Measuring Blood Pressure at Home

A guide for healthcare professionals

Michigan Department of Community Health
Heart Disease and Stroke Prevention Unit
Eileen Worden, Nurse Consultant
July 18, 2012
Disclosures

I have no financial relationships to disclose.

I will not discuss off label use and or any investigational use in my presentation.
Objectives

- Rationale for blood pressure monitoring at home
- Equipment
- Patient education
- Home Blood Pressure Values
- Resources
Rationale

- In 2009 an estimated 29.7% of Michigan adults reported ever being diagnosed with high blood pressure.
- One in two patients have their blood pressure controlled.
- Costs related to hypertension in Michigan are estimated at $1.5 billion (2007)
- Home blood pressure monitoring (HBPM) can be a significant adjunct to assessment and treatment of hypertension.
Figure 4. Actions to Control High Blood Pressure
2009 MiBRFS

Michigan Behavioral Risk Factor Survey 2010
Support for Home Blood Pressure measurement

- Measurements taken by patients at home are often lower than readings taken in the office and closer to the average blood pressure recorded by 24 hour ambulatory monitors.
- Home BP readings predicts risk better than office BP’s
- In a 2005 Gallup poll:
  - 35% of hypertensive patients now check their blood pressure at least once per week
  - 86% of patients who had been advised to purchase a blood pressure monitor had done so.
  - 55% of patients were monitoring their blood pressure an increase of 17% from 2000.

AHA-Hypertension 2008
Equipment

- Fully automated monitors that use the brachial artery for measurements are the most reliable.

- Documentation can be improved if patients use monitors capable of printing and storing readings.

- Oscillometric devices may not work well with patients who have atrial fibrillation or other arrhythmias.

- Patients monitor should be checked against mercury sphygmomanometer.
Validated equipment

- An up-to-date list of validated monitors can be found at:

  British Hypertension Society
  www.bhsoc.org/blood_presssure_list.stm

  Dabl Education Trust
  www.dableducational.org.sphygmomanometers_2_sbpm.htm#armtable
Help patients determine their correct cuff size

<table>
<thead>
<tr>
<th>Cuff Name</th>
<th>Bladder Width</th>
<th>Bladder Length</th>
<th>Mid Arm Circumference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td>8</td>
<td>21</td>
<td>16 to &lt;22cm</td>
</tr>
<tr>
<td>Small arm</td>
<td>10</td>
<td>24</td>
<td>22 to &lt;27cm</td>
</tr>
<tr>
<td>Average arm</td>
<td>13</td>
<td>30</td>
<td>27 to &lt;33cm</td>
</tr>
<tr>
<td>Large arm</td>
<td>16</td>
<td>38</td>
<td>33 to &lt;41cm</td>
</tr>
<tr>
<td>Extra Large</td>
<td>17</td>
<td>43</td>
<td>41 to &lt;52cm</td>
</tr>
</tbody>
</table>

Based on AHA Guidelines
Correct Technique for home blood pressure readings

- Sit calmly with back support, feet flat on floor for 5 minutes before taking a reading.
- Upper arm should be bare.
- When taking a reading the arm with cuff should be supported on a firm surface at heart level.
- Caffeine, smoking, and exercise should be avoided for at least 30 minutes before the reading is taken.
- The cuff should fit snugly.
Readings

- Patients should take at least two, preferably three readings, and record them all. The interval between can be as little as a minute.
- Readings should be routinely taken in the morning (before medication) and at night before bed.
- Patients need to be educated about the variability of readings.
- The recommendation is to take $\geq 2$ morning readings and 2 evening readings every day for 1 week (discarding the readings of the first day. This gives a total of 12 readings on which to make clinical decisions on.
Teach back

• Have patients bring in monitor, observe if readings are done correctly
• Confirm monitor is accurate
• Reinforce education regarding timing of readings, risk factor management, accurate recording of blood pressure
The upper limit of normal for home pressure is 135/85 mm Hg. This corresponds to an office blood pressure of 140/90 mmHg.
Value of Home Blood Pressure Monitoring

- Five prospective studies have compared home and office BP for predicting cardiovascular outcomes.
- All 5 found that home BP is a significant predictor, and 4/5 that it is stronger than office BP.
- Other studies have shown that home BP predicts target organ damage better than office BP.
- Patients who monitor their home BP may be more likely to take their medications regularly.
Special populations who may benefit from Home Blood Pressure Monitoring

- Elderly: BP variability tends to be high, and white coat hypertension is common.

- Diabetics: Tight BP control is important and home monitoring may help achieve this.

- Pregnancy: The early detection of pre-eclampsia might be facilitated by HBPM.

- Chronic Kidney Disease: BP may fluctuate a lot and home monitors help with management.

- Children: White coat hypertension occurs in children, and there are some data on normal home BP levels at different ages.
Training Resources

Online Resources

• Americanheart.org- *Every Step Counts* has a HBPM video showing how to measure BP, choose monitors, report results. *Heart 360* has a tracking program for clinical results.

• MayoClinic.com- Has videos on several topics including how patient should measure BP with an automatic and manual device.

• High Blood Pressure University-www.michigan.gov/hbpu has a range of resources for professional and public on high blood pressure.

• Shared Care Inc.- www.sharedcareinc.com is a blood pressure training and consultation group who has HBPM training material.
Summary

- HBPM is very common and beneficial.
- HBPM can assist with diagnosis, management and control.
- HBPM resources for training and program guidance are available.
- HBPM has minimal cost, enhances self-care and compliance.
Questions?