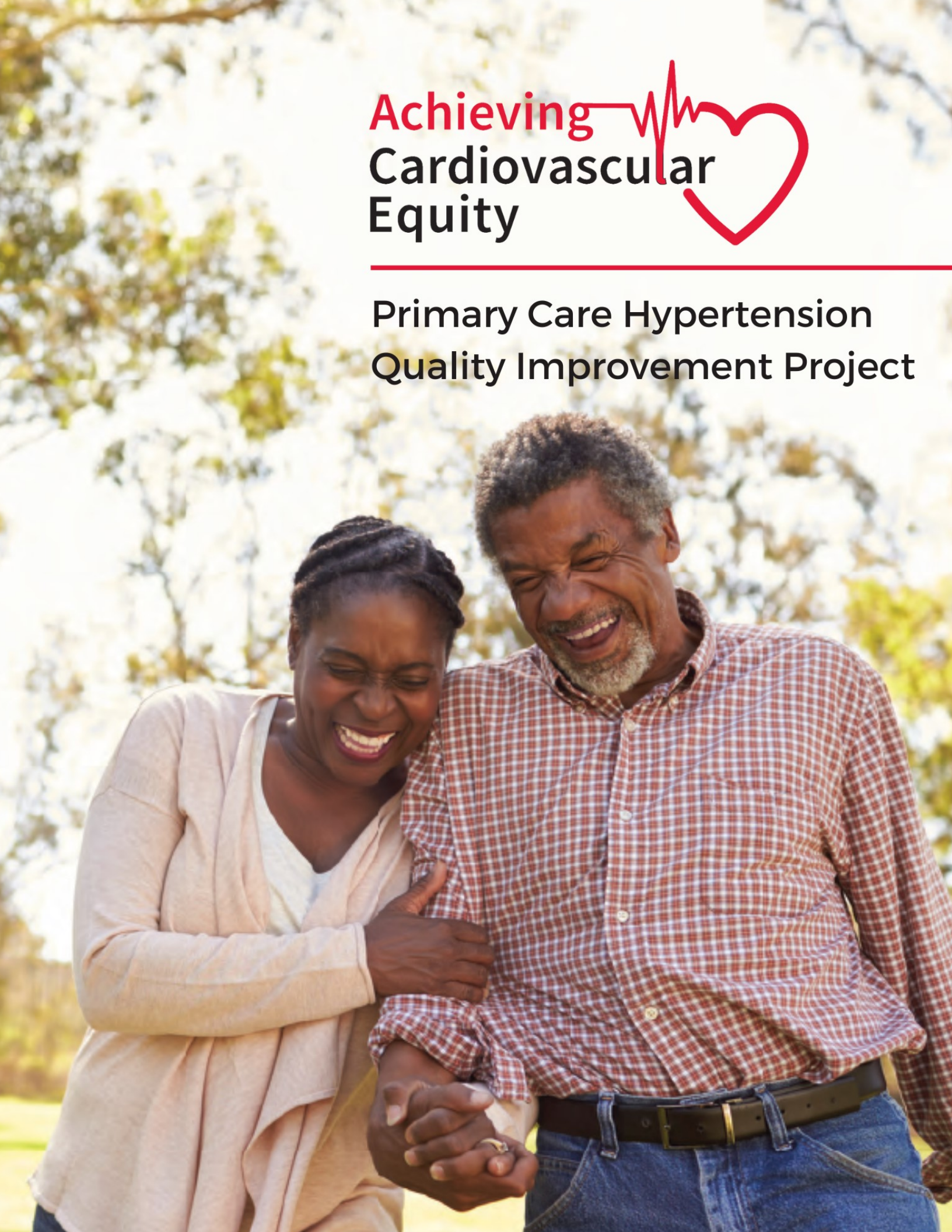
Achieving Cardiovascular Equity

Primary Care Hypertension Quality Improvement Project



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Sustainability Change Package

