	Policies & Procedures  Title: <b>HALO TRACTION – PIN SITE &amp; VEST CARE</b>  I.D. Number: <b>1052</b>
Authorization  <input checked="" type="checkbox"/> SHR Nursing Practice Committee	Source: Nursing Date Revised: Date Effective: September 2012 Date Reaffirmed: Scope: <b>SHR, Affiliates and CBOs</b>

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**DEFINITIONS:**

- **Halo vest** – A halo vest includes a “halo ring” or “halo crown” that is secured to the skull with skull pins and a rigid, fleece-lined vest. The vest is attached to the halo ring with adjustable metal rods or struts. Together the apparatus provides stability to the cervical column while allowing the patient to be mobile. A halo vest can be used as primary treatment to stabilize cervical fractures or used as extra support after surgery. It may be applied to patients with or without spinal cord injury e.g. patient may be a quadriplegic or have no deficits.
  - Some halo rings and vests are MRI compatible, Check with MRI department if test required.
  
- **Autonomic dysreflexia** – When spinal cord lesions prevent messages of painful stimuli (i.e. distended bladder, constipation) from reaching the brain an autonomic nervous system reaction is initiated. This is most common in injuries above T 5 and present as episodes of high blood pressure, throbbing headaches, profuse sweating, flushing of the skin (above the level of the spinal lesion), nasal stuffiness, apprehension and anxiety.
  - It is a medical emergency, so recognizing and treating the earliest signs and symptoms efficiently is crucial.

**1. PURPOSE**

- 1.1 To ensure consistent and safe patient care for patients being treated with a halo vest.
- 1.2 To ensure cervical stability is maintained to prevent further neurologic injury.
- 1.3 To ensure skin integrity is maintained under the vest.

**2. POLICY**

- 2.1 Registered Nurses (RN’s), Graduate Nurses (GN’s), Registered Psychiatric Nurses (RPN’s), Licensed Practical Nurses (LPN’s) and Graduate Practical Nurses (GPN’s) will provide halo vest care.

### 3. PROCEDURE

#### 3.1 Prior to halo vest application (if able)

- 3.1.1 Provide patient/family education regarding halo vest device and what to expect.
- 3.1.2 Ensure adequate anxiety and pain-relieving medications are given as per Physician orders.
- 3.1.3 If supporting patient during application of halo, suggest patient “look down” to avoid patient’s eyebrows being ‘locked’ in a lifted position by the pins.

#### 3.2 Pin Sites

3.2.1 Pin sites need to be assessed once per shift and PRN for:

- 3.2.1.1 signs and symptoms of infection
- 3.2.1.2 pain or discomfort
- 3.2.1.3 loosening – often reported by patients as noticing a ‘clicking’ sound

**Note:** *If patient falls, ensure pin sites are assessed by physician for migration or dislodgement.*

3.2.2 Pin site care will be performed once per shift and PRN.

- 3.2.2.1 Sterile technique is used in hospital. Patients may use clean technique at home.
  - 3.2.2.2 Wet sterile cotton applicator with sterile normal saline
  - 3.2.2.3 Gently clean around each pin. Use new applicator for each pin site. Work in a circular pattern and do not go back over the areas with the same applicator.
  - 3.2.2.4 When cleaning, apply gentle pressure to move the skin at each pin to prevent skin from growing up the pin.
- 3.2.3 Dried secretions (crusts) should be gently removed. If difficult to remove or excess crusting present, wrap pin site with saline soaked gauze. Attempt to remove the crusts with a sterile applicator following. Avoid causing irritation by vigorous cleansing.
- 3.2.4 Do not use any ointments or antiseptics on the pin sites unless prescribed by the physician.
- 3.2.5 Clip hair when it grows around the pin sites

#### 3.3 Vests

- 3.3.1 Vest, straps/buckles and bolt integrity will be assessed once each shift and PRN. Loose bolts or worn straps should be reported to the physician as this may reduce fracture stability. Buckles should not be released except for skin care or vest maintenance (as outlined in 3.4 Skin/Vest Care).
- 3.3.2 The sheepskin should be kept dry at all times. If soiled or wet, notify the physician, orthopedic technician or alternate trained in halo vest application to have it changed. If edges are only slightly damp, expose to air and reassess.
- 3.3.3 Do not add any padding under the vest for comfort. If the vest does not fit properly notify the physician, orthopedic technician or alternate trained in halo vest application to assess and adjust accordingly.

