

A website for blood pressure measuring devices: dableducational.com

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Consumers are faced with an ever-increasing array of blood pressure measuring devices, whether for use in clinical areas or for use by individuals anxious to measure their own blood pressure. Validation protocols that allow for independent evaluation of blood pressure measuring devices are available, and some of the devices on the market have been evaluated according to these protocols. The results of such evaluations have been published periodically in medical journals. However, such surveys are not readily available to the public and to health care authorities with responsibility for purchasing blood pressure measuring equipment for use in clinical medicine, and because of the necessarily lengthy publication process they are no longer up-to-date at the time of publication. Moreover, the results of published validation studies are often flawed because of protocol violations and the conclusions may not be valid. These considerations have been the stimulus for the establishment of an independent non-profit website, which will provide quarterly updates on the accuracy and performance of blood pressure measuring devices on the market as well as an expert

Introduction

There is a large market for blood pressure measuring devices, not only in clinical medicine, but also with the public where the demand for self-measurement of blood pressure is growing rapidly. For the consumer, whether medical or lay, device accuracy should be of prime importance in selecting a blood pressure measuring device. However, the majority of devices available have not been evaluated independently for accuracy and the consumer often does not have the expertise or information to make a fully informed decision as to which device to purchase. Blood pressure measuring devices have been assessed in the literature from time to time [1–3], but such surveys have the disadvantage of being obtainable only by journal subscribers, and the information soon becomes outdated in that this forum cannot keep pace with the availability of new devices [4]. Some websites provide information on blood pressure measuring devices but this is only part of a larger remit and none is devoted entirely to blood pressure measurement [5]. It is generally recognized that it is extremely difficult for doctors and others wishing to purchase blood pressure measuring devices to obtain up-to-date information on the validation status and accuracy of these devices. Device manufacturers complain about the long and costly

assessment of the validation procedures on which recommendations are based. The ethos of the website is primarily educational and it is hoped that it will serve as a forum for the provision of much-needed information that will ultimately improve the management of hypertension. The website is due to be launched shortly and this paper outlines the general principles that have governed its establishment and the facilities that it will provide. *Blood Press Monit* 8:177–180
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time lag between validation of a device and the subsequent publication, which gives it credibility in the marketplace. The ethos of this endeavour is that by making evidence-based information available on the Internet to medical practitioners, consumers, such as patients, hospitals and doctors, and to the device manufacturing industry, blood pressure measurement will become more accurate, thereby benefiting patients with hypertension.

Pre-conditions for a website

The following pre-conditions were decided before sponsorship for the *dabl*[®] Educational Website was sought:

- The website will be a non-profit venture; for this purpose the *dabl*[®] Educational Trust Limited was established.
- The mission of the website is to improve blood pressure measurement and thereby benefit the management of patients with hypertension.
- The website will be staffed by personnel with expertise and training in blood pressure measurement and device validation.

- The website will be independent of the manufacturing industry and other sources of potential conflict of interest.
- The *dabl*[®] Educational Trust will constitute an Advisory Board consisting of international experts in blood pressure measurement (see listing at end of paper).

Website objectives

The *dabl*[®] Educational Trust Website will have the following objectives:

- To provide consumers, medical and lay, with the latest information on the accuracy and performance of blood pressure measuring devices used in clinical medicine and for self blood pressure measurement free of charge;
- To evaluate the validation procedures performed on blood pressure measuring devices, the use of an accepted protocol, adherence to that protocol and the interpretation of the results with respect to the criteria set out in that protocol;
- To provide an overview and library of published literature relating to accepted validation protocols;
- To provide a library of published literature relating to device validation in general and the published evidence of validation for specific blood pressure measuring devices;
- To establish links with consumer organizations, manufacturers of blood pressure measuring devices, international standards institutions and international hypertension and cardiovascular societies with an interest in blood pressure measurement;
- To explore innovative means to improve blood pressure measurement;
- To explore means to facilitate the speedy announcement of validation results and consumer information on blood pressure measuring devices.

Structure of website

The website has been structured to balance the requirements of both the lay and medical target audiences. The home page specifically is developed with the lay audience in mind where news items summarize in clear language the latest developments in blood pressure measurement. This approach is also useful to medical personnel new to the advances in this area. The classification section has a mixed readership in mind, providing more detail but it is summarized in straightforward terms. The remaining pages are intended more for medical/research personnel and the material is more technical.

Home page: This page will be updated quarterly to provide news items on new devices, new developments in

measurement and validation, links to new articles and other items of interest.

Introduction: This page outlines the background to the establishment of the website together with its objectives. It is emphasized that the diagnosis, management, treatment, epidemiology and research of hypertension is dependent on accurate measurement of blood pressure, and that if blood pressure measurement is inaccurate, it follows that incorrect decisions will be made. The different methods of blood pressure measurement are outlined: traditional blood pressure measurement, ambulatory blood pressure measurement, and self blood pressure measurement are explained.

Validation standards: The protocols of the Association for the Advancement of Medical Instrumentation (AAMI) [6], the British Hypertension Society (BHS) [7] and the International Protocol of the European Society of Hypertension [8] are outlined on this page. The criteria used, on the website, for assessing validation studies are stated; on the basis of these criteria devices may be designated as 'Recommended', 'Not recommended' or as being of 'Questionable recommendation'.

Classification of devices: This page provides a validation summary, with the publication reference, of all blood pressure measuring devices for which there are published validation data. Due to the large number of these devices and different areas of interest, they are classified as shown.

I MANUAL SPHYGMOMANOMETERS

- I. i. Mercury sphygmomanometers
- I. ii. Aneroid sphygmomanometers
- I. iii. Non-mercury manual sphygmomanometers

II AUTOMATED SPHYGMOMANOMETERS FOR CLINICAL USE

III AUTOMATED SPHYGMOMANOMETERS FOR SELF-MEASUREMENT OF BLOOD PRESSURE (SBPM)

- III. i. Devices for measurement on the upper arm
- III. ii. Devices for measurement on the wrist
- III. iii. Devices for measurement on the finger

IV AUTOMATED SPHYGMOMANOMETERS FOR AMBULATORY BLOOD PRESSURE MEASUREMENT (ABPM)

- IV. i. Devices for intermittent ABPM
- IV. ii. Devices for continuous non-invasive ABPM

V DEVICES FOR MEASURING BLOOD PRESSURE IN THE COMMUNITY

Manufacturers: All known manufacturers of blood pressure measuring devices are listed.

Library references: This section of the website contains over 300 references and it is hoped in time that many of these will be available as pdf files. A section on papers relating to specific devices contains subheadings, in alphabetical order, of all of the devices listed in the classification page with references to any papers pertaining to the respective devices. There are also sections referencing papers on *Replacing mercury sphygmomanometers*, *Validation protocols*, *Validation studies*, *Methodology of validation*

protocols, Recommendations of standards bodies, Recommendations of International and National Societies of Hypertension, State of the market, History of blood pressure measurement, Computer software and General interest.

Links: Links will be established with international societies of hypertension and cardiology, with national standards bodies, consumers associations and manufacturers and distributors of blood pressure measuring devices. In the best traditions of the Internet we intend that this section will expand with mutual links to and from a comprehensive number of these organizations.

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