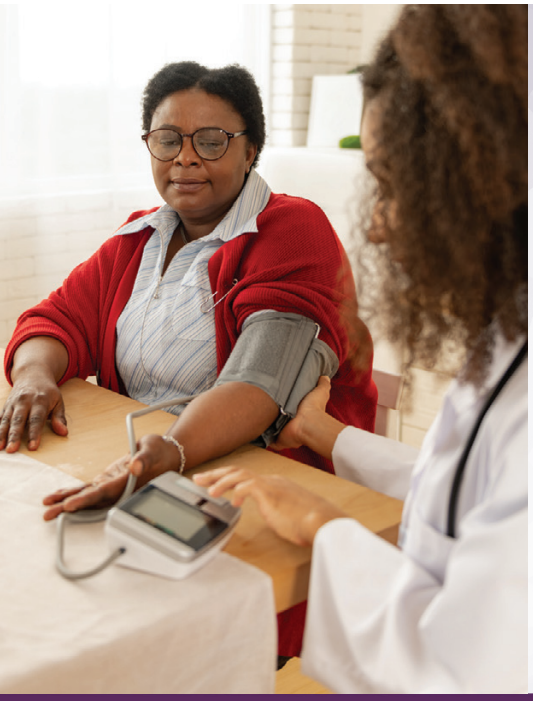
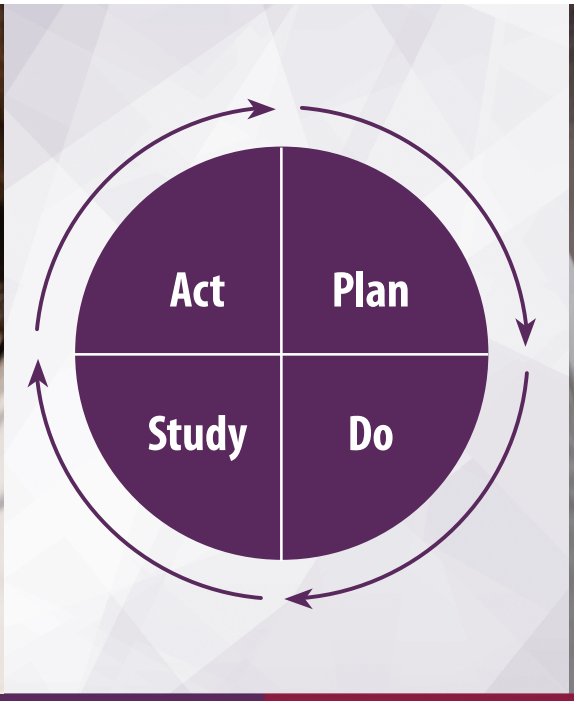
Million Hearts®





A MILLION HEARTS® ACTION GUIDE

Hypertension Control

CHANGE PACKAGE

Second Edition

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

CDC
Centers for Disease Control and Prevention

Authors

The Million Hearts® Hypertension Control Change Package was originally conceptualized and authored by Hilary K. Wall, MPH*; Rikita Merai, MPH*; Jerome A. Osheroff, MD, FACP, FACMI (TMIT Consulting, LLC); and Brita Roy, MD, MPH, MS (Robert Wood Johnson Foundation Clinical Scholars Program at Yale University) in 2015. The 2020 revision was authored by Hilary K. Wall, MPH*; Lauren Owens, MPH (IHRC, Inc.)*; and Kaitlin Graff, MSW, MPH.*

Contributors

The following individuals contributed subject matter expertise, identified tools and resources, and reviewed the document: Jerome A. Osheroff, MD, FACP, FACMI (TMIT Consulting, LLC); Meg Meador, MPH, C-PHI, CPHQ (National Association of Community Health Centers); Michael Rakotz, MD, FAHA, FAAFP (American Medical Association); and Elizabeth Montgomery (National Kidney Foundation).

Reviewers

The following individuals provided review and feedback on the document: Joseph Vassalotti, MD (National Kidney Foundation); Laurence Sperling, MD, FACC, FACP, FAHA, FASPC*; Betsy Thompson, MD, MSPH, DrPH, RADM, U.S. Public Health Service*; Judy Hannan, RN, MPH*; Salvatore J. Lucido, JD, MPA*; and Mary G. George, MD, MSPH, FACS, FAHA.*

Graphic Design and Editorial Assistance

Graphic and HTML design support was provided by Booker Daniels, MPH*; Susan Davis (Northrop Grumman Corporation)*; Jessica Spraggins, MPH*; and Palladian Partners, Inc.

Website Hosting Assistance

Website hosting support of tools and resources was provided by the National Association of Chronic Disease Directors.

We would like to extend special thanks to the following organizations for developing the tools and resources that are showcased in the change package:

- Agency for Healthcare Research and Quality (AHRQ)
- **Alexander Valley Healthcare, Cloverdale, CA**
- Altura Centers for Health (previously Tulare Community Health Clinic), Tulare, CA
- American College of Cardiology (ACC)
- American College of Preventive Medicine (ACPM)
- American Heart Association (AHA)
- American Medical Association (AMA)
- American Medical Group Association (AMGA)
- American Medical Group Foundation (AMGF)
- American Society of Health-System Pharmacists
- ARcare/KentuckyCare, Augusta, AR
- Association of State and Territorial Health Officials (ASTHO)
- Beth Israel Deaconess Medical Center, Boston, MA
- **Broadway Internal Medicine, Queens, NY**
- California Health Care Foundation
- Cardi-OH: Ohio Cardiovascular Health Collaborative
- **Cheshire Medical Center/Dartmouth-Hitchcock, Keene, NH**
- Cigna
- Cleveland Clinic
- Community Health Centers, West Valley City, UT
- Consumer Reports
- Cornerstone Health Care (now Wake Forest Baptist Health), Winston-Salem, NC
- **Ellsworth Medical Clinic, Ellsworth, WI**
- **Esperanza Health Centers, Chicago, IL**
- Exercise is Medicine®
- Family Practice Notebook
- Food and Drug Administration (FDA)
- Golden Valley Health Centers, Merced, CA
- Grace Community Health Center, Gray, KY
- **Green Spring Internal Medicine, Lutherville, MD**
- Health Resources & Services Administration (HRSA)
- HealthPartners (previously Park Nicollet), Bloomington, MN
- Healthy Hearts Northwest
- HealthyHearts NYC
- Heart Health Now! North Carolina Cooperative
- Henry Ford Health System, Detroit, MI
- HIPxCHANGE
- Hypertension Canada
- Institute for Healthcare Improvement (IHI)
- Intermountain Healthcare, Salt Lake City, UT
- **Jennifer Brull, MD, Post Rock Family Medicine, Plainville, KS**
- Johns Hopkins University
- Kaiser Permanente
- Kaiser Permanente Mid Atlantic States
- **Kaiser Permanente Northern California**
- **Kaiser Permanente Southern California**
- Kansas Healthcare Collaborative
- La Maestra Community Health Centers, City Heights, CA
- **Marshfield Clinic Health System, Marshfield, WI**
- Mercy Clinics, Inc., Des Moines, IA
- **Michael Rakotz, MD, FAHA, FAAFP, Northwestern Medical Group, Chicago, IL** (now with AMA)
- Minnesota Board of Nursing
- Minnesota Department of Health
- Move Your Way
- National Association of Community Health Centers (NACHC)
- National Heart, Lung, and Blood Institute (NHLBI)
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- National Kidney Disease Education Program
- National Kidney Foundation (NKF)
- Neighborhood Healthcare, San Diego/Riverside Counties, CA
- New England QIN-QIO
- **New West Physicians, Golden, CO**
- New York City Department of Health and Mental Hygiene (NYC DOHMH)
- New York City Health & Hospitals (NYC Health & Hospitals)
- NorthShore Health Centers, Northwest IN
- Open Door Family Medical Centers, Ossining, NY
- Penn Medicine Department of OBGYN's Heart Safe Motherhood Program
- **Plymouth Family Physicians, Plymouth, WI**
- **Premier Medical Associates, Monroeville, PA**
- Quality Insights (previously West Virginia Medical Institute)
- Redwood Community Health Coalition, Petaluma, CA
- **Reliant Medical Group, Worcester, MA**
- **Rush University Medical Center, Chicago, IL**
- **Sanford Health, Sioux Falls, SD**
- Script Your Future
- **Sharp Rees-Stealy Medical Group, San Diego, CA**
- Sinai Urban Health Institute
- Target: BP
- The Office of the National Coordinator for Health Information and Technology (ONC)
- **ThedaCare, Northeastern WI**
- Trinity Clinic-Whitehouse, TX
- University of Texas Medical Branch
- UVM Medical Center (previously Fletcher Allen Health Care/University of Vermont), Burlington, VT
- Vermont Department of Health
- Washington State Department of Health
- Whitney M. Young, Jr. Health Center, Albany, NY
- **Zufall Health, Dover, NJ**

For More Information

Hilary K. Wall, MPH
Division for Heart Disease and Stroke Prevention
Centers for Disease Control and Prevention
hwall@cdc.gov

Suggested Citation

Centers for Disease Control and Prevention. *Hypertension Control Change Package* (2nd ed.). Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 2020.

