## Appendix A - Recommended Technique for Measuring Blood Pressure [1]

I Measurements should be taken with a sphygmomanometer known to be accurate. A recently calibrated aneroid or a validated and recently calibrated electronic device can also be used. Aneroid devices or mercury columns need to be clearly visible at eye level.

II Choose a cuff with an appropriate bladder size matched to the size of the arm. For measurements taken by auscultation, bladder width should be close to 40% of arm circumference and bladder length should cover 80-100% of arm circumference. When using an automated device, select the cuff size as recommended by its manufacturer.

III Place the lower edge of the cuff 3 cm above the elbow crease and the bladder centred over the brachial artery. The patient should be resting comfortably for 5 minutes in a seated position with back support. The arm should be bare and supported with the antecubital fossa at heart level, as a lower position will result in erroneously higher SBP and DBP. There should be no talking, and the patient's legs should not be crossed. At least three measurements should be taken in the same arm with the patient in the same position. The first reading should be discarded and the latter two averaged. Blood pressure also should be assessed after two minutes standing (with arm supported) and at times when patients report symptoms suggestive of postural hypotension. Supine BP measurements may also be helpful in the assessment of elderly and diabetic patients.

IV Increase the pressure rapidly to 30 mm Hg above the level at which the radial pulse is extinguished (to exclude the possibility of systolic auscultatory gap).

V Place the bell or diaphragm of the stethoscope gently and steadily over the brachial artery.

VI Open the control valve so that the deflation rate of the cuff is approximately 2 mm Hg per heart beat. A cuff deflation rate of 2 mm Hg per beat is necessary for accurate systolic and diastolic estimation.

VII Read the systolic level – the first appearance of a clear tapping sound (phase I Korotkoff) – and the diastolic level – the point at which the sounds disappear (phase V Korotkoff). Continue to auscultate at least 10 mm Hg below phase V to exclude a diastolic auscultatory gap. Record the blood pressure to the closest 2 mm Hg on the manometer (or 1 mm Hg on electronic devices), as well as the arm used and whether the patient was supine, sitting or standing. Record the heart rate. The seated blood pressure is used to determine and monitor treatment decisions. The standing blood pressure is used to examine for postural hypotension, if present, which may modify the treatment.

VIII If Korotkoff sounds persist as the level approaches 0 mm Hg, then the point of muffling of the sound is used (phase IV) to indicate the diastolic pressure.

IX In the case of arrhythmia, additional readings may be required to estimate the average systolic and diastolic pressure. Isolated extra beats should be ignored. Note the rhythm and pulse rate.

X Leaving the cuff partially inflated for too long will fill the venous system and make the sound difficult to hear. To avoid venous congestion, it is recommended that at least one minute should elapse between readings.

XI Blood pressure should be taken in both arms on at least one visit and if one arm has a consistently higher pressure then that arm should be clearly noted and subsequently used for blood pressure measurement and interpretation.

### Reference

1. Canadian Hypertension Education Program. 2007 CHEP recommendations for the management of hypertension. 2007. www.hypertension.ca/chep/