Patient self-monitoring of blood pressure is a valuable addition to the management of hypertension. Through the ASTHO grant, each clinic will receive 3 home blood pressure monitors for short term lending to patients. These monitors are the Omron BP785 and are approved and recommended by Dabl Educational Trust.

Developing protocols and procedures around home blood pressure monitoring will greatly enhance the integration of home blood pressure monitoring into your practice. A requirement of receiving these home monitors is to have in place protocols and procedures that cover the following items.

• Identifying patients appropriate for home monitoring and for what uses
• Checking monitor for accuracy - cleaning and maintenance
• Teaching the patient proper technique and use (and who will do this)
• Frequency and duration of monitoring and recording numbers
• Submission of blood pressure data and entering into the electronic medical record
• Frequency of follow up
• Other as appropriate for your clinic

Please refer to the resources provided with this letter for developing your protocols.
Minnesota clinic home blood pressure monitoring policies

Clinic 1

Patient Instructions:

Which patients can be enrolled in the Home Blood Pressure Monitoring Program?

1. A patient that has been referred from a provider.
2. Any patient that needs to monitor Blood Pressure at home.
3. Patient with no cardiac arrhythmias.
4. Patient that can be fitted with the proper cuff size, arm size 9”-17”.

***Patient needs to meet all above four criteria to be enrolled.

Upon set-up of the Home Blood Pressure Monitoring Program, the health coach will teach you recommendations on how to achieve your best blood pressure readings:

1. Rest 5 minutes with your feet flat on the floor before taking blood pressure.
2. Do not take your blood pressure within 30 minutes after a meal, exercising, bathing, smoking, or drinking caffeine.
3. Do not take your blood pressure while or after drinking alcohol.
4. Take your blood pressure before eating, not after.
5. Do not cross your legs while taking blood pressure.
6. Elevate your arm to heart level on table while taking blood pressure.
7. Make sure the bottom edge of the cuff is 1/2 inch above the crease of your arm.
8. Do not talk while the blood pressure machine is measuring your blood pressure.
Why am I monitoring my blood pressure?? How often and for how long should I monitor my blood pressure??

1. Typically a provider will start a patient on a home blood pressure monitoring program when they have had a recurrent elevated blood pressure.

2. Attached you will find the blood pressure tracker. It has instructions of how to take a home blood pressure, space to record the date/time of the blood pressure readings and heart rate.

3. Take your blood pressure as directed by your provider.

4. Make sure you write down your blood pressure results on the blood pressure tracker after each time you take your blood pressure.

5. Your goal is to obtain a blood pressure reading of less than 135/85.

6. How long does the provider want me to take my blood pressure??

7. How often should I be taking my blood pressure??

Cleaning and maintenance of machine

1. Do not forcefully bend the arm cuff or air tube, do not fold tightly.

2. Clean monitor with soft dry cloth, no abrasive cleaners.

3. Do not attempt to wash the cuff, only wipe it with a sterilizing wipe.

4. Do not submerge the device or any components in water.

5. Do not subject the monitor to extreme hot or cold temperatures, humidity or direct sunlight.

6. Store device and components in a clean safe location.
7. Do not subject the monitor to strong shocks, such as dropping the unit on the floor.

**How often should I follow-up with my provider???

1. How often should I provide my blood pressure readings to my provider???
   ____________________________________________________________

2. When is my follow-up with my provider???
   ____________________________________________________________

3. A weekly follow-up phone call will be completed by the clinics health coach.

4. You should bring your blood pressure tracker logs to every appointment.

_Troubleshooting of the blood pressure monitor_: If the light stays lit during while taking your blood pressure, no issues are detected. If an error is detected the light will flash “ER” on the display. For further assistance with relation to the blood pressure monitor, please contact the clinic staff.

Checklist for clinic

**Checklist for patients newly enrolled in the Home Blood Pressure Monitoring Program**

**Which patients can be enrolled in the Home Blood Pressure Monitoring Program?**

- ____ 1. A patient that has been referred from a provider.
- ____ 2. Any patient that needs to monitor Blood Pressure at home.
- ____ 3. Patient with no cardiac arrhythmias.
- ____ 4. Patient that can be fitted with the proper cuff size, arm size 9”-17”.
  
  ***Patient needs to meet all above four criteria to be enrolled.

**Concepts that need to be addressed by the health coach with the patient at initiation of the Home Blood Pressure Monitoring Program:**
1. Have patient sign the home blood pressure monitoring form and give the patient a copy.