Ohio Department of Health

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Executive Summary

Background

Chronic disease is associated with reduced quality of life, poor health outcomes, increased healthcare needs, and higher healthcare costs. The American Heart Association estimated national medical costs associated with hypertension to be about $131 billion in annual healthcare expenditure averaged over 12 years from 2003-2014.[1] By 2035, total direct and indirect costs are expected to exceed an estimated $220 billion a year.[2,3] Less than half of all patients with hypertension (HTN) have their blood pressure (BP) controlled to goal, and physicians partnering with patients have improved control in as little as 12 months.[4]

Health Equity

Significant racial disparities exist for being diagnosed with cardiovascular (CV) disease. The National Center for Health Statistics reports that in 2019 non-Hispanic Black persons were more likely to die of heart disease than non-Hispanic white persons.[5]

As a result, Black Americans have

1.3x times greater rate of nonfatal stroke

1.8x times greater rate of fatal stroke

1.5x times greater rate of death attributable to heart disease

4.2x times greater rate of end-stage kidney disease compared with white patients.

Of note, Black Americans receive a diagnosis of high BP earlier in life and their average BP levels are higher.[6]

Determinants of racial/ethnic disparities in BP control are multi-factorial and include patient, provider, organizational, community, and policy factors.[7] Focused efforts to address hypertension management in Black patients are necessary to advance cardiovascular equity. This can be addressed successfully with proper medication, meaningful use of hypertension registries, unbiased proper blood pressure management with cultural humility, patients adoption of lifestyle changes, and addressing non-medical health-related social needs.[8,9]

Sustaining Achieving Cardiovascular Equity (ACE) Project Activities

To address hypertension and heart disease disparities, the Ohio Department of Health (ODH) Diabetes and Heart Disease Prevention and Management (DHDPM) Program implemented a three-year Primary Care Hypertension Quality Improvement Project (QIP) in collaboration with the Ohio Colleges of Medicine Government Resource Center (GRC) and The Ohio State University Wexner Medical Center.

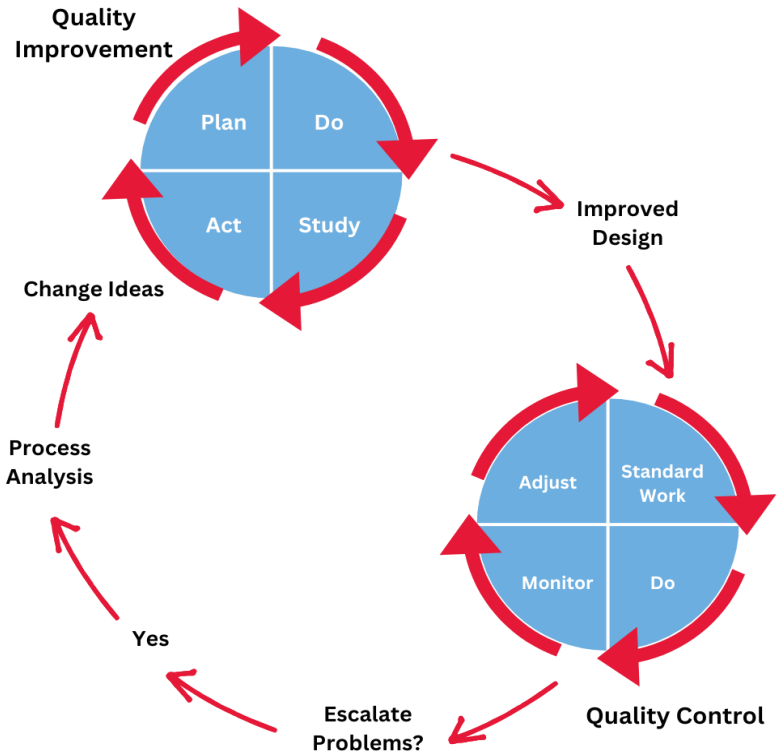
The ACE QIP worked to identify patients with undiagnosed hypertension, improve the management of adults with hypertension through the use of appropriate BP measurement, ensure hypertensive patients are completing self-management of blood pressure, and engage patients in rapid follow-up care. Teams utilized the Institute for Healthcare Improvement's (IHI) Model for Improvement to complete small tests of changes via plan-do-study-act (PDSA) cycles. Additional strategies used to achieve these goals are outlined in the ACE QIP provider change package. Sites were also challenged to address disparities at the site level. Through the use of these key strategies, the ACE QIP improved BP control across the patient population, impacting the Healthcare Effectiveness Data and Information Set (HEDIS) score for high blood pressure control.

