



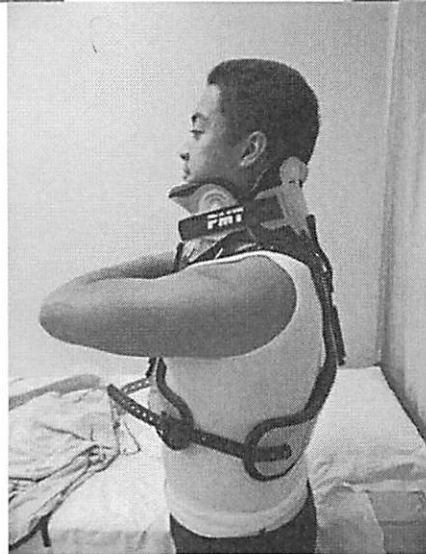
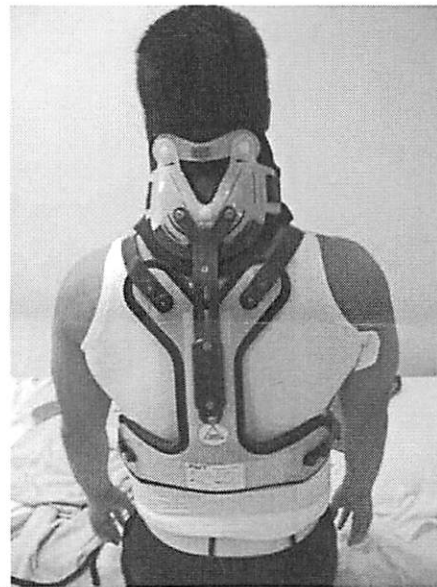
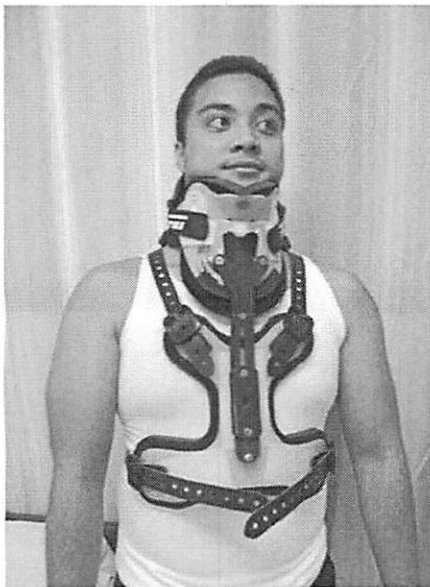
### 5.2.16 Cervico-Thoracic- Orthosis Brace (CTO Brace)

#### **Purpose**

- To outline interventions for care of clients with a CTO Brace
- To standardize care of clients with CTO brace from admission to hospital to transition home.

#### **Preamble**

A CTO brace is used to support and immobilize the cervical spine (neck) and upper parts of the thoracic spine (upper back). It maintains the head in a neutral position, reduces pain, prevents further injury and promotes healing. When the brace is properly fitted and worn, it will prevent the client's spine from bending forward and back (the "yes" motion), however it does not block the side rotation (the "no" motion) as effectively. Clients are to try to restrict that motion as best they can on their own.





### CTO Minerva

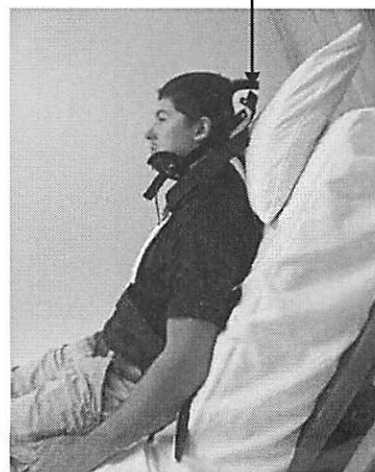




### Troubleshooting:

CTOs have the tendency to migrate upward as the wearer moves around or shifts positions in bed. This can result in poor fit, discomfort and skin breakdown especially under the chin and throat.

Posterior section riding up – places pressure on chin and neck trying to pull the head up with it.



### Client Activities

It is important to check the position frequently to ensure it is not worn too high and the client is not experiencing excess pressure under the chin, throat or elsewhere.

#### Sleeping

- Consult Prescriber as to whether or not the CTO is required at night.
- Depending on the Prescriber orders, the brace should be taken off to allow the skin ventilation to occur.
- The client should have the brace applied before sitting or standing up depending on Prescriber's order.
- When getting up from a lying position with the brace on, clients should roll onto their side by the edge of the bed, drop their legs off the edge and push with their elbow and hand at the same time to get to a seated position, and then slowly stand.

#### Driving

- Clients should not attempt to drive with the brace on. It is unsafe for the client and other drivers.

#### Bathing and Skin Care

- With the prescriber's permission, the client may be able to shower with the brace on. Water will not damage the brace. A shower chair/stool should be used to prevent the client from slipping or falling.
- After showering, the brace must be removed with the client lying down and the brace will need to air dry. The pads will need to be changed if they are moist, wet or have an odour, or are visibly soiled. Pads are to be hand washed only and must be dry before re-use.



- Inspect the skin under and around the brace at least twice daily for the signs of pressure related injury on the surrounding tissue. Creams and lotions are NOT recommended on reddened areas. Skin should be clean and dry.
  - Conduct more frequent ( greater than twice daily) skin assessments where the skin and brace contact each other if there is any swelling (edema) or retention of fluid as this can impact how the brace fits. Changes in fluid volume status or hypoproteinemic states can results in localized or generalized edema causing the brace that initially fits properly to exert external pressure to the skin leading to pressure ulcer formation.