2. Explain to the patient how often and for how long they should monitor their blood pressure. Explain to the patient when to follow up with their provider.

3. Explain to the patient why they are monitoring their blood pressure including:
   a) Explain what blood pressure numbers mean.
   b) Patient’s goal is to obtain a blood pressure reading of less than 135/85.

4. Show the patient how to record their blood pressure readings on the blood pressure tracker. Identify the space to record the date/time of the blood pressure readings and heart rate.

5. Complete lifestyle modification teaching with patient with relation to elevated blood pressure.

6. Identify on patient's problem list as a Home Blood Pressure kit user.

**Checklist to be completed upon completion of the Home Blood Pressure Monitoring Program**

1. Check the monitor for accuracy.
   a) Omron’s calibration check system uses dual sensors to check whether the unit is accurate and functioning correctly. If the light stays lit during the measurement, no issues are detected. If error is detected the light will flash “ER” on display.
   b) After each patient you must check the BP machine calibration. The BP readings should be compared with the patient in the same position, taken from the same arm with at least two separate readings (one with automatic BP machine, one with mercury machine). The home BP device should give readings that are within 10 mmHg systolic and 10 mmHg diastolic of the Mercury machine. If they are not, the electronic machine needs to be sent to the repair department at Omron Healthcare for this service.

2. Clean the blood pressure machine, cuff, tubing, power cord with a low-level disinfectant ie. PDI Sani-Cloth PLUS.

3. Entering Blood Pressure data into the Electronic Medical Record.
   a) Create a notes encounter in the EMR.
   b) Under description in the notes encounter, enter Home Blood Pressure Readings.
c) In the progress note, enter patient was given home blood pressure monitor kit on (date) and patient will return monitor in (week, month, etc.) at follow up visit.

d) The returned blood pressure trackers will then be scanned into EMR and attached to that notes encounter.

**CLINIC 2**

**Suggested Home Blood Pressure monitoring workflow**

1) Provider identifies patient with hypertension (HTN) that is a good candidate for home blood pressure monitoring
   
   A) Verbally indicates to provider that they are motivated to change  
   B) Has valid and updated phone number and home address

2) Provider sends a referral to Health Coach for “Home BP Monitoring” with instructions regarding how often BP readings need to be obtained (patient meets with Health Coach Same Day if possible)

3) Health Coach meets with patient:
   
   A) Discusses Home BP program and patient expectations  
   B) If patient chooses to participate, patient will sign consent to use monitor appropriately and to return it after agreed amount of time
   C) Patient’s name and info will be recorded into BP log  
   D) Demonstration and return-demonstration on how to use monitor will be performed
   E) BP monitor will be given to patient to take home

4) Health Coach will contact patient once weekly at a pre-arranged day or time to discuss:
   
   A) BP readings  
   B) Medication adherence
   C) Lifestyles changes/improvements

5) Health Coach will send EPIC in-basket message to Primary Care Provider (PCP) regarding phone discussion
6) Provider will review in-basket message and respond with any suggested changes or recommendations

7) Health Coach will contact patient if changes are indicated by provider

8) After 3 months, Health Coach will see patient in office to have BP monitor returned and to discuss:
   
   A) Successes/ Lifestyle improvements
   B) Challenges
   C) Plan moving forward

   1) If significant lifestyle changes have been seen or reported and; patient would like to continue with home monitoring, Health Coach will send order to Midwest Medical for Home BP monitor.

### CLINIC 3

1) Appropriate patients for home monitoring:
   - >140/90 with or w/out HTN diagnosis
   - Compliant with appointments
   - Do not have access to BP monitor
   - Motivated to improve health (>7/10 for importance)
   - Hx of “white coat syndrome”

2) Teach patient proper technique:

   1. Ideally, don’t smoke or drink caffeinated beverages for at least 30 minutes prior to screen
   2. Take blood pressure before (not after) a meal.
   3. Rest 5 minutes before taking blood pressure. Focus on deep breathing for 2-3 minutes prior to screen.
   4. Sit comfortably with your back supported and both feet on the floor (do not cross your legs).
   5. Elevate your arm to heart level on a table or desk
   6. Place cuff around bare upper arm. Cuff should be snug and there should be room to slip fingertip under the cuff. The bottom edge of the cuff should be 1 inch above the crease of the elbow.
   7. If BP is >140/90, rest for 2-3 minutes, focus on deep breathing. Then repeat screen. Repeat process again if >140/90. Complete up to 3 BP readings.
3) Submission of blood pressure readings:
   a. Provide blood pressure log for patient. Patient will document 20-30 readings within 1 week.
   b. Patient will set up appointment with coach to return blood pressure monitor and discuss results.
   c. Results will be scanned into patients’ chart and document average blood pressure during home use.