The ACE QIP Sustainability Change Package

The resources compiled in this Sustainability Change Package are for primary care providers and other health care professionals to utilize after implementing the ACE QIP Change Package. It provides needed tools to sustain clinical process and enact policies related to the care of individuals with HTN. In addition to building upon key clinical interventions that are effective in driving change, this resource will describe the importance of holding gains, define supports needed for maintaining effective processes long term, and address institutionalizing policies for change.

Sustainability:

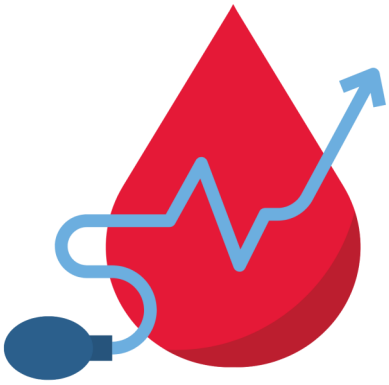
Sustainability in quality improvement refers to the ability to deliver high-quality care processes and services over time. When approaching improvement in a clinical setting, sustainability should be integrated into the planning process prior to project implementation. It represents an integral part of the QI project, and success for this component of work must be defined by the team in the context of the organization. For the ACE hypertension project, success was defined as ensuring all patients with a HTN diagnosis have controlled blood pressure, with a specific focus on eliminating the disparity between non-Hispanic Black and non-Hispanic white patients.



Continuous sustained improvement is driven by the five guiding principles of change:

1. Standardization
2. Accountability
3. Addressing problems proactively through escalation
4. Integration
5. Leadership engagement

During active QI implementation, teams are challenged to engage Plan-Do-Study-Act cycles, using small, rapid tests of change to identify and drive forward improvement.[10,11] When teams have achieved their S.M.A.R.T. (Specific, Measurable, Actionable, Realistic, Timely) aims and seek to sustain their gains, they are moving from quality improvement to quality control.



The implementation activities that were adopted during the QI project become part of a standard work process through institutionalizing policies. Rather than collecting data to drive change, staff should continue monitoring data to ensure accountability and minimally adjust processes as data indicates. When sustaining improvement activities, continuous data is critical to success so, teams can proactively identify issues and escalate problems as needed.

Lastly, continuous QI efforts require a top-down system change, ensuring change leaders have organizational leadership support for the new system. Leaders are critical for establishing improvement goals and creating a culture that promotes innovation and problem-solving.[12] To sustain QI efforts, leadership needs to prove their commitment to success. Human factors (such as relationships, trust, and healthy multidisciplinary teams), talent management, succession planning, and assurance are central to this way of working.[13] When adopting and integrating these five guiding principles of change, teams will be well-posed to ensure the work addressed during the implementation phases of a QI project continues.

Key Process Changes

Equipment

A critical step to supporting effective blood pressure (BP) measurement is ensuring that BP equipment is functioning properly and available in all patient rooms. Investing time upfront to stock or repair equipment will minimize staff frustration, allowing them to more easily focus on technique and new workflows to ensure accurate BP measurement. Consider the following steps prior to launching your activities:

- Maintenance and calibration: Ensure equipment is calibrated and working correctly to minimize inaccurate BP readings. Identify a position or individual responsible for ensuring the equipment is working properly. Aneroid sphygmomanometers should be calibrated every 6 months.[14] Automatic sphygmomanometers should be calibrated according to manufacturers instructions and follow ISO 81060-2:2018 guidelines.[15]
- Use as a visual reminder: Utilize posters or cards in the or room or consider leaving the BP cuff on the patient if the first BP reading is high. This will allow a medical professional to take the second reading after the 5-minute waiting period.
- Equip every patient room: Having the appropriate equipment in every patient room is essential for office flow when multiple BP readings are needed.

