

Are there really differences between home and daytime ambulatory blood pressure? Comparison using a novel dual-mode ambulatory and home monitor

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Several studies compared blood pressure (BP) at home (HBP) with ambulatory BP (ABP), but using different devices, which contribute to differences in measured BP. A novel dual-mode device allowing ABP and HBP monitoring (Microlife WatchBPO3) was validated according to the European Society of Hypertension International Protocol and used to compare the two methods. In the validation study, 33 subjects were assessed with simultaneous BP measurements taken by 2 observers (connected mercury sphygmomanometers) 4 times, sequentially with 3 measurements taken using the tested device. Absolute observer-device BP differences were classified within 5/10/15 mmHg zones. Measurements with ≤ 5 mmHg difference were calculated per participant. In the validation study, the device produced 70/89/96 measurements within 5/10/15 mmHg, respectively, for systolic BP and 67/95/99 for diastolic BP. Twenty-eight

subjects had at least two of their systolic BP differences ≤ 5 mmHg and one subject had no difference ≤ 5 mmHg, whereas for diastolic BP, it was 22 and 1 subjects, respectively. Mean device-observers BP difference was $-0.3 \pm 5.6/-2.4 \pm 4.8$ mmHg (systolic/diastolic). In the application study, the difference between daytime ABP and HBP was 0.5 ± 7.9 mmHg for systolic BP (mean \pm standard deviation, 95% confidence intervals (CI) $-1.9, 2.9, P=NS$) and 0.6 ± 5.5 for diastolic BP (95% CI $-1.1, 2.3, P=NS$). In conclusion, the Microlife WatchBPO3 device for ABP and HBP monitoring fulfils the International Protocol validation criteria. Using this device, no clinically important difference between daytime ABP and HBP was detected. These data justify the use of the same diagnostic threshold for both methods.

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