

Hypertension Quality Improvement Change Package



Hypertension Quality Improvement Change Package

2017



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EXECUTIVE SUMMARY

Hypertension increases the risk of heart disease and stroke, and is a contributing factor of cardiovascular disease, which is the leading cause of death nationwide.¹ In 2013, the National Center for Health Statistics reported that Ohio had the 12th highest death rate from heart disease in the United States.²

In 2006, heart disease accounted for 26% of deaths in Ohio, and almost 200,000 hospitalizations.³

Health Disparities

Overall men and women face similar risks for being diagnosed with cardiovascular (CV) disease. However, there are significant racial disparities. Among those with hypertension and enrolled in Medicaid, blood pressure control <140/90 mmHg is lower among African American adults (52.4%) than among White adult Medicaid recipients (64.4%) even though the prevalence of hypertension within this group is slightly higher.⁴ Additionally, African American men (+21%) and African American women (+26%) disproportionately die from CV disease at higher rates than white men and women.⁵ Focused efforts to address the treatment of African Americans diagnosed with hypertension are therefore necessary to impact the overall Medicaid population and to reduce disparities.

About the Hypertension Quality Improvement Project

A microsimulation analysis conducted by IHS Life Sciences found the projected total cost of chronic disease in Ohio from 2016 to 2030 to be \$1.5 trillion. While all chronic conditions pose a significant risk and contribute to increasing medical costs, cardiovascular disease is the leading cause of death in Ohio and is the most costly chronic condition in Ohio and the United States.⁶ To address this issue, the Ohio Department of Medicaid (ODM), as part of the Medicaid Technical Assistance and Policy Program, partnered with Case Western Reserve University (CWRU) and the Ohio Colleges of Medicine Government Resource Center (GRC) to lead a Hypertension Quality Improvement Project (QIP) as part of the Chronic Conditions Quality Collaborative (CCQC).

The Hypertension QIP seeks to increase the percentage of adults in the target population* who have their blood pressure under control** by 15%. In addition, the project includes a health disparities focus to increase the percentage of African American individuals in the target population with blood pressure under control by 20%. To achieve these aims, the Hypertension QIP has engaged ODM, CWRU, GRC, Medicaid Managed Care Plans (MCPs) and clinical experts from all of Ohio's colleges of medicine. Twelve primary care practices were recruited to identify and test best practices for hypertension control and to address multiple strategies including:

- Accurate measurement of blood pressure, using evidence based techniques including obtaining more than one blood pressure reading

*Medicaid recipients with uncontrolled hypertension served by participating clinics

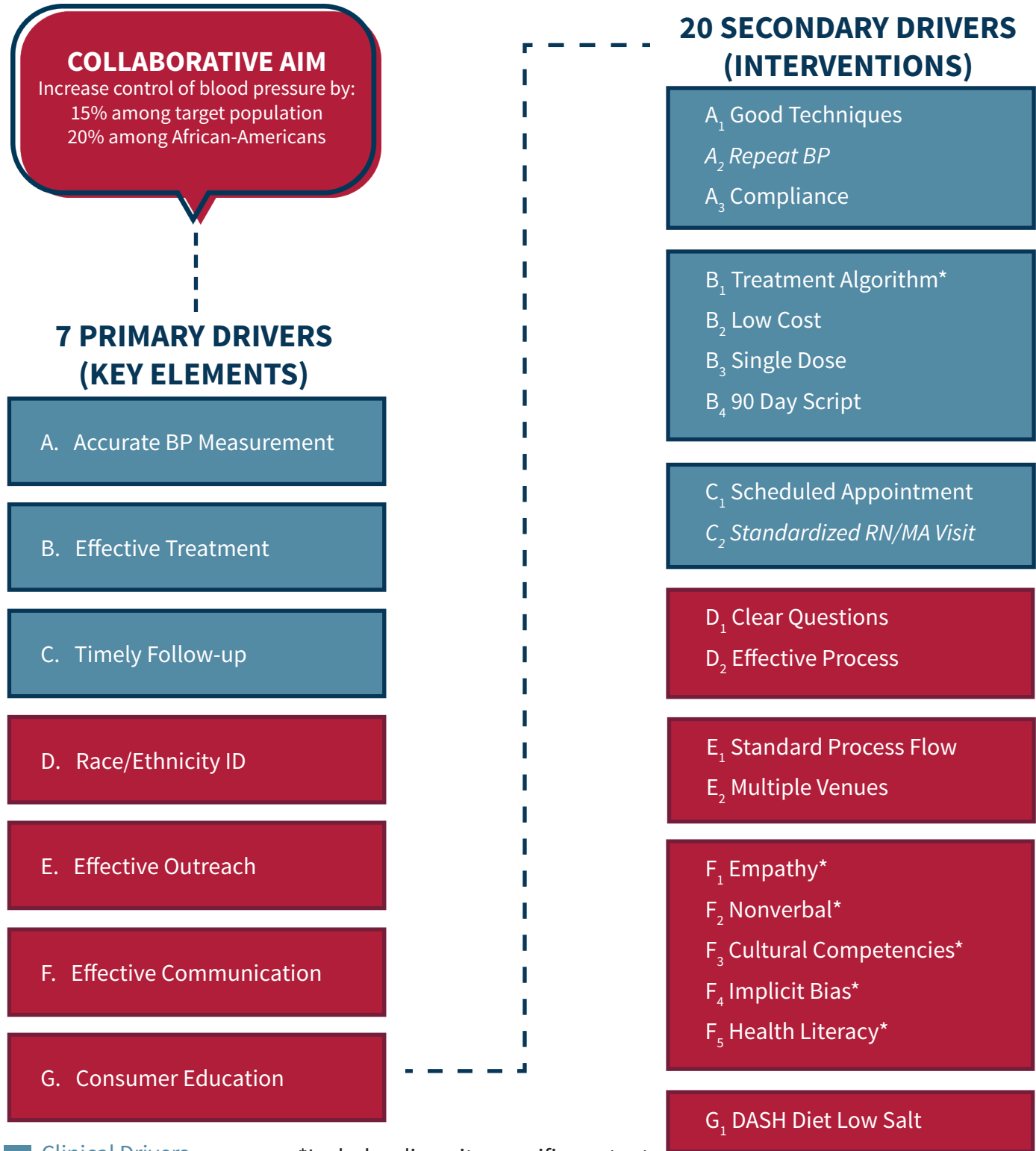
** Under control blood pressure is defined as blood pressure <140/90 mmHg



- Streamlined treatment algorithm using effective, low-cost medication taken once daily
- Monthly follow-up until blood pressure is controlled
- Coordinated outreach to patients with elevated blood pressure
- Enhanced communication with patients

The above evidence-based strategies to improve hypertension management⁷ were disseminated by Better Health Partnership, a regional health improvement collaborative serving high-volume disadvantaged patients in Northeast Ohio primary care practices, including Federally Qualified Health Centers.^{8,9} Blood pressure control within the top 16 of 23 safety net primary care clinics implementing the hypertension best practice improved 9 to 25 points between 2013 to 2016. The following resources compiled for the Hypertension QIP Change Package can assist primary care providers and other healthcare professionals to streamline processes and improve care related to hypertension with the goal of increasing the percentage of patients with controlled blood pressure and reducing complications and deaths related to hypertension.

