Knowledge domain: **Plumbing**
Unit: Leaking
Skill: Cutting Tubes

Tools and Parts Required:

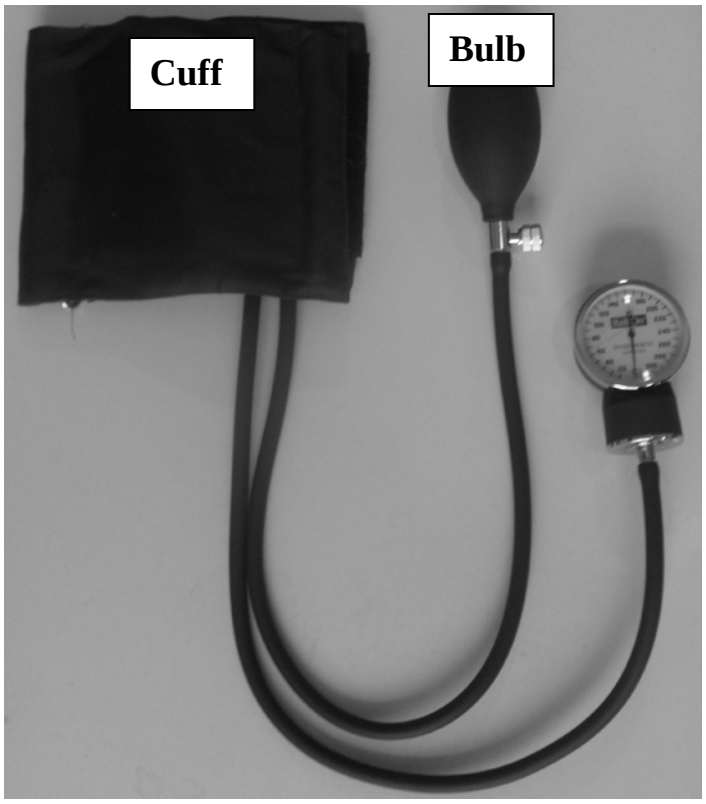
1) **BP apparatus**
2) **Scissors**
3) **Water**
4) **Soap**

Introduction

Leaks occur frequently in plastic or rubber tubes. Leaks prevent the device from providing accurate results. The device cannot create pressure if there is a leak. Suction pumps and blood pressure apparatuses do not function properly if there are leaks. You may cut the plastic or rubber tube to remove leaks.

Example

Below is a picture of a BP apparatus.



Identification and Diagnosis

Leaks in tubing often occur where tubing is stretched. Always check for leaks where tubing is stretched over fittings.

Leaks in BP Apparatus: Close the valve on the BP apparatus. Squeeze the bulb repeatedly. Inflate the cuff completely. The pressure indicated on the dial should NOT decrease significantly. The pressure should decrease 5 mm Hg per minute or less. If the pressure decreases too quickly, check for leaks in the rubber tubing.

Close the valve. Squeeze the bulb repeatedly. Inflate the cuff completely. Slightly rotate the valve to open the valve. The pressure should decrease slowly and consistently. If the pressure decreases quickly or inconsistently, check for leaks in the rubber tubing.

Leaks in suction pump: Use your hand to cover the open end of the tube on the suction pump. Increase the pressure of the suction pump. Feel the suction on your hand. The tube should press against your hand. If you feel no pressure, check for leaks. If the tube does not press against your hand easily, check for leaks.

Procedure

Combine water and soap in a bowl. Rub the soap and water over the tube. Look for bubbles. Bubbles indicate a leak. Identify the leaks in the tube. If the leaks are located in one area, you may cut the tube. If the leaks are located throughout the tube, use electrical tape to repair the leaks. If there are many leaks, replace the tube.

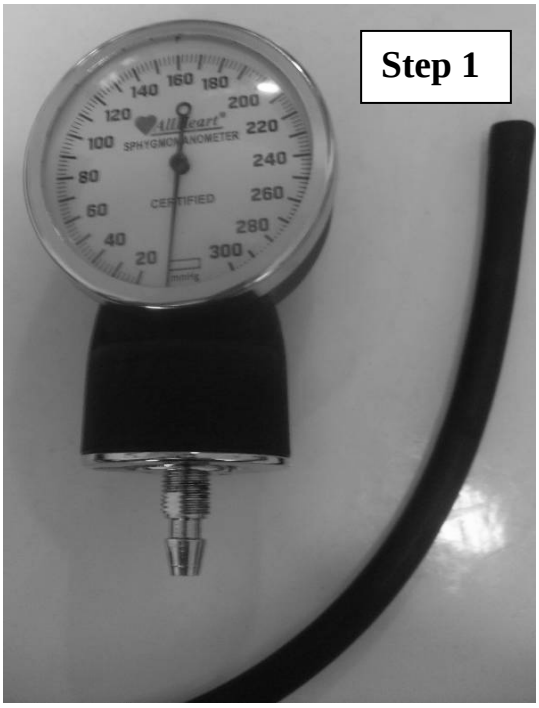
BP apparatus: There are two rubber tubes on a BP apparatus. One tube connects the manometer to the cuff. If used properly, the cuff is on the upper arm at heart-level height. The tube must be long enough to connect the manometer to the cuff. The operator will hold the manometer. The tube must be long enough to perform the test comfortably. A second tube connects the manometer to the bulb. This tube is short. This tube must connect the manometer to the bulb. Before you cut the tube, verify that the tube is long enough.

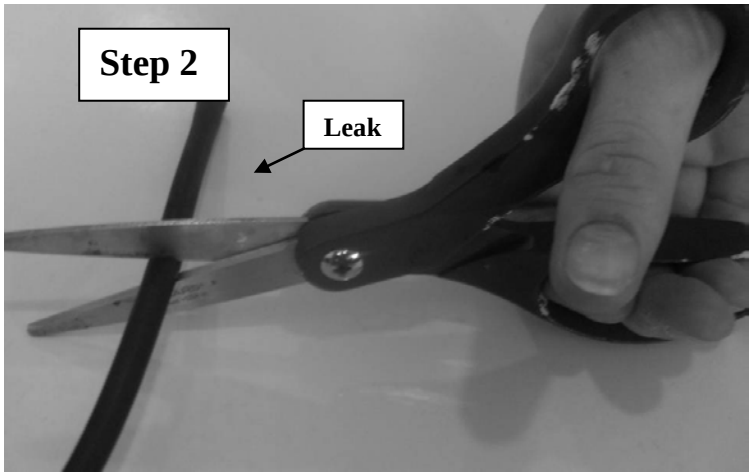
Step 1: Remove the manometer or bulb from tube.

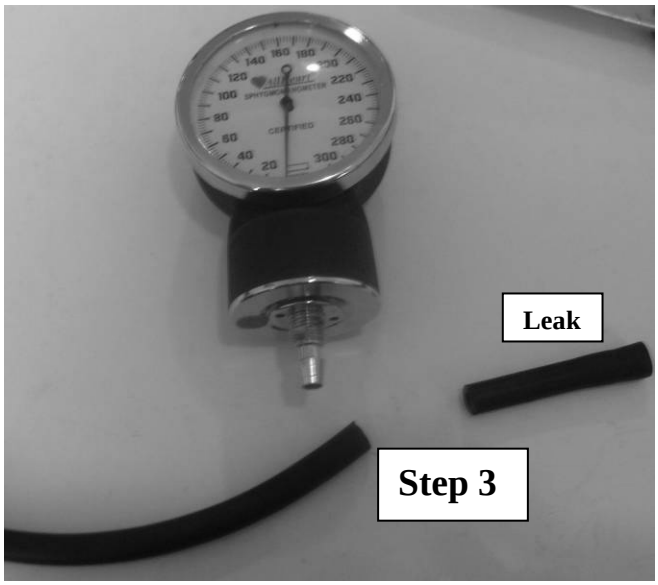
Step 2: Use scissors to cut the tube next to the leak location.

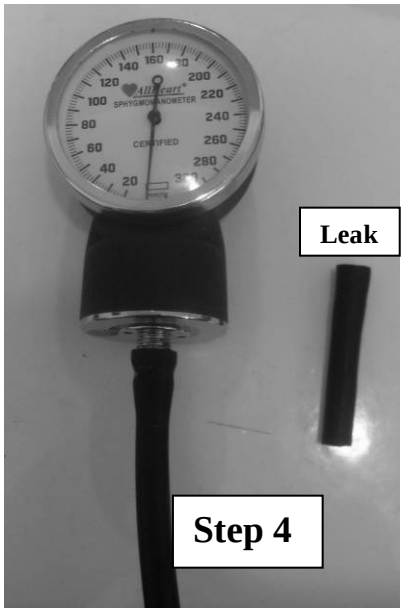
Step 3: Remove the tube section where the leak is located.

Step 4: Attach the leak-free tube to the manometer and cuff/bulb.


Step 1


Step 2
Leak


Leak
Step 3


Leak
Step 4

Suction pumps: The required length of a suction pump tube varies. The tube must connect to the suction pump. The tube must be long enough to reach another device. If a leak is located near the end of the tube, you may cut the tube.

Before you cut the tube, verify that the tube is long enough. Cut the tube with scissors. Remove the tube section where the leak is located. Attach the leak-free tube to the suction pump.

Exercise

Your instructor will give you a BP apparatus. The object may be a piece of medical equipment from your hospital. Check the tube for leaks. Apply soap and water to the tube. Check for bubbles. Remove the leak by cutting the tube. Reattach the tube to the BP apparatus.

Your instructor must verify your work before you continue.

Preventative Maintenance and Calibration

Calibrate the BP apparatus after removing a leak. Calibration ensures that a leaky tube was the source of the problem. Use the BTA skill *Mechanical-Calibration-Blood Pressure Machines*.

Always calibrate every medical device before returning it to use.