

Improving hypertension control at federally qualified primary health centers applying quality improvement methodology: experiences and outcomes

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CCPC Fellowship Graduation Celebration

August 28, 2023

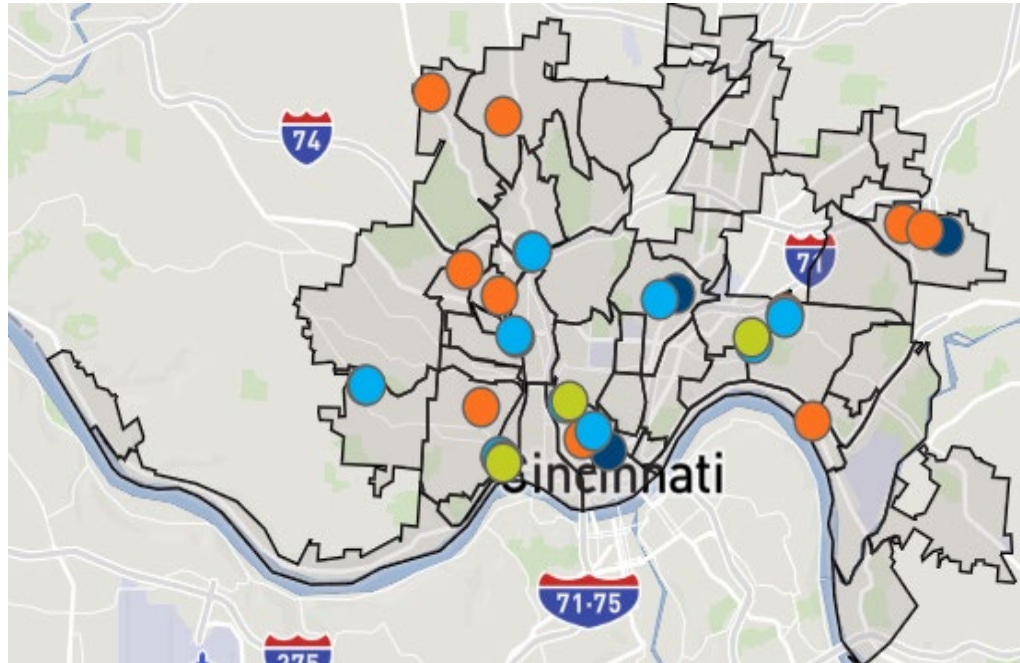
Disclosures

- Commercial interest: none

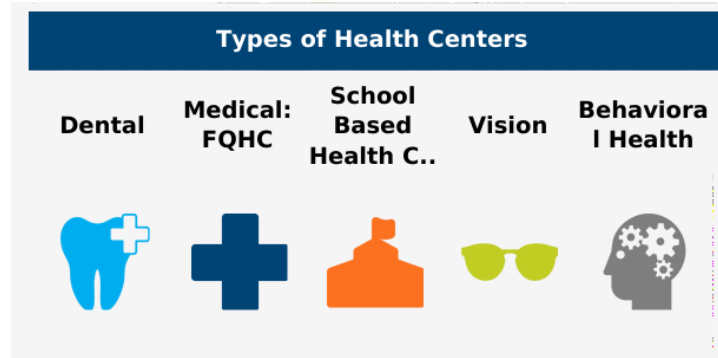
Overview

- Review the definition of high blood pressure (hypertension), prevalence and importance of blood pressure (BP) control
- Discuss how we adopted AMA's M.A.P. QI Improvement framework to improve HTN control at the Cincinnati Health Department
- Review results and lessons learned from our HTN control quality improvement project
- Q&A

Setting: Cincinnati Health Department



- Federally Qualified Health Center
- City of Cincinnati Primary Care
- Division of the Cincinnati Health Department
 - 6 Primary Care Centers
 - 6 Pharmacy Locations
 - 13 School Based Health Centers
 - 5 Dental Centers