Proper BP Measurement

Proper BP measurement is essential for diagnosing hypertension. Research suggests that by properly measuring BP and repeating the measurement if a patient's BP is high (greater than 140/90 mm Hg) that approximately a third of patients had final BP readings lower than 140/90 mm Hg. This can lead to improved decision-making around HTN management. [16]

Staffing was frequently noted as a point of failure due to turnover, shortages, and/or float pool resources unfamiliar with the protocol. Keys to ensuring proper BP measurement include:

- Completing baseline training for all staff to include a comprehensive review of proper BP technique, when repeat readings are necessary, and common missteps to avoid. (e.g., Be sure to sit with your feet flat on the floor, cuff against the bare arm, etc.)
    - Training should include all staff who complete and document BP readings.
- Repeat annual refresher training for all staff, at minimum, to reinforce proper BP technique. While this may be successfully completed at existing meetings, some clinics also implemented 'spot checks' where a colleague observed the BP technique and provided immediate feedback.
- Implementing a plan to train new staff and float pool resources on proper BP techniques and BP-specific protocols.

Changes to your clinic workflow are likely necessary to align with best practices. Review your current workflow to ensure it allows for all appropriate steps. Most often changes were needed to reflect the proper timing of the initial BP measurement and second, if necessary. To ensure any changes are universally adopted, visual reminders may prove useful during implementation and beyond. Consider including:

- A 5-minute seated resting period before the first BP measurement.
    - If possible, allow more time for staff to room patients.
- Identifying which staff completes a repeat BP measurement if the first reading is elevated.
    - Avoid having the physician or resident provide the second BP measurement. While this is not ideal and could contribute to white coat syndrome, it may be the only viable solution for busy clinics or those with staffing issues.
- Utilizing visual cues to remind staff of the need for a second BP and next steps.
    - Leave the BP cuff loosely on a patient's arm to signify the need for a second BP reading.
    - Leave a red paper heart attached to the patient's door (or with the patient)
        - Helpful for reminding staff to complete second BP reading and/or scheduling follow-up appointments.

Self-Measured Blood Pressure (SMBP) Monitoring

SMBP processes are integral to a patient's BP control. Key process changes can help address the utilization of SMBP monitoring and ensure the patient receives the necessary care and follow-up.

1. Have clinic staff ensure that any patient with an elevated BP has access to an SMBP device.
    - If there is a significant need in your community, consider an SMBP loaner program.[17]