HYPERTENSION QUALITY IMPROVEMENT PROJECT KEY DRIVER DIAGRAM (KDD)



■ Clinical Drivers *Includes disparity-specific content
■ Foundational Drivers *Italics* = Priority Driver

USING THIS CHANGE PACKAGE



Pre-Kick-Off

The activities that take place in the months leading up to the in-person kick-off will prepare Hypertension QIP teams to begin testing interventions using Plan-Do-Study-Act Cycles (PDSAs), submitting Electronic Health Record (EHR) extracts every two weeks, and testing tools and resources presented at the in-person session. Activities your practice will engage in include:

- **Form a Core Quality Improvement Team.** Teams should be comprised of a practice champion, key institutional leaders, and supporting interdisciplinary team members such as a medical assistants, nurses, pharmacists, or community health workers. Smaller workgroups may be necessary to address each Clinical Driver (i.e., Accurate BP measurement, Timely Follow-up, and Effective Treatment), and to address Foundational Driver D (Accurate Identification of Race/Ethnicity)
- **Extract Electronic Health Record (EHR) data.** Your practice should establish a method for abstracting requested EHR data elements
- **Build a relationship with an identified Managed Care Plan (MCP).** Over the course of the project, your practice will work directly with a MCP to identify barriers to the control of hypertension both at the clinical and patient level
- **Assess current process for collecting race/ethnicity data from patients (Resource IX)**
- **Begin to examine how your practice currently ensures accurate blood pressure measurement** and when repeat blood pressure measurements are conducted
- **Review the treatment algorithm (Resource III)** and consider adapting for your practice
- **Begin receiving and examining data feedback reports monitoring your practice's success in controlling high blood pressure**

In-Person Kick off

At the in-person kick-off, your practice will review a high-level overview of how to use the resources within this change package. This will include an introduction to **FOCUS** (find and define area understudy, organize improvement effort, clarify your process, understand performance, select an improvement strategy).

Drivers Introduced: Accurate BP Measurement (Clinical Driver A), Effective Treatment (Clinical Driver B), Race/Ethnicity ID (Foundational Driver D), and Effective Communication (Foundational Driver F)

Month 1

Drivers Emphasized: Accurate BP Measurement (Clinical Driver A) and Race/Ethnicity ID (Foundational Driver D)

Drivers Introduced During Monthly Action Period Webinar: Timely Follow-Up (Clinical Driver C) and Consumer Education (Foundational Driver G)

The primary focus for your practice during month one will be testing and adapting tools and resources

introduced at the in-person session. Your practice will work on testing interventions related to collection of self-identified race and ethnicity data and accurate blood pressure measurement, with an emphasis on repeat blood pressure measurement.

Project FOCUS:

Oftentimes improvement work teams will need to FOCUS their efforts prior to actively testing change ideas. FOCUSing before testing helps to make sure efforts are not wasted. Consider the following prior to testing:

Find and define the area understudy – where will you be working and what are the boundaries (i.e., where does the process begin and end)?

Organize the improvement effort – who will lead the effort and who will work on it?

Clarify how the process works – what is the current process flow and how will it need to change?

Understand performance – what is the current performance and how will we measure success over time?

Select an improvement strategy – what specific change idea(s) will be tested?

PDSA (Plan Do Study Act) can be used to set up a plan to test and evaluate each change idea until you are sure it works and is ready for wider adoption.

Month 2

Drivers Emphasized: Timely Follow-Up (Clinical Driver C) and Consumer Education (Foundational Driver G)

Drivers Introduced During Monthly Action Period Webinar: Effective Treatment (Clinical Driver B)

The primary focus for your practice during month two will be to ensure all patients with an elevated BP obtain a follow-up appointment within one month of their visit (Clinical Driver C). **FOCUS** your improvement effort as needed and use PDSA to test a process to ensure patients with an elevated BP have a follow-up staff-led hypertension visit within one month. When needed, the appointment may be with their physician.

Month 3

Drivers Emphasized: Accurate BP Measurement (Clinical Driver A), Timely

Follow-Up (Clinical Driver C), and Race/Ethnicity ID (Foundational Driver D)

The primary focus for your practice during month three will be to continue testing and adapting interventions using PDSAs related to Clinical Driver A, Clinical Driver C, and Foundational Driver D.

Month 4

Drivers Emphasized: Accurate BP Measurement (Clinical Driver A) and Timely Follow-Up (Clinical Driver C)

Drivers Introduced During Monthly Action Period Webinar: Effective Outreach (Foundational Driver E)

The primary focus for your practice during month four will be to continue testing and adapting interventions using PDSAs related to Clinical Driver A, Clinical Driver C, and Foundational Driver D. **FOCUS** your improvement effort as needed and use PDSAs to begin developing outreach strategies to hypertensive patients whose last blood pressure was elevated and who have no follow-up scheduled (Foundational Driver E).

Month 5

Drivers Emphasized: Accurate BP Measurement (Clinical Driver A), Effective Treatment (Clinical Driver B), Timely Follow-Up (Clinical Driver C), Race/Ethnicity ID (Foundational Driver D), and Effective Outreach (Foundational Driver E)

Drivers Introduced During Monthly Action Period Webinar: Effective Communication (Foundational Driver F)

The primary focus for your practice during month five will be to continue testing and adapting interventions using PDSAs related to Clinical Driver A, Clinical Driver B, Clinical Driver C, Foundational Driver D, and Foundational Driver E. At this point you may be ready to use PDSA ramps to scale up adaptations of successful interventions. **FOCUS** your improvement effort as needed and use PDSAs to test and adapt strategies to bring in hypertensive patients whose last blood pressure were elevated and who have no follow-up appointment scheduled. Consider adding new tools at this point, such as group visits, telehealth visits, or exercise programs to enhance effective treatment outcomes.

Months 6 - 10

Drivers Emphasized: All

The primary focus for your practice during months six through 10 will be to continue to review data, test and implement methods for improving repeat blood pressure measurements (Clinical Driver A), Effective Treatment (Clinical Driver B), and Timely Follow-up (Clinical Driver C). Practice sites will continue to work on enhancing accurate identification of race/ethnicity (Foundational Driver D) and outreach to patients to re-engage them in care with the support of MCPs (Foundational Driver E). Practice sites may also consider reviewing communication and health literacy (Foundational Driver F) with their clinic team.

Sustain Efforts: Months 11-16

The primary focus for your practice during months 11 through 16 will be to work as a team to develop tools to sustain gains achieved in the first 10 months.



CLINICAL DRIVER A: ACCURATE BLOOD PRESSURE MEASUREMENT

Measuring blood pressure is a standard practice conducted at the start of most patient visits. Accurate blood pressure measurement is a fundamental skill required for the correct diagnosis and treatment of hypertension.¹⁰ This section provides educational resources and tips for accurately measuring blood pressure, including repeating blood pressure measurements. Providers and staff can use the Blood Pressure Training Checklist as a competency tool to ensure new or existing staff know how to obtain an accurate blood pressure reading. Prior to completing the training checklist, you may want to have your staff review the video on accurate blood pressure measurement (see link on page 10) and complete the Knowledge Checklist on page 14.



Secondary Driver A1: Proper Blood Pressure (BP) Measurement

We encourage you to show this New England Journal of Medicine video¹¹ (<http://bit.ly/2f5AfjE>) on reviewing proper BP measurement technique with your staff, and have them take the post-test on BP measurement technique (Resource II) prior to any competency review.

- CORRECT CUFF SIZE:** Provide the patient with the correct cuff size
 - If cuff is too small, it will produce a higher reading
 - If cuff is too big, it will produce a lower reading
- CORRECT PLACEMENT ON ARM:** Place cuff directly on the patient's bare arm
- FEET FLAT ON FLOOR:** Have the patient sit in a chair (not a bed) with feet are flat on the floor, legs uncrossed, and back supported
 - Seated Systolic Blood Pressures (SBP) are up to 8 mmHg higher when measured on an exam table compared to a chair
- ARM AT HEART LEVEL:** Ensure the patient's arm is straight and at the heart level
- NO TALKING:** Instruct the patient not to speak during BP measurement
- EYES LEVEL WITH MANOMETER:** Remind the healthcare provider to keep their eyes level on the manometer if taking a manual BP measurement
- PROPER INFLATION OF CUFF:** Do not over-inflate the blood pressure cuff
- WAIT:** Have the patient sit down 5-10 minutes before measuring their BP
 - This is how BP is measured in randomized trials showing improvements in BP control and reductions in heart attack, stroke and deaths
 - BP usually decreases by about 10 mmHg after a 5-10 minute wait
- EMPTY BLADDER:** Allow the patient to use the bathroom prior to a BP measurement
 - A full bladder can impact the accuracy of the results

