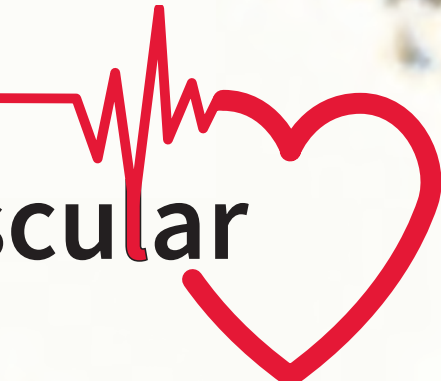


# Achieving Cardiovascular Equity



Primary Care Hypertension Quality Improvement Project



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Primary Care Hypertension Quality Improvement Project

## Provider Change Package

Revised 2023



Department  
of Health



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# EXECUTIVE SUMMARY



Hypertension is a major contributor to heart disease and stroke, which are among the most common, costly, and preventable health problems in the United States and Ohio.<sup>1</sup> Cardiovascular disease, which includes heart disease, stroke, and heart failure, is the leading cause of death in Ohio and nationwide.<sup>2</sup>

- Hypertension is responsible for 33% of all cardiovascular disease and 43% of heart disease in Black people.<sup>3</sup>
- Ohio adults have a higher prevalence of stroke (3.7%) and heart disease (7.4%) compared with adults in the United States.<sup>4</sup>
- In 2021, the National Center for Health Statistics (NCHS) reported that Ohio had the 11th highest death rate from heart disease in the United States, claiming the lives of 30,578 Ohioans.<sup>5</sup>
- In Ohio, 10.3 and 18.4 potential years of life are lost from heart disease in White and Black people, respectively.<sup>6</sup>

## Background

Chronic disease is associated with reduced quality of life, poor health outcomes, increased healthcare needs, and higher healthcare costs. Uncontrolled hypertension (HTN) is a modifiable risk for cardiovascular disease and is ranked in the top ten for U.S. Healthcare expenditures with estimated direct and indirect costs of more than \$363 billion U.S. Dollars in 2016.<sup>7</sup> Less than half of all patients with hypertension have their blood pressure (BP) controlled to goal, and physicians partnering with patients has improved control in as little as 12 months.<sup>8</sup>

## Health Equity

Overall, men and women face similar risks for being diagnosed with cardiovascular disease. However, there are significant racial disparities. The NCHS reports that from 2009-2019 non-Hispanic Black persons were more likely to die of heart disease than non-Hispanic White persons.<sup>9</sup> Of note, Black Americans receive a diagnosis of high BP earlier in life and their average BP levels are higher.<sup>10</sup> As a result, Black Americans have a 1.3-times greater rate of non-fatal stroke, a 1.8-times greater rate of fatal stroke, a 1.5-times greater rate of death attributable to heart disease, and a 4.2-times greater rate of end-stage kidney disease compared with White patients.<sup>11</sup> Determinants of racial/ethnic disparities in BP control are multi-factorial and include patient, provider, organizational, community, and policy factors.<sup>12</sup> One healthcare system example identified the increased tendency for healthcare providers to engage in verbally dominant communication leading to less patient-centered care with Black patients.<sup>13</sup> Focused efforts to address hypertension management in Black patients is necessary to advance cardiovascular equity. This can be addressed successfully with proper medication, hypertension registries, unbiased proper BP management with cultural humility, lifestyle change, and addressing non-medical health related social needs.<sup>14,15</sup>

## About the Achieving Cardiovascular Equity (ACE) Project

To address hypertension and heart disease disparities, the Ohio Department of Health (ODH) Diabetes and Heart Disease Prevention and Management (DHDPM) Program implemented a three-year Primary Care Hypertension Quality Improvement Project (QIP) in collaboration with the Ohio Colleges of Medicine Government Resource Center (GRC) and The Ohio State University Wexner Medical Center. The ACE QIP utilized the Institute for Healthcare Improvement's (IHI) Model for Improvement to identify patients with undiagnosed hypertension, improve management of adults with hypertension, and address social determinants of health among the patient population. Specific interventions were identified to address disparities at the site level. Through use of these key strategies, the ACE QIP sought to improve BP control across the patient population, with a specific focus on Black patients, impacting the Healthcare Effectiveness Data and Information Set (HEDIS) score for high BP control, and fostering community partnerships within the Black community.

### Strategies Included:

- Promoting the adoption and use of electronic health records (EHR) to identify potentially undiagnosed patients and implement a plan to diagnose and treat those patients.
- Reaching out to patients with elevated BP and schedule patient visits to monitor BP.
- Obtaining accurate measurement of BP, using evidence-based techniques such as obtaining more than one BP reading.
- Utilizing a simplified treatment algorithm with effective, low-cost medication taken once daily, making it easier for patients to adhere to treatment.
- Facilitating self-measured BP (SMBP) monitoring with clinical support among adults with hypertension.
- Supporting engagement of non-physician team members in hypertension management in clinical settings and via home-based support.
- Implementing systems to facilitate systematic referral of adults with hypertension to community programs and resources.
- Reducing implicit bias to decrease clinical inertia.
- Addressing patient factors to increase self-efficacy and improve BP control.



### The ACE QIP Change Package

The resources compiled in this Change Package can assist primary care providers and other healthcare professionals to streamline processes and improve care related to hypertension with the goals of increasing the percentage of patients with controlled BP and reducing complications and deaths related to hypertension.

# Using This Change Package

## Initiating Program Activities

The activities that take place in the months leading to implementing program activities will prepare ACE QIP teams to begin testing interventions using Plan-Do-Study-Act Cycles (PDSAs), submitting monthly EHR extracts, and testing tools and resources. Activities your practice will engage in include:



- **Forming a core quality improvement team.** Prior to starting project activities, gain leadership buy-in! Organizational support is critical to implementing an effective and sustainable quality improvement effort. Teams should be comprised of a practice champion, key institutional leaders, and supporting interdisciplinary team members such as medical assistants, nurses, pharmacists, or community health workers. Smaller workgroups may be necessary to address various drivers and interventions.
- **Extracting EHR data.** Your system should establish a method for abstracting and viewing EHR data elements. The EHR data will be used to create run and control charts to inform your practice of progress on achieving SMART aims over time.
- **Reviewing current race/ethnicity data collection** processes and addressing opportunities for improvement.
- **Examining processes to ensure accurate BP measurement** and the need for repeat BP measurements.
- **Reviewing treatment algorithms** and adapting for your practice.





## KEY DRIVER: IDENTIFYING UNDIAGNOSED HYPERTENSION

Measuring BP is a standard practice conducted at the start of most patient visits. Accurate BP measurement is a fundamental skill required for the correct diagnosis and treatment of hypertension.<sup>16</sup> This section provides educational resources and tips for accurately measuring BP, including repeating BP measurements. Providers and staff can use the BP Training Checklist as a competency tool to ensure new or existing staff know how to obtain an accurate BP reading.



# Resource 1: Blood Pressure Measurement Instructions



Blood Pressure Classification	Systolic (mmHg)	Diastolic (mmHg)	Your Goal*
Normal	<120	and <80	<b>&lt;140 / 90</b>
Prehypertension	120-139	or 80-89	
Stage 1 Hypertension	140-150	or 90-99	
Stage 2 Hypertension	≥160	or ≥100	

\*In patients 60 years or older who do not have diabetes or chronic kidney disease, the goal BP level is <150/90 mmHg.

Materials adapted from TARGET:BP in conjunction with American Heart Association and American Medical Association.



## Staff Compliance With Good BP Measurement Technique and Repeat BP Measurement

We encourage you to develop a BP training checklist or modify your current training checklist using the example provided (Resource 2) on page 9. Consider how you will train new employees as they are on boarded. Also, establish an annual review process to keep staff engaged and ensure proper BP measurement technique is critical to accurate BP measurement over time and sustaining efforts.

## Encouraging Staff Compliance With Repeat BPs Through Visual Reminders

Examples of visual reminders include:

- Magnetic laminated “Check Blood Pressure” signs that can be visually displayed in both common areas and next to the blood pressure station.
- Reminder posters next to all computer stations.
- A reminder or flag to recheck BP in your EHR.



