

# How to take an accurate blood pressure

## **Cuff sizing:**

The proper cuff size must be selected for any indirect method of blood pressure measurement that uses a compression cuff. Use of a cuff that is too large, too small, or improperly wrapped will result in inaccurate readings. Each patient's extremity should be properly measured to determine the most appropriate cuff size.

Cuff size refers only to dimensions of the bladder or the inflatable pneumatic cavity of the cuff. It does not refer to the dimensions of the entire cuff. The proper cuff size to select is determined by the dimensions of the limb that is used to measure the blood pressure. The ratio of the width of the cuff to the circumference of the extremity is of critical importance for accurate blood pressure measurements. According to the American Heart Association, the width of the compression cavity of the cuff (or the bladder) should be equal to 40% of the circumference or 1.2 times the diameter of the extremity. The diameter or circumference of the extremity is measured at midpoint of the limb. For the arm, midpoint is measured at half the distance between the shoulder and the elbow joints. For measurements on the thigh, midpoint is half distance between the hip and knee joints.

## **Selection of the proper cuff size:**

- Cuff dimension requirements refer to the size of the actual compression cavity, NOT the cuff itself
- Use the ratio of the arm circumference to the cuff width, NOT the cuff length
- Cuff width should equal 40% of the arm circumference or 1.2 times the diameter of the arm

The use of too narrow a cuff will yield falsely high blood pressure values. Using too wide a cuff will result in falsely low values. If the patient's limb measurement is on the borderline of two different cuff sizes the chance of error is decreased if the larger of the two cuff sizes is used.

The compression effect of the cuff is maximal at the center of the cuff. The use of too narrow a cuff causes the pressure of the compression to be exerted on only a small and inadequate segment of the underlying artery. The artery will not be fully occluded when cuff pressure is greater than intra-arterial pressure.



### Cuff wrap:

Correct sensing of the various pressures depends on uniformity of limb compression. Assure that all residual air is squeezed out of the cuff prior to initiation of a measurement.

The technique used to wrap the cuff is also important in assuring accurate readings. Cuffs that are wrapped too loose will result in falsely elevated values. Cuffs should be applied snugly, allowing only enough room for one finger to be slipped between the cuff and the skin surface.

### Inflation and deflation rate:

Inflation and deflation rate of the manometer may affect the blood pressure reading.

Problem	Result	Recommendation
Inflation rate too slow	<ul style="list-style-type: none"><li>▪ Diastolic pressure too high</li><li>▪ Patient discomfort</li></ul>	<ul style="list-style-type: none"><li>▪ Inflate at an even rate</li></ul>
Deflation rate too fast	<ul style="list-style-type: none"><li>▪ Systolic pressure too low</li><li>▪ Diastolic pressure too high</li></ul>	<ul style="list-style-type: none"><li>▪ Deflate at 2 mmHg per second</li><li>▪ Or 2 mmHg per beat</li></ul>
Deflation rate too slow	<ul style="list-style-type: none"><li>▪ Diastolic pressure too high</li><li>▪ Forearm congestion</li></ul>	<ul style="list-style-type: none"><li>▪ Deflate at 2 mmHg per second</li><li>▪ Or 2 mmHg per beat</li><li>▪ Completely deflate cuff prior to initiation of measurement</li></ul>

© 2005 General Electric Company – All rights reserved.

GE and GE Monogram are trademarks of General Electric Company.

GE Medical Systems Information Technologies, Inc., a General Electric company, going to market as GE Healthcare.