The Importance of Blood Pressure Control

Defining Hypertension

- **BP \geq 140/90** (2003/2014 JNC guidelines)
- **BP \geq 130/80** (2017 ACC/AHA guidelines)

Magnitude of the Hypertension Problem

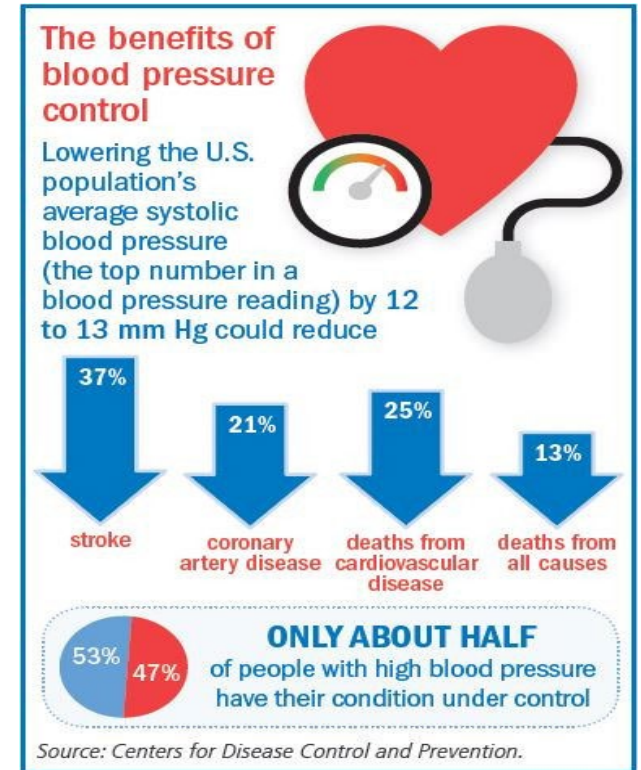
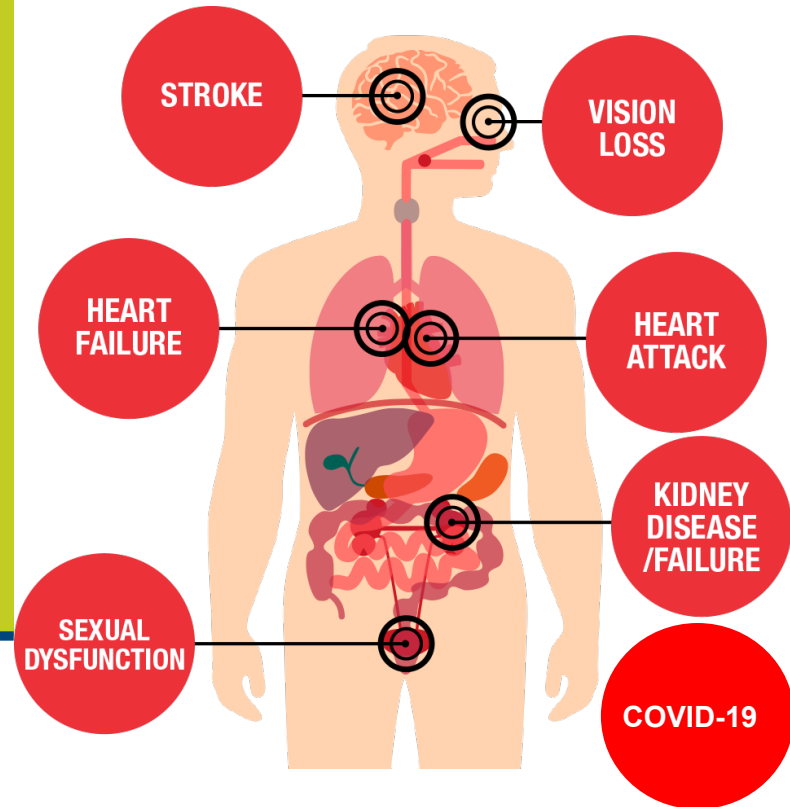
- Nearly half of adults (47% or 116 million) in the United States have hypertension¹.
- Most adults with hypertension in the United States (92.1 million) do not have their hypertension under control².
- Hypertension is more prevalent in non-Hispanic black adults (56%) when compared to non-Hispanic white adults (48%), non-Hispanic Asian adults (46%), or Hispanic adults (39%)³.