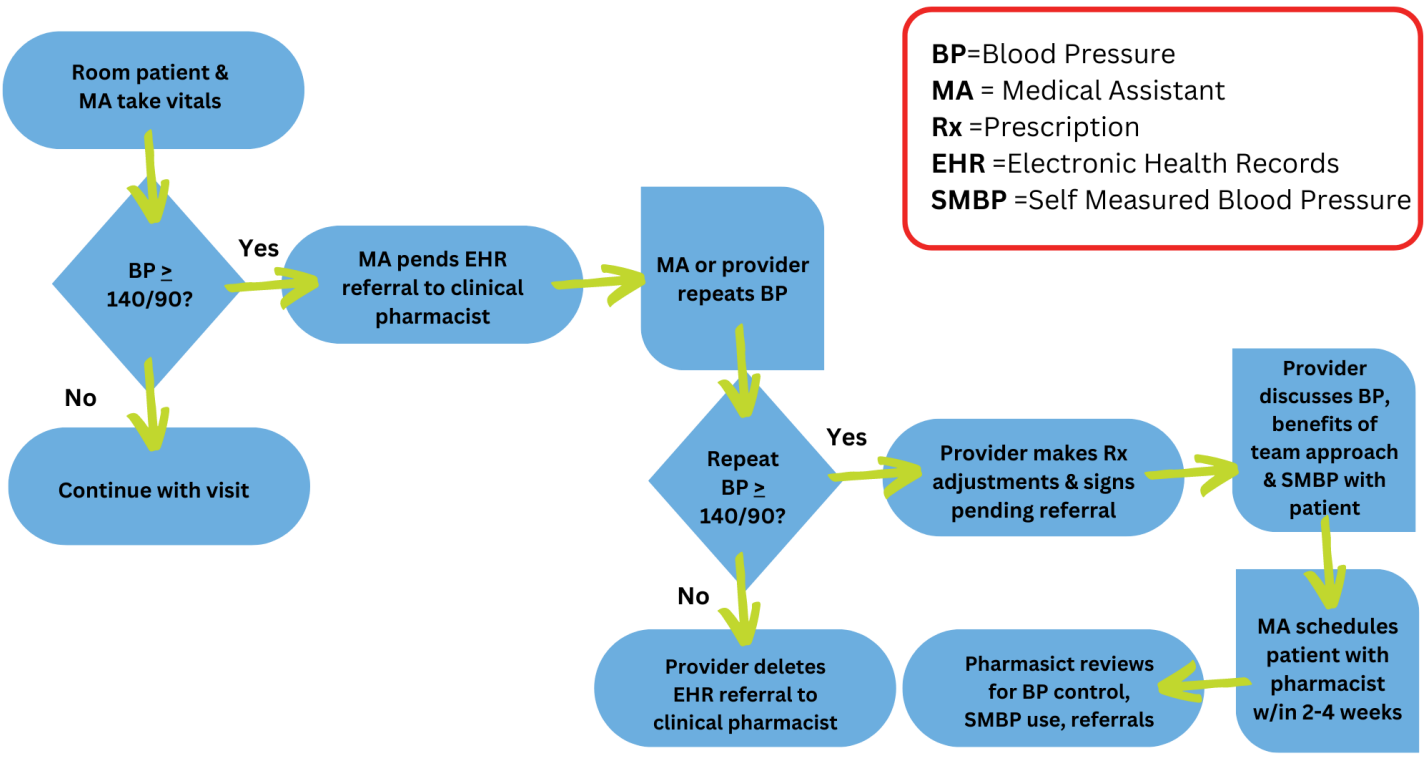
2. Identify the appropriate clinic staff to provide patient support and education for SMBP. Consider pharmacists and/or nurse extenders for this role.
    - This individual may assist in setting up the SMBP device, ensuring the patient understands how to use the device and the proper technique for an accurate BP.
    - This may include assistance with Bluetooth connections for compatible devices.

3. Consider the patient's role, including how and when to share SMBP data.
    - At a minimum, encourage patients to record two SMBP readings twice daily for 3 days.[18]
    - Share SMPB data in one of the following ways:
        - ◊ Direct connection to the patient portal via Bluetooth-enabled SMBP devices.
        - ◊ Advise the patient to bring the device to the next appointment for review.
        - ◊ Provide a paper BP log to capture readings; the patient can take a picture and upload to the patient portal or bring to the next appointment.

4. Use the following CPT codes to reimburse for SMBP activities.[19] The economic case for SMBP is also worth reviewing.[20]
    - CPT code 99743 can be used once when staff provides SMBP training, device set up and/or calibration, and instruction for patients to monitor their BP at home.
    - CPT code 99744 can be used once a month for ongoing treatment, such as electronic or in-person review of BP logs and provider averaging the patient's BP readings to inform next steps.

5. Finally, determine a threshold or criteria at which to notify the provider to review data or identify the next steps.

Below is an example of a successful workflow utilizing clinical pharmacist. This workflow can be adapted to best fit your clinic process.



Rapid Follow-up Care

Best practice suggests scheduling follow up appointments within 2-4 weeks to review for BP control and potential medication adjustments. However, staffing shortages can contribute to limited follow-up care. If staffing challenges persist, consider the following:

- Consult with the prescribing provider and determine if alternate staff, such as a pharmacist or nurse, could be used for follow-up care regarding BP control.
- Utilize various visit types to your and the patient's benefit.
    - Consider an unscheduled BP recheck by office staff.
    - Review SMBP detail via telehealth visits. Recent changes (CMS165v11)[21] allow for SMBP readings to be documented from a remote monitoring device at the clinician's discretion if the device is considered acceptable and reliable.