- 3.3.4 Do not use any supports under the head.
- 3.3.5 Assess patient's swallowing. If a person is having difficulties swallowing, a swallowing evaluation should be completed by a speech-language pathologist.
- 3.3.6 A 7/16" wrench should be attached (i.e. to a rod or front vest plate, see Appendix A) at all times in case emergency vest removal is required.
- 3.3.7 Weight change (loss or gain) may affect vest fit. The physician should be notified if vest fit changes so they can assess and refit if needed. If there are concerns regarding nutritional intake, consult a dietician and monitor weight changes more closely.

### 3.4 Skin/Vest Care

- 3.4.1 Patients wearing a halo vest are at increased risk for skin breakdown and should be assessed for pressure areas a minimum of every shift with special attention to bony prominences.
- 3.4.2 Patients without neurologic deficits will be able to self-report pressure areas, however, patients with neurologic deficits may not be aware of pressure areas and require increased visual inspections.

**Note:** *A poorly fitting halo vest may trigger autonomic dysreflexia.*

- 3.4.3 If patient is non-compliant, at least two staff must be present to perform vest/skin care. (One person supports the patient while the other performs care.)
  - 3.4.3.1 Position patient flat on their side in good alignment. **PATIENT MUST NOT MOVE.**
  - 3.4.3.2 Undo one side strap of the vest. (One side should always be securely buckled).
 

**Note:** *if the buckle position on the straps has not been marked, mark them before you undo them. (See Appendix A)*
  - 3.4.3.3 Inspect skin integrity.
  - 3.4.3.4 Place an incontinent pad/towel against the sheepskin to prevent the sheepskin from getting wet then, with a damp washcloth, wash the torso.
  - 3.4.3.5 Dry the skin thoroughly. **Do not apply lotions or powders under the vest.**
  - 3.4.3.6 Reconnect the strap to the proper notch, then turn patient to the other side and repeat the procedure.
 

**Note** *If it is very difficult to pass a towel between the vest and skin the physician, orthopedic technician or alternate trained in halo vest application should be notified to reassess fit.*

- 3.4.4 Avoid scratching under the vest. Doing so can disrupt skin integrity.

### 3.5 Repositioning & Mobility

**Note:** *Never use the metal halo ring or struts/rods to lift, turn, or reposition a patient.*

- 3.5.1 Turn and reposition the immobile patient every 2 hours to provide pressure relief.
- 3.5.2 Patient must be assisted the first time they ambulate and until safe independently as the vest alters their sense of balance. If patient also has altered sensation they may require ongoing assistance.

- 3.5.3 Assess patient ability using TLR® Transferring, Lifting and Repositioning principles and ensure you have adequate assistance. Logroll patient onto their side and place your hands under the vest so the buckles do not catch on the bedding. Assist patient as needed to sitting position. Allow patient time to adjust to altered balance before standing. Initially a walker is often helpful for balance even if not needed for leg weakness.

**Note:** *If patient requires a mechanical lift, ensure the vest does not get caught on the sling or on the chair/bed when lifting or lowering.*

- 3.5.4 Consult with physiotherapy as needed.

### 3.6 Documentation and Reporting

- 3.6.1 Document on the nurse's progress record what care was given, any observations noted and patient's tolerance.

- 3.6.2 Report any alterations or adverse findings to the physician.

### 3.7 Choking/Cardiac Arrest (See Appendix B)

- 3.7.1 If effective abdominal/chest compressions cannot be achieved with the vest intact:
- 3.7.1.1 Lay the patient flat on a hard surface. (They will be lying on the back portion of the vest)
  - 3.7.1.2 Release the straps on each side of the front portion of the vest
  - 3.7.1.3 Loosen the bolts on the horizontal rods on the front vest plate.
  - 3.7.1.4 Raise the front vest plate up (swiveling on the rod) to expose the chest.
  - 3.7.1.5 Utilize the jaw thrust method to open the airway.

**Note:** *The wrench for the bolts should be attached to the vest.*

- 3.7.2 The patient should be kept flat and still until the Halo vest is reattached.

### 3.8 Prior to Discharge Home

- 3.8.1 Provide education regarding all the topics listed above. The Halo Vest Discharge Handout (Appendix C) may be used (Form # pending).

