

Article of Interest

Niiranen TJ, et al. Outcome-Driven Thresholds for Home Blood Pressure Measurement. *Hypertension*. 2013. [\(Click to Access\)](#)

Context and Study Objective

Interest in out-of-office blood pressure (BP) measurement continues to deepen. While 24-hour ambulatory blood pressure monitoring (ABPM) is preferred, access to this modality remains limited. Home measurement by patients is an attractive alternative but diagnostic thresholds for hypertension in this environment have yet to be codified. This publication by Niiranen sought to identify home BP levels that were associated with similar CV event rates as office-based readings.

Design, Setting, and Participants

In this prospective analysis, a participant's BP was measured in the clinic and home environment upon study entry. Treated and untreated hypertensives as well as normotensive individuals were eligible. After 10 years follow-up, the incidence of cardiovascular (CV) events at various office and home blood pressures were determined. Self-monitored values that were associated with similar CV event rates as in-office measurements were calculated. The clinic value was calculated as the mean of two consecutive readings, each taken with a mercury sphygmomanometer after the subject sat quietly for at least two minutes. Blood pressure was recorded at home twice daily for a minimum of three days with two minutes rest prior to measurement; a validated unit was employed. An average value was calculated and reported to investigators. Of note, the time between consecutive readings was not specified in either setting.

Results

-Study characteristics: 6500 individuals followed for 9 years. Mean age: 59. 57% women. European and Asian populations. 10-20% of the cohort had either untreated or treated hypertension, CV disease, or diabetes. Average clinic reading: 134/79 mm Hg. Home: 127/76 mm Hg. Median number of self-measurements: 28.

-Even after adjusting for confounders and analyzing only untreated hypertensives, the incidence of CV events rose from in-office levels ($> 110/75$ mm Hg) and home readings ($> 105/70$ mm Hg) well below traditional thresholds for hypertension.

-Table: Within the normotensive range, home readings were identical to office measurements. However, the discrepancy between clinic and home-based readings widened as the hypertension became more pronounced.

Home Blood Pressure Values Equivalent to Office-Based Readings	
Office (mm Hg)	Home (mm Hg)
120/80	121/78
130/85	124/79
140/90	133/82
160/100	145/87

Clinical Perspective

-Apart from the awareness that home readings of 140/90 mm Hg reflect inadequate BP control, this paper calls our attention to the importance of out-of-office monitoring. Just as we recognize the foolishness of adjusting medications for diabetes based on a single blood glucose concentration, titrating anti-hypertensives in response to a lone office reading is equally ill-advised.

-To this end, I find self-monitoring invaluable. It is not only inexpensive but can be carried out as frequently as required (e.g. after medication adjustment, post-hospitalization). Because 24-hour ABPM is not yet widely available, home monitoring can identify those patients who would realize the most benefit from this modality.

-As is the case in the clinic, incorrect technique remains a considerable obstacle to accurate home measurement. However, because patients provide 20-25 measurements over several days, regression to the mean allows for a clear trend to emerge.

-Study Shortcomings: The authors included treated hypertensives, a difficult confounder to adjust for. The study was conducted outside of North America so African-Americans were not included.

-Despite the above criticisms, the BP thresholds generated are largely in accordance with those in clinical guidelines.

-Disclosures: I have no conflicts to declare.