Accuracy of Microlife WatchBP Office ABI monitor assessed according to the 2002 European Society of Hypertension protocol and the British Hypertension Society protocol

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Objective **To determine the accuracy of the WatchBP Office ABI monitor for blood pressure measurement developed by the Microlife Company.**

Methods **The device accuracy was tested in 85 subjects with a mean age of 54 ± 19 years. Their systolic and diastolic blood pressure (SBP/DBP) at entry was 141 ± 30/86 ± 19 mmHg, and upper arm circumference was 28 ± 5 cm. Initially, the data from 33 participants were examined according to the 2002 version of the European Society of Hypertension (ESH) protocol. An additional 52 subjects were then enrolled to fulfill the requirements of the British Hypertension Society (BHS) protocol. In all participants, sequential same arm measurements were performed by two trained observers.**

Results **The device passed all three phases of the ESH protocol for SBP and DBP. For the BHS protocol the device was graded A for both SBP and DBP. The A/A grade was achieved in the low blood pressure category (<130/80 mmHg), the B/A grade in the medium category (130–160/80-100 mmHg) and the A/A grade in the high category (>160/100 mmHg). Mean blood pressure difference between device and observers in the first 33 subjects was −0.9 ± 5.5 mmHg for SBP and −2.2 ± 4.5 mmHg for DBP and in the 85 participants it was −1.2 ± 6.5 mmHg and −2.3 ± 5.1, respectively.**

Conclusion **These data show that the Microlife WatchBP Office ABI monitor satisfied the recommended ESH accuracy levels and achieved A/A grade of the BHS protocol across a wide range of BP.** *Blood Press Monit* **16:258–261** © **2011 Wolters Kluwer Health | Lippincott Williams & Wilkins.**

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Introduction

Current guidelines for the management of hypertension recommend the use of automated devices for self blood pressure (BP) measurement [1,2]. Electronic monitors that measure BP using the oscillometric principle have dominated the market and many such devices are available today. Obviously, the accuracy of BP measuring devices is of prime importance and a validation study is mandatory before clinical use. In the last few years, most devices have been tested according to the recommendations of the 2002 protocol of the Working Group on BP Monitoring of the European Society of Hypertension (ESH), which permitted a simplification of validation procedures compared with earlier protocols but only provides a pass/fail result [3]. The British Hypertension Society (BHS) protocol requires a much larger sample and thus allows a more rigorous assessment of the device under investigation [4]. In addition, the BHS protocol is provided with a grading system which allows a qualitative evaluation of a device for three different BP ranges. Therefore, in this study we initially assessed the WatchBP Office ABI monitor using the 2002 ESH protocol [3] and then proceeded to recruit the overall number of 85 participants to meet the requirements of the BHS protocol [4].

Methods

Subjects

Thirty-three subjects with the range of BP required by the ESH rules (11 participants in each of the three pressure bands: 90–129/40–79, 130–160/80–100, and 161–180/101–130 mmHg) were initially studied. Their mean ± SD age was 54 ± 19 years (range 30–91), lying systolic blood pressure (SBP) was 141 ± 25 mmHg, diastolic blood pressure (DBP) was 87 ± 17 mmHg, and arm circumference was 29 ± 4 cm. Seven subjects were excluded because BP ranges were complete ($n = 4$), BP was out of range ($n = 2$), or there was atrial fibrillation ($n = 1$). A further 52 subjects were then recruited to fulfill the criteria of the BHS protocol. Mean age of the 85 participants was 54 ± 19 years. Their SBP/DBP at entry was 141 ± 30/86 ± 19 mmHg, and arm circumference was 28 ± 5 cm. BP measurements were performed in the sitting position. The study was approved by the Ethics Committee of the University of Padua, and written informed consent was given by the participants.

Device

The Microlife WatchBP Office ABI model is an oscillometric fully automatic device for BP measurement at the upper arm. The measuring range spreads over 20–280 mmHg for

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