Office Blood Pressure Measurement With Electronic Devices: Has the Time Come?

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Although the conventional auscultatory office blood pressure (BP) measurement has been the cornerstone of hypertension management, it has important drawbacks and often does not reflect the individual’s true BP. This is mainly due not only to the white-coat phenomenon but also to the fact that physicians rarely follow the recommended methodology for BP measurement. Measurements taken by a nurse provide lower and more reliable BPs than those taken by physicians but again are subject to the drawbacks of the auscultatory technique and the observer bias. An alternative and technologically modern approach is to abandon the auscultatory technique and use validated electronic devices, as currently accepted for ambulatory and home BP monitoring.

In this issue of the American Journal of Hypertension, Myers et al. showed that office BP taken by an electronic device (BpTRU) is lower than that taken by nurses using mercury devices. The authors suggested that this is probably due to minimization of the white-coat effect, and that this method can replace the conventional office measurement.

This information is important and definitely points to the future of office BP measurement. However, the lower BP with the BpTRU approach deserves special attention. This might be attributed either to a systematic underestimation of BP in all subjects or to the elimination of the white-coat effect in some. Unfortunately, this issue remains unresolved since out-of-office BP was not assessed. If the former is true, then new (lower) diagnostic thresholds for this method should be defined.

An interesting point in the study by Myers et al. is that automated office BP measurements were taken in the absence of the observer. When office BP taken by physicians was compared with that taken by nurses, and by an automated device in the absence of an observer, the automated device gave the lowest average BP. However, 15 readings were averaged with the automated device compared to 3 readings with the other methods, which probably contributed considerably to the BP difference.

On the contrary, when office measurements were taken by physicians or by patients being alone in the measurement room but using the same device (automated) and measurement protocol (three readings), there was no difference in measured office BP. It seems that the office setting and the number of readings affect BP more than the presence of the observer. The term “isolated office hypertension” again appears to be more appropriate than the “white-coat hypertension.”

Interesting additional functions of professional devices are currently being tested. The “hybrid” non-mercury auscultatory device, which has a mark button to eliminate the terminal digit preference, is a challenging development but is accurate only when the button is not used. Other devices allow simultaneous both-arms measurement (for the initial assessment of patients) or both auscultatory and oscillometric measurement. The latter is important because the oscillometric measurement is still imperfect, and in some patients it does not give accurate readings.

After a century of use, office BP measurement enters an era of transformation aiming to resolve several of its drawbacks and to maintain a central role in hypertension management. Any change in the conventional methodology should be carefully tested and supported by evidence showing clear improvement in the diagnostic ability of the method.

Disclosure: The author declared no conflict of interest.