## Resource 2: Blood Pressure Training Checklist

### Purpose: Accurately obtain a blood pressure

Knowledge	Yes	No	N/A
1. Describe the benefits and limitations to obtaining a BP using a machine versus a manual BP cuff.			
2. Discuss effective strategies to reduce errors.			
3. Distinguish normal BP ranges from abnormal BP readings.			
4. Describe the process for safe reporting of BP findings.			
Skill	Yes	No	N/A
1. Gather equipment.			
2. Introduce yourself to the patient.			
3. Wash your hands.			
4. Identify patient using two patient identifiers.			
5. Explain the procedure to the patient.			
6. Have patient sit comfortably in a chair for five minutes. Ensure bare arm is at heart level and resting on something. If sitting, have the patient place their feet flat on the floor. Ask the patient not to talk while their blood pressure is being taken.			
7. Select proper cuff size and place 1 inch above the elbow with arrow over the brachial artery. The bladder of the BP cuff should be long enough to wrap around 80% of the arm and wide enough to cover 2/3 of the upper arm.			
8. Note the BP when the first sound is heard (systolic) and when the last sound disappears (diastolic).			
9. Wait 5 minutes. Repeat and record a second BP.			
10. Record findings in EHR and identify normal/abnormal blood pressures.			
11. Provide BP to patient both verbally and in writing.			

# Identifying and Recording Race/ Ethnicity

**Accurate, consistent measurement and recording of race and ethnicity is a critical component to tracking the success of any quality improvement effort that seeks to reduce health disparities.**

Efforts to eliminate disparities must first ensure that the race and ethnicity of patients is collected in a diligent manner. Determining race/ethnicity based on appearance may lead to inaccurate categorization. Training staff to ask patients to self-report race increases the accuracy of this information and can assist in providing more effective treatment.

## Implicit Bias

Implicit biases, which occur in an unconscious manner, explain a potential disconnect between what a person explicitly believes and wants to do and the hidden influence of negative implicit associations on thoughts and actions.<sup>17</sup>

- People of color face more barriers in accessing healthcare, including chronic disease management.<sup>18</sup>
- Health equity can be achieved after an organization identifies disparities, focuses on reduction by implementing evidence-based interventions, and incentivizes the achievement of equity.<sup>19</sup>
- Once an individual is aware of an implicit bias, associations can gradually be unlearned.<sup>20</sup>










# KEY DRIVER: EFFECTIVE TREATMENT

The elements included in the Effective Treatment section are appropriate for all patients with hypertension and include lifestyle modifications, BP goal setting, and self-monitoring.

Lifestyle modification should incorporate key aspects of the Dietary Approaches to Stop Hypertension (DASH) diet and address alcohol, smoking, substance use, caffeinated beverages, and weight loss as appropriate to the individual patient's needs. Two examples of evidence-based medication algorithms are provided on pages 13-14. Below are some special considerations when treating Black patients with diagnosed hypertension.

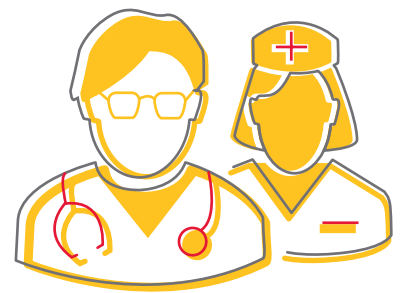
## Considerations for Treating Black Patients With Diagnosed Hypertension

<b>Provider Factor</b>	<b>Clinical inertia</b>
	<ul style="list-style-type: none"> <li>• Implicit bias may lead to clinical inertia — the failure of providers to treat hypertension in some groups.<sup>21</sup></li> <li>• Using peer-review office visits can help overcome clinical inertia and reduce disparities.<sup>21</sup></li> <li>• The ability to communicate shared experiences and develop relationships with patients is key in BP management.<sup>22</sup></li> </ul>
<b>Patient Factor</b>	<b>Medication is multi-factorial and modifiable<sup>23,24</sup></b>
	<ul style="list-style-type: none"> <li>• Building confidence in Black patients' ability to take to their prescribed medication leads to improved control.<sup>25</sup></li> <li>• Use of single-pill anti-hypertensive combinations is one method that may be particularly beneficial in Black patients with diagnosed hypertension.<sup>26</sup></li> </ul>
	<b>Hypertension beliefs</b>
	<ul style="list-style-type: none"> <li>• For Black patients that attributed their hypertension to family history, there is potential for decreased medication adherence.<sup>27</sup></li> <li>• A large percentage of patients rated stress at home as a cause of their hypertension.<sup>28</sup></li> </ul>
<b>Community Factors</b>	<b>Community connection</b>
	<ul style="list-style-type: none"> <li>• Addressing social determinants of health for those who need help is an important strategy.<sup>30</sup></li> </ul>

# Hypertension Drug Treatment Guidelines

The examples on pages 13 -14 display algorithms showing simple, effective pharmacologic therapy approaches for treating patients with hypertension, which prioritize once daily, dual/triple combination, low cost medications to enhance medication adherence. The treatment algorithms also prioritize lifestyle change, and in Black populations without chronic kidney disease, thiazide-type diuretics and calcium channel blockers as first line medications.<sup>31</sup> These algorithms represent two possible approaches to treating and controlling hypertension for your patient.

- Choose a hypertension treatment guideline and use it!
  - Consider the treatment algorithms on pages 13-14.
- Commit to quick follow up (2-4 weeks) for patients with uncontrolled high BP. This system can include nurse visits and clinical pharmacists as well.
- Current recommendations suggest averaging the results of all BP's measured for 7 days or more, twice a day. However, a minimum period of 3 days are recommended for clinical decision making.<sup>37</sup>
- Educate patients on Self Monitored BP (SMBP). Have a system in place to teach patients how to use the unit correctly, log the information or set up the unit to import into the EHR. Nurses, pharmacists, and others can help with this portion and combine it with other patient education such as DASH diet and exercise benefits. (see Resource 5 for more details) This can be billed to many insurances.
- Monitor for treatment adherence.



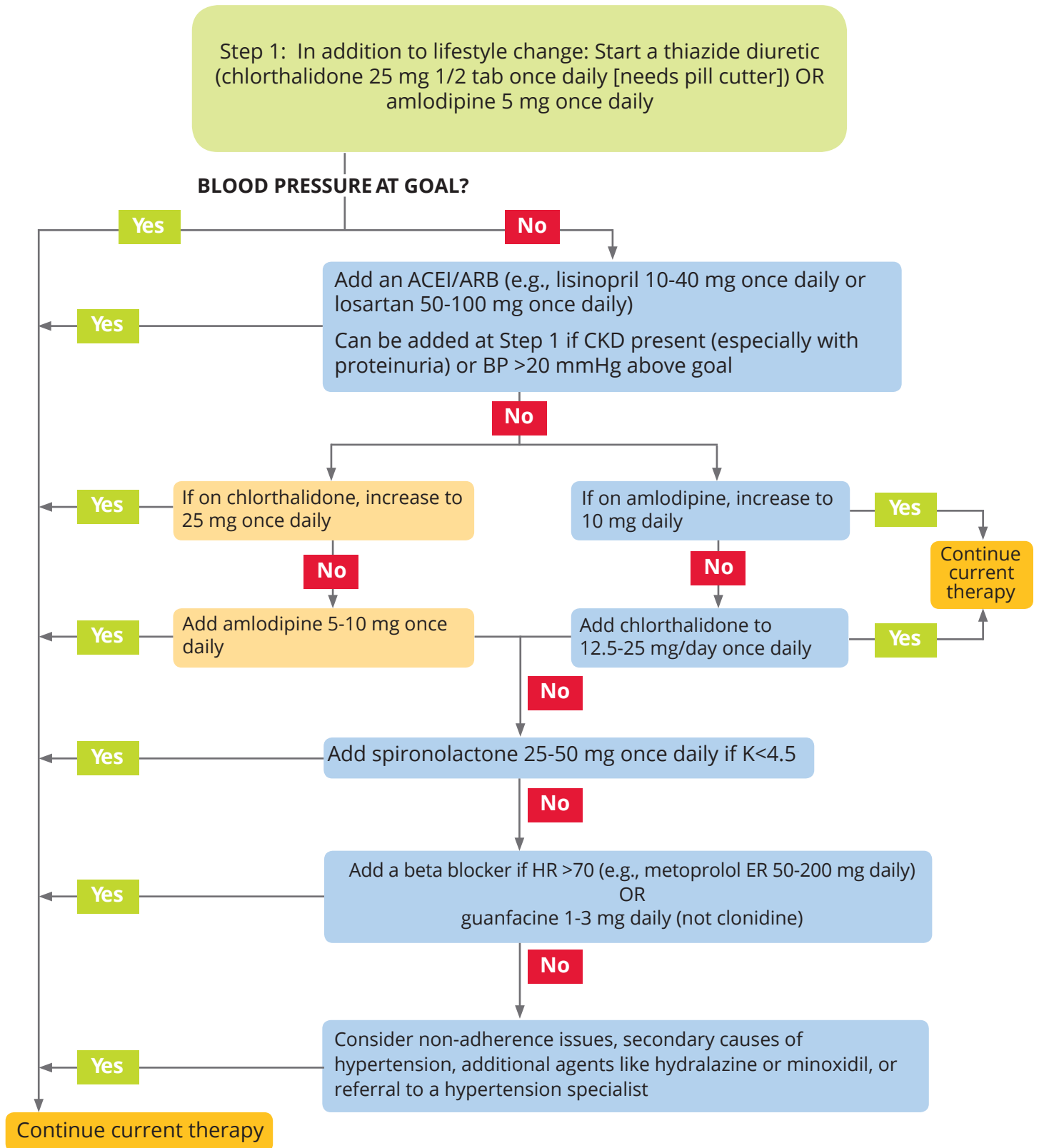
## Resources

A Medication Reference List for Providers is provided in the Appendix and includes information on drug class, examples, and comments to consider.