Secondary Driver A2: Repeating the Blood Pressure

- SBP often decreases by **waiting 5-10 minutes** after the patient sits down to measure BP
- Repeating BP is the standard of care for adults with hypertension and helps account for BP variability
- Multiple BP measurements allows providers to identify if it is necessary to intensify BP medication and helps avoid overtreatment
- Wait at least one minute between BP readings. You may consider waiting longer than one minute depending on how long the patient was sitting prior to the first reading. Consider taking more than two BP readings if the difference between the first and second reading is greater than 5 mmHg
 - Previously participating health clinics in a similar project identified 30% false readings for high blood pressure ($\geq 140/90$) when rechecked after 5-10 minutes ($< 140/90$)
- Provide patient the SBP/DBP readings both verbally and in writing

Secondary Driver A3: Staff Compliance with Good BP Measurement Technique and Repeat BP Measurement

We encourage you to develop a blood pressure training checklist or modify your current training checklist using the example provided (Resource I) on page 12. Establishing 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 a blood pressure in your Electronic Health Record System



Resource I: Vital Signs-Blood Pressure Training Checklist

Name: _____ Employee #: _____ Unit: _____ Date: _____

Employee Signature: _____

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
<i>The following applies to machine measured and manual BP measurements</i>			
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 with arm at level of the heart 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. Ask the patient to remove their arm from any bulky long sleeves; cuff should be on a bare arm (Sleeve NOT pulled up)			
8. Select proper cuff size. 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			
9. Apply BP cuff approximately 1 inch above the elbow with the arrow over the brachial artery			
#10-14 applies to manual BP*			
10. Place bell of stethoscope on the patient's skin, over the brachial artery, and earpieces facing forward			
11. Palpate the brachial pulse with one hand while inflating the cuff. Note the gauge reading when you can no longer feel the pulse			
12. Inflate bulb until the gauge measures 30 mmHg higher than the palpated reading			

Skill	Yes	No	N/A
13. Release the bulb pressure at a steady rate of ~2 mmHg per second			
14. Note the BP when the first sound is heard (systolic) and when the last sound disappears (diastolic)			
15. Repeat and record a second BP after waiting at least one minute			
16. Remove cuff and clean per policy			
17. Record findings in EHR			
18. Provide BP to patient both verbally and in writing			
19. Identify normal/abnormal blood pressures			
20. Record BP obtained by the instructor and the person being tested utilizing a training stethoscope (systolic and diastolic MUST be within 4 mmHg match to the instructors, if both or either do not match within 4 mmHg, then it is not correct).	Instructor /	Staff /	
Record here:			
Repeat:	/	/	
Attitude	Yes	No	N/A
1. Value the contributions of reliability & accountability to safety			
2. Understand own role in accuracy of obtaining BP			
3. Describe own role in prompt reporting and documentation			

*If using an automatic blood pressure machine, then ensure staff are able to operate the automatic machine to begin the blood pressure measurement.

SKILLS EVALUATION

Satisfactory	Unsatisfactory	Comments
-Provides rationales for some behaviors -Demonstrates skill with minimal assistance/guidance -Follows hospital/clinic policy/procedure for skill -Receptive to learning	-Unable to provide rationale for behaviors -Needs repetitive prompting to complete skill -Does not follow hospital/clinic policy/procedure for skill -Not receptive to learning	

Name of Observer: _____

Date: _____

Signature of Observer: _____

Resource II: Knowledge Checklist

The Knowledge Checklist should be completed by every person on your care team. This list identifies common practices when taking a patient's blood pressure and allows your team to identify their current practice in comparison to the recommended best practice.

1. **The diastolic blood pressure is determined when:**
 - A. All sounds disappear
 - B. The sounds become muffled
 - C. The first sound is heard
2. **A cuff that is too small for the patient's arm will result in:**
 - A. An inaccurately low reading
 - B. An inaccurately high reading
 - C. Sounds heard down to zero
3. **Common causes of errors in blood pressure measurement include:**
 - A. Cuff applied over clothing
 - B. Leaks in the tubing
 - C. Arm above or below heart level
 - D. Cuff deflated too rapidly
 - E. All of the above
 - F. B and D only
4. **You hear the first sounds beginning at a systolic blood pressure of 170, then hear nothing again until 150. After 150, you hear sounds consistently until 98 when all sounds disappear. What should be recorded as the systolic blood pressure?**
 - A. 170
 - B. 150
 - C. 98
 - D. None of the above
5. **At what rate of speed should you deflate the blood pressure cuff?**
 - A. 2 mmHg/second
 - B. 5 mmHg/second
 - C. 10 mmHg/second
 - D. None of the above
6. **At a minimum, how many blood pressure measurements should be done at the office visit?**
 - A. One
 - B. Two
 - C. Three
7. **What is the minimum length of time the patient should be sitting before measuring the blood pressure?**
 - A. One minute
 - B. Two minutes
 - C. Five minutes
 - D. 10 minutes
8. **What is the minimum length of time you should wait between measuring a first and second blood pressure reading?**
 - A. One minute
 - B. Two minutes
 - C. Five minutes
 - D. 10 minutes

Answers: 1-A; 2-B; 3-E; 4-A; 5-A; 6-B; 7-C; 8-A



CLINICAL DRIVER B: EFFECTIVE TREATMENT

Secondary Drivers B1-B4: Treatment Algorithm

The Effective Treatment section highlights lifestyle modification, encourages BP goal setting and self-monitoring, and provides a medication algorithm. 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 patients needs.

The treatment algorithm is an example of a simple effective pharmacologic therapy approach for treating patients with hypertension which prioritizes once daily, low cost medications to enhance medication adherence. The treatment algorithm also prioritizes lifestyle change, and in African American populations without chronic kidney disease, thiazide-type diuretics and calcium channel blockers as first line medications.¹² This algorithm represents one possible approach to treating and controlling hypertension for your patient.

We encourage you to review the sample treatment algorithm and modify it to fit your clinic. This treatment algorithm can serve as a model for your staff-led hypertension visits. In addition, you may consider writing 90-day prescriptions once a patient is on a stable regimen to enhance medication adherence by minimizing trips to the pharmacy. Lastly, an example of how you might incorporate home blood pressure monitoring within your clinic is provided (Resource III).

