

Blood Pressure Monitoring



Editorial

- 1 **Foreword**
William B. White

Clinical Methods and Pathophysiology

- 3 **Assessing dynamic cerebral autoregulation after stroke using a novel technique of combining transcranial Doppler ultrasonography and rhythmic handgrip**
Joseph Kwan, Michael Lunt and Damian Jenkinson
- 9 **Venous blood redistribution alters the accuracy of Omron HEM-705CP**
Marek Czarkowski, Małgorzata Mikulska, Mariusz Żebrowski, Anna Baran and Krzysztof Rózanowski

Devices and Technology

- 13 **The Accoson Greenlight 300™, the first non-automated mercury-free blood pressure measurement device to pass the International Protocol for blood pressure measuring devices in adults**
John W. Graves, Mary Tibor, Blaithead Murtagh, Lois Klein and Sheldon G. Sheps
- 19 **Validation of the Pharma-Smart PS-2000 public use blood pressure monitor**
Bruce S. Alpert

- 25 **Accuracy of the Omron RX-M, an automated blood pressure measuring device, measuring blood pressure at the wrist, according to a modified British Hypertension Society protocol**
Richard L. Braam, Benjamin Aslan and Theo Thien

- 31 **Clinical evaluation of an automated oscillometric blood pressure wrist device**
Alexandra C. Cuckson, Paul Moran, Paul Seed, Annemarie Reinders and Andrew H. Shennan

- 39 **Comparison of the automated non-invasive oscillometric blood pressure monitor (BpTRU™) with the auscultatory mercury sphygmomanometer in a paediatric population**
Gurdial S. Mattu, Balraj S. Heran and James M. Wright

- 47 **Overall accuracy of the BpTRU™—an automated electronic blood pressure device**
Gurdial S. Mattu, Balraj S. Heran and James M. Wright

- 53 **Home blood pressure measurement: validation of the Braun BP 2550 (UG) monitor according to the ESH International Protocol**
Hector Nolly, Marcelo Romero, Alejandro Nolly, Pablo Osso, Omar Reinoso and Mariela Nolly

Author guidelines

<http://www.bpmonitoring.com>

Validation of the Pharma-Smart PS-2000 public use blood pressure monitor

Bruce S. Alpert

Objective To test the Pharma-Smart Model PS-2000 public use blood pressure monitor for compliance with the Association for the Advancement of Medical Instrumentation's Standard (AAMI) and to a modified British Hypertension Society (BHS) Protocol.

Methods Subjects tested ranged in age from 18–74, with the average age of 40. Arm circumference ranged from 22–38 cm. Resting systolic blood pressure (BP) ranged from 91–252 mmHg, and resting diastolic pressure ranged from 57–160 mmHg. There were 44 males, and 41 females. For each subject the readings obtained by the PS-2000 were compared with auscultatory readings obtained by two clinicians, blinded to the results of each other and the device. The manual reference measurements were alternated with the readings obtained by the device.

Results The average differences between the reference readings (average of the two clinicians) using the AAMI analysis and the automated readings were 0.07 ± 7.0 mmHg (Mean \pm SD) for systolic BP, and -0.3 ± 6.6 mmHg for diastolic BP.

Conclusions The device met the accuracy requirements of the AAMI standard. In addition, when the data were analyzed to assess the compliance with the current British Hypertension Society Protocol (BHS), the device earned the highest rating of 'A' for both systolic and diastolic pressure. We believe that the Pharma-Smart PS-2000 will provide valid readings when placed in non-medical public use sites. *Blood Press Monit* 9:19–23 © 2004 Lippincott Williams & Wilkins.

Blood Pressure Monitoring 2004, 9:19–23

Keywords: blood pressure, monitor, recorder, validation, hypertension, accuracy, uni-cuff

Department of Pediatrics, School of Medicine, University of Tennessee, Memphis, Tennessee, USA.

Correspondence and requests for reprints to Bruce S. Alpert, MD, Suite 215, 777 Washington Avenue, Memphis, TN 38105, USA.
Tel: +1 (901) 572 3380; fax: +1 (901) 572 5107;
e-mail: bsalpert@utmem.edu

Received 01 August 2003 Revised 10 October 2003

Accepted 21 October 2003

Introduction

Despite increasing awareness and more aggressive treatment of hypertension in the USA, the condition continues to be a leading contributing factor to stroke, myocardial infarction, heart failure, and kidney failure. While a great deal has been documented about the dangers of hypertension, and advances have been made in the management of the condition, statistics continue to reveal that it is largely uncontrolled.

The most recent statistics indicate that hypertension prevalence is increasing in the USA [1]. Year 2000 figures from the National Health and Nutritional Examination Survey (NHANES) indicate that 29% of the adult USA population, (58.4 million individuals), has hypertension. Nearly 30% of all hypertensive individuals (17.5 million) are unaware of their illness. Of the 41 million who are aware they have hypertension, 42% are not being treated, and 69% do not have their hypertension controlled. In addition, nearly 75% of all patients with diabetes and hypertension did not have their hypertension optimally controlled. The goal of the US Department of Health and Human Services that 50% of Americans with hypertension have their blood pressure (BP) controlled by the year

2000 was not met, and this goal has been re-established to be achieved by 2010. Programs improving awareness and treatment of hypertension will be essential in reaching this goal, and are of utmost importance for the health of the USA [1].

Compounding the difficulty of hypertension discovery and management are: poor access to adequate healthcare and screening services; 'white-coat hypertension' which often leads to misdiagnosis in a clinical setting; failure to provide adequate and continuous BP screening data to the physician; and poor levels of education, and as a result, poor compliance to prescriptions.

Currently in the USA, there are approximately 30 000 public use blood pressure devices located in pharmacies and worksites. It is estimated within the industry that these units perform over 500 million measurements each year. While measurement technique employed by existing equipment varies, much of this equipment utilizes forearm BP testing technology, and in some cases measures blood pressure in the standing position. Many of these devices have not been assessed for accuracy using the AAMI standard.