## 4. REFERENCES

Ballert Orthopaedic. (n.d.). *The halo system Part II: Problems with & solutions to halo fixation*. Bernardoni, G. Retrieved April 2011, from <http://ballert.com/index.php/articles/the-halo-system-part-ii-problems-a-solutions-of-halo-fixation>

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Royal Prince Alfred Hospital Intensive Care Unit. (2004). *Intensive Care Service Nursing Policy & Procedures, Spinal Cord Injury (SCI)*.

Sarro, A., Anthony, T., Magtoto, R., & Mauceri, J. (2010). Developing a standard of care for halo vest and pin site care including the patient and family education: A collaborative approach among three greater Toronto area teaching hospitals. *American Association of Neuroscience Nurses*, 42 (3), pp 169-173

Saskatoon Health Region. (2009). *ICU guidelines for halo vest care*. Department of Adult Critical Care, RUH ICU, Saskatoon, Saskatchewan.

6300 Neuroscience Unit. (1997). *Patient information: Guide to wearing the halo vest*. Royal University Hospital, Saskatoon, Saskatchewan.

**Appendix A**

**1 – skull pin on halo ring**

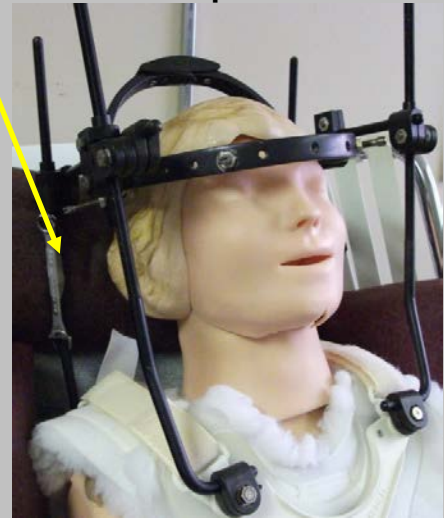
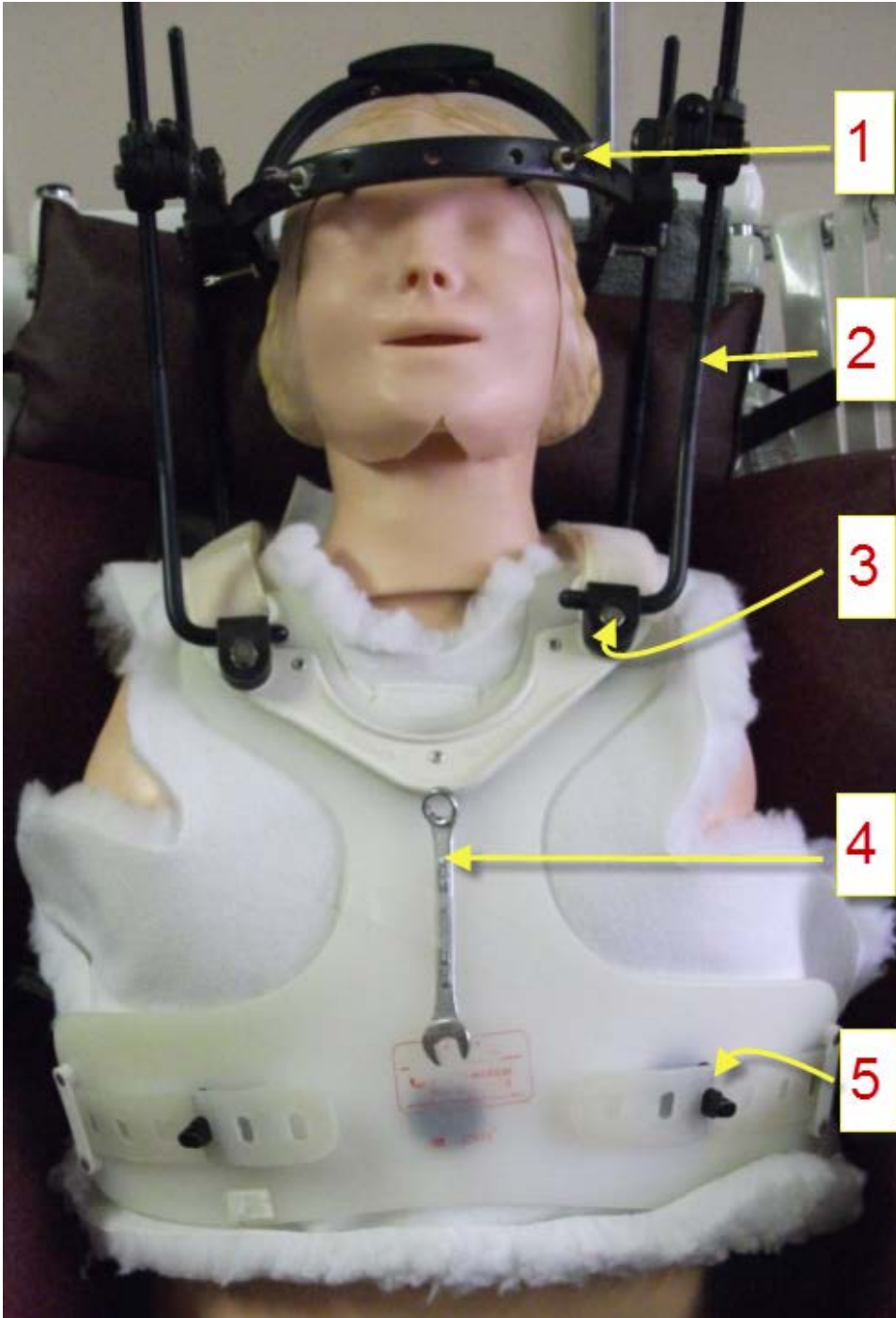
**2 – strut / rod**