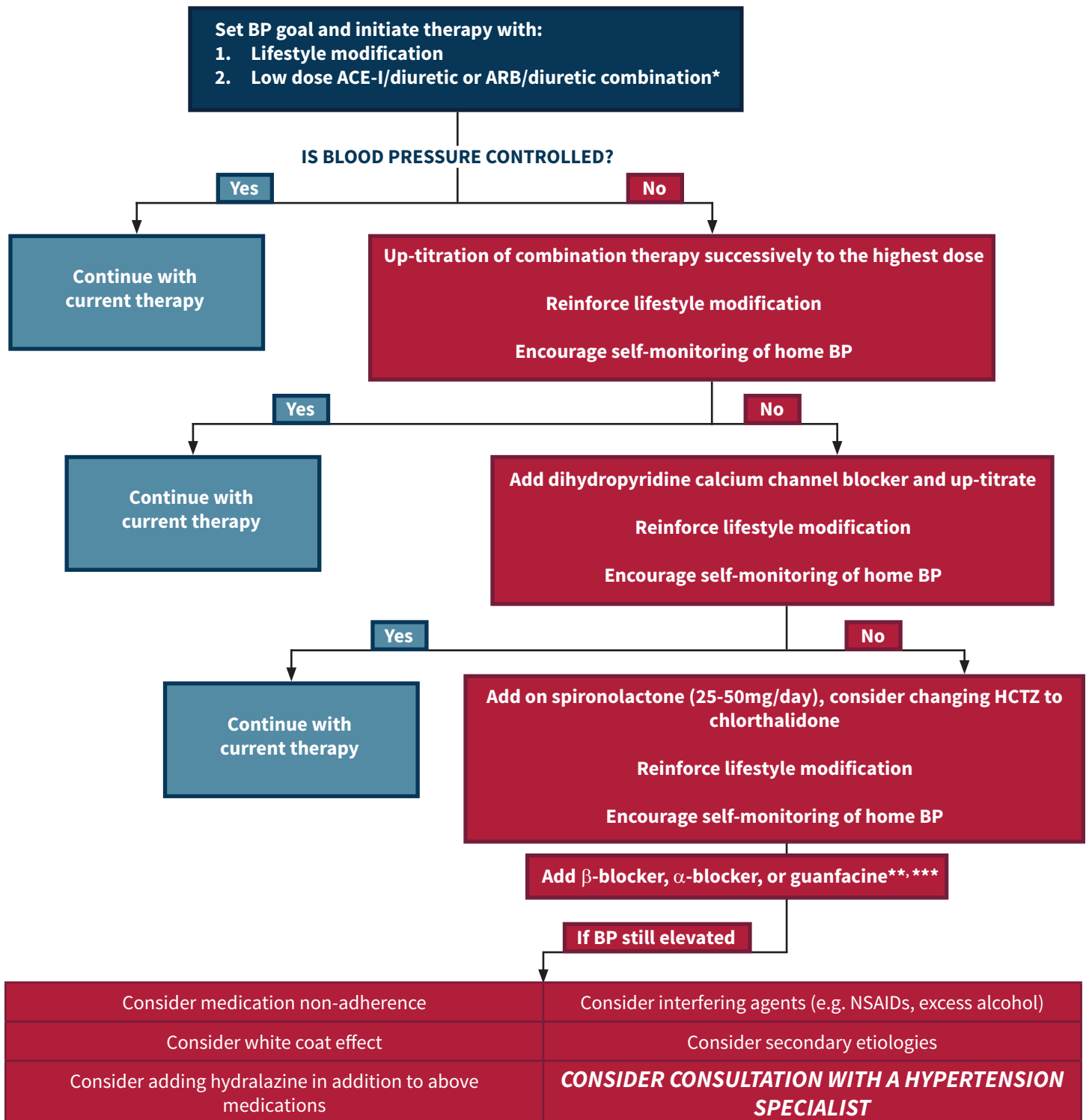


Potential method for measuring Effective Treatment:

1. Percentage of adults with hypertension on guideline recommended blood pressure medications
2. Percentage of adults with hypertension adherent to blood pressure medications

Resource III: Treatment Algorithm¹³ (Secondary Drivers B1-B3)

Use of a validated treatment algorithm will improve blood pressure control within your practice.



*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 IV: 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

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

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

Resource V: Medication Reference List for Providers

PHARMACOLOGIC THERAPY¹⁴

Drug Class	Examples	Comments
Thiazide-type Diuretics	Chlorthalidone HCTZ	<ul style="list-style-type: none"> • May worsen hyperuricemia/gout • Monitor serum potassium and creatinine levels initially, then within 2-4 weeks and annually thereafter if normal • May cause photosensitivity (rare) • Chlorthalidone twice as potent and half-life 2-3 times longer than HCTZ at given dose
ACEI	Lisinopril Ramipril Benazepril Enalapril	<ul style="list-style-type: none"> • Contraindicated in pregnancy • Possible dry cough and/or angioedema • Avoid concomitant use with an ARB or direct renin inhibitor or ARNI* • Monitor serum potassium and creatinine initially, then within 2-4 weeks and annually thereafter if normal • Up to 30% increase in serum creatinine after initiation of therapy considered normal. Consider interruption or discontinuation if greater increase seen
ARB	Candesartan Irbesartan Losartan Valsartan Olmesartan Telmisartan	<ul style="list-style-type: none"> • Contraindicated in pregnancy • Avoid concomitant use with an ACEI or direct renin inhibitor or ARNI* • Monitor serum potassium and creatinine initially, then within 2-4 weeks and annually thereafter if normal • Up to 30% increase in serum creatinine after initiation of therapy considered normal. Consider interruption or discontinuation if greater increase seen
DHP CCB	Amlodipine Felodipine Nifedipine	<ul style="list-style-type: none"> • More common adverse drug reactions may include lower extremity edema and headache (often temporary) • Hepatic dysfunction can increase levels (begin at lower doses) • Amlodipine half-life more than twice that of felodipine or available sustained-release nifedipine
Non-DHP CCB	Verapamil Diltiazem	<ul style="list-style-type: none"> • Verapamil may cause constipation and is contraindicated in AV node dysfunction, systolic HF and decreased LV function • Diltiazem associated with less constipation but also contraindicated in AV node dysfunction, systolic HF and decreased LV function • Hepatic dysfunction can increase levels (begin at lower doses)
BB	<p><i>Non-selective</i> Propranolol</p> <p><i>Cardioselective</i> Atenolol Metoprolol (Tartrate & Succinate)</p> <p><i>Combined α- and β-blocker</i> Carvedilol Labetalol</p>	<ul style="list-style-type: none"> • Discontinue with slow taper over a period of at least one week • Avoid combination with non-DHP CCBs and centrally acting α-2 adrenergic agonists due to increased risk of bradycardia and heart block • As dose increases, cardioselectivity decreases • 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 • Concurrent use of centrally acting α-2 adrenergic agonists and a beta blocker may result in increased risk of sinus bradycardia • An exaggerated clonidine withdrawal response including rebound hypertension may be seen with beta blockers (except for labetalol or carvedilol)

ALDO ANTAG	Spironolactone Eplerenone	<ul style="list-style-type: none"> • Avoid use in cases of hyperkalemia ($K^+ > 5.0$ mmol/L) or severe kidney dysfunction ($GFR < 30$ mL/min) • Dosing interval should be increased as renal function declines to every 24-48 hours for $GFR < 50$ mL/min • Monitor potassium and kidney function initially, then within 2-4 weeks and annually thereafter if normal • Higher risk of gynecomastia with spironolactone than eplerenone
Alpha-Adrenergic Blockers	Doxazosin Prazosin Terazosin	<ul style="list-style-type: none"> • Initiate at low doses • Administer first dose at bedtime to avoid syncope • Could be beneficial in patients with benign prostatic hyperplasia and hypertension • Alpha blockers are not recommended as a single agent for treating hypertension
Centrally Acting α -2 Adrenergic Agonist	Clonidine Guanfacine Methyldopa	<ul style="list-style-type: none"> • Monitor for adverse drug reactions such as somnolence and dry mouth • Discontinue with a slow taper to avoid rebound hypertension and withdrawal symptoms • Concurrent use of centrally acting α-2 adrenergic agonists and a beta blocker may result in increased risk of sinus bradycardia and an exaggerated clonidine withdrawal response including rebound hypertension • Note: <i>Guanfacine has similar mechanism of action as clonidine but can be given once daily</i>
Vasodilator	Hydralazine Minoxidil	<ul style="list-style-type: none"> • May result in edema and reflex tachycardia that respond well to concomitant use of a diuretic and β-blocker • Hydralazine can be prescribed twice daily • Monitor for headache and Lupus-like syndrome (dose-related) with hydralazine • Monitor for hypertrichosis and fluid overload including pericardial effusions with minoxidil (should monitor volume status closely)

*The only ARNI currently available is Entresto® (valsartan/sacubitril). It is NOT FDA-approved for HTN 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.

Resource VI: Incorporating Home Blood Pressure Monitoring Into Your Clinic

The following information should be provided to patients:

- Information regarding hypertension and BP variability, including letting patients know that home BP measurements can be more accurate than office BPs if done accurately
- Selection of equipment
- Interpretation of results

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 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

Instructions to patients on home BP monitoring procedures:

- **Remain still:**
 - Ensure at least ≥ 5 minutes of quiet rest before measuring BP
 - Avoid smoking, caffeinated beverages, or exercise for 30 minutes before measuring BP
 - Sit with back straight and supported (e.g. a straight-backed dining chair rather than a sofa)
 - Keep feet flat on the floor with legs uncrossed
 - Support arm on a flat surface (e.g. a table) with the upper arm at heart level
 - Place middle of the cuff directly above the bend of the elbow
- **Take multiple readings:**
 - Take at least two readings one minute apart in the morning before taking medications and in the evening before supper. Ideally, obtain BP readings daily during the week prior to a clinic visit and during any week after a change in the treatment regimen
 - All monitors should be brought to all clinic appointments so staff can verify monitor accuracy and review built-in memory when available
 - For clinical decision making, BP should be based on an average of two or more readings

Reinforce the above with videos available from the American Heart Association online: <http://bit.ly/2vXdV1C>



CLINICAL DRIVER C: 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 four weeks. The purposes of the follow-up hypertension*

visit are to: 1) obtain additional blood pressure 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 blood pressures; 4) provide education on hypertension including lifestyle modification such as the DASH diet; 5) provide self-monitoring blood pressure instructions and; 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. The consumer education resources (Foundational Driver G) provides additional supports for patient education during this visit.