1. "Facts about Hypertension." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 27 Sept. 2021, <https://www.cdc.gov/bloodpressure/facts.htm>.

2. Rana J, Oldroyd J, Islam MM, Tarazona-Meza CE, Islam RM. Prevalence of hypertension and controlled hypertension among United States adults: Evidence from NHANES 2017-18 survey. *Int J Cardiol Hypertens*. 2020 Oct 26;7:100061. doi: 10.1016/j.ijchy.2020.100061. PMID: 33447782; PMCID: PMC7803033.

3. *Racial Differences in High Blood Pressure* . (2017). www.heart.org. Retrieved January 9, 2022, from <https://www.heart.org/en/news/2018/05/01/more-than-half-of-all-african-americans-have-high-blood-pressure-under-new-diagnostic-guidelines>.

Why should we care about improving HTN Control?



Health threats from High Blood Pressure.(2016) www.heart.org. Retrieved January 9, 2022, from <https://www.heart.org/en/health-topics/high-blood-pressure/health-threats-from-high-blood-pressure>.

Controlling Blood Pressure with Fewer Side Effects (2020) health.harvard.edu. Retrieved January 9, 2022, from <https://www.health.harvard.edu/heart-health/controlling-blood-pressure-with-fewer-side-effects>

Gaps in Hypertension Control



■ Environmental/Societal Factors

- Limited access to healthcare
- Limited access to nutritious foods and recreation
- Lack of transportation
- Inadequate community resources
- Poor living and working conditions
- Housing instability
- Segregation and discrimination
- Limited access to quality education
- Limited media and technology access



■ Patient Factors

- Low health literacy
- Treatment non-adherence
- Unhealthy lifestyle choices
- Loss to follow up
- Mental illness
- Poor social support



■ Physician/Provider Factors

- Competing priorities/time
- Clinical inertia
- Not using evidence-based treatment protocols
- Knowledge gap
- Providing limited access to patients



■ Health System Factors

- Inaccurate BP Measurement protocols
- Practice resource constraints
- Lack of organizational priority

Applying AMA's M.A.P. Framework to Improve Blood Pressure Control at the Cincinnati Health Department

AMA M.A.P Quality Improvement Framework

Measure accurately

Act rapidly

Partner with patients

M

Increase BP measurement accuracy

- ✓ Incorporate standardized patient positioning
- ✓ Use upper arm BP automated measurement devices validated for clinical accuracy and calibrated regularly
- ✓ Implement standardized measurement protocol (screen and confirm approach)

A

Adopt standardized, evidence-based protocols for treating hypertension

- ✓ Use an evidence-based treatment protocol
- ✓ Frequent, follow-up visits until blood pressure is controlled
- ✓ Single-pill combination therapy to treat when possible

P

Promote patient self-management

- ✓ Incorporate self-measured blood pressure (SMBP) education, tools and resources for patients
- ✓ Encourage healthy lifestyle changes to improve BP control
- ✓ Assess and address medication and treatment non-adherence
- ✓ Use collaborative communication

About the Cincinnati Health Department (CHD)

- CHD operates six Primary Care Health Centers, one free-standing dental center, one free-standing vision and dental center and thirteen School-Based Health Centers that have a Federally Qualified Health Center (FQHC) designation.



AIM of the QI Project

- To increase the percentage of patients age 18-85 with controlled hypertension (BP lower than 140/80) from a median of 58% to 72% across all CHD health centers.
 - Exclusions: ESRD, dialysis, renal transplant and hospice care

Blood Pressure Control KDD

Project Leader(s): Meron Hirpa, MD

Revision Date: 08/19/2023 (v9)

Global Aim

Enhance the health of our patients to be able to live at their highest quality of life by reducing their risk of serious cardiovascular morbidity and mortality with improved blood pressure control.