4) Tracking individuals who have used home blood pressure monitor:
   a. Excel Spreadsheet
   b. Tele Encounter sent to provider

5) Length of rental
   a. 1/2 week period
   b. Schedule f/u appointment with Dan to return monitor and discuss results

6) How to refer patient:
   a) Send referral to Dan Schletty for Home BP monitor
   b) Coach will demonstrate and show how to use monitor
   c) Patient will sign home BP consent form
   d) Coach will give patient BP log to document results
   e) Coach will schedule f/u appointment to go over results/return BP monitor
   f) Coach will send outcome of results back to provider

7) Calibration of BP machines
   a) Calibrate monthly and/or before patient rents device
Home Blood Pressure Monitoring

Name: ________________________________

Target Blood Pressure: ________________

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Time</th>
<th>Blood Pressure</th>
<th>Comments</th>
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If you have any questions, please contact:
DEEP BREATHING EXERCISES

**Complete Natural Breathing Before Checking Blood Pressure**

1. Sit with good posture, knees bent with feet flat on floor. Relax your shoulders and neck.
2. Take deep, slow breath through your nose.
3. Notice your stomach expand as the air flows downward.
4. Hold your breath for a few seconds.
5. Exhale slowly through your mouth. Relax your abdomen and chest.

**Repeat 3-5x or until you feel sense of relaxation.**

---

**Proper steps for accurate blood pressure reading**

1. Ideally, don’t smoke or drink caffeinated beverages for at least 30 minutes prior to screen.
2. Take blood pressure before (not after) a meal.
3. Rest 5 minutes before taking blood pressure. Focus on deep breathing for 2-3 minutes prior to screen.
4. Sit comfortably with your back supported and both feet on the floor (do not cross your legs).
5. Elevate your arm to heart level on a table or desk.
6. Place cuff around bare upper arm. Cuff should be snug and there should be room to slip fingertips under the cuff. The bottom edge of the cuff should be 1 inch above the crease of the elbow.

7. If BP is >140/90, rest for 2-3 minutes, focus on deep breathing. Then repeat screen. Repeat process again if >140/90. Complete up to 3 BP readings.

The equipment you are receiving is not expected to be reimbursed by Medicare and/or your insurance policy. XXXXXX Healthcare Center will provide this equipment for your use with the following agreement:

I accept this equipment as is and accept full responsibility for the care of this equipment and will replace XXXXXX Healthcare Center the full replacement value for any damage to this equipment, lost, or not returned.

I am receiving this equipment today and agree to return the equipment by the agreed upon date of __________ in clean and dry condition to avoid any additional charges.

Equipment Received: **Omron BP785 Blood Pressure Monitor with cuff and power cord**

Serial #: ____________________________

Replacement Value: $100

__________________________________   __________________
Patient Signature      Date

___________________________________   __________________
Parent/Guardian Signature (if minor)    Date
Blood Pressure (BP) Home Monitoring Protocol

1. Identify patients for home monitoring
   a. Patients will initially be identified by risk (systolic >=160 mmHg and/or diastolic >=100 mmHg) and considered as a good candidate by provider discretion (e.g. keeps appointments, adheres to medication, motivated, etc.).
   b. Patient agrees to use home monitoring device

2. Selecting a monitor. Recommend:
   a. For the ASTHO grant project purchase monitors for all patients in the pilot so they are using the same equipment. **Omron BP785 have been purchased for the clinics**
   b. A validated monitor only. For lists see:
      i. Dabl Educational Website [http://www.dableducational.org/sphygmomanometers/devices_2_sbpm.html#ArmTable](http://www.dableducational.org/sphygmomanometers/devices_2_sbpm.html#ArmTable)
   c. A brachial cuff model. Wrist and finger models are often used incorrectly.
   d. A monitor with a fully automated - rather than a manual - inflation cuff.
   e. An appropriate sized cuff. (Standard adult cuffs are too small for about a third of patients.)
   f. Models equipped with printers or memory may improve reliability in record keeping, though they are also more expensive.