Also, Medicaid and managed care Medicaid all use a unified preferred drug list. This list separates agents by drug class and identifies which are preferred (and therefore covered) and which would require a prior authorization. <https://pharmacy.medicaid.ohio.gov/unified-pdl>

## Resource 3: Updated Hypertension Drug Treatment Algorithm

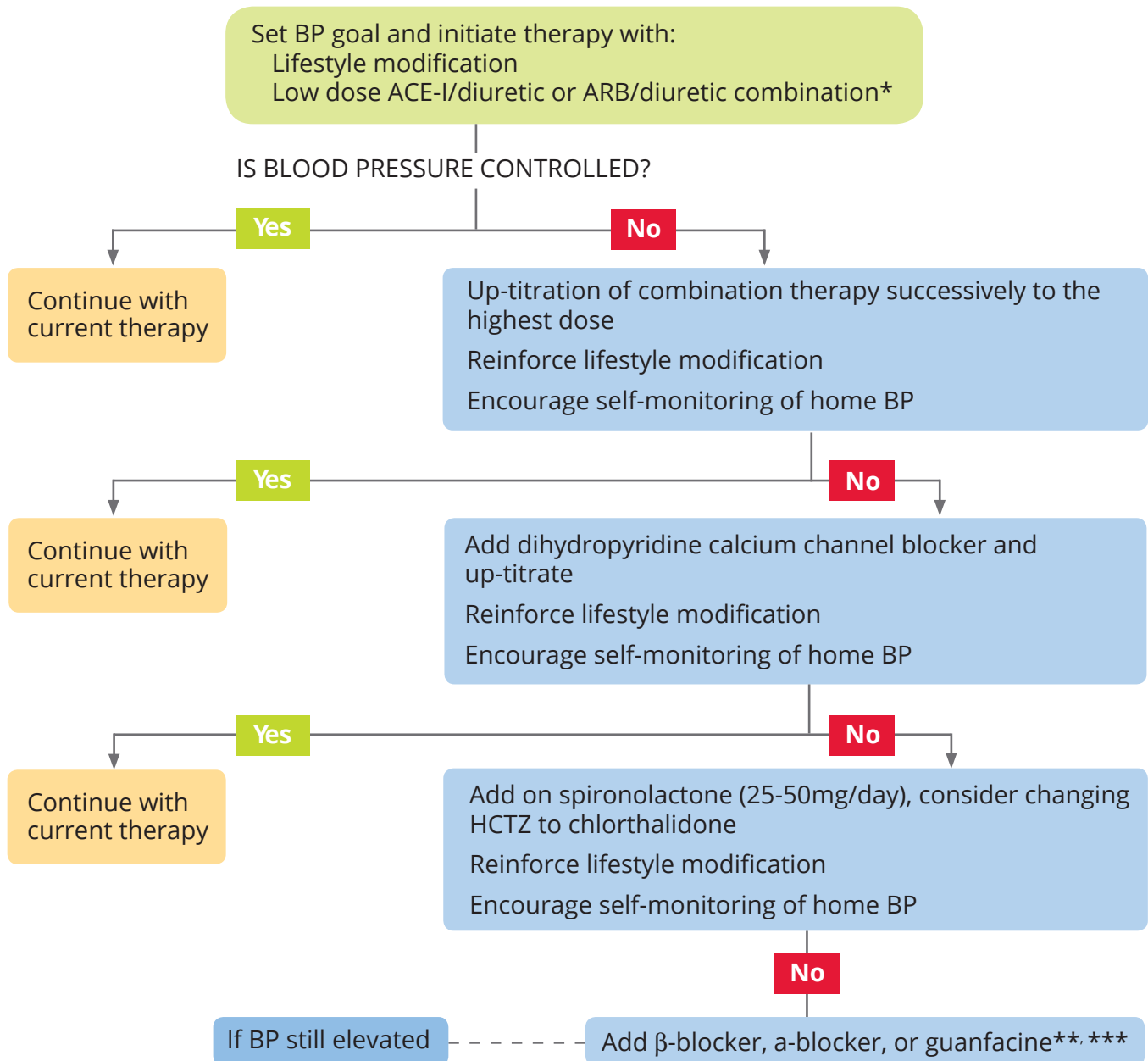
Use of a validated treatment algorithm will improve blood pressure control within your practice. Medication reference lists provided in Resource 8 on page 18 and Resource 11 in the Appendix.





## Resource 4: Classic Hypertension Drug Treatment Guideline<sup>33</sup>

Use of a validated treatment algorithm will improve blood pressure control within your practice. Medication reference lists provided in Resource 8 on Page 18 and Resource 11 in the Appendix.



If BP still elevated ----- Add  $\beta$ -blocker,  $\alpha$ -blocker, or guanfacine<sup>\*\* , \*\*\*</sup>

Consider medication non-adherence	Consider interfering agents (e.g. NSAIDs, excess alcohol)
Consider white coat effect	Consider secondary etiologies
Consider adding hydralazine in addition to above medications	<b>Consider Consultation With A Hypertension Specialist</b>

\*If pregnant or pregnancy potential, avoid using ACE-I or ARB or spironolactone  
 \*\*Avoid starting a beta blocker if pulse <70 or on a non-dihydropyridine calcium channel blocker  
 \*\*\*Guanfacine has similar mechanism of action as clonidine and is once daily instead of three times a day

## Resource 5: Incorporating Home Blood Pressure Monitoring Into Your Clinic

### The following information should be provided to patients:

- Your clinic should consider utilizing a clinical pharmacist for patient education, setting up SMBP units, and medication titration. A suggested workflow can be found in the Sustainability Change Package (Rapid follow-up care). Also, if a bluetooth device is linked to the patients EHR CPT codes can be utilized for initial set up and potentially ongoing treatment: (See page 10 of the Sustainability Change Package- Self-measured blood pressure (SMBP) monitoring).

#### At-Home BP Measurement Information provided to patient on correct method

- Provide instruction within the practice by nursing staff, clinical pharmacist or refer patient to external program

#### Selection of Equipment

- Choose equipment from [www.validatebp.org](http://www.validatebp.org)
- Consider choosing a unit that has remote patient monitoring

#### Interpretation of Results

- Have patient bring their units in for calibration at least once a year
- If patient has remote monitoring, access the data one day prior to the visit for pre-visit planning

### Devices:

- Verify use of automated validated devices. *Note: Use of auscultatory devices (mercury, aneroid, or other) is not generally useful for home BP monitoring.*
- Monitors with provision for storage of readings in memory and with Bluetooth capability are preferred.
- Verify use of appropriate cuff size to fit the arm.
- Arm cuff monitors are preferred. Wrist cuff or finger monitors are less accurate.
- Verify that left/right inter-arm differences are insignificant. If significant, instruct patient to measure BPs in the arm with higher readings.