**3 – bolt**

**4 – wrench (7/16”)**

**5 – strap/buckle**

**Alternate wrench placement  
(i.e. for confused patients)**



**Note marking on strap indicating  
correct buckle placement.**



**Sheepskin liner is worn under the vest to protect the skin.**

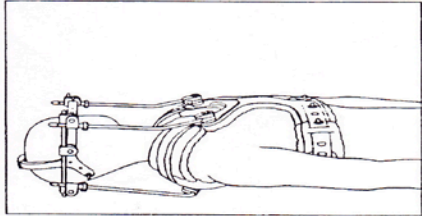


Appendix B

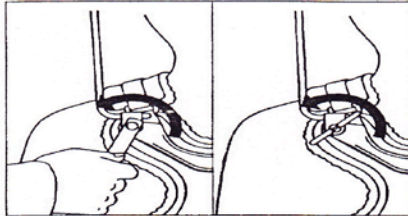
Attach This Sheet To The Patient's Chart Or Bed

# Bremer Air Flo® Vest\*/Classic II Vest Exposing The Chest For CPR And Life Support

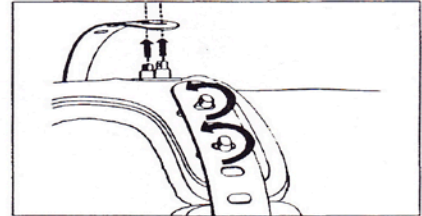
**NOTE:** Wrench supplied with the Vest should be attached to the Vest, superstructure, or patient's bed at all times.



**1** Place patient supine on posterior portion of the Vest

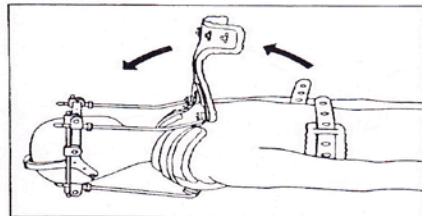


**2** Loosen the two anterior Vest bolts (identified by the RED emergency washers) using the 7/16" (1.1mm) wrench or, if attached, the ICU Knobs



**3** Release the thoracic bands by turning the locking posts and pull the bands out of the way

**NOTE:** If plastic cable ties are in place, cut them with scissors and remove prior to turning the locking posts.



**4** Rotate the anterior shell of the Vest away from the body exposing the chest

**5** Using the posterior Vest shell as a "crash board" perform CPR and/or Life Support as necessary

**NOTE:** Some stability of the cervical spine is maintained as long as the patient's body remains on the posterior Vest shell, the posterior Vest uprights are secure, and the transverse bars remain firmly attached to the Bremer Halo Crown®/Adjustable Ring.

