

PHYSIOLOGICAL CAUSES OF VARIABILITY IN BLOOD PRESSURE MEASUREMENT

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Abstract

Blood pressure is an important clinical measurement. The relationship between high blood pressure and increased mortality has been well researched and documented. However, measurement accuracy is subject to a number of potential problems. It has been estimated that even a small error of 5 mmHg would result in inappropriate treatment of over 40 million in the USA. The traditional manual technique is being used less frequently, and automated techniques are being increasingly employed. Many automated devices are not validated, and there cannot be certainty that pressure measurements in individual patients will be accurate. Because of physiological variability between subjects, when devices are assessed to world standards a clinical test is employed using 85 subjects undergoing comparative manual measurement with a calibrated sphygmomanometer and two independent trained measurement staff. For the automated device to be suitable for clinical use the mean error over all 85 subjects must be no more than 5 mmHg with a standard deviation no more than 8 mmHg. Automated devices are increasingly taking over the role of blood pressure measurement, and although they undoubtedly have an important role to play, some devices do not meet the requirement of the international standards, and of those that do there can be no certainty that measurements in individual patients will be correct. Continuing research in this area is needed.