PURPOSE

The purpose of any chest drainage device is to remove air and fluid in a closed, one-way fashion.

The purpose of this practice support document is to describe procedures related to the care of a patient with a silicone chest tube including assisting with care, monitoring and trouble shooting guidelines.

SITE APPLICABILITY

This practice can be carried out at BCCH site wide.

PRACTICE LEVEL/COMPETENCIES

Registered Nurses in acute and critical care at BCCH have basic foundational skills to care for and monitor patients with chest tubes.

Cardiac Surgery Nurse Practitioners are able to remove Blake chest tubes.

DEFINITIONS

Blake Drain: Radiopaque silicone drain with 4 channels along the sides. They are flexible fluted drains that exert constant suction over the entire length of the fluted portion of the drain with noncollapsible tubing and long channels for drainage.

Blake Bulb or J-VAC BULB SUCTION RESERVOIR: Used when patient requires drainage only. The J-VAC Bulb Suction Reservoir is available in 100 ml size and has a standard anti-reflux valve. Markers are provided at increments along the side of the reservoir to facilitate the approximate measurement of fluid.

EQUIPMENT

Safety equipment: clamps, alcohol swab, 2x2 gauze, bulb

Stripping: Alcohol swab

Emptying: Gloves and appropriate sized syringe(s)

PROCEDURE

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>RATIONALE</th>
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<tbody>
<tr>
<td><strong>1. MONITOR</strong> routine vital signs as per postoperative protocol orders.</td>
<td>Ensures appropriate monitoring.</td>
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<td><strong>2. IDENTIFY</strong> patient and <strong>EXPLAIN</strong> process of hourly site to source safety check of Blake drain to patient and family. <strong>ENSURE</strong> patient and family understand procedure and questions are answered.</td>
<td>Ensures identification mechanism is present to ensure treatments, medications and procedures are provided to the correct patient. Reduces child and family’s anxiety.</td>
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<tr>
<td><strong>3. ENSURE</strong> appropriate safety equipment is available. This includes;</td>
<td>Blake drain tubing is made of silicone elastomer suction drain tubing which is soft and pliable and “should not be handled or come into contact with pointed, toothed, sharp-cornered or even blunt instruments, as punctures, surface cuts, nicks, crushing or other overstressing can lead to tearing or warping of the tubing and to subsequent structural failure of the drain and/or fragment retention within the wound.” (Ethicon, 2002).</td>
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<td>- Clamps (non-toothed) are readily available at bedside for EMERGENCY only (see below).</td>
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<td>- Extra Blake bulb on unit.</td>
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<tr>
<td>Step</td>
<td>Action/Task Description</td>
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<td>5.</td>
<td><strong>PEFORM</strong> a site to source check. <strong>INSPECT</strong> the Blake bulb and tubing every hour for patency, cracks, holes, or kinks. <strong>ENSURE</strong> the bulb is compressed at all times. <strong>NOTIFY</strong> physician or designate if the bulb does not compress and if bulb continually fills with air. <strong>CHANGE</strong> bulb if clots are present or PRN. <strong>PINCH</strong> tubing manually to clamp tubing when changing bulb.</td>
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<td>6.</td>
<td><strong>INSPECT</strong> the Blake drain Mepore dressing for new discharge every 4 hours. <strong>CLEANSE</strong> site with sterile normal saline and change the Mepore dressing every 48 hours or PRN if soiled. <strong>ASSESS</strong> Blake drain exit site for placement, redness or swelling during dressing change.</td>
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<td>7.</td>
<td><strong>ASSESS</strong> the Blake bulb every hour for changes in drainage (colour, volume, air). <strong>NOTIFY</strong> physician or designate if any significant changes.</td>
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<td>8.</td>
<td>Unless otherwise specified, <strong>STRIP</strong> drain tubing every hour for the first 12 hours following a procedure then every 2 hours thereafter. Starting closest to patient, hold the tubing at that end firmly with one hand and with other hand wrap an alcohol wipe around the tubing and squeeze and pull the length of the tubing towards the bulb.</td>
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<td>9.</td>
<td>Unless otherwise specified, <strong>EMPTY</strong> Blake drain bulb every hour for the first 12 hours postoperatively, then every 4 hours thereafter. Use an appropriate sized luer lock syringe. <strong>DOCUMENT</strong> output each time.</td>
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<tr>
<td>10.</td>
<td><strong>ENCOURAGE</strong> patient to deep breathe or use incentive spirometry once every hour while awake or as tolerated.</td>
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| 11.  | **MONITOR:**  
* Respiratory rate, heart rate, oxygen saturation and BP as ordered.  
* Pain assessment every 4 hours or as needed using age/developmentally appropriate pain assessment tools. | Continual assessment of child’s cardiorespiratory status while drain is in place is essential to assess the health status, comfort and well being of the child and to identify and prevent complications. Chest drains are invasive and are likely to be uncomfortable and restrict movement. |
| 12.  | **DOCUMENT** on appropriate record(s) (i.e. patient care flowsheet and nurse notes):  
* Site to source safety check hourly.  
* Respiratory rate, heart rate, oxygen saturation and BP as ordered.  
* Volume of drainage emptied from Blake | |
- Drain bulb every 4 hours.
- Total volume of Blake drainage output q12 hours.
- Frequency of Blake tubing stripping every 2 hours or PRN.
- Colour and consistency of Blake drainage with bulb emptying.
- Dressing changes performed.
- Use of analgesics.
- Activity level every shift.
- Pain score using an age/development appropriate assessment tool every 4 hours while awake and PRN.