**6** Defibrillation of the patient may be performed without removing the Bremer Halo Crown® or Bremer Adjustable Ring

**Recommendation**

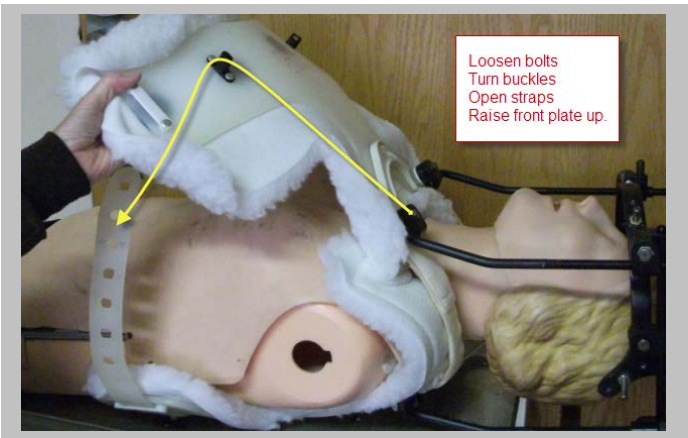
Manufacturer suggests the entire nursing care team practice this procedure using a Bremer AirFlo® Vest / Classic II Vest on a resuscitation dummy.



**Bremer Medical, Inc.**  
An Acromed Co.  
4801 Dawin Road  
Jacksonville, Florida 32207-9512  
(904) 730-8559

24 Hour Service: 800-874-4256

\*\*Indicates a registered trademark of Bremer Medical, Inc., An Acromed Co., 1Bremer Halo Crown, 4.612.930, \*Bremer Air Flo Vest, 5.121.741  
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Appendix C

Saskatoon Health Region

Addressograph

Discharge Careplan  
Patient Instructions  
For  
Halo Thoracic Vest

Your Guide to Wearing a Halo Vest includes:

- Vest Care
- Pin Care
- Activity
- Sleep
- Clothing
- Shampooing
- Sexual Activity
- Halo Removal

**Vest Care**

- Before discharge, be sure the vest fits comfortably. Do not loosen or adjust your vest by yourself.
- Try to avoid extremes of weight loss or gain which will affect the fit of the brace. If this occurs, the brace will need to be refitted.
  - You may not be as active but a lot of calories may be burned just carrying the Halo Vest around. You can stay on your regular diet, but monitor the fit of your vest and adjust accordingly.
- Have a daily sponge bath and use a wrung-out face cloth to clean the skin areas near the brace. Do not put powders or lotions under the vest and never scratch under the brace.
- The sheepskin liner must be kept dry. If it accidentally gets wet, dry it with a hair dryer at low temperature settings (as the brace and pins will conduct heat readily).
- Inspect visible skin daily for pressure areas or irritations and report these to your physician immediately
- The sheepskin liner will be changed as needed at your return appointments.
- NOTE: the sheepskin is synthetic material which is highly flammable. Be aware of this danger if you smoke.

**Pin Care**

- Pin care should be performed at least twice a day. Assistance may be needed.
  - Dip a Q-tip into normal saline
  - Work gently around the pin removing all crusting.
  - Discard the Q-tip
  - Use a clean Q-tip for each pin site. Move the skin as instructed during your hospitalization.
- Observe pin sites for redness, swelling, drainage or discomfort or pain. Report these changes to your doctor.
- Do not use any ointments or antiseptics on the pin sites unless prescribed by a doctor.
- Pulling or turning by the Halo frame or supporting rods **MUST BE AVOIDED**. All movement is transmitted to the pins and this may cause them to loosen.
- These pins will be checked and tightened as needed at your follow-up appointments. A "clicking" sensation at the pin site is a sign of a loose pin and needs prompt follow-up by a doctor. Do not for any reason adjust or remove these pins.
- The steel readily conducts heat and cold. Wear warm head covering when you go out in cold weather, use hair dryer on low setting, etc.





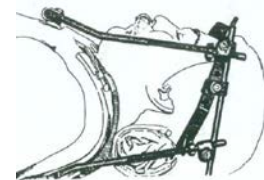
## Activity

- You will be very top-heavy and your balance will be impaired. This will improve as your body accommodates to the new weight distribution but falling down could be very dangerous. Do not consume alcohol.
- Your field of vision is also limited and you will not be able to see your feet or the ground directly in front of you, therefore you must be very careful on stairs, uneven ground, or slippery surfaces (e.g., bathrooms, throw rugs, winter sidewalks, etc).
- Try to maintain normal social activities but do not engage in activities involving heavy lifting, jumping or running.
- Getting into vehicles may be difficult. The easiest way is to back in, buttocks first, and slide until your head is cleared. It is important that someone helps to guide your clearance, because bumping your Halo could loosen your pins. Do NOT drive as you cannot turn your head.
- Public transportation can be more difficult as they often shake a bit and you are not always guaranteed a seat. The vibration will travel through your body to the pins and will be transmitted to your skull if you have to sit or lean against a hard surface. If it is necessary to use public transportation, try to avoid crowds.
- Reading may be difficult as you cannot tilt your head. Prism glasses can be used for this or try a music stand or easel to hold your reading material.