### Action for Patient: BP tracking and sharing

- 1.Recommend monitoring for 7 days or more, twice a day. However, a minimum period of 3 days is recommended for clinical decision making. Average all SMBP measurements received from patients during the monitoring period.<sup>37</sup>
- 2.Recommend recording BPs using a log. (See sample in Resource 6.) Setting up BP monitors to input directly into the patients EHR will allow for providers to counsel their patients in a timely manner if the medical practice has a system in place.
- 3.If BP reaches hypertensive urgency numbers, proceed to urgent care or emergency department.
- 4.If BP remains in hypertensive range every day for 2 weeks, call provider.  
*Note: Follow up may depend on health system.*



### Resources for Validated Home BP Devices

AMA U.S. BP Validated Device Listing: [www.validatebp.org](http://www.validatebp.org)

British Hypertension Society: <https://bhsoc.org/bp-monitors/for-home-use>

Canadian Hypertension Society: <https://hypertension.ca/bpdevices>

dabl Educational Trust: [www.dableducational.org/sphygmomanometers/devices\\_2\\_sbpm.html#ArmTable](http://www.dableducational.org/sphygmomanometers/devices_2_sbpm.html#ArmTable)

## Resource 6: Blood Pressure Log

Read 'How to Measure Your BP at Home' for the best way to take your BP. Twice a day, take two readings, 5 minutes apart, and record on the log to share with your provider.

### Be sure to include:

- Date and time of day you took the readings.
- Blood pressure with systolic number on the left and diastolic number on the right (e.g., 140/90).
- If necessary, add comments such as whether you took medications or felt anxious or upset.



### What to do if your blood pressure numbers are elevated:

- If your blood pressure is over 180/120, go to urgent care or the emergency department.
- If your blood pressure is in hypertensive range every day for 2 weeks, call your provider.
- *You can take a picture of this log and load in your Patient Portal to share with your provider with any questions.*

**My target home blood pressure is less than \_\_\_\_\_ / \_\_\_\_\_ mmHg.**  
systolic / diastolic

Date		Time	Comments	Heart Rate (beats per min)	BP Reading #1 (mmHg)		BP Reading #2 (mmHg)	
					Systolic	Diastolic	Systolic	Diastolic
Example 11-19-20	AM	8:30 AM	Meds at 9AM	75	138	82	135	80
	PM	8:00 PM	upset	84	157	92	154	90
	AM							
	PM							
	AM							
	PM							
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## Resource 7: Medication Reference List for Staff-led Hypertension Visits

The table below can be used by nurses and other staff during follow-up hypertension visits to monitor for side effects and determine whether lab work is needed based on the medication class being used.

### Commonly Associated Side Effects of Blood Pressure Medications

<b>Medication Class</b> (generic names of individual medications)	<b>Common Side Effects</b>
Needs metabolic panel if started or increased this medication class	
Diuretics (e.g., hydrochlorothiazide, chlorthalidone)	Increased urination (often goes away if used daily for several weeks), rash, low potassium
ACE-inhibitors (e.g., lisinopril, enalapril, benazepril)	Dry cough, potassium, increased creatinine
Angiotensin II receptor blockers (e.g., losartan, valsartan)	Increased potassium, increased creatinine
Combinations which include an ACE-I, ARB, or diuretic	See side effects under individual classes
Aldosterone antagonist (e.g., spironolactone)	Increased potassium, increased creatinine, gynecomastia
No metabolic panel needed if started or increased this medication class	
Calcium channel blockers (e.g., amlodipine, verapamil, diltiazem)	Ankle edema (amlodipine), slow heart rate (verapamil, diltiazem)
Beta blockers (e.g., metoprolol, atenolol, carvedilol)	Fatigue (usually gets better after several weeks), slowed heart rate (watch for pulse <60)
Alpha blockers (e.g., doxazosin, prazosin, terazosin)	Orthostatic hypotension
Centrally acting a-2 adrenergic agonist (e.g., clonidine, guanfacine)	Sedation, dry mouth
Vasodilators (e.g., hydralazine, minoxidil)	Headache, edema, tachycardia

Abbreviations: ACE-I = Angiotensin converting enzyme inhibitor, ARB = angiotensin receptor blocker

## Resource 8: Types of Antihypertensive Combination Medications

Research indicates that single-pill combination therapy should be prescribed, as the vast majority of Black patients with diagnosed hypertension will need more than one anti-hypertensive agent to achieve BP goal <140/90. Furthermore, the likely lowering of BP goal targets will further necessitate the use of multiple agents.<sup>35</sup>

### Types of Antihypertensive Combination Medications

Triple Combination	
Tribenzor (Pro)	Generic name: amlodipine / hydrochlorothiazide / olmesartan
Exforge HCT (Pro)	Generic name: amlodipine / hydrochlorothiazide / valsartan
Dual Combination	
ACE inhibitors with calcium channel blocking	
Tarka (Pro)	Generic name: trandolapril / verapamil
Lotrel (Pro)	Generic name: amlodipine / benazepril
Amlobenz	Generic name: amlodipine / benazepril
Lexxel	Generic name: enalapril / felodipine
Prestalia (Pro)	Generic name: amlodipine / perindopril
ACE Inhibitors with thiazides	
Zestoretic (Pro)	Generic name: hydrochlorothiazide / lisinopril
Prinzide (Pro)	Generic name: hydrochlorothiazide / Lisinopril
Uniretic (Pro)	Generic name: hydrochlorothiazide / moexipril
Accuretic (Pro)	Generic name: hydrochlorothiazide / quinapril
Capozide	Generic name: captopril / hydrochlorothiazide
25 / 15 Capozide	Generic name: captopril / hydrochlorothiazide
25 / 25 Capozide	Generic name: captopril / hydrochlorothiazide
50 / 15 Capozide	Generic name: captopril / hydrochlorothiazide
50 / 25 Lotensin	Generic name: captopril / hydrochlorothiazide
HCT (Pro) Monopril	Generic name: benazepril / hydrochlorothiazide
HCT (Pro)	Generic name: fosinopril / hydrochlorothiazide
Quinaretic	Generic name: hydrochlorothiazide / quinapril
Vaseretic (Pro)	Generic name: enalapril / hydrochlorothiazide
Angiotensin II receptor blockers with calcium channel blockers	
Azor (Pro)	Generic name: amlodipine / olmesartan
Twynsta (Pro)	Generic name: amlodipine / telmisartan
Exforge (Pro)	Generic name: amlodipine / valsartan
Angiotensin II receptor blockers with thiazides	
Teveten HCT (Pro)	Generic name: eprosartan / hydrochlorothiazide
Avalide (Pro)	Generic name: hydrochlorothiazide / irbesartan
Micardis HCT (Pro)	Generic name: hydrochlorothiazide / telmisartan
Edarbyclor (Pro)	Generic name: azilsartan medoxomil / chlorthalidone
Hyzaar (Pro)	Generic name: hydrochlorothiazide / losartan
Benicar HCT (Pro)	Generic name: hydrochlorothiazide / olmesartan
Diovan HCT (Pro)	Generic name: hydrochlorothiazide / valsartan
Atacand HCT (Pro)	Generic name: candesartan / hydrochlorothiazide

## Types of Antihypertensive Combination Medications: *continued*

<b>Dual Combination: <i>continued</i></b>	
<b>Antiadrenergic agents (central) with thiazides</b>	
Aldoril (Pro) Clorpres (Pro)	Generic name: hydrochlorothiazide / methyl dopa Generic name: chlorthalidone / clonidine
<b>Antiadrenergic agents (peripheral) with thiazides</b>	
Enduronyl Minizide Renese-R	Generic name: deserpidine / methyclothiazide Generic name: polythiazide / prazosin Generic name: polythiazide / reserpine
<b>Beta blockers with thiazides</b>	
Corzide 80 / 5 Tenoretic 50 Ziac (Pro) Corzide (Pro) Corzide 40 / 5 Dutoprol (Pro) Inderide (Pro) Lopressor HCT (Pro) Tenoretic (Pro) Tenoretic 100 Timolide	Generic name: bendroflumethiazide / nadolol Generic name: atenolol / chlorthalidone Generic name: bisoprolol / hydrochlorothiazide Generic name: bendroflumethiazide / nadolol Generic name: bendroflumethiazide / nadolol Generic name: hydrochlorothiazide / metoprolol Generic name: hydrochlorothiazide / propranolol Generic name: hydrochlorothiazide / metoprolol Generic name: atenolol / chlorthalidone Generic name: atenolol / chlorthalidone Generic name: atenolol / chlorthalidone Generic name: hydrochlorothiazide / timolol
<b>Miscellaneous antihypertensive combinations</b>	
Exforge HCT Tekturna HCT Tekturna HCT (Pro) Tribenzor (Pro) Valturna (Pro) Amturnide (Pro) Apresazide Byvalson (Pro) Ser-Ap-Es Tekamlo (Pro)	Generic name: amlodipine / hydrochlorothiazide / valsartan Generic name: aliskiren / hydrochlorothiazide Generic name: amlodipine / hydrochlorothiazide / olmesartan Generic name: aliskiren / valsartan Generic name: aliskiren / amlodipine / hydrochlorothiazide Generic name: hydralazine / hydrochlorothiazide Generic name: nebivolol / valsartan Generic name: hydralazine / hydrochlorothiazide / reserpine Generic name: aliskiren / amlodipine
<b>Potassium sparing diuretics with thiazides</b>	
Maxzide (Pro) Aldactazide (Pro) Moduretic 5-50 Dyazide (Pro) Maxzide-25	Generic name: hydrochlorothiazide / triamterene Generic name: hydrochlorothiazide / spironolactone Generic name: amiloride / hydrochlorothiazide Generic name: hydrochlorothiazide / triamterene Generic name: hydrochlorothiazide / triamterene