SMART Aim

To increase the percentage of CCPC patients age 18-85 with controlled hypertension (BP lower than 140/90) from

58% to 72%

by date 12/31/2023.

Population

Patients age 18-85 with a diagnosis of hypertension who had at least one outpatient primary care encounter at the CCPC Medical Centers during the measurement year.

Blood Pressure Control KDD

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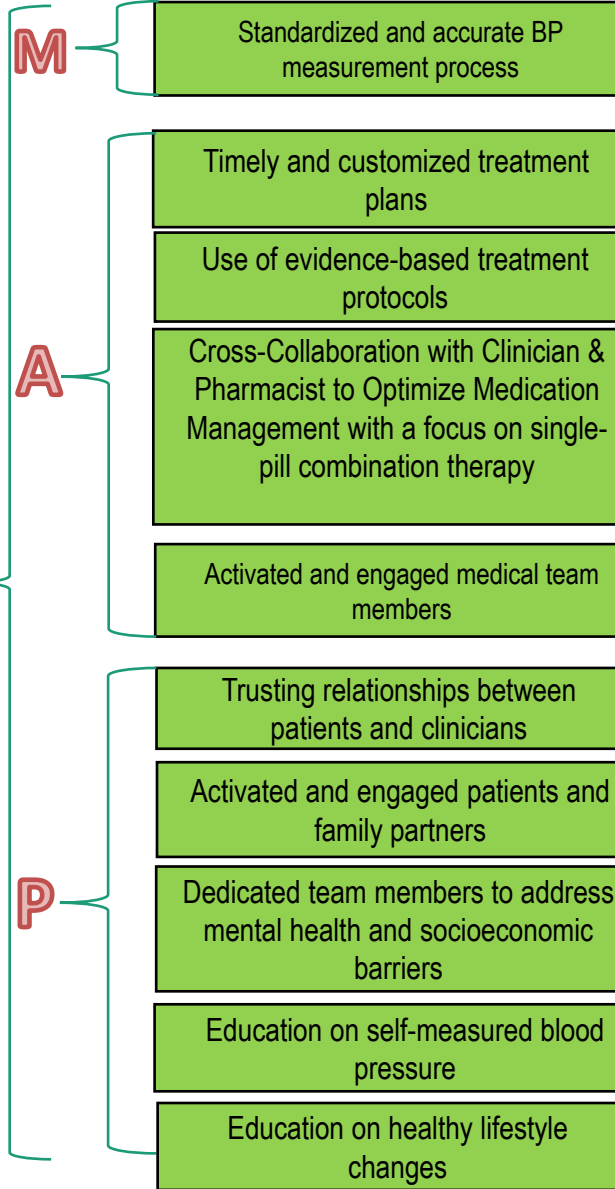
SMART Aim

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Population

Patients age 18-85 with a diagnosis of hypertension who had at least one outpatient primary care encounter at the CCPC Medical Centers during the measurement year.

