Comparing Blood Pressure Measurement Methods: Differences Depend on Blood Pressure Height

To the Editor:

We welcomed the article from Myers et al1 on automated office blood pressure (AOBP) measurement. It is well known that the differences between routine blood pressure (BP) measurements taken by health professionals in daily practice and BP measurements taken by well-trained observers within the framework of scientific studies are impressive. Because of this, routine BP measurement is of limited value. The studies on AOBP open the way in realizing a valid BP measurement in the office. We would like to add a few comments on the data presentation and on the proposed algorithm.

Differences in BP readings between different measurement methods are strongly dependent on the population in which BP measurements are taken. A high mean difference of 20/5 mm Hg between standardized automated measurements and automated measurements with the patient alone in a room was found in patients referred to a specialist for hypertension treatment. A low difference of 3/3 mm Hg was found in an open population. The mean automated BP was 142/80 mm Hg in the first mentioned study by Myers2 and 115/71 mm Hg in the open population study.3 In the recent article by Myers et al,1 Bland-Altman plots show the differences between manual office BP measurement and the daytime ambulatory BP against their mean (Figure 1A in Reference 1). As one can see in the plots, the differences tend to 0 at normal BP levels and increase with increasing BP, the so-called positive rank correlation. So there is a proportional error indicating that the differences are not normally distributed. Therefore, the data need to be logarithmically transformed to specify the limits of agreement. After back transformation of the data, limits of agreement are percentage-plotted in the original scale. The median difference in systolic BP between office BP measurement and awake ambulatory BP measurement against their mean is then presented as a relative difference (a percentage).4

Considering the fact that the difference between manual office BP and awake ambulatory systolic BP tends to 0 in patients with normotension, we only advise an AOBP for those with an elevated routine BP. This would mean that AOBP is not mandatory for every BP measurement but only in case of a manual office BP >140/90 mm Hg.

Disclosures

None.

Nynke Scherpbier-de Haan
Carel Bakx
Department of Primary and Community Care
Radboud University Nijmegen Medical Centre
Nijmegen, The Netherlands

Theo Thien
Department of Internal Medicine
Radboud University Nijmegen Medical Centre
Nijmegen, The Netherlands

Comparing Blood Pressure Measurement Methods: Differences Depend on Blood Pressure Height
Nynke Scherpbier-de Haan, Carel Bakx and Theo Thien

*Hypertension*. 2010;56:e4; originally published online May 3, 2010;
doi: 10.1161/HYPERTENSIONAHA.110.152926

*Hypertension* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2010 American Heart Association, Inc. All rights reserved.
Print ISSN: 0194-911X. Online ISSN: 1524-4563

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://hyper.ahajournals.org/content/56/1/e4

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in *Hypertension* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to *Hypertension* is online at:
http://hyper.ahajournals.org//subscriptions/