*Centers for Disease Control and Prevention

Million Hearts® Hypertension Control Champions are shown in **red**

Contents

Hypertension Control Change Package – Quick Reference 1

What Is the Hypertension Control Change Package? 3
Figure 1. Hypertension Control Change Package Focus Areas 3

What's New in This Version of the Hypertension Control Change Package? 3
Figure 2. Comparison of Blood Pressure Classification Thresholds, JNC 7, and the 2017 ACC/AHA Guideline 4

How Can I Use the Hypertension Control Change Package? 5
Figure 3. Institute for Healthcare Improvement (IHI) Model for Improvement 5

How Do I Measure Quality Improvement Efforts? 7
Figure 4. Example of a Run Chart – Grace Community Health Center 7

Change Concepts, Change Ideas, and Tools and Resources 8
Table 1. Key Foundations 8
Table 2. Equipping Care Teams 12
Table 3. Population Health Management 15
Table 4. Individual Patient Supports 18

Appendix A: Additional Quality Improvement Resources 22

Appendix B: Hypertension Control Case Studies 23

Acronyms 24

References 25

Website addresses of nonfederal organizations are provided solely as a service to readers. Provision of an address does not constitute an endorsement for this organization by CDC or the federal government, and none should be inferred. CDC is not responsible for the content of other organizations' web pages.

Hypertension Control Change Package — Quick Reference

Focus Areas

Change Concepts and Change Ideas

Key Foundations
Make HTN Control a Practice Priority
Designate a practice or health system champion, such as a head physician or quality improvement lead
Ensure care team engagement in HTN control
Redesign office or exam space to support proper BP measurement technique
Provide BP checks without appointment or co-pay
Expand the HTN care team with community pharmacists and/or community health workers
Implement a Policy or Process to Address BP for Every Patient with HTN at Every Visit
Develop HTN control policies and procedures
Develop a flowchart/workflow for proactively tracking and managing patients with HTN
Deploy HTN treatment protocols and algorithms
Overcome diagnostic and treatment inertia
Manage resistant HTN
Evaluate all patients with HTN for CKD; diagnose and treat if appropriate
Equipping Care Teams
Train and Evaluate Direct Care Staff on Accurate BP Measurement and Documenting
Adopt a clinician/staff training policy to train and retrain staff
Provide guidance on measuring BP accurately
Assess adherence to proper BP measurement technique
Equip Direct Care Staff to Facilitate Patient Self-Management
Ensure the care team is skilled in supporting patient medication adherence
Put a prevention, engagement, and self-management program in place
Establish a Self-Measured BP (SMBP) Monitoring Program
Assign care team roles for an SMBP monitoring program and adapt the workflow accordingly
Provide patients guidance on selecting a home BP monitor
Develop a home BP monitor loaner program
Train patients on home BP monitor use and proper preparation and positioning
Develop a process for handling patient-generated BP readings
Prepare the Care Team Beforehand for Effective HTN Management During Office Visits (e.g., via team huddles, using EHR data)
Use a flowchart or dashboard with care gaps highlighted in team huddles to help care teams better support patients
Implement pre-visit planning into workflows and use clinical decision support tools to ensure that indicated orders/actions occur during the visit

Population Health Management
Identify Patients with Potentially Undiagnosed HTN
Compare practice HTN prevalence to national or local estimates to understand whether you might be missing patients with undiagnosed HTN
Establish clinical criteria to define potentially undiagnosed HTN
Search EHR data for patients who meet the established clinical criteria
Implement a plan to confirm HTN status and treat those with HTN
Identify Patients with Potentially Undiagnosed CKD
Search EHR data for patients with HTN who have estimated glomerular filtration rate (eGFR) and/or urine albumin-to-creatinine ratio (uACR) test results; if missing one test result, order it; diagnose and treat if both labs are abnormal
Use a Registry to Track and Manage Patients with HTN
Implement a HTN registry
Use a defined process for outreach (e.g., via phone, mail, email, text message) to patients with uncontrolled HTN and those otherwise needing follow-up
Use Clinician-Managed Protocols for Medication Adjustments and Lifestyle Recommendations
Use protocols to cover proactive outreach driven by registry use and respond to patient-submitted home BP readings
Use Practice Data to Drive Improvement
Determine HTN control and related process metrics for the practice
Regularly provide a dashboard with BP goals, metrics, and performance
Individual Patient Supports
Prepare Patients Before the Office Visit via Pre-Visit Patient Outreach
Contact patients to confirm upcoming appointments and provide instructions on how to prepare for their visit
Optimize Patient Intake to Support HTN Management (e.g., check-in, waiting, rooming)
Provide patients with educational materials to help them understand HTN and its implications
Provide patients with tools to support their visit agenda and goal setting
Measure, document, and repeat BP correctly as indicated; flag abnormal readings
Reconcile medications patient is actually taking with the EHR medication list
Optimize the Patient–Clinician Encounter (e.g., documentation, orders, education/engagement)
Use documentation templates to help capture key data such as patient treatment goals and barriers to adherence
Use order sets and standing orders to support evidence-based and individualized care
Assess individual risk and counsel using motivational interviewing techniques; agree on a shared action plan and use "teach back" to confirm patient understanding
Support Patients in HTN Self-Management During Their Routine Daily Activities (i.e., outside of the clinical encounter)
Provide patient supports for medication adherence
Provide patient supports for SMBP monitoring
Provide patient supports for increasing physical activity
Provide patient supports for dietary changes
Provide patient supports for managing CKD
Optimize the Encounter Closing (i.e., checkout)
Provide patients with a written self-management plan, visit summary, and follow-up guidance at the end of each visit
Follow Up to Monitor and Reinforce HTN Management Plans (i.e., after visits)
Assign staff responsibility for managing refill requests by refill protocol
Implement frequent follow-ups (e.g., email, phone calls, text messages) with patients to make sure they are taking their medication as directed or using SMBP
Use all staff touchpoints to support HTN goals and follow up

What Is the Hypertension Control Change Package?

The Hypertension Control Change Package (HCCP) presents a listing of process improvements that outpatient clinical settings can implement as they seek optimal hypertension (HTN) control. It is composed of change concepts, change ideas, and evidence- or practice-based tools and resources. **Change concepts** are general notions that are useful in the development of more specific ideas for changes that lead to improvement. **Change ideas** are actionable, specific ideas for changing a process. Change ideas can be rapidly tested on a small scale to determine whether they result in improvements in the local environment. With each change idea, the HCCP lists evidence- or practice-based **tools and resources** that can be adapted or adopted in a health care setting to improve HTN control.

While the science behind cardiovascular risk reduction is continually evolving, there is strong evidence that a systematic approach to HTN management can significantly improve HTN-related care processes and outcomes. The purpose of the HCCP is to help health care practices put systems in place to care for patients with HTN more efficiently and effectively. The HCCP is broken down into four main focus areas: key foundations, equipping care teams, population health management, and individual patient supports (**Figure 1**).

What's New in This Version of the Hypertension Control Change Package?

The HCCP was originally published in 2015 and has been used in the field to improve HTN control by a variety of health centers and clinics.[1] New clinical guidelines, development of new resources, and general advances in quality improvement for HTN management have prompted the need for this updated version.

Since 2012, Million Hearts® has recognized **Hypertension Control Champions**—individual clinicians, practices, health centers, or health systems that have achieved high levels of blood pressure (BP) control in their patient population (≥70% from 2012 to 2017, ≥80% from 2018 on). This work has recognized 118 high performers from 36 states and the District of Columbia that collectively treat more than 5 million U.S. adults with HTN. For this version of the HCCP, we reached out to Hypertension Control Champions to gather their tested tools and resources that enabled them to reach high levels of HTN control with their patients.

In the 2015 HCCP, self-measured blood pressure (SMBP) monitoring was briefly mentioned and a few existing resources were highlighted. In the past five years, the evidence regarding SMBP with clinical support has grown. Importantly, the use of SMBP has been included in several guidelines and recommendation statements for HTN management and diagnosis. In response,

Figure 1. Hypertension Control Change Package Focus Areas

a number of additional organizations have published guidance materials to help clinicians implement an SMBP monitoring program with their patients, including the American Medical Association (AMA) and the American Heart Association (AHA) through **Target: BP** and the National Association of Community Health Centers' (NACHC) **Self-measured Blood Pressure Monitoring: Implementation Guide for Health Care Delivery Organizations**. Moreover, starting in 2020, two new **Current Procedural Terminology (CPT®) codes** are available for SMBP: 99473 for training, education, and device calibration, and 99474 for using SMBP for ongoing HTN management. In this updated HCCP, we include more SMBP-focused content with tools and resources and encourage those particularly interested in the topic to visit the above resources for additional information.

For the past few years, NACHC, in conjunction with CDC, has worked with a number of health centers to focus on finding potentially undiagnosed HTN in their patient populations.[2] Of the patients identified as having potentially undiagnosed HTN who returned for follow-up, 1,787 (31.9%) ultimately received a diagnosis of HTN.[1] The findings from that work were used to create a **change package** on this specific aspect of HTN management. Thus, we are showcasing more tools to find patients with potentially undiagnosed HTN than in the previous edition.

Influenced by the HCCP, the National Kidney Foundation (NKF) created the **Chronic Kidney Disease Change Package** in January 2019 to help diagnose and manage patients with chronic kidney disease (CKD). HTN is a leading cause of CKD and is the second leading cause of kidney failure.[3] HTN can lead to CKD, and CKD can lead to worsened HTN. As such, it is important that testing for CKD with estimated glomular filtration rate (eGFR) and urinary albumin-to-creatinine ratio (uACR) be included as part of routine HTN diagnosis and management. To address this, we have added new change ideas that focus on CKD testing and identification that highlight tools and resources excerpted from the NKF Chronic Kidney Disease Change Package.

In 2017, the American College of Cardiology (ACC) and AHA published a new clinical **guideline** for the prevention, detection, evaluation, and management of high BP in adults.[4] This guideline eliminated the concept of prehypertension, with a subset of those previously classified as such now referred to as having elevated BP, and provided new thresholds for stage 1 and 2 HTN (**Figure 2**). Recognizing that significant clinical uptake of guidelines occurs over time, some of the tools and resources provided in this updated HCCP may reflect elements of prior algorithms, which can be adapted to meet the guidelines supported by specific health care settings.

Figure 2. Comparison of Blood Pressure Classification Thresholds, JNC 7,[5] and the 2017 ACC/AHA Guideline[4]

Systolic Blood Pressure, mmHg		Diastolic Blood Pressure, mmHg	Classification	
			JNC 7	2017 ACC/AHA
<120	and	<80	Normal BP	Normal BP
120–129	and	<80	Prehypertension	Elevated BP
130–139	or	80–89	Prehypertension	Stage 1 Hypertension
140–159	or	90–99	Stage 1 Hypertension	Stage 2 Hypertension
≥160	or	≥100	Stage 2 Hypertension	Stage 2 Hypertension

How Can I Use the Hypertension Control Change Package?

The HCCP is meant to serve as a menu of options from which practices can select specific interventions to improve HTN control. We do not recommend that any practice attempt to implement all of the interventions at once, nor is it likely that all interventions will be applicable to your clinical setting.

Start by bringing together a team of physicians, nurse practitioners, physician assistants, nurses, medical assistants, pharmacists, quality improvement staff, and administration to discuss the aspects of HTN control that are most in need of improvement (see **Appendix A** for additional quality improvement resources that can be useful in planning improvement activities). The team can then select corresponding interventions from the HCCP that best address those issues.

In **Figure 3** you will find the Institute for Healthcare Improvement's (IHI) Model for Improvement.[6] The model suggests posing three questions:

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in improvement?

The answers will point you to your quality improvement objectives and related metrics, and you can choose corresponding change ideas from the HCCP that have been shown to result in improvement. Each strategy you choose should first be tested on a small scale (i.e., conduct "small tests of change") to assess feasibility and allow the team to evaluate and adjust before instituting the change on a broader, more permanent scale. This approach can be accomplished using **Plan-Do-Study-Act (PDSA) cycles**.

Tables 1 through 4 contain a list of change concepts and change ideas that clinicians and practices have successfully implemented to improve HTN control for their patient population. Each change idea is paired with several tools and resources suggested by experts in the field who have successfully used them.

Figure 3. Institute for Healthcare Improvement (IHI) Model for Improvement[6]

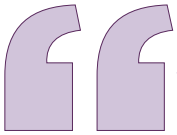
- **Key Foundations** (Table 1) offers ways to establish practice foundations for effective HTN control efforts and is likely the best place on which to focus initial quality improvement efforts. These include identifying a champion to provide leadership on focused quality improvement efforts, making HTN a practice priority, and expanding the HTN care team.
- **Equipping Care Teams** (Table 2) lists strategies related to training and preparing clinicians and other staff to focus on HTN control. This includes improving accuracy of office-based BP measurements, supporting patient medication adherence and other forms of self-management, and implementing an SMBP program.
- **Population Health Management** (Table 3) presents tools and approaches to proactively monitor and manage HTN practice-wide. This includes using practice data to drive improvement and finding patients with potentially undiagnosed HTN or CKD.
- **Individual Patient Supports** (Table 4) lists ways that clinical settings can leverage all care steps to better manage HTN for individual patients. These supports span the patient care continuum, including pre-visit patient outreach, check-in opportunities, interactions during the visit, checkout, and after-visit reinforcement.

Additional resources can be found in the appendices:

- **Appendix A** provides resources for quality improvement.
- **Appendix B** highlights case studies in health systems change for HTN control.

The tools in the HCCP have been successfully used in the field to systematize and improve the delivery of care for patients with HTN. Details in certain tools may reflect models of treatment and management that differ from those in your practice. You may need to modify these tools to adapt them to your patient population and practice. In addition, because the science of treating HTN continues to evolve, some tools may become outdated over time. The HCCP will be periodically updated accordingly.

Outpatient health care settings vary, so we try to provide a number of different tools and resources from which users can choose as a starting point. Some may find the variety overwhelming. We suggest picking a single tool to begin with and exploring others if you are interested in alternative approaches.



The CDC's HCCP is a powerful roadmap for organizations to improve hypertension control outcomes. We led a hypertension quality improvement project with 10 community health centers using the HCCP as the core resource... and they improved their average blood pressure control rates by 9% in one year! 'The HCCP was the best tool. It was so simple to understand and was packed with awesome ideas' said one of the participating community health centers."

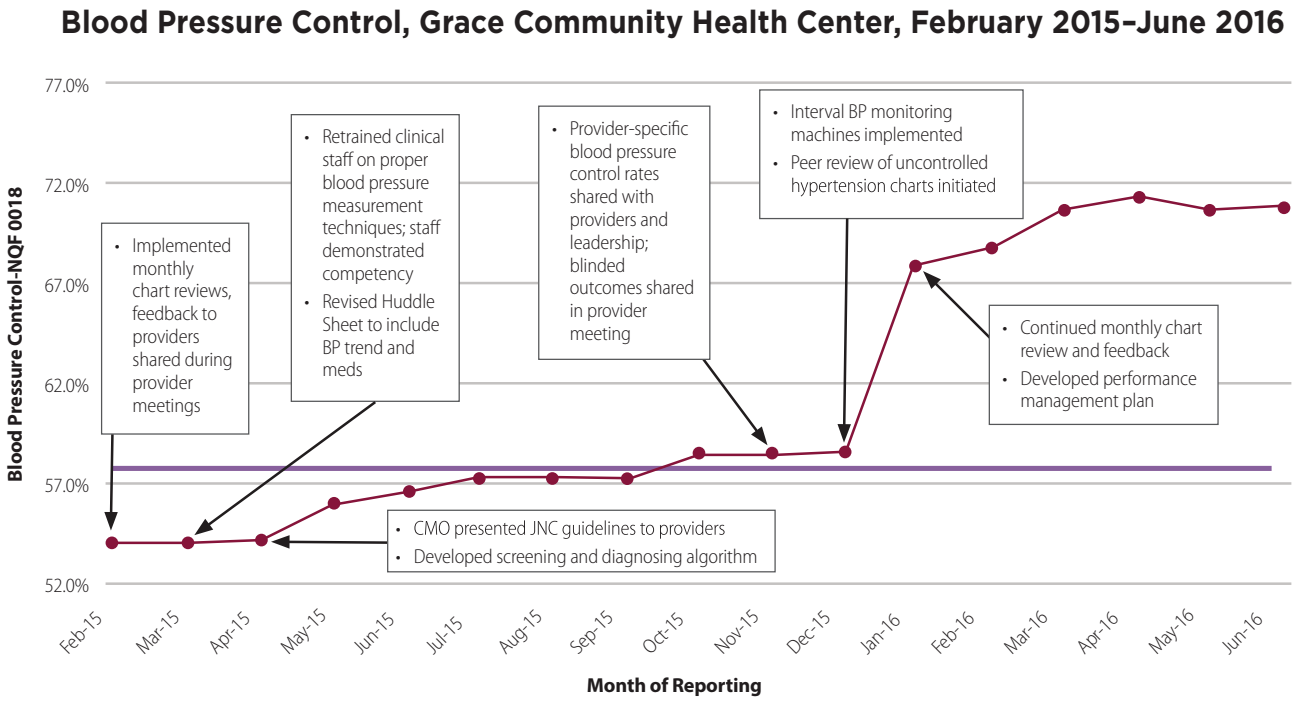
— Meg Meador, MPH, C-PHI, CPHQ, Director, Clinical Integration and Education, National Association of Community Health Centers

How Do I Measure Quality Improvement Efforts?

It is essential to monitor and measure quality improvement efforts—both outcomes and processes. Overall outcomes, such as improved HTN control, are important to measure, but process measures, such as the percentage of newly diagnosed patients with HTN who are brought back for a follow-up visit within a designated period of time, can provide much-needed feedback on whether interventions are being successfully carried out. Begin by collecting baseline data on a process that you are interested in improving, then test your change ideas on a small scale in order to identify potential barriers to implementation. This approach allows clinical staff to make needed refinements to address these barriers before implementing the change idea on a broader scale.

One very helpful tool for displaying and monitoring improvement efforts over time is a **run chart**. A run chart is a graph that longitudinally displays performance on a given process or outcome. It can be useful to chart performance over time to concretely show decision makers and other stakeholders why recommended changes are needed. You can then document when specific changes were made to show the impact that implemented changes yielded on performance (**Figure 4**). The Agency for Healthcare Research and Quality (AHRQ) has developed a **Do-It-Yourself Run Chart template** to get you started.

Figure 4. Example of a Run Chart—Grace Community Health Center[1]



Change Concepts, Change Ideas, and Tools and Resources

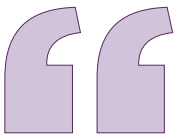
Bold font indicates health care settings that contributed content to Tables 1–4.

Table 1. Key Foundations

Change Concept	Change Idea	Tools and Resources
Make HTN Control a Practice or System Priority	Designate a practice or health system champion, such as a head physician or quality improvement lead	• **Kaiser Permanente Northern California** — Cardiovascular Physician Champion Role Description • HRSA — Hypertension Control: Commitment from Leadership
	Ensure care team engagement in HTN control	• AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 7: All Team Members Trained in Importance of BP Goals and Metrics • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix A: Health Center Staff Engagement Material – Hiding in Plain Sight (HIPS), **Grace Community Health Center** • HIPxCHANGE — BP Connect Stakeholder Checklist
	Redesign office or exam space to support proper BP measurement technique	• **Plymouth Family Physicians** — BP Lounge • Target: BP — BP Positioning Tool • Target: BP — 7 Simple Tips to Get an Accurate Blood Pressure Reading
	Provide BP checks without appointment or co-pay	• AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 8, Tool 2: Standard Workflow for BP Check, **ThedaCare** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 8, Tool 3: Walk-in Medical Assistant Blood Pressure Check Protocol, **Kaiser Permanente** • **Cheshire Medical Center/Dartmouth-Hitchcock** — Patient Instruction for Nurse Clinic Blood Pressure Check
	Expand the HTN care team with community pharmacists and/or community health workers	• CDC — Advancing Team-Based Care Through Collaborative Practice Agreements: A Resource and Implementation Guide for Adding Pharmacists to the Care Team – Especially Sample Collaborative Practice Agreement for Hypertension/Cardiovascular Disease • Sinai Urban Health Institute, Sinai Health System — Best Practice Guidelines for Implementing and Evaluating Community Health Worker Programs in Health Care Settings • Minnesota Department of Health — Community Health Worker (CHW) Toolkit: A Guide for Employers • Community Preventive Services Task Force — Guide to Community Preventive Services: Cardiovascular Disease: Team-Based Care to Improve Blood Pressure Control • Community Preventive Services Task Force — Guide to Community Preventive Services: Cardiovascular Disease: Interventions Engaging Community Health Workers

Table 1. Key Foundations (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Implement a Policy or Process to Address BP for Every Patient with HTN at Every Visit	Develop policies and procedures to reflect prioritization of HTN control	• NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Assessment of Hypertension Protocols and Procedures • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 4, Tool 3: Blood Pressure Check Visit Policy and Procedure, **Kaiser Permanente** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 8, Tool 1: Guideline for Treatment of HTN, **Sharp Rees-Stealy Medical Group** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 3, BP Addressed for Every Hypertension Patient at Every Primary Care or Cardiology Visit • **Sanford Health** — Hypertension Improvement Strategies • **Zufall Health** — Guidelines for Screening, Diagnosis and Management of Hypertension (pp. 1–4) • **Marshfield Clinic Health System** — Population Health – Maintenance and Prevention Standing Order • Cardi-OH — Procedures for Office BP Measurement • **Esperanza Health Centers** — EHR Documentation Handout Overview • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 8, Tool 5: Standard Work Form, Automatic Omron Blood Pressure Measurement, **Park Nicollet** (now HealthPartners) • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 8, Tool 4: Standard Work Form, Specialty Services, **Park Nicollet** (now HealthPartners)
	Develop a flowchart/ workflow for proactively tracking and managing patients with HTN	• NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Suggested Workflow for Blood Pressure Control • **Sanford Health** — Blood Pressure Measurement Algorithm • **Alexander Valley Healthcare** — Promising Practice Hypertension Control • HRSA — Implementation: Hypertension Control: Critical Pathway for HTN Control: Figure 3.1 • **Marshfield Clinic Health System** — Primary Care HTN Referral Receiving Process • **Marshfield Clinic Health System** — BP Referral Process-Specialty Departments • **Cheshire Medical Center/Dartmouth-Hitchcock** — Workflow for Primary Care BP Visits By Nursing • **Cheshire Medical Center/Dartmouth-Hitchcock** — Primary Care HTN Workflow • IHI — Planned Care Visit Workflow (can be adapted for BP control)

Table 1. Key Foundations (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Implement a Policy or Process to Address BP for Every Patient with HTN at Every Visit	Deploy HTN treatment protocols and algorithms (e.g., with media in waiting rooms, throughout clinic or hospital system)	• AMA — Hypertension Medication Treatment Protocol • **Kaiser Permanente** — Adult Blood Pressure: Clinician Guide • NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Blood Pressure Control: Hypertension Diagnosis and Treatment for Adults • **Intermountain Healthcare** — Management of High Blood Pressure • **Redwood Community Health Coalition** — Clinical Protocol: Nurse Co-management in Uncomplicated Hypertension • BP Medication Treatment Protocol. A Cluster-Randomized Trial of Blood-Pressure Reduction in Black Barbershops. Victor RG, et al., 2018.[7] • **Rush University Medical Center** — Hypertension Management Guideline • **Sanford Health** — Hypertension Practice Guideline • **Cheshire Medical Center/Dartmouth-Hitchcock** — Algorithm for Blood Pressure Phone Triage • **Zufall Health** — Guidelines for Screening, Diagnosis and Management of Hypertension (pp. 7–11) • ACC — Guidelines Made Simple: Blood Pressure (BP) Thresholds and Recommendations for Treatment and Follow-Up • Million Hearts® — Evidence-based Treatment Protocols for Improving Blood Pressure Control • Million Hearts® — Elements Associated with Effective Adoption and Use of a Protocol: Insights from Key Stakeholders • ASTHO — Million Hearts® Success Story: New York Develops Clinical Pathway to Identify and Manage Adult Hypertension, Whitney M. Young, Jr. Health Center
	Overcome diagnostic and treatment inertia	• AMA & Johns Hopkins University — M.A.P. IT Tools: Act Rapidly (pp. 37–42) • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 3: BP Addressed for Every Hypertension Patient at Every Primary Care or Cardiology Visit See also "Deploy HTN treatment protocols and algorithms" change idea above.



The protocols contained within the [change] package were utilized a lot by our organization. We did not necessarily 'adapt' a single protocol, rather used them all to really assist us in getting our footing to make our own."

— HCCP Health Center User

Table 1. Key Foundations (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Implement a Policy or Process to Address BP for Every Patient with HTN at Every Visit	Manage resistant HTN	• NYC Health & Hospitals — Adult Hypertension Clinical Practice Guidelines: Treatment of Resistant Hypertension • **Zufall Health** — Guidelines for Screening, Diagnosis and Management of Hypertension (pp. 12–13) • Resistant Hypertension: Detection, Evaluation, and Management: A Scientific Statement From the American Heart Association. Carey RM, et al., 2018.[8] • 11.1 Resistant Hypertension (see especially Figure 10). 2017 ACC/AHA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Whelton PK, et al., 2018.[4] • Family Practice Notebook — Resistant Hypertension
	Evaluate all patients with HTN for CKD; diagnose and treat if appropriate	• NKF — How to Manage Your CKD Patients • **Intermountain Healthcare** — Management of Chronic Kidney Disease (CKD) • NKF — Chronic Kidney Disease Change Package: Figure 6: Risk of Chronic Kidney Disease Progression and Frequency of Assessment • NKF — CKD Risk Assessment Tool • National Kidney Disease Education Program —Your Kidney Test Results • National Kidney Disease Education Program — Making Sense of CKD: A Concise Guide for Managing Chronic Kidney Disease in the Primary Care Setting

> Montana used the HCCP to develop a flowchart of key strategies/concepts for primary care clinics. This helped focus blood pressure QI efforts and gave the Cardiovascular Health Program a framework to initiate the blood pressure QI conversation with primary care. In the past several years, we used major concept(s) from the HCCP to improve quality measures in 59 Montana primary care facilities."
>
> — Marilyn McLaury, MS, Quality Improvement Coordinator, Montana Cardiovascular Health Program, Montana Department of Public Health and Human Services

Table 2. Equipping Care Teams		
Change Concept	**Change Idea**	**Tools and Resources**
Train and Evaluate Direct Care Staff on Accurate BP Measurement and Documenting	Adopt a clinician/staff training policy to train and retrain staff	• AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 1, Tool 9: Blood Pressure Champion and CDS Education and Auditing Process for New Staff, **HealthPartners**
	Provide guidance on measuring BP accurately	• **Cheshire Medical Center/Dartmouth-Hitchcock** — Obtaining Accurate Blood Pressure Measurements in the Ambulatory Setting: How Do You Size a Blood Pressure Cuff? (pp. 14–19) • Target: BP — Blood Pressure Measurement: Measure Accurately • Target: BP — 7 Simple Tips to Get an Accurate Blood Pressure Reading • AHA — The Importance of Measuring Blood Pressure Accurately Webinar [video] (CE credits) • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 1, Tool 11: Blood Pressure Accuracy and Variability Quick Reference, **HealthPartners** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 1: Tool 7: How to Take Blood Pressure Properly [video] – How to Take Blood Pressure Properly: The Wrong Way, **Cornerstone Health Care** (now Wake Forest Baptist Health) [video] – How to Take Blood Pressure Properly: The Right Way, **Cornerstone Health Care** (now Wake Forest Baptist Health) [video] • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 1: Tool 14: Accurate Blood Pressure Measurement, **Premier Medical Associates** [video] • Table 8. Checklist for Accurate Measurement of BP. 2017 ACC/AHA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Whelton PK, et al., 2017.[4] • Heart Health Now! North Carolina Cooperative — Office BP Measurement: Current Challenges and Best Practices
	Assess adherence to proper BP measurement technique	• Target: BP — Technique quick-check • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 1, Tool 8: New Employee Blood Pressure Measurement Initial Competency Checklist, **HealthPartners** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 1, Tool 9: Blood Pressure Champion and CDS Education and Auditing Process for New Staff, **HealthPartners** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 1, Tool 10: Quarterly Blood Pressure Auditing Tool, **HealthPartners** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 4, Tool 4: Blood Pressure Spot Check, **Kaiser Permanente**

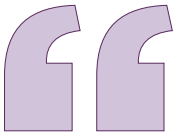
Table 2. Equipping Care Teams (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Equip Direct Care Staff to Facilitate Patient Self-Management	Ensure the care team is skilled in supporting patient medication adherence	• NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Task B10: Respond quickly to control elevated BP by targeting medication adherence • NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Suggested Workflow for Blood Pressure Control, Medication Adherence Workflow • Million Hearts® — Hypertension Control: Action Steps for Clinicians: Table 2. Actions to Improve Medication Adherence • AHRQ — How to Create a Pill Card • West Virginia Medical Institute (now Quality Insights) — Medication Management Care Planning Tool • AMA — Medication Adherence: Improve Patient Outcomes and Reduce Costs Module • NYC DOHMH — Medication Adherence Action Kit: Provider Resources • Million Hearts® — Improving Medication Adherence Among Patients with Hypertension: A Tip Sheet for Health Care Professionals • CDC — Public Health Grand Rounds: Promoting Medication Adherence through High-Tech and High-Touch, **Reliant Medical Group** • American College of Preventive Medicine — Medication Adherence – Improving Health Outcomes (particularly section 6)
	Put a prevention, engagement, and self-management program in place	• IHI — Partnering in Self-Management Support: A Toolkit for Clinicians – Self-Management Support Roles and Tasks in Team Care • California Healthcare Foundation — Helping Patients Manage Their Chronic Conditions
Establish a Self-Measured BP (SMBP) Monitoring Program	Assign care team roles for an SMBP monitoring program and adapt the workflow accordingly	• NACHC — Self-Measured Blood Pressure Monitoring Implementation Guide for Health Care Delivery Organizations: Diagram 2: SMBP Model Design Checklist and Key Questions • Target: BP — CME Course: Using SMBP to Diagnose and Manage HBP • NYC DOHMH — Patient Self-Monitoring of Blood Pressure: A Provider's Guide • NACHC — Self-Measurement: How patients and care teams are bringing blood pressure to control [video] • Million Hearts® — Self-Measured Blood Pressure Monitoring: Action Steps for Clinicians
	Provide patients guidance on selecting a home BP monitor	• AMA — Validated Device Listing • Table 2. Validation Studies of Home Devices [in Pregnancy]. Accuracy of Blood Pressure Measurement Devices in Pregnancy: A Systematic Review of Validation Studies. Bello NA, et al., 2018.[9] • Hypertension Canada — Blood Pressure Devices Recommended by Hypertension Canada • Target: BP — Selecting a Cuff Size • NYC DOHMH — Patient Self-Monitoring of Blood Pressure: A Provider's Guide

Table 2. Equipping Care Teams (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Establish a Self-Measured BP (SMBP) Monitoring Program	Develop a home BP monitor loaner program	• Target: BP — SMBP Loaner Device Agreement • **Open Door Family Medical Centers** — Blood Pressure Monitor Loan Agreement (English and Spanish) • Target: BP — Inventory Management • Target: BP — SMBP Patient Training Checklist – Loaner Device • NACHC — Self-Measured Blood Pressure Monitoring Implementation Guide for Health Care Delivery Organizations: Appendix Y: SMBP Loaner Program Policy & Procedure – Cleaning and Care of Home BP Monitors, **Whitney M. Young, Jr. Health Center** • AMA — Cleaning and disinfection procedure • Kaiser Permanente — PHASE SMBP Community of Practice: SMBP Loaner Pilot Model Design (pp. 15–22)
	Train patients on home BP monitor use and proper preparation and positioning	• Target: BP — Device Accuracy Test • Target: BP — SMBP Patient Training Checklist • NACHC — Self-Measured Blood Pressure Monitoring Implementation Guide for Health Care Delivery Organizations: Appendix AC: Training Manual – Staff Checklist for SMBP Training, **ARcare/KentuckyCare** • Target: BP — SMBP Training Video [video] (English and Spanish) • NACHC — How to Use Your Home Blood Pressure Monitor [video] • Target: BP — How to Measure Your Blood Pressure At Home infographic • ACC — CardioSmart: How to Take Your Blood Pressure At Home
	Develop a process for handling patient-generated BP readings	• Million Hearts® — Self-Measured Blood Pressure Monitoring: Action Steps for Clinicians: Suggested SMBP Measurement Protocol • AMA — In-office BP Average Calculator • Target: BP — SMBP Average Calculator
Prepare the Care Team Beforehand for Effective HTN Management During Office Visits (e.g., via team huddles, using EHR data)	Use a flowchart or dashboard with care gaps highlighted in team huddles to help care teams better support patients	• NYC DOHMH — Hypertension/Dyslipidemia Flow Sheet • **Plymouth Family Physicians** — Health Maintenance Table • **Plymouth Family Physicians** — Patient-Level Report
	Implement pre-visit planning into workflows and use clinical decision support tools to ensure that indicated orders/actions occur during the visit	• NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix O: CDS-Enabled BP Tool – NextGen, **Golden Valley Health Centers** • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix P: CDS-Enabled BP Tool – eClinicalWorks, **Neighborhood Healthcare** • IHI — Partnering in Self-Management Support: A Toolkit for Clinicians: Planned Care Visit Workflow • AHRQ — Patient-Centered Outcomes Research Clinical Decision Support: Healthful Diet and Physical Activity for CVD Prevention in Adults With Cardiovascular Risk Factors – Implementation Guide

Table 3. Population Health Management		
Change Concept	**Change Idea**	**Tools and Resources**
Identify Patients with Potentially Undiagnosed HTN For additional resources, please see the NACHC Million Hearts® Hiding in Plain Sight Consolidated Change Package; NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Task B6: Respond quickly to control elevated BP by targeting undiagnosed hypertension (HTN)	Compare practice HTN prevalence to national or local estimates to understand if you might be missing patients with undiagnosed HTN	• Million Hearts® — Hypertension Prevalence Estimator Tool • Vermont Department of Health and the New England QIN-QIO — From 70 to 80 Percent: The Hypertension Management Toolkit: Task 2: How Does Your Practice Compare to Local and National Benchmarks? • AMGA — Hypertension Prevalence – AMGA Results Using Dx Code, Problem List, and Elevated Blood Pressure Readings[10]
	Establish clinical criteria to define potentially undiagnosed HTN	• Table 1. Number of At-Risk Patients Identified by Each Hypertension Screening Algorithm. A Technology-Based Quality Innovation to Identify Undiagnosed Hypertension among Active Primary Care Patients. Rakotz MK, et al., 2014.[11] • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix L: Undiagnosed Hypertension Algorithms and Clinical Criteria Decision Points, HIPS Project • Patients with Undiagnosed Hypertension: Hiding in Plain Sight. Wall HK, et al., 2014.[12]
	Search EHR data for patients who meet the established clinical criteria	• NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix M: Potentially Undiagnosed Hypertension Algorithm used to Generate Registries and Reports - i2i Tracks, Golden Valley Health Centers and Tulare Community Health Clinic (now Altura Centers for Health) • Identifying Patients with Hypertension: A Case for Auditing Electronic Health Record Data. Baus A, et al., 2012.[13] • **Plymouth Family Physicians** — Patient-Level Report
	Implement a plan to confirm HTN status and treat those with HTN	• NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix I: Million Hearts® HIPS Recall Report, **Golden Valley Health Centers** • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix K: HIPS Recall List – i2i Tracks, **La Maestra Community Health Centers** • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix N: Patient Status and Opportunities Alert - eClinicalWorks, **Neighborhood Healthcare**
Identify Patients with Potentially Undiagnosed CKD	Search EHR data for patients with HTN who have estimated glomerular filtration rate (eGFR) and/or urine albumin-to-creatinine ratio (uACR) test results; if missing one test result, order it; diagnose and treat if both labs are abnormal	• NKF — A framework for CKD-related data analysis • Cigna — Chronic Kidney Disease Provider's Guide to Coding and Documenting Diagnosis • CKD as a Model for Improving Chronic Disease Care through Electronic Health Records. Drawz PE, et al., 2015.[14] • National Institute of Diabetes and Digestive and Kidney Diseases — CKD population health management Model Cases: Development of an EHR-based CKD Registry for Use in Clinical Research and Improvement of Patient Outcomes, **Cleveland Clinic, Glickman Urological and Kidney Institute** • National Institute of Diabetes and Digestive and Kidney Diseases — CKD population health management Model Cases: Managing Chronic Kidney Disease Populations within an Integrated Health Management Organization, **Kaiser Permanente Southern California**

Table 3. Population Health Management (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Use a Registry to Track and Manage Patients with HTN	Implement a HTN registry	• **Green Spring Internal Medicine, LLC** — Registry • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 6: Registry Used to Track Hypertension Patients • ONC — Quality Improvement in a Primary Care Practice (Registry section and figure) • NYC DOHMH — Hypertension Panel Management Patient List
	Use a defined process for outreach (e.g., via phone, mail, email, text message) to patients with uncontrolled HTN and those otherwise needing follow-up	• **Redwood Community Health Coalition** — Hypertension Recall Instructions • NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Suggested Workflow for Blood Pressure Control, Recall Workflow • NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Task B9: Respond quickly to control elevated BP by implementing a recall workflow • **Zufall Health** — Instructions to Schedule Follow Up Appointments • **Zufall Health** — Uncontrolled Hypertension Call Back Tracking • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix U: Care Message Patient Outreach – SuccessEHS/i2i Tracks, ARcare/KYcare • **Rush University Medical Center** — Action Plan for No-Shows • **Rush University Medical Center** — Hypertension Registry Workflow • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix V: HIPS Front Office Script, **Golden Valley Health Centers** • **Esperanza Health Centers** — Hypertension Outreach: Automated Call/Text Campaign • **Esperanza Health Centers** — Tracking Hypertension Outreach: Weekly Emails
Use Clinician-Managed Protocols for Medication Adjustments and Lifestyle Recommendations	Use protocols to cover proactive outreach driven by registry use and respond to patient-submitted home BP readings	• **Green Spring Internal Medicine, LLC** — Evidence-Based Protocols (pp. 15, 16) • Minnesota Board of Nursing — FAQ: Use of Condition Specific Protocols • Kansas Healthcare Collaborative — Intervention Outline: Nurse-Driven Care Protocol: Protocol for Uncomplicated Hypertension: Registered Nurse Titration of Lisinopril, Hydrochlorothiazide, Atenolol and Amlodipine, **Kaiser Permanente Southern California** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 4, Tool 2: Hypertension Standing Orders, **Mercy Clinics, Inc.**

Table 3. Population Health Management (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Use Practice Data to Drive Improvement	Determine HTN control and related process metrics for the practice	• 2019 AHA/ACC Clinical Performance and Quality Measures for Adults With High Blood Pressure: A Report of the American College of Cardiology/American Heart Association Task Force on Performance Measures. Casey DE, et al., 2019.[15] • NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Process Measures • NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Hypertension Panel Summary Sample
	Regularly provide a dashboard with BP goals, metrics, and performance	• NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Hypertension Panel Summary Sample • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 7, Tool 3: Quarterly Status Report, **Kaiser Permanente Mid Atlantic States** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 7, Tool 1: HTN Report, **Kaiser Permanente Mid Atlantic States** • **Plymouth Family Physicians** — Practice Performance Report, HTN measures • **Rush University Medical Center** — Quality Index – Ambulatory BP Control • **Rush University Medical Center** — Project Metrics • **Zufall Health** — Dashboard Screenshots (pp. 1–3) • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 7, Tool 2: Clinical Level Performance Report, **Mercy Clinics, Inc.** • **Marshfield Clinic Health System** — Population Health Management Quality Dashboard • **Marshfield Clinic Health System** — Hypertension Referral Dashboard • AHRQ — EvidenceNOW Tools for Change: Clinic Dashboard (Healthy Hearts Northwest) • NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: Prevention and Care Dashboard Sample



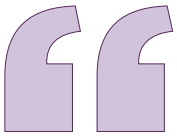
[The] HCCP provides robust, structured guidance . . . and has helped many care delivery organizations reengineer their hypertension care and achieve BP control targets. For example, grantees in the Kaiser Permanente–funded 'Preventing Heart Attacks and Strokes Everyday' (PHASE) program used the HCCP to address [their] QI questions . . . Here's a quote from one of these grantees:

> 'The HCCP is a very powerful tool, and so it's very comprehensive and I've used it . . . all the tools are pretty powerful and are keeping you on target to meet your goals.'
> — Health Center QI Manager

The health center improved BP control rates 12.1 percentage points to 77% in patients with diabetes and improved BP control rates in patients with hypertension 8.6 percentage points to 68.2% [both from Q1 2017 to Q3 2019]."

— Jerome A. Osheroff, MD, Principal, TMIT Consulting, LLC

Table 4. Individual Patient Supports		
Change Concept	**Change Idea**	**Tools and Resources**
Prepare Patients Before the Office Visit Via Pre-Visit Patient Outreach	Contact patients to confirm upcoming appointments and provide instructions on how to prepare for their visit	• Washington State Department of Health — Improving the Screening, Prevention, and Management of Hypertension: An Implementation Tool for Clinic Practice Teams: Key Message #1: Building Trust is Critical
Optimize Patient Intake to Support HTN Management (e.g., check-in, waiting, rooming)	Provide patients with educational materials to help them understand HTN and its implications	• ACC — CardioSmart Know Your Numbers Fact Sheet • ACC — CardioSmart High Blood Pressure Fact Sheet • AHA — What Is High Blood Pressure? • Washington State Department of Health — What is blood pressure? – English – Spanish; Chinese, Russian, and Vietnamese also available • Washington State Department of Health — What's the BIG DEAL about controlling my blood pressure? – English – Spanish; Chinese, Russian, and Vietnamese also available • Target: BP — Consequences of High Blood Pressure – Spanish and Chinese also available • West Virginia Medical Institute (now Quality Insights) — High Blood Pressure Management Zones • NKF — High Blood Pressure and Your Kidneys – English – Spanish • NACHC — Taking Control of My Blood Pressure: D'Angelo's Story [video] • NACHC — Taking Control of My Blood Pressure: Natalia's Story [video]
	Provide patients with tools to support their visit agenda and goal setting	• Washington State Department of Health — Improving the Screening, Prevention, and Management of Hypertension: An Implementation Tool for Clinical Practice Teams: Appendix 2: Bubble Diagram • IHI — Action Plan Form • IHI — Dinner Plate Menus • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 5, Tool 1: BP at Goal Patient Questionnaire, **Fletcher Allen Healthcare/University of Vermont** (now UVM Medical Center)



The Million Hearts® Hypertension Control Change Package is a model for chronic disease control that the National Kidney Foundation has leveraged in collaboration to develop a CKD Change Package. The epidemiologic interaction between hypertension and CKD is important for the community to recognize as an opportunity to improve care of both hypertension and CKD."

— Joseph A. Vassalotti, MD, Chief Medical Officer, National Kidney Foundation

Table 4. Individual Patient Supports (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Optimize Patient Intake to Support HTN Management (e.g., check-in, waiting, rooming)	Measure, document, and repeat BP correctly as indicated; flag abnormal readings	• **Plymouth Family Physicians** — Health Maintenance Table and Description [video] • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix O: CDS-Enabled BP Tool – NextGen, **Golden Valley Health Centers** • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix Q: Blood Pressure Flow Sheet with Red Framed Alerts for Elevated Blood Pressure Readings – SuccessEHS, **ARcare/KentuckyCare** • ONC — Meaningful Use Case Studies: Improving Blood Pressure Control for Patients with Diabetes in 4 Community Health Centers See Table 2 (p. 12) for correct BP measurement technique resources.
	Reconcile medications patient is actually taking with the EHR medication list	• IHI — Medication Reconciliation Form • Beth Israel Deaconess Medical Center — EHR Medication Reconciliation Tool
Optimize the Patient-Clinician Encounter (e.g., documentation, orders, medication adherence assessment, education/ engagement)	Use documentation templates to help capture key data such as patient treatment goals and barriers to adherence	• NYC DOHMH and HealthyHearts NYC — ABCS Toolkit for the Practice Facilitator: – eCW-How to Add a Medication Adherence Questionnaire by Creating Structured Data – eCW's External Rx History Check: RxHub – eCW's Drug Formulary Review – MDLand External Rx History Check – MDLand Medication Adherence: Medication History (Internal) – MDLand Medication Adherence: Medication Reports – MDLand Medication Adherence: Rx Eligibility • ONC — Meaningful Use Case Studies: Improving Blood Pressure Control for Patients with Diabetes in 4 Community Health Centers (Figures 1, 4, and 5)
	Use order sets and standing orders to support evidence-based and individualized care	• Vermont Department of Health and the New England QIN-QIO — From 70 to 80 Percent: The Hypertension Management Toolkit: Hypertension Order Set Checklist (Appendix H) • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 4: Tool 2: Hypertension Standing Orders, **Mercy Clinics, Inc.**
	Assess medication adherence and individual risk; counsel using motivational interviewing techniques; agree on a shared action plan and use "teach back" to confirm patient understanding	• AMGF – Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 4: Tool 1: Morisky Scale, **Mercy Clinics, Inc.** • ACC/AHA — ASCVD Risk Estimator Plus • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 5: Tool 3: 5As Encounter Form, **Mercy Clinics, Inc.** • Target: BP — Collaborative Communication Strategies to Manage Blood Pressure

Table 4. Individual Patient Supports (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Support Patients in HTN Self-Management During Their Routine Daily Activities (i.e., outside of the clinical encounter)	Provide patient supports for medication adherence	• Consumer Reports — Drug Safety: Reading Labels and Patient Information • American Society of Health-System Pharmacists — My Medicine List™ • AHA — How Do I Manage My Medicines? • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 5, Tool 18: Blood Pressure Medications, **Henry Ford Health System** • FDA — Medicines To Help You: High Blood Pressure • AHA — What Is High Blood Pressure Medicine • Fig 3. Example of Medication Reminders Available for the Smartphone and Smart-watch. New Concepts in Hypertension Management: A Population-Based Perspective. Milani RV, et al., 2016.[16] • AHRQ — Your Medicine: Be Smart. Be Safe. • Script Your Future — Online Tool for Patients to Support Medication Adherence (medication list wallet cards in English, Spanish, and several other languages can be ordered in bulk for free here)
	Provide patient supports for SMBP monitoring	• Target: BP — SMBP Infographic: How to measure your blood pressure at home • Target: BP — 7 Day Recording Sheet SMBP • Washington State Department of Health — How to Check Your Blood Pressure – English – Spanish; Chinese, Russian, and Vietnamese also available • NYC DOHMH — Blood Pressure Tracking Card & Action Plan • **New West Physicians** — Home BP EMR Entry • Target: BP — SMBP Using a Wrist Cuff to Measure Blood Pressure (Not recommended for most patients)
	Provide patient supports for increasing physical activity	• Move Your Way — Fact Sheet for Adults • Move Your Way — Activity Planner • Move Your Way — Tips for Getting Motivated [video] • Exercise is Medicine® — Being Active with High Blood Pressure • Exercise is Medicine® — Sit Less. Move More. • AMA — Action plan for increasing physical activity
	Provide patient supports for dietary changes	• NHLBI — In Brief: Your Guide to Lowering Your Blood Pressure with DASH • NHLBI — DASH Eating Plan (see especially the Getting Started with the DASH Eating Plan section) • AMA — Action plan for healthy eating • NYC DOHMH — Eat and Drink to Lower Blood Pressure • CDC — How to Reduce Sodium • NHLBI — DASH Eating Plan: Tips to Reduce Salt and Sodium

Table 4. Individual Patient Supports (continued)		
Change Concept	**Change Idea**	**Tools and Resources**
Support Patients in HTN Self-Management During Their Routine Daily Activities (i.e., outside of the clinical encounter)	Provide patient supports for managing CKD	• NKF — How well are your kidneys working? Explaining Your Kidney Test Results • NKF — About Chronic Kidney Disease: A Guide for Patients – English – Spanish • NKF — High Blood Pressure and Your Kidneys • NKF — High Blood Pressure and Chronic Kidney Disease: For People with CKD Stages 1–4 • National Kidney Disease Education Program — CKD Diet Counseling (Medical Nutrition Therapy) Referral Form
Optimize the Encounter Closing (i.e., checkout)	Provide patients with a written self-management plan, visit summary, and follow-up guidance at the end of each visit	• AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 5, Tool 12: "How Am I Doing?" Blood Pressure Management Plan, **Henry Ford Health System** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 5: Tool 3: 5As Encounter Form, **Mercy Clinics, Inc.** • ONC — Providing Patients in Ambulatory Care Settings with a Clinical Summary of the Office Visit • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 5: Tool 7: Patient Participation Handouts—English & Spanish, **Sharp Rees-Stealy Medical Group** • AMGF — Measure Up Pressure Down Provider Toolkit to Improve Hypertension Control: Plank 5, Tool 19: Stress Management and Blood Pressure, **Henry Ford Health System** • IHI — Action Plan Form
Follow up to Monitor and Reinforce HTN Management Plans (i.e., after visits)	Assign staff responsibility for managing refill requests by refill protocol	• **Trinity Clinic Whitehouse** — Automatic Refill Policy Example • University of Texas Medical Branch — Adult Primary Care Prescription Refill Guidelines for Ambulatory Services • Minnesota Board of Nursing — FAQ: Use of Condition Specific Protocols
	Implement frequent follow-ups (e.g., emails, phone calls, text messages) with patients to make sure they are taking their medication as directed, using SMBP	• **Altura Centers for Health** — Sample outreach text messages • **Zufall Health** — Instructions to Schedule Follow Up Appointments • Preprogrammed Text Message Algorithm – Supplementary File 2. Comparing standard office-based follow-up with text-based remote monitoring in the management of postpartum hypertension: a randomised clinical trial. Hirshberg A, et al., 2018.[17] • Penn Medicine Department of OBGYN's Heart Safe Motherhood Program — Sample Patient and Provider Interface for Automated Text Messages
	Use all staff touchpoints to support HTN goals and follow up	• HIPxCHANGE — BP Connect Scheduler Instructions: Supportive Staff Responses • NACHC — Million Hearts® Hiding in Plain Sight Consolidated Change Package: Appendix V: HIPS Front Office Script, **Golden Valley Health Centers**

Appendix A: Additional Quality Improvement Resources

If you are new to continuous quality improvement (QI), there are many useful QI tools that can assist you in your efforts. For example, the Institute for Healthcare Improvement (IHI) provides a number of QI tools that support its Model for Improvement (**Figure 3**). Their **Quality Improvement Essentials Toolkit** is a good primer for those beginning their quality improvement journey. It includes the **Improvement Project Planning Form** to help teams think systematically about their improvement project, the **Cause and Effect (or "fishbone") Diagram** to identify specific areas for improvement, and the **Plan-Do-Study-Act Worksheet for Testing Change**, which walks the user through documenting a test of change. These resources may be helpful for planning, assigning responsibilities, and carrying out small tests of change for improving HTN control.

Another useful QI reference and toolkit is the **Guide to Improving Care Processes and Outcomes in Health Centers** available from the Health Resources and Services Administration (HRSA), which supports the U.S. health care safety net. This resource includes worksheets, such as the **Clinical Decision Support-enabled Quality Improvement Worksheet**, for analyzing current workflows and information flows and considering improvements for targets such as increasing blood pressure (BP) control. Alternatively, you may also find the **ABCS Toolkit for the Practice Facilitator—Workflow Mapping Worksheets**, from the NYC DOHMH and HealthyHearts NYC, useful to lay out current care processes, identify gaps, and brainstorm solutions. The HCCP can help identify promising and evidence-based approaches to enhancing care processes to achieve improved HTN control.

Finally, the Healthcare Information and Management Systems Society (HIMSS) publishes a guidebook series on improving care delivery and outcomes with clinical decision support (CDS).[18,19] These guidebooks can help you apply the **CDS 5 Rights framework** to ensure that all the right people, including patients, get the right information in the right formats via the right channels at the right times to optimize health-related decisions and actions. The guidebooks help health care practices and their partners set up programs that reliably deliver outcome-improving CDS interventions. They also provide detailed guidance on how to successfully develop, launch, and monitor such interventions so that all stakeholders benefit.

Appendix B: Hypertension Control Case Studies

Below are case studies illustrating how small rural practices, community health centers, and large health systems have used systematic approaches, together with specific tools, to enhance information flow and workflow, to achieve significant improvements in HTN control. See Tables 1–4 in this change package for approaches and tools to replicate these successes. For additional case studies related to HTN control, see the **Million Hearts® Hypertension Control Champions Case Studies**.

Case Study by Provider or Setting Name	Location	Description
Ellsworth Medical Clinic	Ellsworth, WI	Small rural practice
Jennifer Brull, MD	Plainville, KS	Small rural practice
Broadway Internal Medicine	Queens, NY	Small urban, Spanish-speaking family practice
Community Health Centers, Inc.	West Valley City, UT	Community health center
Zufall Health	Dover, NJ	Community health center
Reliant Medical Group	Worcester, MA	Large multi-specialty group practice
Cheshire Medical Center/ Dartmouth-Hitchcock Keene	Keene, NH	Large health system
NorthShore Health Centers	Northwestern IN	Large multisite primary care organization

Acronyms

ACC	American College of Cardiology
AHA	American Heart Association
AHRQ	Agency for Healthcare Research and Quality
AMA	American Medical Association
AMGA	American Medical Group Association
AMGF	American Medical Group Foundation
ASTHO	Association of State and Territorial Health Officials
BP	blood pressure
CDC	Centers for Disease Control and Prevention
CDS	clinical decision support
CKD	chronic kidney disease
DOHMH	Department of Health and Mental Hygiene
eGFR	estimated glomular filtration rate
EHR	electronic health record
FDA	Food and Drug Administration
HCCP	Hypertension Control Change Package
HIMSS	Healthcare Information and Management Systems Society
HRSA	Health Resources and Services Administration
HTN	hypertension
IHI	Institute for Healthcare Improvement
JNC	Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure
NACHC	National Association of Community Health Centers
NHLBI	National Heart, Lung, and Blood Institute
NKF	National Kidney Foundation
ONC	Office of the National Coordinator for Health Information Technology
PCMH	Patient-Centered Medical Home
QI	quality improvement
QIN	quality innovation network
QIO	quality improvement organization
uACR	urine albumin-to-creatinine ratio
VA	Department of Veterans Affairs

References

1. Million Hearts®. National Association of Community Health Centers Partnership Shows Quick Hypertension Control Returns. **https://millionhearts.hhs.gov/files/Champions-SS-NACHC.pdf**. Accessed April 12, 2019.
2. Meador M, Osheroff JA, Reisler B. Improving identification and diagnosis of hypertensive patients hiding in plain sight (HIPS) in health centers. *Jt Comm J Qual Patient Saf*. 2018;44(3):117–129.
3. Centers for Disease Control and Prevention. Chronic kidney disease in the United States, 2019. **https://www.cdc.gov/kidneydisease/publications-resources/2019-national-facts.html**. Accessed October 31, 2019.
4. Whelton PK, Carey RM, Aronow WS, et al. **2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines**. *Hypertension*. 2018;71:e13–e115.
5. National High Blood Pressure Education Program. **The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure**. Bethesda, MD: National Heart, Lung, and Blood Institute; 2004.
6. Institute for Healthcare Improvement. **The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement**. IHI Innovation Series white paper. Boston, MA: Institute for Healthcare Improvement; 2003.
7. Victor RG, Lynch K, Li N, et al. A cluster-randomized trial of blood-pressure reduction in black barbershops. *N Engl J Med*. 2018;378:1291–1301.
8. Carey RM, Calhoun DA, Bakris GL, et al. Resistant hypertension: detection, evaluation, and management: a scientific statement from the American Heart Association. *Hypertension*. 2018;72:e53–e90.
9. Bello NA, Woolley JJ, Cleary KL, et al. Accuracy of blood pressure measurement devices in pregnancy: a systematic review of validation studies. *Hypertension*. 2018;71:326–335.
10. Ritchey M, Yuan K, Gillespie C, Zhang G, Ostchega Y. **Development and validation of a hypertension prevalence estimator tool for use in clinical settings**. *J Clin Hypertens* (Greenwich). 2016;18(8):750–61.
11. Rakotz MK, Ewigman BG, Sarav M, et al. A technology-based quality innovation to identify undiagnosed hypertension among active primary care patients. *Ann Fam Med*. 2014;12(4):352–358.
12. Wall HK, Hannan JA, Wright JS. Patients with undiagnosed hypertension: hiding in plain sight. *JAMA*. 2014;312(19):1973–1974.
13. Baus A, Hendryx M, Pollard C. Identifying patients with hypertension: a case for auditing electronic health record data. *Perspect Health Inf Manag*. 2012;9:1e.
14. Drawz PE, Archdeacon P, McDonald CJ, et al. CKD as a model for improving chronic disease care through electronic health records. *Clin J Am Soc Neph*. 2015;10(8):1488–1499.

15. Casey DE, Thomas RJ, Bhalla V, et al. 2019 AHA/ACC clinical performance and quality measures for adults with high blood pressure: a report of the American College of Cardiology/American Heart Association Task Force on Performance Measures. *JACC*. 2019;74(21):2661–2706.

16. Milani RV, Lavie CJ, Wilt JK, Bober RM, Ventura HO. New concepts in hypertension management: a population-based perspective. *Prog Cardiovasc Dis*. 2016;59(3):289–294.

17. Hirshberg A, Downes K, Srinivas S. Comparing standard office-based follow-up with text-based remote monitoring in the management of postpartum hypertension: a randomised clinical trial. *BMJ Qual Saf*. 2018;27:871–877.

18. Osheroff JA, Teich JM, Levick D, et al. *Improving Outcomes with Clinical Decision Support: An Implementer's Guide*. 2nd ed. Chicago, IL: HIMSS; 2012.

19. Osheroff JA, ed. *Improving Medication Use and Outcomes with Clinical Decision Support: A Step-by-Step Guide*. Chicago, IL: HIMSS; 2009.

Million Hearts® is a U.S. Department of Health and Human Services initiative that is co-led by the Centers for Disease Control and Prevention and the Centers for Medicare & Medicaid Services, with the goal of preventing one million heart attacks and strokes by 2022.

millionhearts.hhs.gov

May 2020