



## Common Errors in the Measurement of Blood Pressure

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Norman Kaplan said “The measurement of blood pressure is likely the clinical procedure of greatest importance that is performed in the sloppiest manner [1].” It is of great importance that common and often overlooked errors in the measurement of blood pressure be addressed.

Firstly, I would like to emphasize the importance of proper cuff size. It is well known that miscuffing or using an improper cuff size can lead to an inaccurate blood pressure measurement [2,3]. To put this into perspective, undercuffing (cuff too small) can increase systolic blood pressure by 10mmHg [4], while overcuffing (cuff too large) can decrease systolic blood pressure by approximately 4mmHg [5].

It is also known that an overestimation of blood pressure by just 5mmHg can lead to inappropriate treatment of approximately 30 million patients [6], which can then lead to unnecessary treatment and cost, potential side effects of medications and mislabelling as hypertensive with attendant psychological issues. Underestimation of blood pressure by 5mmHg will mislabel approximately 20 million patients with pre-hypertension when they would have true hypertension [7].

The “ideal” cuff should have a bladder length that is 80% and a width that is at least 40% of arm circumference [8]. The American Heart Association (AHA) also recommend cuff sizes based on arm circumference [8]. Most present day cuffs have an index marker and range marker which can assist in preventing miscuffing without the need for measuring the arm circumference. Once the index marker is within the range, the cuff is of the appropriate size for the patient [9].

Secondly, the JNC 7 guidelines state that patients should be rested for 5 minutes before the blood pressure is taken [10]. However most patients are not given sufficient time to rest before their blood pressure is measured which can lead to falsely high values and potential over treatment. A recent study found that 98% of patients were insufficiently rested before having their blood pressure measurement [11].

Other commonly overlooked errors that are made when measuring blood pressure include not having the patient seated in a chair with feet on floor and back supported and arm at heart level [10]. An unsupported back can increase systolic blood pressure by 6-10mmHg. An unsupported arm can increase systolic blood pressure by 7mmHg. Talking to the patient while measuring blood pressure can increase systolic blood pressure by 10mmHg and that

should be avoided. Also a distended bladder can increase systolic blood pressure by 15mmHg [4].

In an era of busy medical practices, we need to make a concerted effort to adhere to these guidelines when measuring blood pressure. These are some of the more common mistakes seen during the measurement of blood pressure. As many different health care professional are involved in measuring blood pressure, it is integral that these mistakes be prevented, as accurate measurements will lead to accurate diagnoses and better treatment of hypertensive patients.

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