# Timely Follow-Up

**Patients who received a repeat BP and have an average BP result which is elevated\* should be scheduled for follow-up within two to four weeks.**

The purposes of the follow-up hypertension visit are to:

1. Obtain additional BP readings.
2. Assess and address barriers to medication taking.
3. Start or intensify medications in adults who are adherent to medications but still have elevated BPs.
4. Provide education on hypertension, including lifestyle modification such as the DASH diet.
  - Refer for nutrition education on the DASH Diet.
5. Provide self-monitoring BP instructions.
6. Assist with self-management goal-setting.

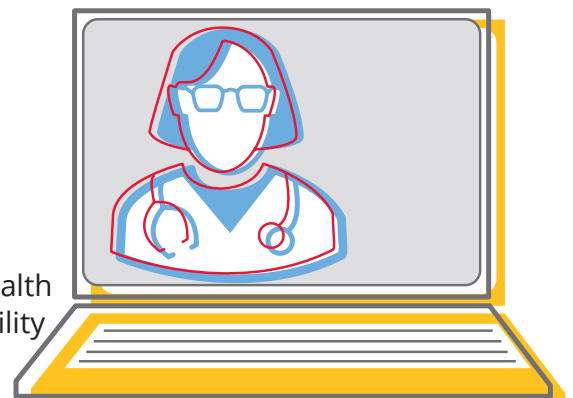
In this section, we provide a sample flow chart for scheduling a follow-up hypertension visit and a sample visit template to assess and address the purposes of the visit. You may want to consider other follow-up options such as telehealth visits, group visits, and home visits.

## Scheduling a Follow-up Visit

Establishing guidelines and an agreed upon referral process for hypertension follow-up help to increase the percentage of patients returning for follow-up during the recommended period.

## Hypertension Visit Template

Resource 10 is an example that could be adapted for use in your EHR. To ensure a clear understanding of how the patient is self-monitoring their BP and adhering to recommended treatment for their hypertension, the assigned staff or provider leading the follow-up hypertension visit should document the information shown in the Staff-led Follow-up Visit Template found in this section (Resource 10). Recent CMS changes allow for documenting SMBP during telehealth visits under some circumstances " (See page 11 in the Sustainability Change Package-Rapid Follow up Care).

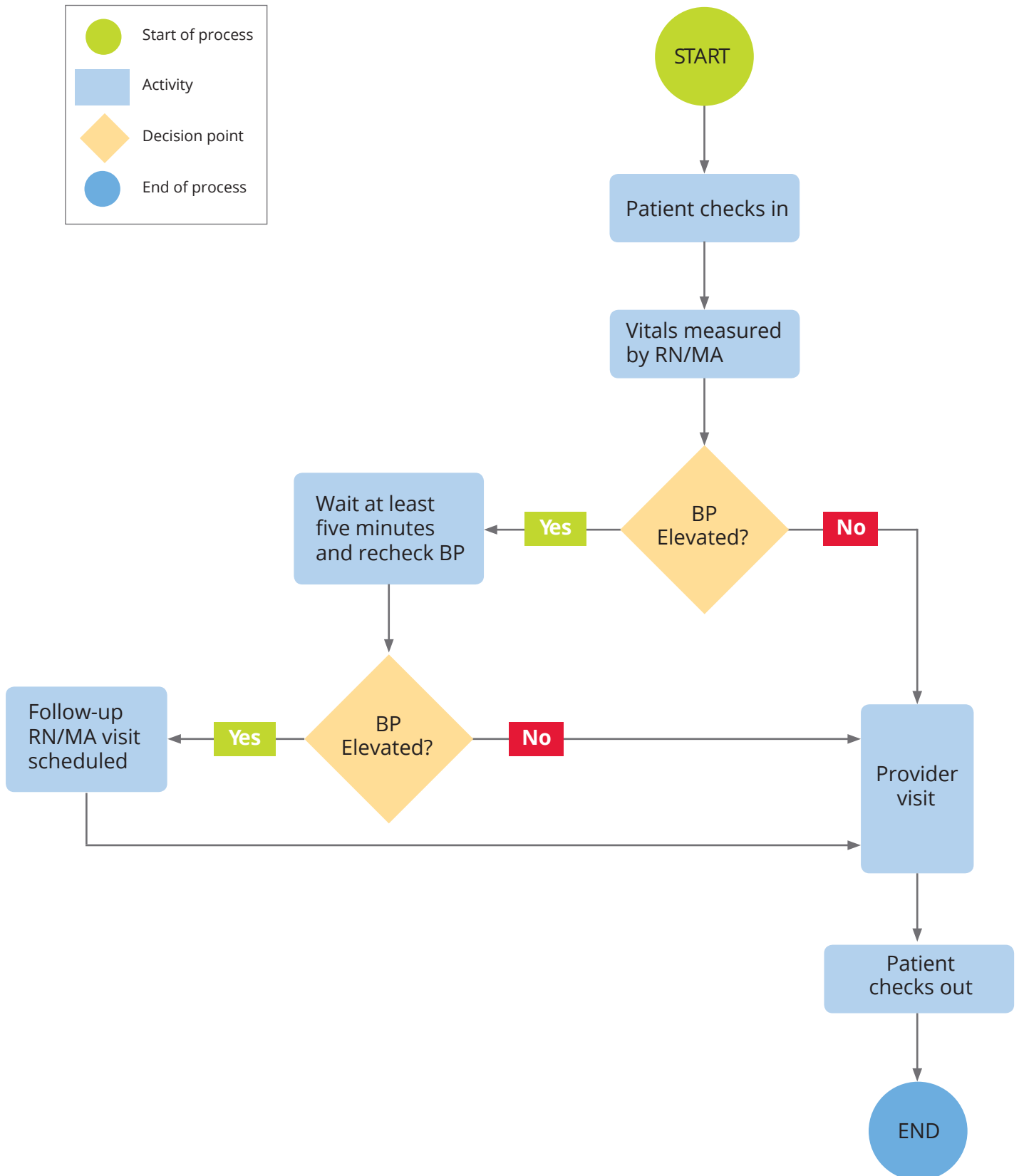


Telehealth visits are increasing in popularity. While this is a billable encounter, consider discussing the copay with patients prior to telehealth appointment.

\*Elevated BP is  $\geq 140/90$



## Resource 9: Process Map for Follow-Up Visit Referral



## Resource 10: Example Template for Staff-led Follow-Up Visit

The assigned provider leading the follow-up visit should document the below information provided by the patient to ensure a clear understanding of how the patient is monitoring and adhering to recommended treatment for their hypertension diagnosis. This example template can be tailored for use in your EHR and modified for telehealth home visits.

