Editorials

Measuring blood pressure in primary care:

identifying 'white coat syndrome' and blood pressure device comparison

Hypertension is a major risk factor for cardiovascular disease, especially in the presence of other risk factors.[1] Accurate identification of hypertension is challenging largely due to blood pressure variability in an office or clinic where most GP consultations take place. Blood pressure can be affected by several factors including measurement technique and observer bias.[2]

Ambulatory blood pressure monitoring (ABPM) and self-monitoring, two methods used to detect 'white coat syndrome' (the phenomenon whereby blood pressure measured by medical personnel is elevated above usual levels), have been shown to be more accurate in predicting end-organ damage than office readings.[3,4] However, thresholds for diagnosis of hypertension with ABPM vary and guidelines recommend its use in specific circumstances only.[5] The use of self-monitoring in diagnosis is unclear in terms of the number of blood pressure readings required.[6] Furthermore, current cardiovascular risk assessment charts are based on office blood pressure readings, so when calculating cardiovascular risk clinicians need a reliable method of measuring office blood pressure.

OPTIMAL CONDITIONS FOR MEASUREMENT

In this month's issue of the *BJGP* two articles focus on blood pressure measurement. Scherpbier-de Haan and colleagues examine the agreement of office blood pressure measurement over a 30-minute period using an ambulatory blood pressure device when compared to standard blood pressure measurement.[7] The authors recruited 83 consecutive patients from Dutch general practice whose clinical encounter with their GP necessitated blood pressure measurement.

Key elements of the standardised blood pressure measurement included: 5-minutes rest in the absence of the observer before measurement, three blood pressure readings with 30 seconds between (first reading discarded), and correct positioning of patient and blood pressure cuff.

The 30-minute automated measurement took place 30 seconds after the standardised measurement: the observer checked the first measurement and then left the room, and a further 11 measurements were recorded (first measurement discarded) over a 30-minute period. This process was repeated after 2 weeks to assess repeatability.

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The authors found that mean 30-minute blood pressure readings were 7.6/2.5 mmHg (95% CI = 6.1 to 9.1/1.5 to 3.4 mmHg) lower than standardised readings. This effect persisted when the process was repeated after a 2-week interval.

The 30-minute blood pressure measurement approach reduces the 'white coat' effect and offers clinicians and patients an office-based alternative to daytime ABPM and self-monitoring at home. The authors acknowledge that this measurement cannot account for features unique to 24-hour ABPM, such as nocturnal dipping and pulse variability both of which have been shown independently to increase the risk of target organ damage.[3] However, this 30-minute approach has the potential to identify patients with 'white coat syndrome' in a manner that is potentially more convenient from the patient's perspective, while reducing the risk of over treating patients without true hypertension.

Pragmatically, space constraints will limit the use of this measurement in many general practices, as this will require a spare room to leave patients in for 30-minutes while blood pressure measurements occur. However, emerging evidence indicates than a shorter measurement period may be as reliable and perhaps more applicable in primary care.[8]

DIGITAL SPHYGMOMANOMETERS

In a related article concerning blood pressure measurement in this month's journal, A'Court and colleagues carried out a cross-sectional study to establish the type and accuracy of sphygmomanometers in current use across 38 UK-based general practices.[9] They found that digital sphygmomanometers have largely replaced mercury models in practice and have equivalent accuracy. This follows a recent EU directive for mercury sphygmomanometers to be phased out of clinical practice.

Aneroid devices were found to have significantly higher failure rates than the other devices, leading the authors to conclude that the continued use of aneroid blood pressure devices in contemporary clinical practice should be questioned.

This article also highlights the important issue of the need for regular calibration of blood pressure devices. In their study, A'Court *et al* measured accuracy using the British Hypertension Society (BHS) classification standard. This scheme classifies devices as green (well calibrated) if within 3 mmHg of the standard across the pressure range, amber if 4–9 mmHg, and red if >10 mmHg. A total of 86% of assessed devices were classified in the green range, 13% in the amber range, and <1% in the red range. Poorly calibrated devices have the potential to lead to systematic under- or over-diagnosis of hypertension with its associated morbidity. The BHS guidelines recommend servicing of blood pressure devices at least annually.

ASSESSMENT AND MANAGEMENT

These research articles remind us of the difficulties of accurate measurement of blood pressure in clinical practice and the need for valid, reliable instruments. Scherpbier-de Haan and colleagues present a viable alternative to daytime ABPM or self-monitoring for patients with suspected 'white coat syndrome' on standard blood pressure measurement. This 30-minute automated office-based measurement is potentially more

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convenient for patients and less expensive than proceeding directly to ABPM.

A'Court and colleagues have quantified the type of blood pressure devices used in current general practice and their accuracy. Digital devices were found to be as accurate as mercury models. This is reassuring considering the ubiquitous use of these devices in general practice.

We should remember that accurate blood pressure measurement is one parameter in relation to estimating cardiovascular risk and providing recommendations about preventative treatments (pharmacological and non-pharmacological). It is the integration of all these parameters, including office-based blood pressure, that determine the overall risk assessment which then informs management decisions. The advent of more sophisticated methods to establish 'true' office-based blood pressure readings are to be welcomed as a way of improving accuracy of hypertension diagnosis and enhancing cardiovascular risk assessment.

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DM-3000 blood pressure device, Nissei Healthcare

The efficacy of different sphygmomanometer types has been examined with varying results.

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Provenance
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