HOME BLOOD PRESSURE MONITORING

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Introduction

Home blood pressure (BP) monitoring has been recommended as a supplement to measurements in the clinic in the 2003 European Society of Hypertension-European Society of Cardiology (ESH-ESC) hypertension guidelines (1). Detailed recommendations for home BP monitoring have previously been published in the first international guidelines for home BP monitoring (2) and in the 2003 ESH recommendations for BP measurement (3). The method has several advantages in comparison to BP measurement in the clinic (Table 1) which contribute to its usefulness in the management of hypertension (1-4).

Table 1. Advantages of home blood pressure monitoring. Adapted from references 2 and 4.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Clinic</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of measurements</td>
<td>Few</td>
<td>Many</td>
</tr>
<tr>
<td>Observer bias</td>
<td>Yes/No*</td>
<td>Yes/No*</td>
</tr>
<tr>
<td>White Coat Effect</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Reflection of target organ damage</td>
<td>Moderate</td>
<td>Good</td>
</tr>
<tr>
<td>Prediction of prognosis</td>
<td>Moderate</td>
<td>Good</td>
</tr>
<tr>
<td>Improvement of compliance</td>
<td>?</td>
<td>Possible</td>
</tr>
<tr>
<td>Placebo effect</td>
<td>Yes</td>
<td>Limited</td>
</tr>
</tbody>
</table>

*Automated measurement

Table 2. Blood pressure thresholds (mm Hg) for definition of hypertension with different types of measurement. Adapted from reference 1.

<table>
<thead>
<tr>
<th>Measurement Method</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
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<tbody>
<tr>
<td>Office or clinic</td>
<td>140</td>
<td>90</td>
</tr>
<tr>
<td>24-hour ambulatory</td>
<td>125</td>
<td>80</td>
</tr>
<tr>
<td>Home (self)</td>
<td>135</td>
<td>85</td>
</tr>
</tbody>
</table>

Usefulness of home blood pressure monitoring

In the diagnosis of hypertension, home BP monitoring is a useful supplement, but home BP values should not override clinic BP values. Home BP monitoring should be encouraged in order to provide more information for the doctor’s decision and improve patient’s adherence to treatment regimens, but should be discouraged whenever it causes patients anxiety or induces self-modification of the treatment regimen (1). Poor standardisation of measurement and wrong technique may be common if patients are not given specific instructions (27). However, even manual home BP measurement can be learned by patients from different age groups and across a wide range of backgrounds (7,28). Valid measurements can be obtained in elderly subjects (29). Home BP monitoring may be used as a screening test for white coat hypertension, followed by ambulatory BP monitoring if home values are low. It may also be appropriate for the follow-up of white coat hypertensives, and in refractory hypertension, which is...
often caused by poor compliance (2). Patients with irregular cardiac rhythm should use a manual auscultatory device. Printer- or memory-equipped devices may be used for reduction of observer bias (2). Many automated devices suitable for home BP monitoring are available. ESH has previously recommended devices, based on published evidence of independent validation for accuracy (31), but such surveys need continuous updating as more devices become validated. Up-to-date lists of validated devices are available on websites (32,33) recommended by the ESH (34). Devices which have passed validation according to the British Hypertension Society protocol or International protocol are listed in Table 3.

Table 3. Automatic blood pressure monitors suitable for home/self assessment listed by the British Hypertension Society (33).

A&D UA-767
A&D UA-779
A&D UA-878
Omron MIT
Omron M5-I
Omron 705IT
Omron 705 CPII
Microlife 3BT0-A
Microlife 3AG1

References

Home BP monitoring should be used under medical supervision. BP measurements should be performed in the seated position, after five minutes of rest. The cuff should be kept at heart level, and the arm with the highest BP level should be used (2,3). The number of measurements that maximises the prognostic value of home BP is not known. It is currently recommended that during diagnosis and initiation of treatment, duplicate BP measurements should be made in the morning and evening for 1 week. For long-term observation, this should be repeated for 1 week every 3 months. For each measurement period, all recorded data except those from the first day should be used to calculate the mean home BP. However, the frequency may vary according to the severity of hypertension and the need for adjustments of pharmacological treatment (2,3). In patients with a low (<20%) 10 year cardiovascular risk, and until further prognostic data become available, the recommended home BP threshold of 135/85 mm Hg (1-3) may be used for the confirmation of hypertension, while ambulatory BP monitoring should be used to exclude white coat hypertension if the mean home BP is <135/85 mm Hg. A tentative treatment target of <130-135/85 mm Hg has been suggested (2). Studies are needed to evaluate different monitoring protocols and measurements for frequency of patient education should include information about hypertension and cardiovascular risk, in addition to training in BP measurement, and information about measurement protocol and interpretation of BP readings, and advice on equipment. This requires special training of doctors and nurses, preferably done by completion of a specific training course (2).

Conclusions
Home BP monitoring offers advantages over clinic BP measurements, and may improve the overall management of hypertension. The use of the method is limited by the lack of definite diagnostic thresholds and target treatment values, and further longitudinal studies are needed to define its precise role in clinical practice. Until such prospective data become available, management of hypertension exclusively based on home BP is not recommended.