### Hypertension Clinic Documentation Tool for Electronic Health Records

HTN Clinic:		Visit number:	
BP readings from last 4 encounters: (                    ), (                    ), (                    ), (                    )			
Medication taken today? <input type="checkbox"/> Yes <input type="checkbox"/> No		Medication brought to visit? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Can name blood pressure medications? <input type="checkbox"/> Yes <input type="checkbox"/> No		Any recent medication changes? <input type="checkbox"/> Yes <input type="checkbox"/> No	
What time is medication taken? _____ Is this correct? <input type="checkbox"/> Yes <input type="checkbox"/> No		How many missed doses in the past week? _____	
Any side effects or new symptoms since last visit (describe): _____ _____			
Any OTC medication use? <input type="checkbox"/> Yes <input type="checkbox"/> No		Any cold, allergy, respiratory medications? <input type="checkbox"/> Yes <input type="checkbox"/> No	
If you have sleep apnea, are you using your continuous positive airway pressure (CPAP) device nightly? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Does patient check BP at home? <input type="checkbox"/> Yes <input type="checkbox"/> No Did staff review BP log? <input type="checkbox"/> Yes <input type="checkbox"/> No		If brought to clinic, was Home BP monitor checked to see if it is accurate? <input type="checkbox"/> Yes <input type="checkbox"/> No Was it accurate? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Do you drink beer, wine, or any other form of alcohol? <input type="checkbox"/> Yes <input type="checkbox"/> No How many drinks in the last 24 hours? _____			
Did staff follow up on outstanding HUB referrals? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Assessment			
Has the goal been met? <input type="checkbox"/> Yes <input type="checkbox"/> No Plan: _____ Medication changes: _____		Counseling tailored to the patient risks and needs (examples: DASH diet, exercise, smoking, self-management, caffeine): _____ _____ (Describe and print After Visit Summary)	
Follow up appointment with _____ in _____ weeks			
Does patient agree with plan? <input type="checkbox"/> Yes <input type="checkbox"/> No		BMP today? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Consulted with Dr.: _____			
Guidelines for follow-up:			
<ul style="list-style-type: none"> <li>• If BP is at goal: See PCP in 3 months</li> <li>• If BP remains high: See RN or Clinical Pharmacist in 2-4 weeks.</li> <li>• After third visit with RN, if BP is still high, follow up with PCP in 2-4 weeks</li> </ul>			



# KEY DRIVER: COMMUNITY CONNECTION

Working to identify and address health-related social needs of your patient provides an opportunity to connect patients to social services that can address barriers that may be impacting your patient's ability to address hypertension.

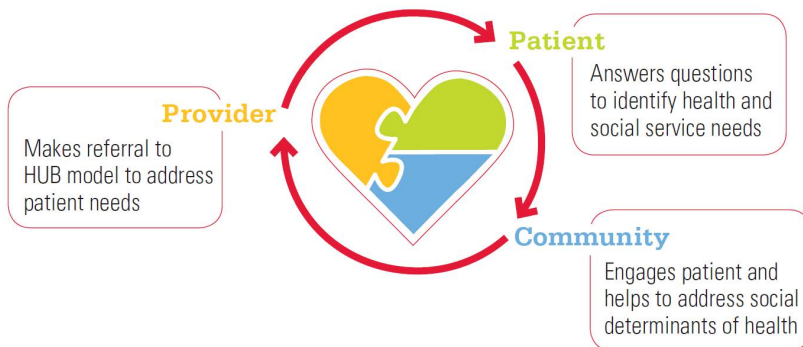
Resource 12 (see Appendix) includes some social determinants of health (SDOH) questions to help identify community referral or resource needs. If your clinic does not have something in place, consider asking these questions to your patient. Repeat on a quarterly basis to stay apprised of changes to health-related social needs your patient may encounter.

## SDOH Content Areas for Consideration

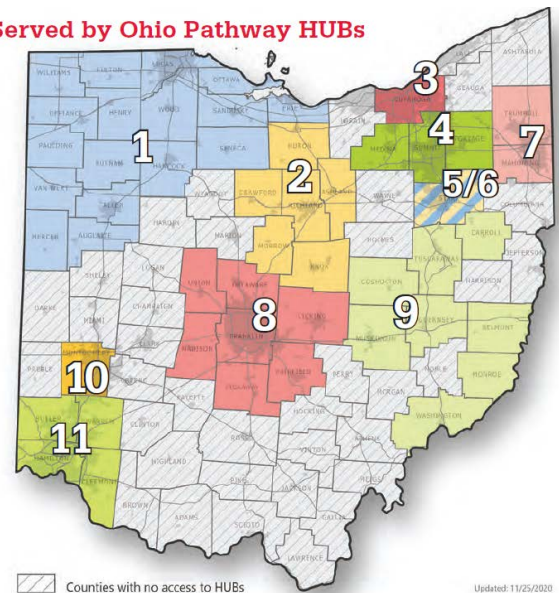
- Alcohol Use
- Depression
- Financial Resource Strain
- Food Insecurity
- Housing Stability
- Physical Activity
- Post-partum Depression
- Social Connections
- Stress
- Tobacco Use
- Transportation Needs

## Connection to Community Resources

The Pathways Community HUBs can help healthcare providers with referrals for their under-resourced patients to improve their health and well-being.



Counties Served by Ohio Pathway HUBs





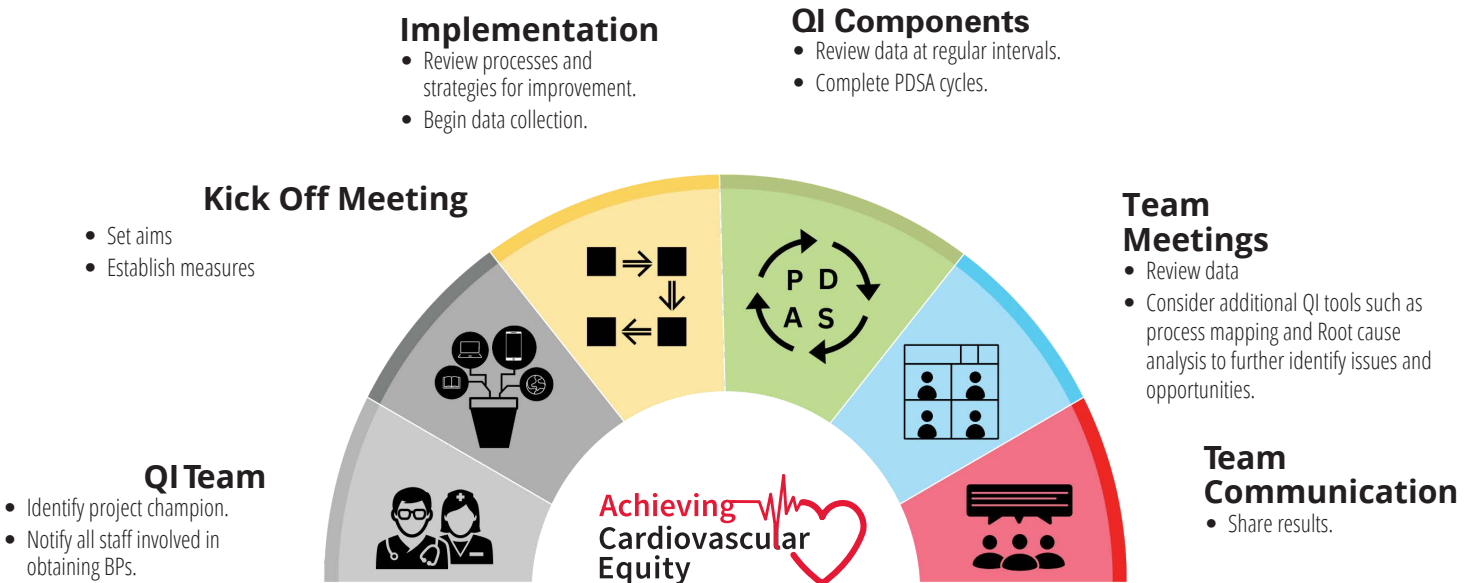
# KEY DRIVER: QUALITY IMPROVEMENT ENGAGEMENT & TRAINING

This quality improvement (QI) project will utilize the Institute for Healthcare Improvement's (IHI)

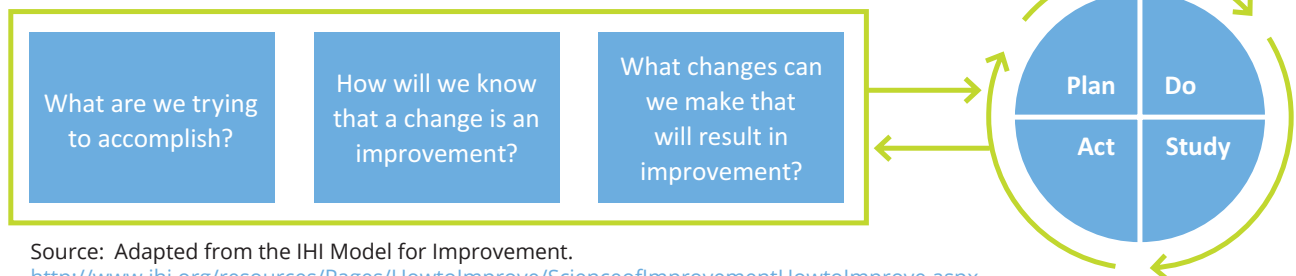
**Model for Improvement and work with clinics to modify processes aimed at increasing hypertension control and reducing disparities among Black patients with diagnosed hypertension.**

## What to Expect

The image below shows some of the collaborative components and how they fit together. The learning process will evolve as strategies are addressed by clinical and QI experts during monthly calls, optional QI coaching is utilized, and best practices are shared with peers. Sites will complete small tests of change utilizing the IHI Model for Improvement to make changes that result in an improvement.