3. Check the patients monitor for accuracy
   a. Have the patient take a sitting position with the arm at heart level. The arm should be completely relaxed and resting on the desk. After allowing the patient to rest for five minutes, five sequential same-arm BP readings should be taken no more than 30 seconds apart. The patient and the health-care provider must avoid any conversation during the measurements to prevent an increase in blood pressure. The entire procedure should take approximately 10 minutes.
   b. The first two readings are taken with the patient's device. The health-care provider takes the third reading, with a clinic device. A fourth reading is taken by the patient, followed by the fifth and final reading, which is taken by the health-care provider. In most cases, BP readings will decline over the five measurements, with the final one being as much as 10 mm Hg systolic BP lower than the first. There is no established target for how close the readings from the patient's cuff should be to those of the provider's cuff. (Essentia Health’s protocol uses 10mmHg) However, this exercise can provide a general sense of the HBPM device's accuracy, which can be taken into consideration for future measurements recorded at home.
   c. Repeat this procedure annually.

4. Teach the patient proper technique
   a. Rest 5 minutes before taking your blood pressure.
b. Don’t smoke or drink caffeinated beverages for at least 30 minutes before.
c. Take your blood pressure before (not after) you eat.
d. Sit comfortably with your back supported and both feet on the floor (don’t cross your legs).
e. Elevate your arm to heart level on a table or a desk.
f. Use the proper sized cuff. It should fit smoothly and snugly around your bare upper arm. There should be enough room to slip a fingertip under the cuff. The bottom edge of the cuff should be 1 inch above the crease of the elbow.
g. Ideally, take 3 measurements at one sitting and record the average.
h. Ask the patient to note on their log if they have missed their medications for any reason.
i. Remind patients that it is normal for BP values to vary, even within the few-minute intervals between readings. Moreover, patients should expect there to be unusually high or low individual readings, but the overall average is what will be used to determine response to treatment. However, there are times that treatment decisions are based on wide BP variation and/or wide pulse pressure (a large difference between systolic and diastolic BP).

5. Submission of blood pressure readings
   a. Provide a tracking log or web based link for the patient to record their blood pressure readings. The American Heart Association’s Heart360 is one example of an online system. [https://www.heart360.org/Default.aspx](https://www.heart360.org/Default.aspx)
   b. Develop protocol that address how frequently patient should take BP at home and BP goal for at home readings.
   c. Request that the patient call in their readings twice a month (or more frequently per provider request) and/or bring their logs to every appointment.
   d. Document blood pressure readings in the patients chart.
   e. Document on the patient’s problem list using a code created for home monitoring flagging them as a home BP patient.
   f. Provide feedback and support to the patient after submitting readings.

6. Create office systems to easily integrate home blood pressure monitoring into your practice.
   a. Identify a staff member who can teach patients how to use monitors, validate devices, and review action plans and blood pressure logs.
   b. Develop a protocol to address frequency of office visits, handle inquiries from patients about home monitor concerns, and that tracks which patients are doing home monitoring, who has borrowed home BP monitor from the clinic, etc.
   c. Develop a field within the EHR to document home blood pressure readings.
d. Consider organizing hypertension support groups for your patients or using peer educators to teach patients how to measure blood pressure at home.

7. Resources for home blood pressure monitoring
   d. AHA guideline for blood pressure measurement
   e. Million Hearts http://millionhearts.hhs.gov/index.html
   f. Measure Up Pressure Down http://www.measureuppressuredown.com/
Below are some potential metrics for evaluating your home blood pressure monitoring program.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definition</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Data Collection Method and Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home blood pressure monitoring</td>
<td>A. Patients sending in home BP monitoring readings</td>
<td>A. Number by gender race/ethnicity, and age of patients in the denominator who sent home BP readings (in the past month?)</td>
<td>Patients who were identified and agreed to use a home BP monitoring device.</td>
<td>Patients who were identified by risk (systolic &gt;=160 mmHg and/or diastolic &gt;=100 mmHg) and considered as a good candidate by provider discretion (e.g. keeps appointments, adheres to medication, motivated, etc.).</td>
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<td>B. BP readings patient submitted</td>
<td>B. Average number of BP readings sent by patient in the denominator in the past month</td>
<td></td>
<td>Patients will initially be identified on their problem list using a code created for this project flagging them as a home BP kit user.</td>
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<tr>
<td></td>
<td>C. Mode of Patient BP reading submission</td>
<td>C. Number of BP reading submissions completed by telephone or by manual log during a face-to-face encounter in the past month</td>
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<tr>
<td></td>
<td>D. Patient received clinical support and feedback after submitting home BP readings</td>
<td>D. Number of patients in the denominator, with documentation of clinical support and feedback in their within 1 week of home BP reading submission</td>
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