### Patient/family education.

#### BLAKE DRAIN REMOVAL

1. **PROVIDE** analgesia prior to procedure. Administer medication based on the peak effect.

   Analgesia given at least 30 minutes before the procedure can decreases patient’s experience of pain or stress during procedure.

2. A Cardiac Surgery Nurse Practitioner, Fellow, Surgeon or designate will remove the Blake drain as per BCCH Cardiac Surgery practice.

3. After the Blake drain is removed, a **Mepore** dressing will be placed over the site. **ASSESS** dressing for any drainage of fluid or exudate.

   Monitor for potential bleeding from site following removal.

4. **MONITOR** vital signs (heart rate, respiration rate and oxygen saturations) respiratory effort and **ASSESS** patient every 15 minutes for 1 hour. NOTIFY physician or designate if any change in vital signs or clinical status deteriorates.

   To allow early identification of potential complications such as pneumothorax, tamponade and bleeding. A chest X-ray will be routinely ordered by MD/NP. Timing of the x-ray is based on the patient’s clinical presentation.

5. **REMOVE** the dressing after 48 hours. **ASSESS** wound for any signs of infection every shift.

   Assessment for possible signs and symptoms of infection. Promote wound healing.

6. **REMOVE** the Blake drain purse sutures 48 hours after Blake drain has been discontinued.

#### EMERGENCY PROCEDURES

If a Blake drain falls out or is pulled out by a patient:
- Cover exit site with sterile 2x2 gauze and firmly hold in place.
- Notify Cardiac Surgery Nurse Practitioner/Fellow/Surgeon or designate.
- Monitor vital signs (heart rate, respiration rate and oxygen saturations) continuously until Cardiac Surgery Team arrives and then as per guidelines post Blake drain removal (see above).

If there is a hole in the tubing:
- Consider clamping the tubing above the leak with non-toothed clamp if there is any

   Use non-toothed plastic or metal clamps.
- Notify Cardiac Surgery Nurse Practitioner/Fellow/Surgeon or designate.

If the tubing breaks off or the bulb is detached from the tubing:
- Pinch end of tubing manually.
- Clean end of tubing with chlorhexidine/alcohol swab.
- Then re-attach new bulb
- Notify Cardiac Surgery Nurse Practitioner/Fellow/Surgeon or designate.

**OUTPATIENT MANAGEMENT**

- Patients with Blake drains can be discharged home or be off the unit at the discretion of the BCCH Cardiac Surgical Team. Patients and families are to be provided with education around the care of Blake drains (including emergency management) prior to discharge and/or leaving the unit.

**DOCUMENTATION**
Include guidance about what information is essential to record and specific forms to be used, if applicable.

**REFERENCES**