## IHI Model for Improvement



Source: Adapted from the IHI Model for Improvement.

<http://www.ihl.org/resources/Pages/HowtoImprove/ScienceofImprovementHowtoImprove.aspx>



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# APPENDICES

## Resource 11: Medication Reference List for Providers

### Pharmacologic Therapy<sup>36</sup>

Drug Class	Examples	Comments
Thiazide-type Diuretics	Chlorthalidone HCTZ	<ul style="list-style-type: none"> <li>• May worsen hyperuricemia/gout.</li> <li>• Monitor serum potassium and creatinine levels initially, then within 2-4 weeks and annually thereafter if normal.</li> <li>• May cause photosensitivity (rare).</li> <li>• Chlorthalidone twice as potent and half-life 2-3 times longer than HCTZ at given dose.</li> </ul>
ACEI	Lisinopril Ramipril Benazepril Enalapril	<ul style="list-style-type: none"> <li>• Contraindicated in pregnancy.</li> <li>• Possible dry cough and/or angioedema.</li> <li>• Avoid concomitant use with an ARB or direct renin inhibitor or ARNI*.</li> <li>• Monitor serum potassium and creatinine initially, then within 2-4 weeks and annually thereafter if normal.</li> <li>• Up to 30% increase in serum creatinine after initiation of therapy considered normal. Consider interruption or discontinuation if greater increase is identified.</li> </ul>
ARB	Candesartan Irbesartan Losartan Valsartan Olmesartan Telmisartan	<ul style="list-style-type: none"> <li>• Contraindicated in pregnancy.</li> <li>• Avoid concomitant use with an ACEI or direct renin inhibitor or ARNI*.</li> <li>• Monitor serum potassium and creatinine initially, then within 2-4 weeks and annually thereafter if normal.</li> <li>• Up to 30% increase in serum creatinine after initiation of therapy considered normal. Consider interruption or discontinuation if greater increase is identified.</li> </ul>
DHP CCB	Amlodipine Felodipine Nifedipine	<ul style="list-style-type: none"> <li>• More common adverse drug reactions may include lower extremity edema and headache (often temporary).</li> <li>• Hepatic dysfunction can increase levels (begin at lower doses).</li> <li>• Amlodipine half-life more than twice that of felodipine or available sustained-release nifedipine.</li> </ul>
Non-DHP CCB	Verapamil Diltiazem	<ul style="list-style-type: none"> <li>• Verapamil may cause constipation and is contraindicated in AV node dysfunction, systolic HF and decreased LV function.</li> <li>• Diltiazem associated with less constipation but also contraindicated in AV node dysfunction, systolic HF and decreased LV function.</li> <li>• Hepatic dysfunction can increase levels (begin at lower doses).</li> </ul>

\*The only ARNI currently available is Entresto® (valsartan/sacubitril). It is NOT FDA-approved for hypertension and should only be used in patients with chronic heart failure class II to IV. If a patient is on Entresto®, they should NOT be on concurrent ACEI or ARB therapy.

Abbreviations: ACE-I = angiotensin converting enzyme inhibitor; ARB = angiotensin receptor blocker; ARNI = angiotensin receptor–neprilysin inhibitors; DHP CCB = dihydropyridine calcium channel blockers; HCTZ = Hydrochlorothiazide.

## Pharmacologic Therapy<sup>36</sup> *continued*

Drug Class	Examples	Comments
BB	<p><u>Non-selective</u> Propranolol</p> <p><u>Cardioselective</u> Atenolol Metoprolol (Tartrate &amp; Succinate)</p> <p><u>Combined <math>\alpha</math>- and <math>\beta</math>-blocker</u> Carvedilol Labetalol</p>	<ul style="list-style-type: none"> <li>Discontinue with slow taper over a period of at least one week.</li> <li>Avoid combination with non-DHP CCBs and centrally acting <math>\alpha</math>-2 adrenergic agonists due to increased risk of bradycardia and heart block.</li> <li>As dose increases, cardioselectivity decreases.</li> <li>Use with caution in patients with COPD, asthma, diabetes, and peripheral vascular disease; may want to consider use of a cardioselective BB in patients with those comorbid conditions.</li> <li>Concurrent use of centrally acting <math>\alpha</math>-2 adrenergic agonists and a beta blocker may result in increased risk of sinus bradycardia.</li> <li>An exaggerated clonidine withdrawal response, including rebound hypertension, may be seen with beta blockers (except for labetalol or carvedilol).</li> </ul>
ALDO ANTAG	Spironolactone Eplerenone	<ul style="list-style-type: none"> <li>Avoid use in cases of hyperkalemia (<math>K^+ &gt; 5.0</math> mmol/L) or severe kidney dysfunction (<math>GFR &lt; 30</math> mL/min).</li> <li>Dosing interval should be increased as renal function declines to every 24-48 hours for <math>GFR &lt; 50</math> mL/min.</li> <li>Monitor potassium and kidney function initially, then within 2-4 weeks and annually thereafter if normal.</li> <li>Higher risk of gynecomastia with spironolactone than eplerenone.</li> </ul>
Alpha-Adrenergic Blockers	Doxazosin Prazosin Terazosin	<ul style="list-style-type: none"> <li>Initiate at low doses.</li> <li>Administer first dose at bedtime to avoid syncope.</li> <li>Could be beneficial in patients with benign prostatic hyperplasia and hypertension.</li> <li>Alpha blockers are not recommended as a single agent for treating hypertension.</li> </ul>
Centrally Acting $\alpha$ -2 Adrenergic Agonist	Clonidine Guanfacine Methyldopa	<ul style="list-style-type: none"> <li>Monitor for adverse drug reactions such as somnolence and dry mouth.</li> <li>Discontinue with a slow taper to avoid rebound hypertension and withdrawal symptoms.</li> <li>Concurrent use of centrally acting <math>\alpha</math>-2 adrenergic agonists and a beta blocker may result in increased risk of sinus bradycardia and an exaggerated clonidine withdrawal response, including rebound hypertension.</li> <li>Note: <i>Guanfacine has similar mechanism of action as clonidine but can be given once daily.</i></li> </ul>
Vasodilator	Hydralazine Minoxidil	<ul style="list-style-type: none"> <li>May result in edema and reflex tachycardia that respond well to concomitant use of a diuretic and <math>\beta</math>-blocker.</li> <li>Hydralazine can be prescribed twice daily.</li> <li>Monitor for headache and Lupus-like syndrome (dose-related) with hydralazine.</li> <li>Monitor for hypertrichosis and fluid overload, including pericardial effusions with minoxidil (should monitor volume status closely).</li> </ul>

Abbreviations: BB = beta blocker; ALDO ANTAG = Aldosterone antagonist; DHP CCB =dihydropyridine calcium channel blockers.

## Resource 12: Social Determinants of Health Questions to Consider

### Alcohol Use

- Use: Yes, not currently, never.
- How often do you have a drink containing alcohol?
- How many drinks containing alcohol do you have on a typical day when you are drinking?
- How often do you have six or more drinks on one occasion?
- Estimate drinks/week, by glasses of wine, cans of beer, shots of liquor and/or standard drinks or equivalent.

### Depression

- Patient Health Questionnaire (PHQ-9) questions\*.
- Visit [www.phqscreeners.com](http://www.phqscreeners.com) for full screener, scoring, and translated materials.
- Over the last 2 weeks, how often have you been bothered by any of the following problems?
  - Little interest or pleasure in doing things.
  - Feeling down, depressed, or hopeless.
  - Trouble falling or staying asleep, or sleeping too much.
  - Feeling tired or having little energy.
  - Poor appetite or overeating.
  - Feeling bad about yourself or that you are a failure or have let yourself or your family down.—
- Trouble concentrating on things, such as reading the newspaper or watching television.
  - Moving or speaking so slowly that other people could have noticed. Or the opposite, being so fidgety or restless that you have been moving around a lot more than usual.
  - Thoughts that you would be better off dead, or of hurting yourself.
- If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

### Financial Resource Strain

- How hard is it for you to pay for the very basics like food, housing, medical care, and heating?**Food**

### Insecurity

- Within the past 12 months, you worried that your food would run out before you got money to buy more?
- Within the past 12 months, the food you bought just didn't last and you didn't have money to get more?

