

GUIDELINES FOR BLOOD PRESSURE MEASUREMENT

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Support: RM is supported by an NIHR Professorship and NIHR Oxford CLAHRC.

Conflict of interest: GSS and GP conducted validation studies for various manufacturers and advised manufacturers on device development. RM received blood pressure monitoring equipment for research purposes from Omron and Lloyds Pharmacies and is chair of British Hypertension Society Blood Pressure Monitoring Working Party which oversees validation studies for various manufacturers. GH, MM and PKW have nothing to declare.

Word count: Manuscript: 2,107 References: 28 Tables: 1

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Formal guidelines for managing hypertension have been published for four decades [1] and have been based on solid evidence from many long-term outcome studies. However, deficiencies in the methods used to determine an accurate BP reading in routine clinical practice have often been ignored, resulting in frequent misclassification of the patients' BP status. In recent years there has been increasing awareness of the importance of these well-documented errors in BP measurement, especially those related to the observer using the auscultatory method, and greater recognition of the white coat and the masked hypertension phenomena. This has led to progressive endorsement of automated out-of-office BP measurements (home and ambulatory) as the preferred methods for diagnosing hypertension. These methods reduce both the inaccuracy of readings related to poor BP measurement technique and the unpredictable effect of the office setting on the individual's BP.

Guidelines specific for BP measurement have been published during the last two decades by several scientific societies, which provide detailed recommendations for office, home and ambulatory BP measurement (Table) [2-21]. These documents, which have been developed mainly by BP monitoring experts, have typically provided strong support for use of out-of-office BP monitoring. In contrast, general hypertension guideline publications have primarily relied on office BP measurements for diagnosing hypertension. These differences are due to the widespread availability of office BP measurement in clinical practice and the fact that this method has been used in the vast majority of hypertension outcome trials. Moreover, general hypertension guidelines tend to include a range of experts in hypertension, not necessarily in BP measurement, as co-authors, resulting in the neglect of BP measurement issues. Even published research papers on hypertension have frequently employed inadequate methodology for BP evaluation or have provided incomplete information regarding the accuracy of the BP measuring device and the precise methodology used.

In 1986 the British Hypertension Society published recommendations for office BP measurement [2]. Later on, several societies in the US, Canada, Europe, Australia, Japan and elsewhere published guidelines specific for BP measurement methods [3-21]. In 2008 the European Society of Hypertension [11] and the American Heart Association/American Society of Hypertension [6] published separate guidelines for home BP monitoring, which were in full agreement in recommending wide clinical application of the method in evaluating the BP status of subjects with treated or suspected hypertension [22]. In 2005 the Canadian Hypertension Education Program was the first organization that included ambulatory and home BP measurements in the algorithm for diagnosing hypertension [23]. In 2011, the UK NICE guidelines made a landmark recommendation that the diagnosis of hypertension should always be confirmed by ambulatory BP monitoring [24]. In 2012 an Australian consensus document confirmed the importance of ambulatory BP monitoring for the diagnosis of hypertension [19]. In 2013 the European Society of Hypertension guidelines recommended wider use of ambulatory BP monitoring in many cases with suspected or treated hypertension [13]. In 2014 the Japanese Society of Hypertension recommended home and ambulatory BP monitoring for diagnosing white coat, masked and sustained hypertension and for evaluating treatment effects [25]. Finally, in 2015 both the Canadian Hypertension Education Program [26] and the US Preventive Services Task Force [27] recommended ambulatory BP monitoring as the diagnostic method of choice in subjects with suspected hypertension.

As with previous recommendations, the 2017 American College of Cardiology/American Heart Association guidelines for hypertension placed considerable emphasis on the optimal methodology for office BP measurement [28]. Even more important, a primary role was given to out-of-office BP measurement (home or ambulatory) for diagnosis and treatment titration, especially when BP is close to the diagnostic thresholds [28]. This guideline is the first to provide

a detailed strategy for identification and management of the white coat and masked hypertension phenomena in both untreated and treated subjects, with a clear recommendation to base treatment decisions on ambulatory or home BP [28].

These initiatives by leading scientific societies aim to ensure accurate diagnosis of hypertension and appropriate treatment in the community. In an era of recommendations for lower BP thresholds for diagnosis and more intensive treatment [28], accurate BP measurement has become even more important, in order to prevent potential overtreatment-induced unwanted consequences, especially in older adults. Efforts should now be directed towards making ambulatory and home BP monitoring readily available in primary care and ensuring that such measurements are obtained following current guideline recommendations. Moreover, it should be mandatory for all published clinical research papers on hypertension to document the validity of the BP monitor used and provide details of the BP measurement methodology employed.

Table.

Guidelines by scientific societies **specific to blood pressure measurement** methods.

Body	Year	Method	Reference
BHS	1986	OBP	2
ASH	1995	HBP ABP	3
AHA	2005	OBP, HBP, ABP	4
ASH	2008	HBP, ABP	5
AHA, ASH	2008	HBP	6
CHS	1999	ABP	7
FSH	2000	HBP	8
ESH	2003	OBP, ABP, HBP	9
ESH	2004	HBP	10
ESH	2008, 2010	HBP	11,12
ESH	2013, 2014	ABP	13,14
JSH	2003	HBP	15
JSH	2012	HBP	16
Australia	1999	HBP	17
Australia	2002	ABP	18
Australia	2012	ABP	19
Australia	2015	HBP	20
WHL	2014	OBP	21

ABP, ambulatory blood pressure; AHA, American Heart Association; ASH, American Society of Hypertension; CHS, Canadian Hypertension Society; ESH, European Society of Hypertension; FSH, French Society of Hypertension; HBP, home blood pressure; JSH, Japanese Society of Hypertension; OBP, office blood pressure; WHL, World Hypertension League.

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