Data Feedback Provided to Participating Practices:

1. Percent of hypertensive adults with hypertensive BP who have a follow-up scheduled within 35 days
2. Percent of hypertensive adults with hypertensive BP who show up to their scheduled hypertension follow-up appointment

Foundational Driver C1: Scheduling a Follow-up Visit

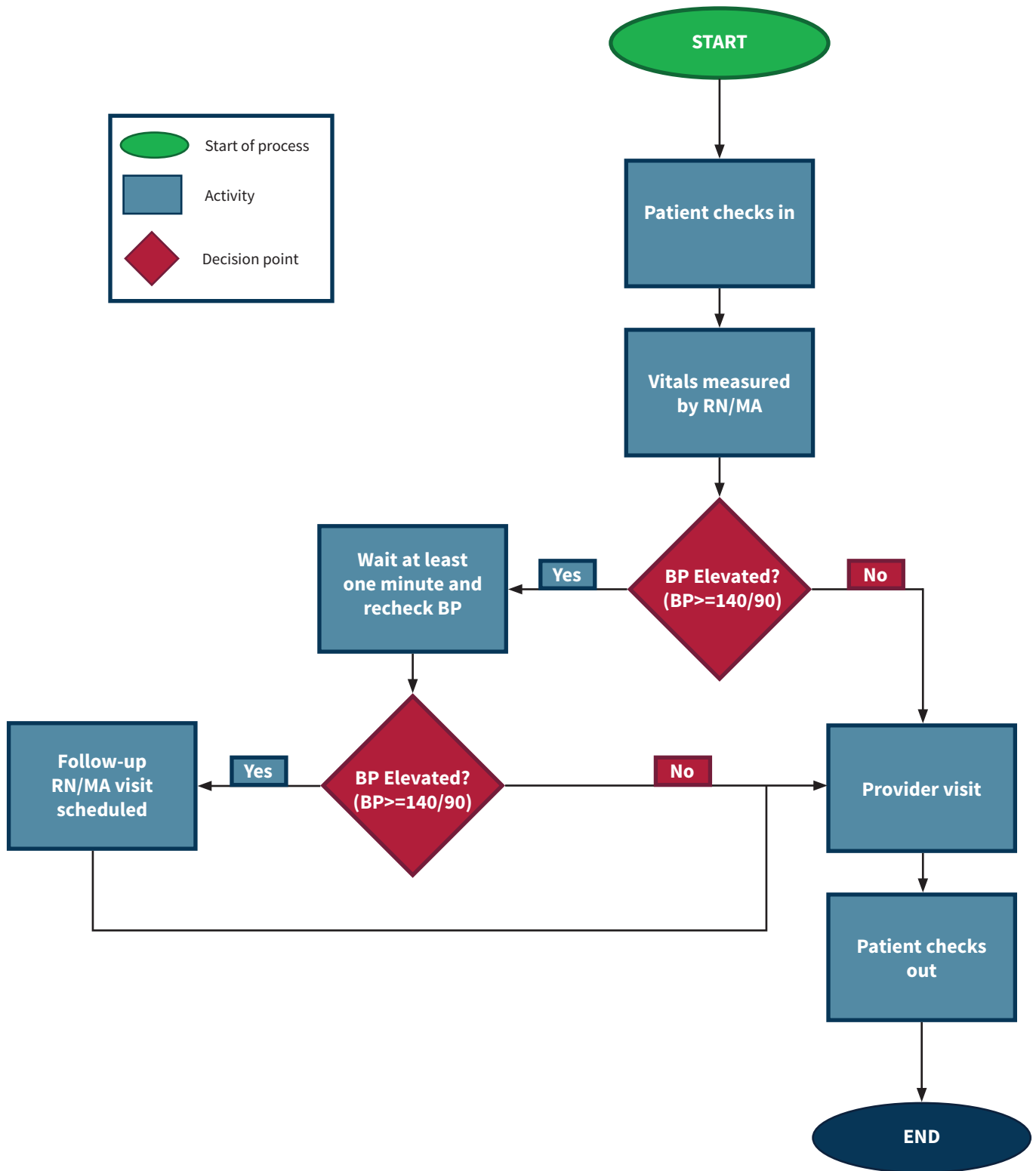
Establishing guidelines and an agreed upon referral process for hypertension follow-up help to increase the percentage of patients returning for follow-up during the recommended period.

Foundational Driver C2: Hypertension Visit Template

Resource VIII is an example template 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 Follow-up Visit Template found in this section.

*Elevated BP is $\geq 140/90$

Resource VII: Process Map for Follow-Up Visit Referral



Resource VIII: 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. Below is an example template that could be adapted for use in your EHR and modified for home visits.

Hypertension Clinic Documentation Tool for Electronic Health Records

HTN Clinic: _____

Visit number: _____

1. BP Readings from Last 4 Encounters:
[BP readings automatically brought into note here]
2. Medication taken today: {YES/NO}
3. Medication brought to visit: {YES/NO}
4. Can name blood pressure medications: {YES/NO}
5. Any recent medication changes: {YES/NO}
6. What time is medication taken: _____
 - A. Is this correct: {YES/NO}
7. How many missed doses in the past week: _____
8. Any side effects or new symptoms since last visit: (describe)

9. Any OTC medication use: {YES/NO}
10. Any cold, allergy, respiratory medications: {YES/NO}
11. If you have sleep apnea are you using your Continuous Positive Airway Pressure (CPAP) nightly: {YES/NO}

12. Do you have a home monitor to check your BP: {YES/NO}
13. If brought to clinic, was it checked to see if it is accurate: {YES/NO}
 - A. Was it accurate: {YES/NO}
14. Do you drink beer, wine, or any other form of alcohol: YES/NO
 - A. How many drinks in the last 24 hours: _____

[Today's Vitals automatically brought into note here]

Assessment:

1. Has the goal been met: {YES/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**

PT agrees with plan: {YES/NO}

BMP today: {YES/NO}

Consulted with Dr.: _____

Guidelines for follow-up:

- If BP is at goal: See PCP in 3 months
- If BP remains high: See RN in 4 weeks
- After third visit with RN, if BP is still high, follow up with PCP in 2-4 **weeks**



FOUNDATIONAL DRIVER D: IDENTIFYING AND MEASURING 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 rigorous 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.

In this section, we provide suggested instructions for obtaining race/ethnicity in the most accurate manner. We provide a guidance sheet (Resource IX) on how to accurately obtain race/ethnicity data and address patient questions which may arise. We also provide an assessment to determine if your clinic is obtaining information about race/ethnicity accurately (Resource X).

Measurement Metric: Percent of hypertensive adults with a self-reported race and ethnicity recorded in the electronic health record

Secondary Driver D1: Clear Questions

The current standard for measurement of race and ethnicity is to use a variation of the 1997 Office of Management and Budget (OMB) approach. OMB provides a “minimum standards” directive that describes the minimum acceptable way to measure race and ethnicity. This approach was first adopted for the 2000 U.S. Census, and it remains the most widely used framework. The Institute of Medicine and the Agency for Health Care Research and Quality endorse the following approach to measurement.

Resource IX: Employee Guidance for Implementing Measurement of Race and Ethnicity

Accurate and consistent measurement and recording of race and ethnicity is a critical component of high quality healthcare. The current standard for measurement of race and ethnicity is to ask about ethnicity first and then race. Patients are free to give the answer that best describes them. **The Institute of Medicine and the Agency for Health Care Research and Quality** endorses this approach to measurement.

“To make sure we have accurate records, I need to ask you a couple of additional questions.”