Key Drivers



Note: LOR # = Level

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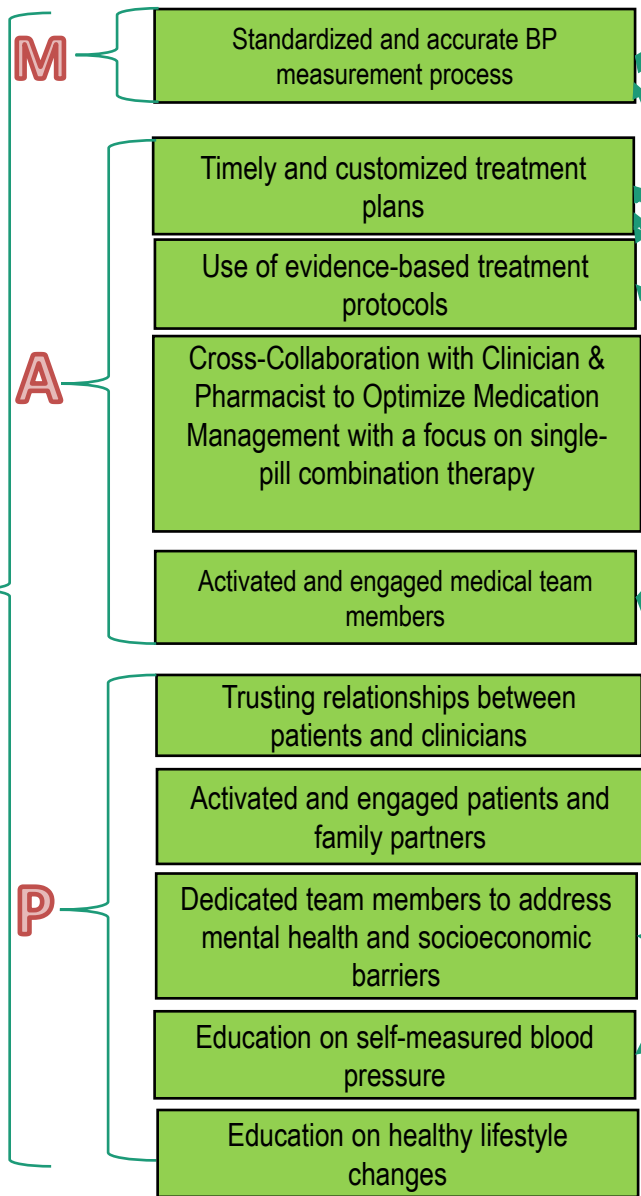
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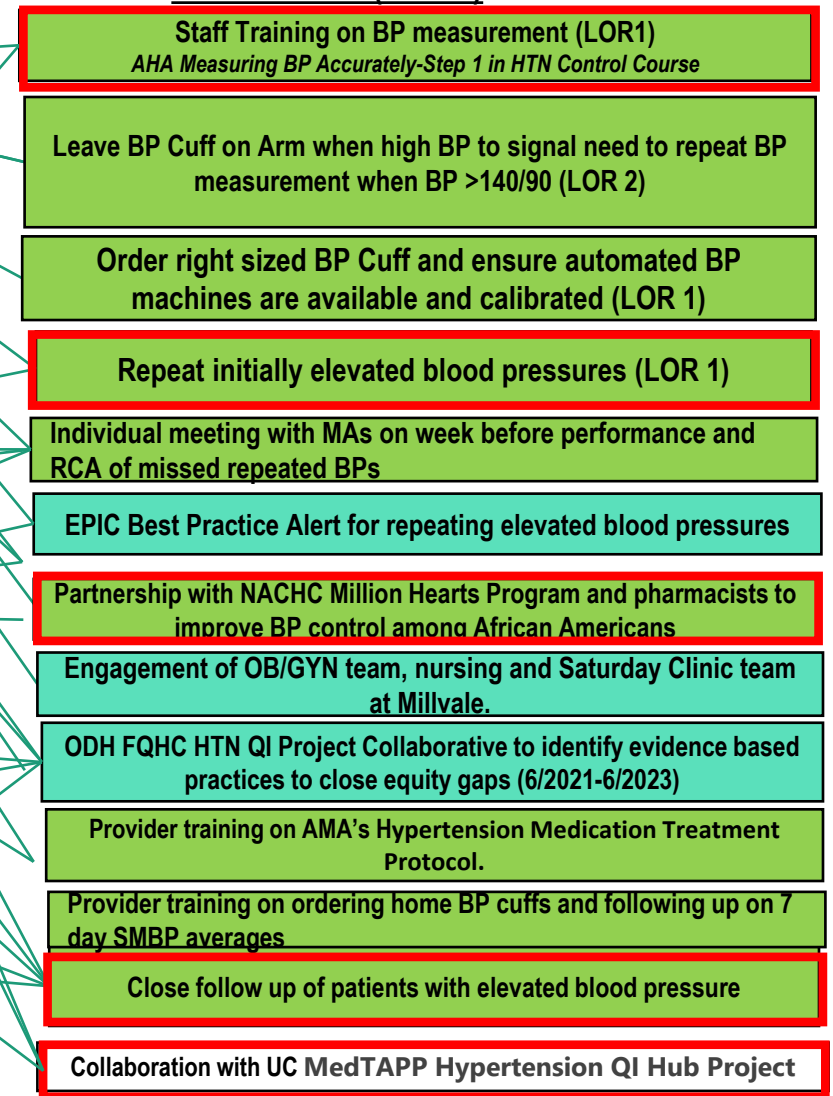
Population

