

Evaluation of interarm blood pressure differences using the Microlife WatchBP Office in a clinical setting

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Objective The aim of this study was to evaluate the usefulness of Microlife WatchBP Office and the effect of increasing the number of measurements in the clinical evaluation of systolic interarm difference (IAD).

Patients and methods Office blood pressure was measured simultaneously on both arms in 339 patients (85% diabetic) using the Microlife WatchBP Office, a fully automatic, oscillometric device. The patients included were all scheduled for ambulatory blood pressure measurement at the outpatient clinic of endocrinology at Silkeborg Regional Hospital, Denmark. Two successive sets of three individual measurements were made. A statistical analysis of variance was carried out on the measurements.

Results In the first set of measurements, the mean IAD was -0.3 mmHg and the prevalence of IAD greater than or equal to 10 mmHg was 9.1%. Only 7.6% of the patients with an IAD less than 10 mmHg in the first set of measurements had an IAD greater than or equal to 10 mmHg in the second set of measurements. The 95% limits of agreement for the mean IAD for a single set of three measurements were ± 13.16 mmHg. The probability of detecting an IAD more

than 10 mmHg only increased slightly with an increasing number of measurements.

Conclusion A single set of triplicate measurements using Microlife WatchBP is an acceptable method for evaluating IAD as more measurements do little to improve the probability of detecting an IAD more than 10 mmHg because of high intraindividual variation. *Blood Press Monit* 00:000–000 Copyright © 2017 Wolters Kluwer Health, Inc. All rights reserved.

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Introduction

Bilateral measurements at the initial blood pressure (BP) evaluation are recommended by current guidelines to identify a possible significant interarm difference (IAD) in BP [1,2]. A systolic IAD less than 10 mmHg is widely considered a normal physiological variation. Several studies have shown a high prevalence (9.5–19.6%) in IAD greater than or equal to 10 mmHg [3,4]. If significant IAD is detected, the arm with the highest BP should be used for future evaluation, both at home and for ambulatory blood pressure monitoring (ABPM) [1,5,6]. However, IAD measurements are characterized by poor reproducibility both between measurements performed at the same visit and for measurements performed on separate days [7,8]. Although guidelines of international hypertension societies recommend bilateral measurements, there is no consensus with respect to which technique should be used for IAD assessment [1]. Two different automated devices are used widely for simultaneous BP

measurements in clinical studies [9–11]. However, even the use of two different devices may introduce bias because of interdevice differences or measurement delays, and also if the two devices are of the same type. Moreover, it is time-consuming and cumbersome to use two monitors simultaneously or a single monitor sequentially. The current guidelines recommending bilateral measurements are therefore widely disregarded in clinical practice. Recently, the Microlife WatchBP Office device was introduced. This device is capable of performing simultaneous, triplicate BP measurements in both arms using a single BP monitor [12,13].

As Microlife WatchBP Office is a single device capable of measuring BP simultaneously in both arms, the risk of bias is reduced. The aim of this study was therefore to evaluate the usefulness of Microlife WatchBP Office to detect systolic IAD in a clinical setting and the effect of increasing the number of measurements.

Patients and methods

Office BP was measured simultaneously on both arms in 339 patients using Microlife WatchBP Office (Microlife

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