Ethnicity:

How would you describe your ethnicity?

Hispanic or Latino

Not Hispanic or Latino

The following categories are not asked, but are made available if the patient volunteers these responses

[Declined]

[Unknown]

[Unavailable]

Race:

How would you describe your race? (select all that apply)

American Indian or Alaska Native

Asian

Black or African American

Native Hawaiian or Other Pacific Islander

White

Some other Race

The following categories are not asked, but are made available if the patient volunteers these responses

[Declined] (e.g. patient refuses to answer the question)

[Unknown] (e.g. patient does not know their race)

[Unavailable] (e.g. patient is non-responsive)

It's Up to the Patients

- Under no circumstances should any employee select the race/ethnicity of a patient if it is not reported by the patient or their guardian/caregiver
- Reluctant patients do not have to answer, but it can be helpful to respond by stating, **“Many studies from around the country have shown that a patient’s race and ethnicity can influence the treatment they receive. We want to make sure this doesn’t happen here so we use this information to check and make sure that everyone gets the best care possible. If we find a problem, we fix it.”**
- Visit hretdisparities.org/Howt-4176.php for additional material on how to discuss this topic with patients

Resource X: Race and Ethnicity Data Quality Worksheet for Health Care Practices (Secondary Driver D2: Effective Process for Obtaining Race/Ethnicity)

This worksheet is designed to help practices self-assess whether they can make improvements to the consistency and accuracy of the collection of race and ethnicity.

1. Which employees in your practice have primary responsibility for collecting the race and ethnicity of patients? *Circle all that apply*

Physicians, Physicians Assistants
and Advanced Practice Nurses

Nurses
Medical or Nursing Assistants

Other personnel
Front desk staff

It's important to confirm that ALL employees who are collecting race and ethnicity data are doing so properly.

2. Do these employees verbally ask all new patients to respond to two race and ethnicity questions as described in the guidance above? [YES] [NO]

Under no circumstances should any employee select the race or ethnicity of a patient if it is not reported by the patient or their guardian/caregiver. Some employees may be reluctant to ask these questions of all patients. It can be helpful to remind employees to preface questions with the statement, "To make sure we have accurate records, I need to ask you a couple of additional questions."

3. Are responses to both race and ethnicity questions recorded consistently in the electronic medical record? [YES] [NO]

Reluctant patients do not have to answer, but it can be helpful to initially respond by stating, "The more we know about you the better. Do you want to provide the details of your racial background?" Regardless of the response given (e.g. unknown), every patient should have a value recorded in the race and ethnicity fields.

4. Which employees in your practice have primary responsibility for entering the race and ethnicity of patients into the EMR? Circle all that apply

Physicians, Physicians Assistants
and Advanced Practice Nurses

Nurses
Medical or Nursing Assistants

Other personnel
Front desk staff

It's important to confirm that ALL employees entering race and ethnicity data are doing so properly.

5. Do patients ever use pen and paper or a computerized device to answer race and ethnicity questions? [YES] [NO]

If patients self-administer race and ethnicity in this manner, it is critically important that a member of the health care team CONFIRM that both questions have been completed and that both responses are properly entered into the electronic medical record.

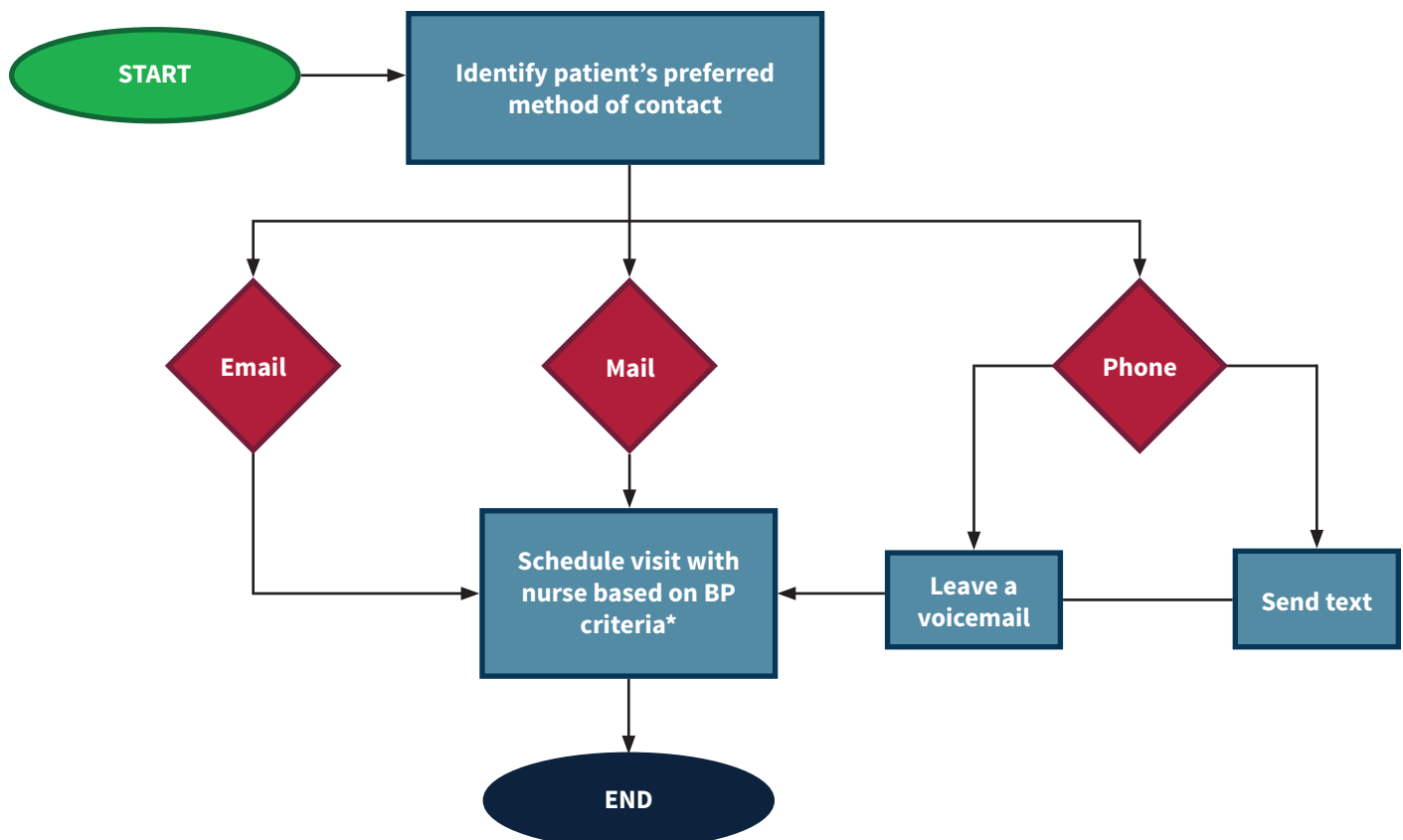


FOUNDATIONAL DRIVER E: EFFECTIVE OUTREACH & FOUNDATIONAL DRIVER F: COMMUNICATION

Outreach through text messaging, a patient portal, phone calls, or letters is an effective method for encouraging patients with elevated blood pressure and no follow-up appointment to schedule a follow-up hypertension visit. Described below is one approach to setting up an outreach process using multiple venues at your clinic. Please review and modify this process flow to best fit your clinic.

