Home Blood Pressure Monitoring

Home Blood Pressure Monitoring (HBPM) Usage

When patients regularly monitor their blood pressure (BP) at home, their BP may be better controlled. Usage of BP monitoring is growing rapidly nationwide. In a 2010 survey of Montanan adults aged 45 years and older, 60% reported that their healthcare provider had suggested self-monitoring their BP.

- *The target home BP is <135/85 mmHg (or <130/80 mmHg in patients with diabetes or chronic kidney disease).* Home readings tend to be lower than office readings, possibly because of the absence of the "white-coat" effect. Readings may need to be taken both in the morning and at night to identify BP fluctuations.

What are the Advantages of HBPM?

- **May expedite a hypertension diagnosis**
  HBPM may facilitate diagnosis, particularly when the BP elevation is modest. Patients with clinical BP controlled but whose home BP is high are at increased risk of cardiovascular events. It is recommended that an average of at least 12 readings be used to make clinical decisions. These readings would be taken morning and evening over several days.

  *Masked hypertension is defined as a persistently normal office BP (<140/90 mmHg) and an elevated ambulatory or home BP at other times (typically >135/85 mmHg). This may occur in up to 10% of pre-hypertension patients. Cardiovascular disease risk in masked hypertension is relatively high. HBPM may be useful to diagnose masked hypertension, but if it is borderline (between 125/76 and 135/85 mmHg), then 24-hour ambulatory monitoring may be indicated.

  *White-coat hypertension is persistently elevated office BP (>140/90 mmHg) and a normal BP at other times. The cardiovascular risk in white-coat hypertension is relatively low. These patients may not need drug treatment, but continued home monitoring is advised.

- **May predict risk**
  Of five prospective studies that compared home and office BP for predicting cardiovascular outcomes, all five found that home BP is a significant predictor. Four of the five studies found that home BP is a stronger predictor than office BP. Other studies have shown that home BP predicts target organ damage better than office BP.

- **May improve compliance**
  HBPM is recommended for evaluating the response to antihypertensive treatment. Patients who monitor their BP at home may be more likely to take their medications regularly.

- **May benefit certain populations**
  - Elderly – BP variability tends to be high, and white-coat hypertension is common.
  - Patients with diabetes – Home monitoring may help to achieve tight BP control.
  - Pregnancy – Early detection of preeclampsia might be facilitated by HBPM.
  - Chronic kidney disease – BP may fluctuate substantially, and home monitors help with management.

Advice for Patients

Before recommending HBPM to patients, evaluate their interest level and capacity to measure their BP and report the readings. Oscillometric upper arm devices (electronic) are easiest to use for HBPM. Since patients do not always keep accurate records of their readings, devices with memory are ideal.

Advise patients to select brands that have been independently validated according to international protocols. See the following link:
www.dableducational.org/sphygmomanometers/recommended_cat.html

Show patients how to measure their arm circumference to determine their cuff size. Periodically ask them to bring in their HBPM log so clinic staff can review results.

For further patient instruction on HBPM, see the handout called "Take Control and Measure Your Blood Pressure at Home," which is included in this Tackle Box.

What about Cost?

Home monitors can cost between $40-100. There is no CPT code, but some insurers will reimburse.

Evaluation of Home BP Monitor Accuracy

When patients get their own monitor, it is important to have them bring it into the clinic to check their technique as well as the accuracy of the monitor. A simple and practical version of the European Society of Hypertension Protocol has been developed for this purpose and can be done in 10 minutes by a healthcare provider and the patient. The patient sits at a desk with the monitor set up and the arm resting on the desk. Five sequential same-arm BP readings are recorded with a gap of no more than 30 seconds between readings. The first two are taken by the patient using the patient's device; the third by the provider using a mercury sphygmomanometer; the fourth by the patient: and the fifth by the provider. There is a tendency for the BP to decline during this process. The accuracy of the device can be assessed by comparing the device and mercury readings, although exact criteria for determining acceptability have not been established.

Developed from the American Heart Association 2008 "Call to Action on Use and Reimbursement for Home Blood Pressure Monitoring." Adapted from a Michigan High Blood Pressure University resource.