## Sleep

- You may need more sleep than you usually did. Your body uses more energy even doing simple things because you are wearing a brace.
- Lie in the middle of the bed. If you are close to the edge, you may turn and topple over the edge.
- Protect your bed linen and mattress from wear and tear by lying on an old sheet or thin blanket. (Also be aware of this problem when you sit on upholstered furniture.)
- You will not be accustomed to having your head suspended. Putting a rolled towel or pillowcase between your head and the back of your neck or cheek may help you feel more normal. It is important, however, that the towel or pillowcase not apply any pressure. Slightly elevating the head of the bed or mattress may also make you feel more comfortable.
- When getting out of bed, it is important NOT to try to sit straight up, bending from the waist. This puts great stress on your front pins. Get up by rolling onto your side near the edge of the bed and while dropping your legs off the edge, push sideways with your elbow and hand to bring yourself to a sitting position.

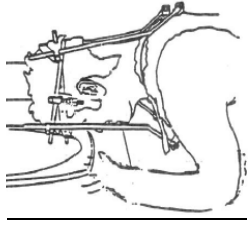


## Clothing



- Loose T-shirts or smocks one or two sizes larger than normal usually fit over the brace.
- Loose jackets with front zippers and scarves or capes work quite well in cooler weather. Remember to protect the steel from cold (or heat).
- Footwear should be sturdy, low heeled and have good traction. Do not wear high heels at anytime because they change your balance and increase the risk of falls.
- Some clothing may be altered with Velcro or snap closures to accommodate the halo frame. More information on this is available from the Occupational Therapy Department.

## Shampooing



- Hair should be shampooed regularly. You will need an assistant.
- Protect the shoulders of the vest with plastic. Tuck the plastic into the plates of the brace so that it forms a large cape. Drape the loose end of the plastic over the edge of the tub or sink and the water will run away protecting the sheepskin.
- Kneel over the bathtub or sink and bend forward until your head is lower than your shoulders. Have your assistant do the shampooing and rinsing.
- Do not use any tints, dyes, sprays, gels or conditioner on your hair while pins are in. Dandruff under the ring is not an uncommon problem.

## Sexual Activity

- Halo vest should not stop sexual activity but it will probably have to be modified.
- The Halo apparatus was not designed for close contact, even hugging. When kissing, both must be careful not to bump the Halo ring or pins. It is easy to misjudge distances between an object and your Halo ring until you have become accustomed to wearing it.
- Some positions are safer for your partner than others. A side-lying position is probably most comfortable for both. If other positions are used you might find that putting a small pillow between you will keep the rods from injuring your partner. Experiment within reason but you both must be careful, gentle and tolerant.
- If your neck injury has been particularly difficult to realign or hold in position, your doctor may recommend that you abstain from sexual activity until the six or eight week mark is reached.

## What to Report to Your Doctor

- Swelling, discharge, or unusual redness at the pinsite
- Pain or clicking sensation at a pinsite (with or without redness)
- Feeling that you can move your neck or rattling sounds from the brace.
- Soreness or redness of the skin under the brace.
- Fall or injury.

## When Your Halo is Removed

- Halo vest is usually worn for 12 weeks and is removed by the physician once x-rays have confirmed that your neck is healed.
- To reduce scarring, massage the pin sites above your eyebrows to break the adhesions which have formed between the skin and the bone. This procedure is done to reduce the scarring on your forehead after healing. You should continue to move the skin over the pin holes for several days to avoid reattachment of the adhesions.
- When the Halo is removed all the weight of your head is on your neck again. The muscles in your neck have not done any work for many weeks, therefore your head will feel very heavy and your neck very wobbly. You will be fit with a collar to wear for the next several weeks.
- When the collar comes off your doctor may recommend physiotherapy sessions to strengthen your neck muscles. You should continue to restrict your activities during this time but you will notice gradual improvements every day.
- Your doctor will advise you when it is safe to return to more strenuous activities.