Potential method for measuring Effective Outreach: Percent of adults with hypertension who schedule an appointment within one month of the outreach attempt

Secondary Drivers E1 and E2: Sample Process for Outreach Using Multiple Venues

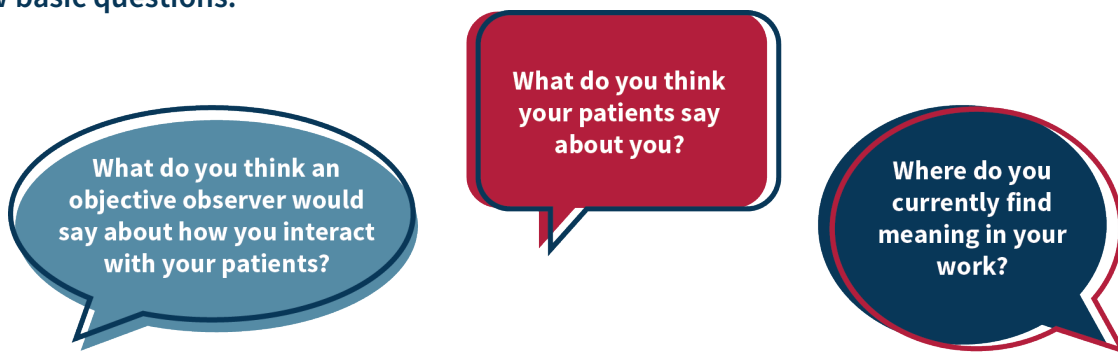


*If BP was high ($\leq 140/90$) in last 3 months, schedule visit with nurse, if BP was high ($\leq 140/90$) > 3 months ago, schedule visit with provider

Foundational Driver F: Effective Communication






The following section outlines a high-level overview of communications strategies or best practices which can assist your health care team in building trusting relationships with patients. Beyond improving patient satisfaction, improving communication skills has shown promising results on patient outcomes (such as blood pressure control) among diverse populations.^{15,16} Sharing and discussing the articles and links below with staff and providers at your clinic may assist in improving communication. Watching the American Medical Association’s Health Literacy video¹⁷ at a practice meeting and then discussing evidence-based strategies to address health literacy is one way of building these skills.

When reflecting on how health care providers and staff currently communicate, they can start by thinking about a few basic questions:



Secondary Drivers F1-F5: Communication Techniques

Several techniques and concepts that can assist in building trusting relationships with patients include:

-  **Empathy:** Defined as the ability to understand and share the feelings of another. Research has demonstrated that empathy is essential to achieving positive outcomes when interacting with patients.
-  **Nonverbal Strategies:** Some of the most common and effective nonverbal strategies include sitting down, leaning in toward the patient, nodding, and eye contact.
-  **Culturally and Linguistically Appropriate Care:** Culturally and linguistically appropriate care are a set of congruent behaviors, attitudes, and policies that come together in a system, agency, or among professionals that enables effective work in cross-cultural situations.¹⁸ Culture refers to integrated patterns of human behavior that include the language, thoughts, communications, actions, customs, beliefs, values, and institutions of racial, ethnic, religious, or social groups. Competence implies having the capacity to function effectively as an individual and as an organization within the context of the cultural beliefs, behaviors, and needs presented by consumers and their communities. Training resources can be found at thinkculturalhealth.hhs.gov.
-  **Implicit Bias:** Refers to the attitudes or stereotypes that affect understanding, actions, and decisions in an unconscious manner. The negative impact of implicit bias may be reduced by standardizing treatment as recommended in this “change package” for adults with hypertension.
-  **Health Literacy:** The degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services to make appropriate health decisions.

Communications Resources

Communication Practices of Physicians with High Patient-Satisfaction Ratings¹⁹

Article: This article from Kaiser Permanente describes the following provider strategies which are associated with higher patient satisfaction scores.

1. Focus on patient's agenda
2. Draw out the story
3. Demonstrate understanding, such as responding empathetically and showing caring
4. Provide detailed explanations of the clinical problem
5. Complete the patient's agenda, including delivering what was promised or negotiating until later

American Medical Association Health Literacy Video

Video: This four-minute video displays how patients may not understand a diagnosis or standard medication instructions given by a health care professional, and includes some scenarios that are specific to hypertensive patients. You may want to show the video to all staff/providers at one of your regular clinic meetings and discuss reactions to the video. To view this video, visit youtu.be/ubPkdpGHWAQ

1. Use of the Teach Back Method (i.e. ask patients to repeat back any instructions for their care)
2. Use pictures whenever possible
3. Give explicit medication instructions such as writing "in the morning and at night" instead of twice daily on prescriptions
4. Review patient education materials verbally with all patients or those who may screen positive for low literacy



FOUNDATIONAL DRIVER G: CONSUMER EDUCATION

These consumer education resources and handouts may be useful as patient handouts within your clinic.

Patient Instructions for Home Blood Pressure Measurements

Preparation

- Ask your doctor if the blood pressure monitor is on the list of approved monitors
- Note: Wrist or finger blood pressure monitors are **much less** accurate than arm monitors

Sit correctly

- Sit with back straight and supported (on a straight-backed dining chair, for example, rather than a sofa)
- Feet should be flat on the floor and legs **not** crossed
- Arm should be supported on a flat surface (such as a table) with the upper arm at heart level and not bent
- Bottom of the blood pressure cuff should be placed directly above the bend of the elbow

Remain still

- Avoid smoking, beverages containing caffeine, or exercise for 30 minutes before measuring blood pressure
- Sit quietly for at least 5 minutes before taking the first blood pressure reading

Take multiple readings

- Take at least two readings one minute apart in the morning before taking your medications and in the evening before supper
- Ideally, write down your blood pressure every week beginning two weeks after a change in the blood pressure medications and during the week prior to a clinic visit

Write down all readings

- Monitors with built-in memory should be brought to all clinic appointments
- The average of several blood pressures is needed for your doctor to know whether treatment is needed or working

Resource XI: Patient Handout on How to Reduce Sodium²⁰ (Secondary Driver G2)

Most of us eat much more sodium or salt than we need, even if we never pick up the salt shaker. That's because more than 75% of the sodium we eat comes from packaged and restaurant foods. That can make it hard to control how much salt you eat, because it is already added to our food before we buy it.



I know that too much sodium hurts my health – what can I do to cut back?

At the store/while shopping for food:

- **Choose packaged and prepared foods carefully.** Compare labels and choose the product with the lowest amount of sodium (per serving) you can find in your store. You might be surprised that different brands of the same food can have different sodium levels
- **Pick fresh and frozen poultry that hasn't been injected with a sodium solution.** Check the fine print on the packaging for terms like “broth,” “saline” or “sodium solution.” Sodium levels in unseasoned fresh meats are around 100 milligrams (mg) or less per 4-ounce serving
- **Choose condiments carefully.** For example, soy sauce, bottled salad dressings, dips, ketchup, jarred salsas, capers, mustard, pickles, olives and relish can be sky-high in sodium. Look for a reduced or lower-sodium version
- **Choose canned vegetables labeled “no salt added” and frozen vegetables without salty sauces.** When you add these to a casserole, soup, or other mixed dish, there will be so many other ingredients involved that you won't miss the salt
- **Look for products with the American Heart Association's Heart-Check mark** to find foods that can be part of an overall healthy dietary pattern. Heart-Check is not a low-sodium program and the Heart-Check mark is not necessarily a sign that a product is “low-sodium”, but it does mean that the food meets AHA's sodium criteria to have the Heart-Check mark. You can eat foods with varying amounts of

sodium and still achieve a balanced and heart-healthy diet. To learn more about the Heart-Check Food Certification Program, visit www.heartcheck.org

When preparing food:

- **Use onions, garlic, herbs, spices, citrus juices and vinegars** in place of some or all of the salt to add flavor to foods
- **Drain and rinse canned beans** (like chickpeas, kidney beans, etc.) **and vegetables** – this can cut the sodium by up to 40 percent
- **Combine lower-sodium versions of food with regular versions.** If you don't like the taste of lower-sodium foods right now, try combining them in equal parts with a regular version of the same food. You'll get less salt and probably won't notice much difference in taste. This works especially well for broths, soups, and tomato-based pasta sauces
- **Cook pasta, rice, and hot cereal without salt.** You're likely going to add other flavorful ingredients to these foods, so you won't miss the salt
- **Cook by grilling, braising, roasting, searing, and sautéing to bring out the natural flavors in foods** – that will reduce the need to add salt
- **For those who do not have chronic kidney disease, incorporate foods with potassium,** like sweet potatoes, potatoes, greens, tomatoes and lower-sodium tomato sauce, white beans, kidney beans, nonfat yogurt, oranges, bananas and cantaloupe. Potassium helps counter the effects of sodium and may help lower your blood pressure.

Is my food going to taste bland with less salt?

It certainly doesn't have to, especially when you use cooking techniques and other flavorful ingredients (noted in the tips above) to enhance your food. And as you take steps to reduce sodium gradually, you'll start to appreciate foods for their true flavor.

Over time, your taste buds can adjust to prefer less salt. Studies have shown that when people are given a lower sodium diet for a period of time, they begin to prefer lower-sodium foods and the foods they used to enjoy taste too salty. Try it and see for yourself!

What about salt substitutes?

There are many salt substitutes on the market for you to try. Some of them replace some or all of the sodium with potassium. Most people can use these products freely, unless you have certain medical conditions (like kidney disease) are taking certain medications that have implications for how much potassium you should eat. Talk with your healthcare professional about whether a salt substitute is right for you.

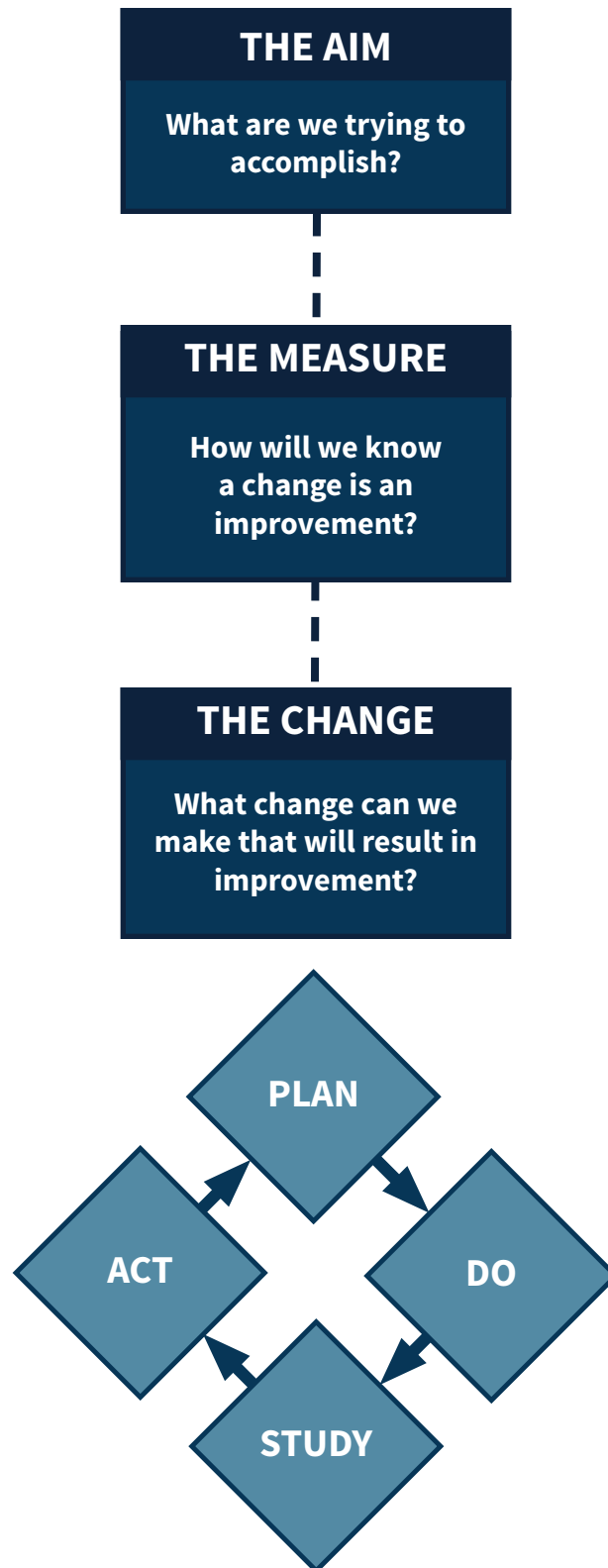
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APPENDICES

Resource: Quality Improvement Methodology



Resource: PDSA Worksheet

Team Name:

Date of Test:

Test Completion Date:

Overall team/project aim:

What is the objective of the test?

What goal does the change impact?

PLAN:

Briefly describe the test:

How will you know that the change is an improvement?

What driver does the change impact?

What do you predict will happen?

List the tasks necessary to complete this test. For example: what?	Person responsible (who)	When	Where
Ensure that all staff have access to the form			
Get staff feedback on the form			
Find inconsistencies in utilization of the form			
Continued and more detailed conversation regarding the usage and adaptations			

Plan for collection of data:

DO: Test the changes.

Was the cycle carried out as planned? Yes No

Record data and observations.

What did you observe that was not part of our plan?

STUDY:

Did the results match your predictions? Yes No

Compare the result of your test to your previous performance: What did you learn?

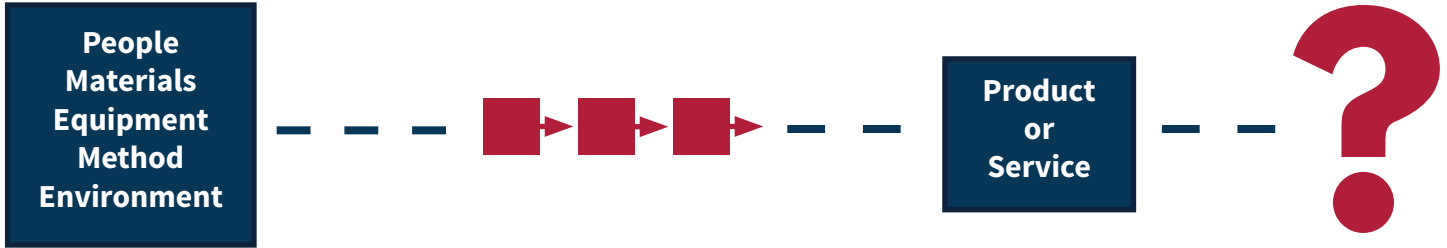
ACT: Decide to Adopt, Adapt, or Abandon.

Adapt: Improve the change and continue testing plan. Plans/changes for next test:

Adopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability.

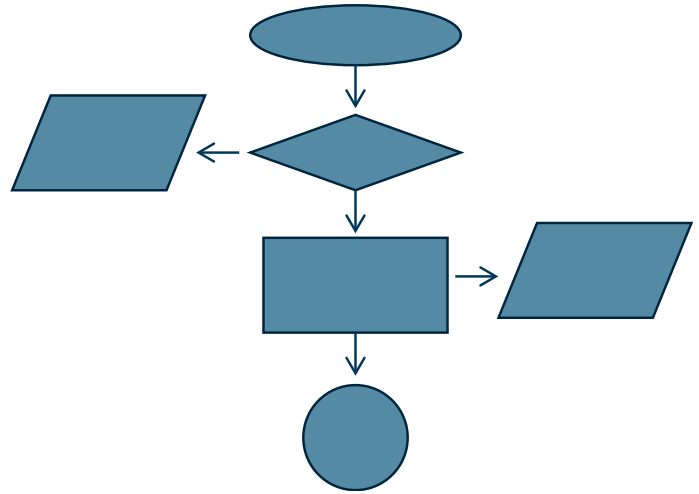
Abandon: Discard this change idea and try a different one.






Resource: Process Flow Chart Template and Key



Flow charts create a visual map of a process from start to finish.

- A **high-level flowchart** (6-12 steps) is a mapping of the major, less detailed steps in a process. These types of flowcharts can be useful when making initial plans for process change.
- A **detailed flowchart** (12 or more steps) is an expanded mapping of a process that includes much more detail than the high-level flowchart. These are helpful for identifying precisely where issues arise in processes.



FLOW CHART SYMBOL	MEANING	EXPLANATION
	Start and end	The symbol denoting the beginning and end of the flow chart
	Step	This symbol shows that the user performs a task. (Note: In many flow charts steps and actions are interchangeable)
	Decision	This symbol represents a point where a decision is made
	Action	This symbol means that the user performs an action. (Note: In many flow charts steps and actions are interchangeable)
	Flow line	A line that connects the various symbols in an ordered way

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