Using Data to Sustain Change

Key measures, including construction

Data reports require the use of process and outcome measures to evaluate progress. Participants should consider the health equity gap, specifically focusing on the non-Hispanic Black population. A defined list of data elements (see Table 1) was used to derive the measures along with the requested frequency of each data element. Sustainability requires data to continue to be collected and processed monthly or quarterly at minimum to produce QI charts. The performance measures are recommended to be available in a central data dashboard or posted in a centralized location so all team members are aware of site activities and ideally stratified by relevant covariates (e.g., age, race/ethnicity, health insurance status).

EHR codes and definitions

ICD-9 codes for hypertension, uncomplicated and complicated, mirror those used in developing the Elixhauser AHRQ-Web comorbidities index.[22] Codes used by Quan et al. (2005) form the basis of the initial materials.[23]

The main ICD-9 codes for hypertension, uncomplicated and complicated include: 401.0, 401.1, 401.9, 402 – 405. The main ICD-10 codes include: I10.x, I11.x – I13.x, I15.x. Detailed measures used to calculate variables related to hypertension control can be found in the appendix (Table 2).

Frequency of reporting

To assess the impact of change in real-time, it is important to look at data over time to see how your system is changing with your intervention. When looking at a quality issue from an improvement perspective, we view smaller amounts of data, but more frequently to see if we are improving over time. [24] The data should be available as close to real-time as possible, ideally on a daily or weekly basis. The data should prompt discussion and action, with the team reviewing the data regularly, identifying any signals that suggest something unusual in the data, and taking action as necessary.[25] Data can be reported daily, weekly, bi-weekly or monthly, from a baseline period to the implementation period, to compare data before and after an intervention while studying trends to assess whether an outcome is improving.

Chart types for effective communication

QI efforts must be measured to assess how a system is performing over time.[26] Trends and patterns are essential to understanding the impact of changes in QI. The data should be shown as a time series analysis, to provide a visual display of whether the system is improving.[25]

Two types of variation that can be seen in data measured over time are common cause and special cause variation.[26] Common cause variation is natural variation that is inherent to any process, occurring on a regular basis.[26] Repeated measures of the same factor or process, even without changes to that system, often produce slightly different values.[26] Special cause variation, in contrast, refers to unnatural variation that is due to external factors.[26]

Graphical displays of data over time can aid in distinguishing common cause and special cause variation.[26] Statistical process control (SPC) methods are most commonly used for this type of analysis.[26]

The main tools used for this purpose are a run chart and Shewhart (or control) chart.[25] The run chart (Fig 1) is a graphical display of data in time order, with a median value, and uses probability-based rules to help identify whether the variation seen is random or non-random.[25]

Fig 1: Run Chart Construction

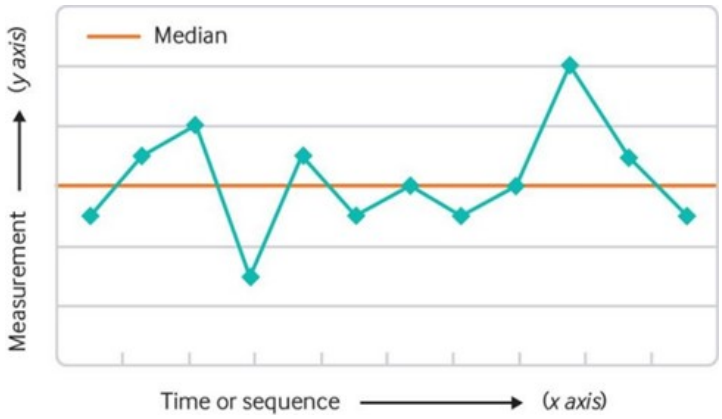


Image Source: Munich Gupta and Heather C Kaplan. (2017). Using Statistical Process Control to Drive Improvement in Neonatal Care. A Practical Introduction to Control Charts

Shewhart (control) charts are meant to identify the common cause and special cause variation.[26] The control chart (Fig 2) also displays data in time order, but with a mean as the center line instead of a median, and the standard deviation plotted as upper and lower control limits (UCL and LCL) placed at ± 3 standard deviations from the mean which defines the boundaries within which you would predict the data to be.[26,27] Control limits reflect the inherent variability in the data.[26]

Fig 2: Shewart (Control) Chart Construction

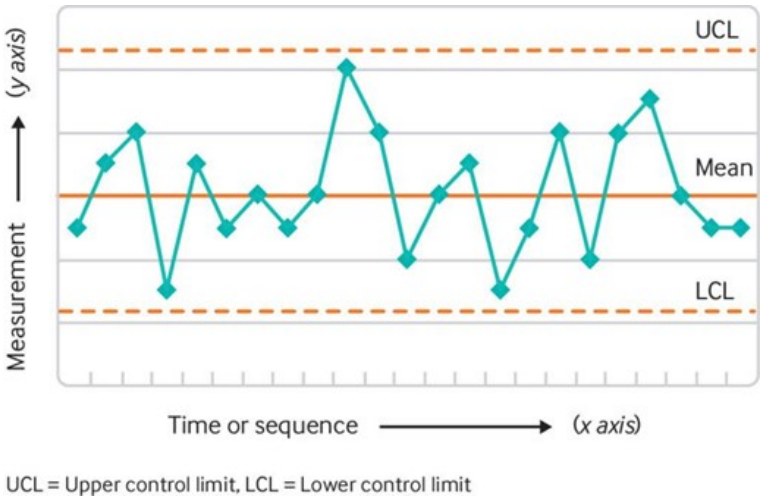


Image Source: Munich Gupta and Heather C Kaplan. (2017). Using Statistical Process Control to Drive Improvement in Neonatal Care. A Practical Introduction to Control Charts

Closing

In addition to the specific elements outlined above, financial alignment contributes to the potential for overall success. Value-based care continues to be embraced by health systems, insurers and managed care plans, where financial incentives are provided to those that achieve goals related to quality and/or patient outcomes.[28-31] Across Ohio, several value-based initiatives are underway within the primary care space.[32,33] By aligning QI project outcomes to measures more broadly used (e.g., HEDIS quality rating system (QRS) metric used by Centers for Medicare & Medicaid Services (CMS) and Ohio Department of Medicaid (ODM) for population health strategies, it allows practices to potentially increase reimbursements related to QI efforts. The ACE QIP found that many practices are willing to prioritize hypertension QI efforts due to potential financial incentive and synergy with system-level financial priorities.

Appendix

Table 1. Key Measure Definitions

Hypertension QIP Measures	Data Definition	Numerator	Denominator	Measure Type
Core Measures (from EHR)				
1. % of total patients with hypertension diagnosis	BP diagnosis and visit date	Patients with a hypertension diagnosis	All adult patients	Process
2. % of hypertensive patients in control	Most recent BP and date	Systolic<140 mmHg. Diastolic <90 mmHg Exclusions: Active pregnancy during the measurement period; End Stage Renal Disease; Chronic Kidney Disease; Dialysis; and/or Hospice care	All adult hypertensive patients	Outcome
3. % of hypertensive patients referred to an evidence-based lifestyle program	Number of adult patients (aged 18-85) seen during the measurement period with a diagnosis of HTN who received a referral to an evidence-based lifestyle program from their health care provider within the last 12 months	Patients referred to at least one community program	All adult hypertensive patients	Process
4. Percentage of patients with undiagnosed hypertension	Number of adult patients (aged 18-85) seen during the measurement period who do not have a diagnosis of HTN but are identified as potentially having HTN	Two stage 1 HTN BP measurements during the last 12 months (Systolic >=140 and < 160 mm Hg OR-Diastolic >=90 and < 100 mm Hg) OR One stage 2 HTN BP measurement at any visit during the past 12 months (Systolic >=160 mm Hg OR Diastolic >= 100 mm Hg) Exclusions: Active pregnancy during the measurement period; End Stage Renal Disease; Chronic Kidney Disease; Dialysis; and/or Hospice care	All adult patients without a hypertension diagnosis	Outcome

Appendix

Table 1. Key Measure Definitions (cont.)

		Active pregnancy during the measurement period; End Stage Renal Disease; Chronic Kidney Disease; Dialysis; and/or Hospice care		
9. Percentage of hypertensive patients with follow-up appointment scheduled within 35 days	Percentage of hypertensive patients whose next appointment to address hypertension in primary care is within 35 days	All hypertensive patients who had a follow-up appointment scheduled within 35 days of their most recent visit	All adult hypertensive patients (systolic BP > 140 and diastolic BP >90 during most recent reading)	Process
10. Percentage of hypertensive patients with a follow-up appointment attended within 35 days	Among patients with a follow-up visit scheduled within 35 days, the percentage who attended that visit	All patients who attended their follow-up visit	All adult hypertensive patients who had a follow-up appointment scheduled within 35 days of their most recent visit	Process
7. Percentage of adult patients screened for Social Determinants of Health (SDOH) within the last 12 months	Examples of SDOH screening: American Academy of Family Physicians - Social Needs Screening Tool (https://www.aafp.org/dam/AAFP/documents/patient_care/everyone_project/physician-long.pdf) or https://prapare.org/	All patients receiving at least one screening in the past 12 months	All adult patients	Outcome
8. Percentage of patients screened for SDOH who were referred to community/social services	Patients referred to community and social services; including housing, food, transportation, utilities, child care, financial assistance, job services, education needs, etc.	All patients given information or connected to community resources to help address their social needs	All adult patients receiving at least one screening in the past 12 months	Outcome

Appendix

Table 2: EHR codes and Definitions for Hypertension

401, I10	ESSENTIAL (PRIMARY) HYPERTENSION
401.1	ESSENTIAL HYPERTENSION, BENIGN
401.9	UNSPECIFIED ESSENTIAL HYPERTENSION
402, I11	HYPERTENSIVE HEART DISEASE
402	MALIGNANT HYPERTENSIVE HEART DISEASE WITH HEART FAILURE
402.1	BENIGN HYPERTENSIVE HEART DISEASE
402.1	BENIGN HYPERTENSIVE HEART DISEASE WITH HEART FAILURE
402.9	UNSPECIFIED HYPERTENSIVE HEART DISEASE
402.9	UNSPECIFIED HYPERTENSIVE HEART DISEASE WITH HEART FAILURE
403, I12	HYPERTENSIVE CHRONIC KIDNEY DISEASE
403	MAL HY KID W CR KID V
403.1	HYPERTENSIVE KIDNEY DISEASE, BENIGN
403.1	BEN HYP KID W CR KID V
403.9	UNSPECIFIED HYPERTENSIVE KIDNEY DISEASE
403.9	HYP KID NOS W CR KID V
404, I13	HYPERTENSIVE HEART AND CHRONIC KIDNEY DISEASE
404	MAL HYP HT/KD I-IV W HF
404	MAL HRT/REN HYPERTEN & REN FAIL
404	MAL HYP HT/KD STG V W HF
404.1	HYPERTENSIVE HEART AND KIDNEY DISEASE, BENIGN
404.1	BEN HYP HT/KD I-IV W HF
404.1	BEN HY HT/KD ST V W/O HF
404.1	BEN HYP HT/KD STG V W HF
404.9	UNSPECIFIED HYPERTENSIVE HEART AND KIDNEY DISEASE
404.9	HYP HT/KD NOS I-IV W HF
404.9	HY HT/KD NOS ST V W/O HF
404.9	HYP HT/KD NOS ST V W HF
405, I15	SECONDARY HYPERTENSION
405	SECONDARY RENOVASCULAR HYPERTENSION, MALIGNANT
405.1	OTHER SECONDARY HYPERTENSION, MALIGNANT
405.1	SECONDARY HYPERTENSION, BENIGN
405.1	SECONDARY RENOVASCULAR HYPERTENSION, BENIGN
405.2	OTHER SECONDARY HYPERTENSION, BENIGN
405.9	UNSPECIFIED SECONDARY HYPERTENSION, UNSPECIFIED
405.9	SECONDARY RENOVASCULAR HYPERTENSION, UNSPECIFIED
406	OTHER SECONDARY HYPERTENSION, UNSPECIFIED

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