### Clothing

- A long cotton t-shirt should be worn under the brace. It may be necessary to change the t-shirt throughout the course of the day. If this is required, follow the process for removal of the CTO brace.
- Oversized shirts or sweaters can be worn over the brace.

### **Other Client Teaching:**

- Wearing a thin t-shirt will prevent rubbing and irritation that can cause skin breakdown.
- The brace should only be stopped under the direction of the Prescriber. The client should not stop wearing the brace, even if they start to feel better.
- Eating and drinking may be awkward at first. Using a straw to drink and adjusting table or chair height can allow the client to get closer to the food. It is a good idea to place a napkin under the chin to catch spills.
- Avoid tilting head upwards. Assistance with shaving may be required to avoid this motion.
- Caution should be exercised when going down stairs, and instruction should be to use a hand rail.
- Caution should be exercised when bending.

### **Application**

- The prescriber must indicate if (2) persons are required to assist with **application** of the CTO if the client's head and neck must be held in a straight neutral position.
- RN/LPN with specialized training if (2) persons are required to assist **with application** and the head and neck must be kept in a straight neutral position.
- HCA with delegated task training if only (1) person is required and no head /neck immobilization during application is required. HCA **for removal** of the brace with delegated task training.
- Home Care can provide assistance if (1) or (2) Persons are required to complete this task. One person may be a client's family member/caregiver or HCA. Note: If the client's family member/caregiver is not consistently available, second person should be the HCA as the brace cannot be removed or applied without the second person present if it is identified by the prescriber that (2) persons are required.
- Hospital Based Case Coordinator to consult with Nursing Resource Coordinator to discuss the need for the nursing staff to be trained. If training is required, the Nursing Resource Coordinator will work with the Hospital OT/PT to arrange for training in hospital of nursing staff.
- The prescriber will reassess when the brace can be removed.

### **Equipment**

- Replacement pads
- Mild soap
- Basin with warm water
- Towel
- Face cloth



## Steps for Putting the CTO Brace ON

1. Perform hand hygiene before contact with client or client identifiers.
2. Verify client identity using at least 2 client identifiers.
3. Review client in home file documentation.
4. Explain procedure and expected outcomes to client.
5. Perform hand hygiene.
6. Ensure client is lying down on a flat- bed surface.
7. Assist with skin care/sponge bath. Avoid lotions, creams and powders under the brace.
8. Ensure client has a clean dry thin cotton t-shirt on. The brace should NOT be applied directly onto bare skin.
9. Assist client onto his/her side **without flexing, twisting or bending the spinal column**. The second person if required should ensure the client's back and head/neck are kept straight and facing forward at all times.
10. Identify the back half of the CTO brace and determine top/bottom.
11. Slide edge of back section under client as far as possible and place the brace so it cups the base of the client's skull to ensure proper positioning.
12. Assist client back onto his/her back into the brace **without flexing, twisting or bending the spinal column**. Ensure the brace runs down the middle of the client's body. Ensure the headpiece is cradling the head and the contoured areas of the neckpiece behind the client's neck.
13. Lay the front of the brace on the client's chest so the front chest buckles are even with the back chest straps. Slide the brace up until it is 1 cm or 1 finger width away from the client's chin.
14. Fasten the chest straps first as snug as tolerable without compromising breathing.
15. Fasten the shoulder straps snugly so straps are resting on the shoulder, not too tight, approximately 1 finger should be able to slip under easily.
16. Fasten chinstraps last. The chin piece should be in slight contact with the client's chin.
17. Once the client stands up with the brace on, if re-adjustments are needed, loosen only one strap at a time. Ensure readjustments are made when client is sitting.
18. If the client reports a painful or red area, it may be due to improper positioning of the brace. Reapply the brace lying down and assess if the discomfort goes away. If it does not, the brace may need to be readjusted by Health Science Centre Orthotics. Contact 204-787-2790.
19. Assist client with donning of any exterior clothing such as loose waist pants or shorts, oversized t-shirt or sweater over the brace.
20. Perform hand hygiene.
21. Document in client file: application of the brace, skin care and assessment and any follow up with Orthotics.

## Steps to take the CTO brace OFF

1. Perform hand hygiene before contact with client or client identifiers.
2. Verify client identity using at least 2 client identifiers.
3. Review client in home file documentation.
4. Perform hand hygiene.
5. Explain procedure and expected outcomes to client.
6. Ensure client is lying on a flatbed surface on his/her back.
7. Remove the front section by undoing the chest, shoulder and chin straps.
8. Assist the client onto his/her side **without flexing, twisting or bending the spinal column** to remove the back section.
9. Inspect skin for areas of redness or skin breakdown. Note: the brace will cause faint red marks on the skin and mild discomfort. If the client reports a painful or red area, it may be due to improper positioning of the brace. Any reddened marks/areas should fade after the brace has been off for 10-15 minutes. If red marks get worse, or discomfort becomes severe, contact the Health Sciences Centre Orthotics Department at 204-787-2790.



10. Assist with skin care.
11. Clean inside of the brace with mild soap or 50% solution of rubbing alcohol and water, followed by rinsing with cool water.
12. Dry the brace with towel or cool fan. DO NOT USE HEAT.
13. Change collar pads at least once daily. Wash with mild soap and air dry.
14. Perform hand hygiene.
15. Document in client file- removal of brace, pad changes, skin care and assessment and any follow up with Orthotics.

### References:

Health Sciences Centre Orthotics Department: Cervical Thoraco- Lumbo-Sacral Orthosis (CTLSSO) Client handout.

University of Michigan Health System: Orthopedics Minerva CTO Care patient care and use instructions.  
<http://www.med.umich.edu/op/Patient%20Education%20Forms/6A/MINERVA%20CTO.pdf>

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