### Housing Stability

- In the last 12 months, was there a time when you were not able to pay the mortgage or rent on time?
- In the last 12 months, how many places have you lived?
- In the last 12 months, was there a time when you did not have a steady place to sleep or slept in a shelter (including now)?

\*Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display, or distribute.



## Resource 12: Social Determinants of Health Questions to Consider: continued

### Physical Activity

- On average, how many days per week do you engage in moderate to strenuous exercise (like walking fast, running, jogging, dancing, swimming, biking, or other activities that cause a light or heavy sweat)?
- On average, how many minutes do you engage in exercise at this level?

### Postpartum Depression

- Edinburgh Postnatal Depression Scale\* (EPDS).
- Full screener and scoring materials are widely available.
- In the last 7 days, have you:
  - I have been able to laugh and see the funny side of things.
  - I have looked forward with enjoyment to things.
  - I have blamed myself unnecessarily when things went wrong.
  - I have been anxious or worried for no good reason.
  - I have felt scared or panicky for no very good reason.
  - Things have been getting on top of me.
  - I have been so unhappy that I have had difficulty sleeping.
  - I have felt sad or miserable.
  - I have been so unhappy that I have been crying.
  - The thought of harming myself has occurred to me.

### Social Connections

- In a typical week, how many times do you talk on the phone with family, friends, or neighbors?
- How often do you get together with friends or relatives?
- How often do you attend church or religious services?
- Do you belong to any clubs or organizations, such as church groups, unions, fraternal or athletic groups, or school groups?
- How often do you attend meetings of the clubs or organizations to which you belong?
- Are you married, widowed, divorced, separated, never married, or living with a partner?

### Stress

- Do you feel stressed — tense, restless, nervous, or anxious, or unable to sleep at night because your mind is troubled all the time — these days?

\*Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786. Users may reproduce the scale without further permission providing they respect copyright by quoting the names of the authors, the title, and the source of the paper in all reproduced copies.

## Resource 12: Social Determinants of Health Questions to Consider: continued

### Tobacco Use

- Smoking status.
- Start / quit dates.
- Types (cigarettes, pipe, cigars; smokeless snuff or chew).
- Pack years (calculate by # packs per day X # of years smoked).
- Is patient ready to quit?
- Counseling given.

### Transportation Needs

- In the past 12 months, has lack of transportation kept you from medical appointments or from getting medications?
- In the past 12 months, has lack of transportation kept you from meetings, work, or getting things you needed for daily living?

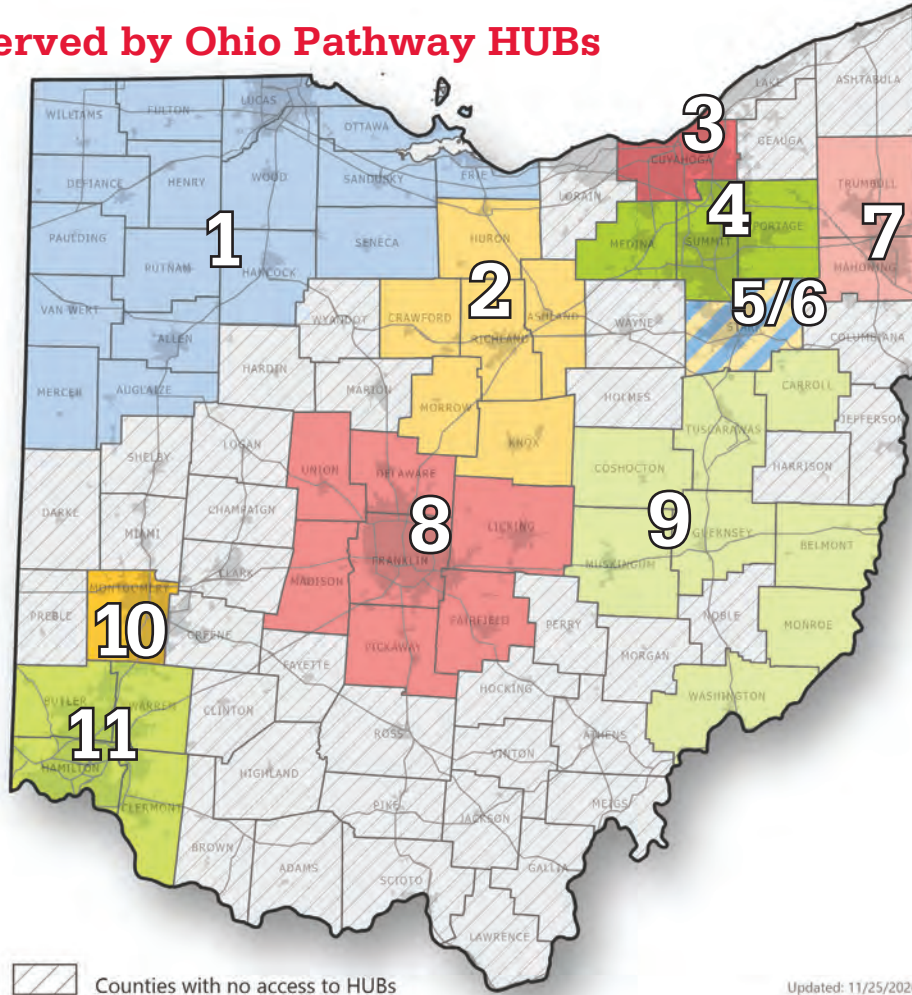
### Additional Resource(s):

- Social Needs ScreeningTool by the American Academy of Family Physicians  
[https://www.aafp.org/dam/AAFP/documents/patient\\_care/everyone\\_project/physician-long.pdf](https://www.aafp.org/dam/AAFP/documents/patient_care/everyone_project/physician-long.pdf)
- The Accountable Health Communities Health-Related Social Needs ScreeningTool from CMS  
<https://innovation.cms.gov/files/worksheets/ahcm-screeningtool.pdf>

## Resource 13: Pathways HUB Models in Ohio

Services and procedures vary by location. Please reach out to the your nearest HUB to assist your patients in addressing non health-related social needs that may be impacting their ability to address health concerns.

### Counties Served by Ohio Pathway HUBs



Hub Name	Web Address
1 Northwest Ohio Pathways HUB	<a href="http://www.hcno.org/regional-programs/northwest-ohio-pathways-hub/">http://www.hcno.org/regional-programs/northwest-ohio-pathways-hub/</a>
2 Community Health Access Project (CHAP)	<a href="http://chap-ohio.com/">http://chap-ohio.com/</a>
3 Better Health Pathways Hub	<a href="http://www.betterhealthpartnership.org/">http://www.betterhealthpartnership.org/</a>
4 Pathways HUB Community Action	<a href="https://www.ca-akron.org/pathways-community-hub-model">https://www.ca-akron.org/pathways-community-hub-model</a>
5 Community Action Pathway HUB	<a href="https://www.sccaa.org/wba/content/agency-programs/community-action-pathways-hub/">https://www.sccaa.org/wba/content/agency-programs/community-action-pathways-hub/</a>
6 Stark County THRIVE Pathways HUB	<a href="https://www.starkhelpcentral.com/resources/stark-county-thrive-pathways-hub/">https://www.starkhelpcentral.com/resources/stark-county-thrive-pathways-hub/</a>
7 Mahoning Valley Pathways HUB	<a href="https://www.mahoninghealth.org/mahoning-county-pathways-hub/">https://www.mahoninghealth.org/mahoning-county-pathways-hub/</a>
8 Central Ohio Pathways Hub	<a href="https://www.healthimpactohio.org/">https://www.healthimpactohio.org/</a>
9 Bridges to Wellness HUB (Formerly Access Tuscarawas)	<a href="http://www.hcgc.org/central-ohio-pathways-hub.html">http://www.hcgc.org/central-ohio-pathways-hub.html</a>
10 Dayton Regional Pathways HUB	<a href="https://gdaha.org/hub/">https://gdaha.org/hub/</a>
11 Health Care Access Now	<a href="https://healthcareaccessnow.org/">https://healthcareaccessnow.org/</a>



Materials adapted with permission from the Ohio Department of Medicaid, originally developed in conjunction with:

