle the strap on the side.
2. Loosen off the nut at the shoulder level with the wrench mounted on the front of the vest.
3. Pull the front plate a little away from the chest.
4. Follow the instructions below for cleaning the skin. With your child in this position, you can only clean his skin front and back on the side that is unbuckled.
5. Replace the plate and secure the nuts. Do up the strap to the point you marked.
6. Turn your child over and clean his other side in the same way.

Please note: Do not try to replace the liner with your child on his side.

How do I clean my child's skin?

Look at the skin for any reddened marks or bruised areas, especially over bony prominences (places where the bones 'stick out' from under the skin). Pay special attention to bony places like the shoulder blades, bottom of the ribs, and spine.

Rub these areas gently with rubbing alcohol, as it helps toughen the skin. Do NOT use alcohol if the skin is broken. Make note of any areas of concern – where and how big they are – and call the orthopedic clinic nurse. A little extra padding or foam may need to be inserted.

Wash the skin with plain water (taking care not to wet the liner) and dry well. Don't use soap on the cloth as it may irritate the skin.

Do not apply creams or lotions unless suggested by the doctor.

Parent suggestion:

"We used travel wipe towels to clean under the vest. They worked really well."

While you have the vest open, take a moment to inspect the liner to ensure it is dry, clean and intact without any bulges.

If your child has reported a loss of feeling or seems to be developing some discomfort under the vest, it is important to check her skin under the vest daily to prevent any skin breakdown. Any reddened areas should be reported to the orthopedic clinic nurse, doctor, or your home care nurse if you have one.

What if my child gets itchy?

Do not use rulers or sticks or coat hangers inside the brace to scratch, as they can damage the skin. Please call the orthopedic nurse for other suggestions.

Parent suggestion:

"I threaded some pantyhose under the plates and moved it back and forth and up and down. It worked really well."

"I blew COOL air from a hairdryer to relieve itching."

"Rubbing alcohol can relieve an itch but, be careful, as too much can also dry the skin and make it itchy."

What if the liners need to be changed?

Follow instructions under “How do I open the brace?” for opening the vest from the front and back. With your child on her back and the front of the vest lifted, remove the front panel liner. If you have a replacement ready, insert it now. Otherwise, have a couple of towels or pillowcases to insert temporarily. You can use a piece of plastic or pillowcase to ease the sliding of the vest up past the Velcro hooks.

Bring the vest front panel down and look at the plastic edges to ensure that the liner is even and covering any hard plastic edges. Do up the shoulder and waist straps ensuring comfort and snugness. Tighten the bolts at the shoulders. You are now ready to reposition your child on her front.

The back panel liner may be a little tricky to fit as you have to line up the narrow shoulder flaps as well as the plastic shell edges. Always make sure there are no wrinkles to irritate your child.

Do up the back straps and tighten up the bolts at the back of the shoulders. **Always return the wrench to the Velcro strap at the front of the vest.**

Note: At no time should your child be up and about without the vest securely fastened and fitting snugly.

How do I clean the sheepskin liners?

There is no need to change the liners regularly. However, you can change them and launder them at home if you want. If the liners get very dirty, wash them with a mild detergent in cool water. Hot water will shrink the liners! Tumble dry on a COOL setting.

If a portion of the liner gets wet when washing hair or sponge bathing, you may use a hair dryer on COOL setting to dry it.

Where can I get extra liners?

You can buy extra liners from the outpatient pharmacy of the hospital if you need them. Check to see that you have the correct size.

You can make more sheepskin liners (synthetic is ok). Just use the liners you have as a pattern to trace new ones.

Personal care

There are several ways for your child to keep clean. Start with sponge bathing (the simplest) and work up to the shower, if your doctor has given permission. There is more time and effort involved in showering. The doctor will tell you if and when it is okay to use the tub or shower, especially if your child has had surgery and has a dressing (bandages).

How can my child take a bath?

Children and teens may enjoy being able to immerse themselves in water while older children and teens may appreciate the independence of bathing themselves and washing their own hair.

Sponge bathing

A daily sponge bath will keep your child feeling fresh and clean. You can clean your child's neck and face and shoulders with a damp (not dripping) cloth. Be sure you do not get water under the brace. (You will clean the skin under the brace as part of skin care.)

Sitting in the tub

This feels like having a real bath, but the bottom of the vest must be protected with plastic wrap or plastic bags if you are not changing the liner. You can wash your child's hair in this position if you are planning to change the liner immediately after or you have replaced the liners with a folded towel or pillowcases of equal bulk.

Shower

If a shower is permitted, follow the instructions for changing the liners. Instead of replacing the liner with the new clean one, replace with folded towels or pillowcases of equal bulk and secure the brace's straps and bolts. Your older child or teen can shower as usual and then lie down in a waterproofed area to remove the wet towels or pillowcases. You can lay a plastic sheet or tablecloth underneath your child to protect the surface she's lying on. The vest plates will need to be dried off on the inside as well as the outside before you replace the vest liners.

Parent suggestion:

"My teenager really wanted a shower. I came up with the idea of replacing the liners with small folded towels. He could then stand under the shower once in a while. We would remove the wet towels, dry well, and do the skin check right after the shower. To make sure the skin was really dry before slipping the liners in I would blow with a hair dryer on a COOL setting."

"Our 14-year-old daughter found it hard to have me washing her. I tried to give her as much privacy as possible."

How can I wash my child's hair?

Shampoo your child's hair at least 3 times a week but more if possible. A clean head prevents infection of the pin sites. Older children and teens will need help from you or a friend and must have someone standing by in the bathroom.

If your child is up and about:

Keep the vest dry by threading a small towel inside the bars and then wrapping a plastic sheet or garbage bag around the vest and tucking it under the towel.

If you have a low bathtub your child can kneel on the floor with his hands in the bath. If the tub is high he can sit on a chair and lean forward holding the edge of the bathtub.

Use a hand-shower or jug to wet the hair. Shampoo as usual but try to avoid the ring and pins.

If your child's activity level is limited:

Be creative. You may need to have him lie at the end or side of the bed or table. Protect the surface under your child with a plastic sheet or tablecloth. Place a thick padding of towels on top for your child to lie on. Protect the vest from getting wet.

Have a plastic pitcher or container for pouring water onto the hair. Use a bucket, basin, or garbage can to catch the water.

Parent suggestion:

"We used a plastic jug rather than a glass or metal one. It made less of a clang when it hit the metal bars or halo ring."

"Our 6-year-old was able to lie on a kitchen counter with his head over the sink for a shampoo."

"Our dining room table was too small for our teenager and our couch had arms, so we used a summer lounge chair and she placed her head at the foot end."

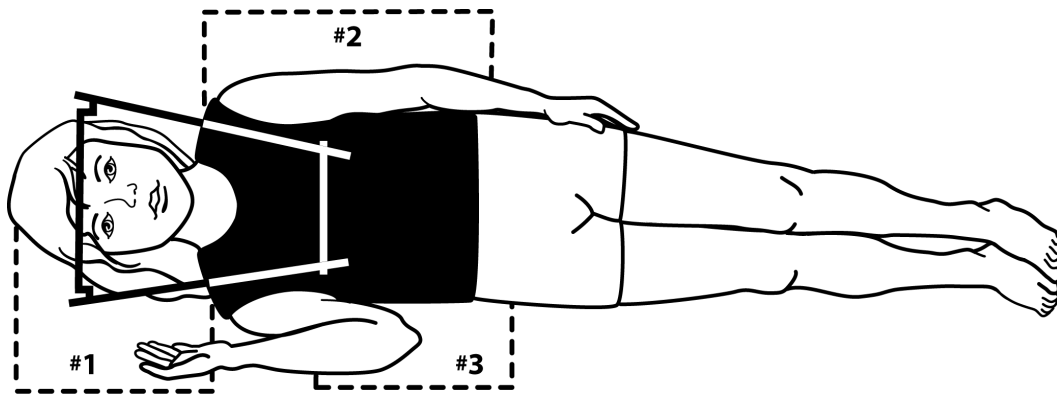
Towel-dry your child's hair to avoid dripping water onto the vest. Use a low heat setting on your hairdryer. High heat can make the metal on the brace hot enough to burn the skin.

Can my child colour or streak her hair?

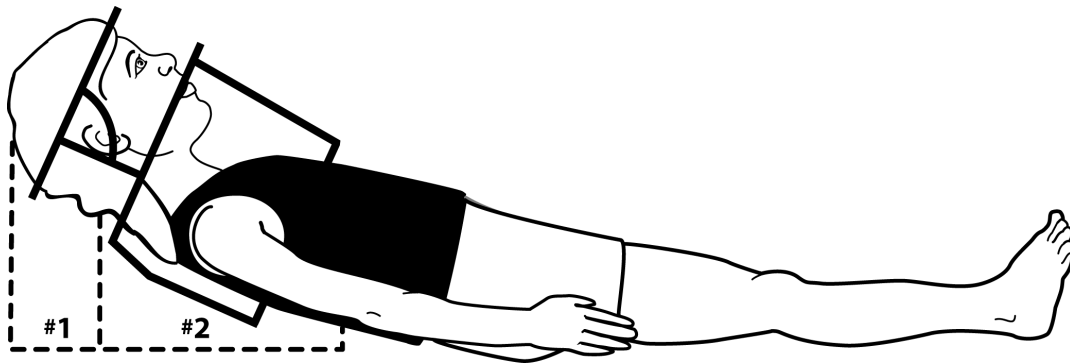
Do not allow your child to apply hair colour to her hair while she is in the brace. There is a possibility the pin sites could become infected.

How can I help my child sleep in the brace?

Surprisingly, most children sleep quite well in the halo brace once they are used to it.



If your child moves around in her sleep it is probably a good idea to put a large pillow on either side of her once she is asleep.



If she complains of discomfort, ask the occupational therapist for suggestions on pillow props to help her get more comfortable. It is important that the prop or pillow does not apply pressure to the neck or head. Sleeping with the head of the bed raised or a pillow under the mattress may make your child more comfortable.

If your child prefers to sleep on her tummy, you can add extra pillows to support her in this position. Follow the directions under skin care for laying your child on her front.

You can also tuck a small pillow next to her cheek as a comfort measure.

Parent suggestion:

“The rods and halo are hard on bed linens. Protect the mattress with an old blanket and don’t use your best sheets!”

How will my child eat in the brace?

Getting food from plate to mouth is more of a challenge in a brace.

The closer the plate to the chin, the easier it is. If you keep the plate at chin level but move it away from the face, your child will be able to see what he is eating!

To avoid crumbs and spills inside the vest, tuck a large table napkin or tea towel into the neck of your child’s shirt at mealtimes.

Because your child will not be able to tilt his head back, a flexible straw will make drinking easier.

If your child’s size changes much, the brace may no longer fit well. Help your child to maintain a constant weight. High protein and dairy products will help the bones heal.

Parent suggestion:

“We put a thick book at the correct place on the dining table. We balanced a plastic tray on it and put the plate and cutlery on the tray.”

“I had one of those trays that go onto a bed and we used that at the table to raise the plate.”

“Our son sat on a low stool at the table so it was easier for him to eat without spilling.”

What can my child wear over the vest?

Tops in larger sizes that button or zip up the front will fit over the brace. The easiest and most popular outfit for both boys and girls is a jogging suit with a front zippered jacket.

In warm weather, tank tops one or two sizes larger than your child’s regular size work well over the brace without needing to be adapted.

In cold weather, scarves are a must. You may want one to wrap around your child’s head and another to keep his neck warm. Metal gets very cold very quickly.

Shoes or boots should have low heels with traction soles to avoid slipping – runners are great!

How can I help my child get dressed?

Your child may need some help dressing, so allow for extra time. Getting socks on can be tricky!

It is hard for older children and teens to give up some of their privacy when they need help with personal care. You or the person in your family with whom your child feels most comfortable can offer this help. If your child is used to dressing himself, try to be sensitive and give only the help he asks for.

How can I get a T-shirt over the brace?

The occupational therapist will adapt one shirt for you while your child is in hospital. You can buy some cheap shirts and adapt in the same way or any other way that works.

If your child becomes unbearably hot, snug fitting cotton undershirts or T-shirts can be worn underneath the brace. Cut the shoulder straps of a close-fitting tank top or undershirt, or split the seams of a T-shirt from the neck to the armholes. Pull the top up inside the vest from the bottom and refasten the cut pieces using pins, Velcro, buttons or snaps.

Can my daughter still wear a bra and makeup?

Your daughter can wear a bra by slipping it under the front of the vest midline and fastening it around the outside of the vest back.

Your teenager may find that putting on makeup is a bit of a challenge when she can't tilt or turn her head. If she asks for help, you or one of her friends can have fun doing it for her.

Can my child resume normal activities?

It is important that your child continue to go to school and have outings when possible. Some activities will need to be changed while your child has the halo brace, yet it is important to have some fun with friends, too!

Transportation Issues

Will my child be able to travel?

It is important to ensure your child's safety for travel with a halo brace. Please be sure to talk with your orthopedic clinic nurse, occupational therapist and/or physiotherapist prior to discharge.

Getting in and out of a car can be a little awkward. Be sure your child has help. Even if your child is old enough, he cannot drive.

The transportation needs of young children with a spinal cord injury or spinal surgery are a concern for all involved. As the "halo" will interfere with the normal functioning of the 5-point harness, it is important that you consult with your child's occupational therapist (OT), physiotherapist (PT), orthopedic clinic nurse or hospital recommended professional to determine the best option to use in transporting your child. The key concern is that with the front halo bars, the 5-point harness needs to stay in the correct position.

How can I secure my young child in a car seat or booster seat?

All of the options have limitations so travel should be limited.

See if your own child restraint system (car seat) will work first and apply the guidelines below for the chosen restraint system.

Rear Facing Car Seat

Use a Canadian Motor Vehicle Safety Standard (CMVSS) approved convertible child restraint. Follow the manufacturers' recommended weight and height guidelines for use in the rear-facing position. Use a car seat that provides adequate room for the halo. Make sure that the harness straps are easy to rethread over the shoulders and easily secured.

Consider the "halo" as part of the child and rethread the 5-pt. harness straps inside the frame of the "halo" through the shoulder slots on the child restraint, according to the instructions in the manufacturer's manual. This ensures that the 5-pt. harness is in correct alignment. This may be difficult to do with your child in the car seat, but it does provide secure positioning of the 5-pt. harness. If this method is chosen, then utility scissors must be secured in a safe

and visible location in the vehicle. This will ensure that the webbing can easily be cut to remove a child quickly in an emergency situation.

Forward Facing Car Seat

Use a car seat that provides adequate room for the halo. Consider the “halo” as part of the child and re-thread the 5-pt. harness straps inside the frame of the “halo” through the shoulder slots on the child restraint, according to the instructions in the manufacturer’s manual. This ensures that the 5-pt. harness is in correct alignment. This may be difficult to do with your child in the car seat but it does provide secure positioning of the 5-pt. harness. If this method is chosen, then utility scissors must be secured in a safe and visible location in the vehicle. This will ensure that the webbing can easily be cut to remove a child quickly in an emergency situation. Follow the manufacturers’ recommended weight and height guidelines for use in the forward-facing position.

- Use a Canadian Motor Vehicle Safety Standard (CMVSS) approved Convertible or Forward-facing car seat available in retail stores. A child restraint system that has a larger shoulder width between the horizontal slots of the harness straps may work. Make sure that the harness straps are easy to rethread over the shoulders and easily secured.
- An EZ-On Vest is a special harness/vest restraint that can be used when sitting. The EZ-On Modified vest is for lying flat. These are available in several sizes depending on the child’s age, weight and size. This can also be special-ordered by your child’s therapist (occupational or physical therapist) or by yourself. It may be difficult to rethread the shoulder fastenings every time it is used but it would provide secure support. See the resource list at the end of this booklet to find out where to get an EZ-On Vest.

Booster Seats

Use a Canadian Motor Vehicle Safety Standard (CMVSS) approved booster seat (high back or backless) for children from 40 – 80 pounds. Use the vehicle shoulder lap belt to secure your child in the booster seat as per the instruction manual.

- **DO NOT** loop the shoulder strap through the brace.
- **DO NOT** use a lap belt only.

If you are using a backless booster seat, check that your vehicle has a built in head rest behind your child’s head.

How can I secure my older child in a seat belt?

Vehicle Seats

Use the shoulder lap belt and adjust (if possible) the height of the shoulder portion to cross your child’s mid-shoulder.

- **DO NOT** use a lap belt only.
- **DO NOT** loop the shoulder strap through the brace.

Special Needs

If your child is in a wheelchair, transport him in a wheelchair with a supportive seating system and a 4-pt. chest harness securely in place within the frame of the “halo.”

Use a custom EZ-On modified vest when transporting your child in the lying-down position on back seat of a vehicle. See the resource list at the back of this booklet.

Can my child take public transportation?

If your child must travel by bus or ferry, be sure he travels at non-peak hours to ensure he has a seat to avoid being bumped. Assured boarding of ferries can be arranged with a letter from your doctor’s office.

Coping outside of the home

Can my child attend school?

Getting back to school and friends is an important part of getting life back to normal. Your child can return to school as soon as she has adjusted to the brace. You should call the school principal and your child's teacher(s) ahead of time to explain the situation. Reading and writing will be difficult. Please ask our occupational therapist about adaptations such as drafting tables that can be tilted to the right angle for books, if your child needs assistance.

Ask your child's teacher(s) to allow her to start out 5 minutes ahead of time between classes and breaks if the corridors and halls are crowded.

Ask if there is a spare set of books that your child can use at school. Being able to keep her school books at home means your child will not have a heavy bag to carry to school and home again each day.

Your child will need to stay away from school playgrounds and gyms.

Please get a note from your doctor to excuse your child from physical education classes.

Parent suggestion:

"My husband made a small wooden box with a sloped top on which my son could prop books. He was able to read and write using this at home and school."

"We bought a recipe book holder for Jane. She propped it up on the telephone book so it was the right height and then stood books in that."

"We borrowed a laptop computer for my son to use for schoolwork. It can be set down on top of things to bring it to the right height. He could only work on it for a short while before tiring, though."

How can we prepare my child's classmates?

If your child is in elementary school, send your teacher a picture of your child in the halo thoracic brace. Ask the teacher to explain to the class what has happened to your child and show the picture. Your child will attract fewer stares and questions if her friends know what to expect. The teacher should explain that the brace does not hurt but that it is heavy. Because your child can't turn her head, she can't really see the floor or things around her on each side. Your child's teacher could ask the students not to bump into her because her balance isn't very good in the halo and rods.

Of course it is your decision whether or not to give the class the "heads up" about the halo thoracic brace through your child's teachers. Your child may prefer to just turn up and tell her own story to her friends.

Parent suggestion:

"I helped David write a letter to his schoolmates explaining things. We enclosed a photo of him. He sort of made a joke of things saying he was coming back to school having been on a spaceship to Mars. They could expect him to arrive in his space costume."

"I called my daughter's best friend and asked her to help Sheila stay safe going class to class."

How can I help my child to cope emotionally?

Being in the brace is going to be frustrating and irritating at times. Your child won't be able to do all the things his friends can do. He won't be able to play sports or swim or skate, etc.

Your child may feel sorry for himself in the brace. Most people will understand this and make allowances for his feelings and behaviour. But, if your child can try to keep his spirits up and not ask for too much pity, family and friends are more likely to really want to go the extra mile to include him when possible.

Moodiness tends to wear people out – even those who love your child a lot! The trick is to encourage your child to keep up as many of his normal activities and routines as possible. If your child has a bad day, he can let his family or friends know about it. Remind him to ask for some of the hugs and cuddles he needs. Sometimes people don't show physical affection because they can't figure out how to hug the brace.

Exercise is important in boosting your child's mood. Encourage your child to be active at the things she can do. Take your young child for a walk each day. Offer to go for a walk with an older child or teen, too.

Your child will tire more quickly in the brace. Getting enough sleep will help him to cope with irritation and frustration.

Parent suggestion:

"We talked to our son about stares and questions he could expect at school or other places we went. Kids and adults can be quite rude about this. We gave him some suggestions of what to say to people. It helped to be prepared. We also said he didn't have to answer all questions. So, he said things like: 'I broke a bone in my neck – this thing around my head is my halo. It is instead of a cast. Mostly kids asked 'How do you sleep?' He said: 'I just lie down with my head on the pillow and close my eyes.'"

In An Emergency

In an emergency, you must know how to loosen off the front plate. Before your child leaves the hospital, make yourself familiar with how to release the straps and shoulder bolts. Practice opening up the vest a few times with and without the nurse to help you. Ensure that the wrench is attached to the front plate at all times.

Follow up

The surgeon will decide if, and when, you need to come for a follow up visit. If you have any questions or concerns, such as loose pins or discharge from the pin sites, you can call and talk to the clinic nurse during office hours or the orthopedic doctor on call after hours. She will advise you or refer you to the surgeon.

What happens when the brace is removed?

Before the brace is removed, the doctor will ask to see some X-ray images to make sure the healing is complete. The orthopedic technologist will remove the brace in the orthopedic clinic. This does not hurt very much.

When the brace is removed, your child may feel fragile and off balance again. She may need support for moving around in the first few days. The muscles that hold her head up will have grown weak over the months in the brace. They will need time to strengthen. Your child may need to wear a soft neck collar whenever her neck feels sore or tired.

If your child's neck needs more support than a collar can give, the orthopedic surgeon will fit your child with a different style of brace that supports the chin and the back of the head. This kind of brace stays on for about 23 hours

a day. The doctor will let you know when your child is ready to change to the soft collar.

Most people are out of the collar and back to normal about 6 to 8 weeks after coming out of the halo thoracic brace, although there may be some restrictions on what activities and sports your child can do.

Frequent massages to the pin sites on your child's forehead will help to break up the underlying skin layer. Massage these areas gently until the pin sites are healed. Then you can use more pressure. Massaging the skin will reduce scarring.

Parent suggestion:

" I kept reminding myself during the first few weeks that lots of other families have done this. We accepted all offers of help from others, like carpooling our other kids so we could be home with Jenny. We made it through – so will you."

Shopping List for the Halo Thoracic Brace

- Q-Tips™
- 11mm box wrench
- peroxide
- replacement liner

Resource List

Family Resource Library
4480 Oak St. Room K2-126
Vancouver, BC V6H 3V4
Phone: 604-875-2345 Loc 5102
Toll free: 1-800-331-1533 ext. 2
Email: famreslib@cw.bc.ca
Website: www.bcchildrens.ca/frl

Outpatient Pharmacy
4480 Oak St. Room K1-127,
Vancouver, BC V6H 3V4
Phone: 604-875-2345 Loc 2205

EZ-On Vests
Phone: (561) 747-6920
Website: www.ezonpro.com

For any questions or concerns, contact the Orthopedic Clinic Nurse at 604-875-2609 or your Orthopedic Doctors Office.

Developed by the health care professionals of the Orthopedics Department with assistance from the Department of Learning and Development.

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means now known to be invented, electronic or mechanical, including photocopying, recording, or by any information storage or retrieval system without written permission from the authors or publisher, except for brief inclusion of quotations in a review.

BCCH1247

BC Children's Hospital © August 2009