Patients age 18-85 with a diagnosis of hypertension who had at least one outpatient primary care encounter at the CCPC Medical Centers during the measurement year.

Key Drivers



Interventions (LOR #)



Legend

- Potential intervention
- Active intervention
- Adopted/Abandoned intervention

Note: LOR # = Level of Reliability Number, e.g., LOR 1

Putting it into Action

Change Package

- 1. Repeat Elevated BP (**Measure Accurately**)
- 2. Address Uncontrolled HTN at each visit (**Act Rapidly**)
- 3. Frequent follow up (**Act Rapidly**)
- 4. Incorporate self-measured blood pressure (SMBP) and healthy lifestyle changes to improve BP control (**Partner with patients**)



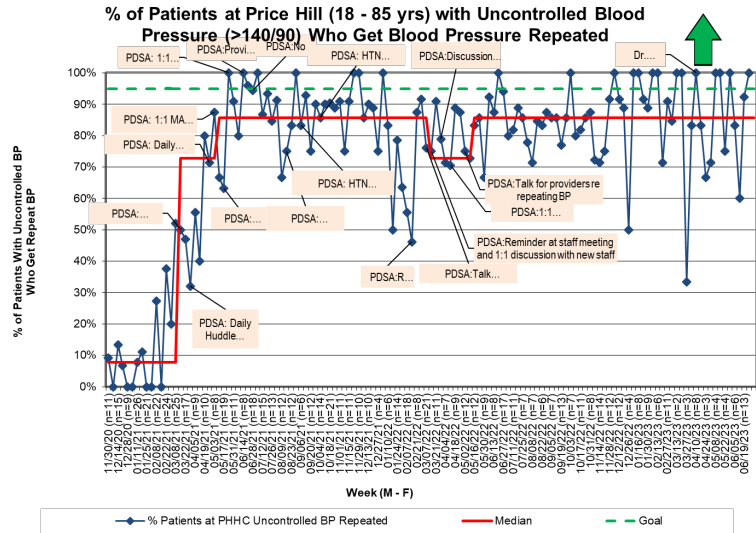
Run/Control Chart-Price Hill and Millvale

Change Package:

1. Repeat Elevated BP
2. Address Uncontrolled HTN at each visit
3. Frequent follow up
4. SMBP & healthy lifestyle education



Price Hill



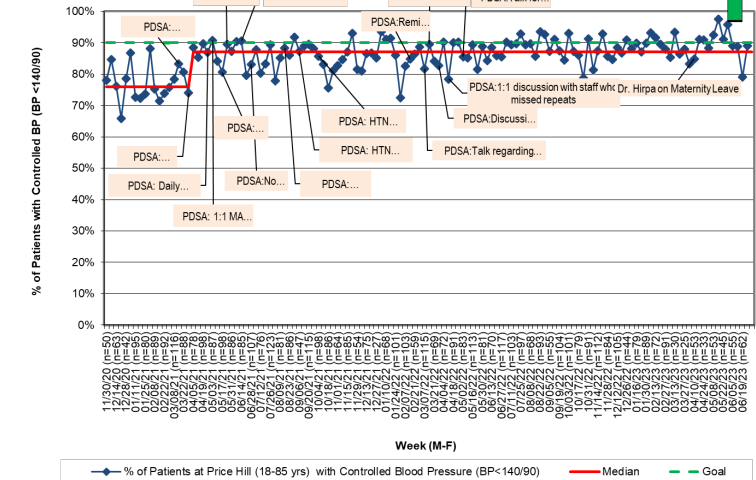
REPEATING ELEVATED BPs

Goal: To repeat >95% of elevated BPs

Before intervention: Only 8% of elevated BPs were repeated

After intervention: 86% of elevated BPs were repeated

% of Patients at Price Hill (18-85 yrs) with Controlled Blood Pressure (BP<140/90)



% Controlled BP

Goal: To have >90% patients with BPs controlled (<140/90)

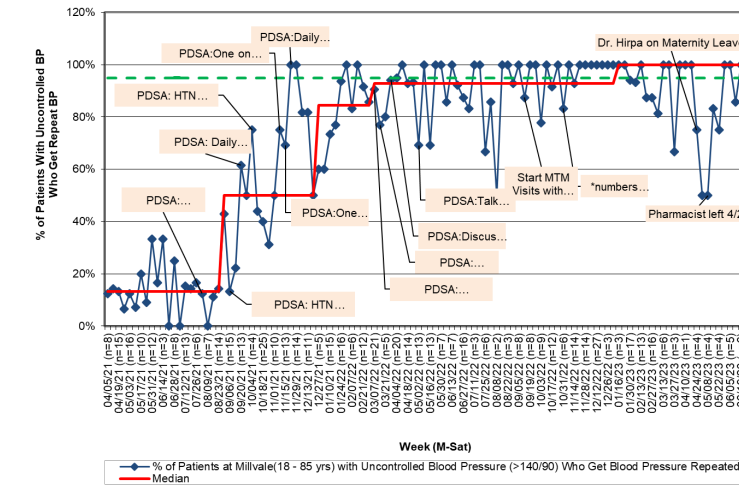
Before intervention: Only 76% of BPs were controlled

After intervention: 88% of BPs were controlled

Millvale



% of Patients at Millvale(18 - 85 yrs) with Uncontrolled Blood Pressure (>140/90) Who Get Blood Pressure Repeated



REPEATING ELEVATED BPs

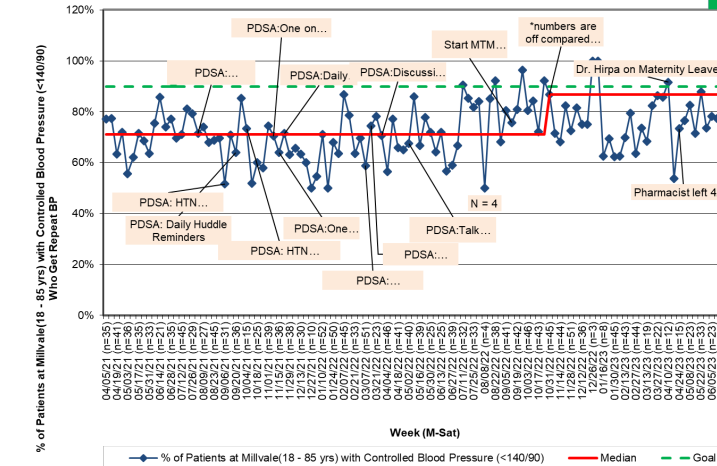
Goal: To repeat >95% of elevated BPs

Before intervention: Only 13% of elevated BPs were repeated

After intervention: 100% of elevated BPs were repeated



% of Patients at Millvale(18 - 85 yrs) with Controlled Blood Pressure (<140/90)



% Controlled BP

Goal: To have >90% patients with BPs controlled (<140/90)

Before intervention: 72% of BPs were controlled

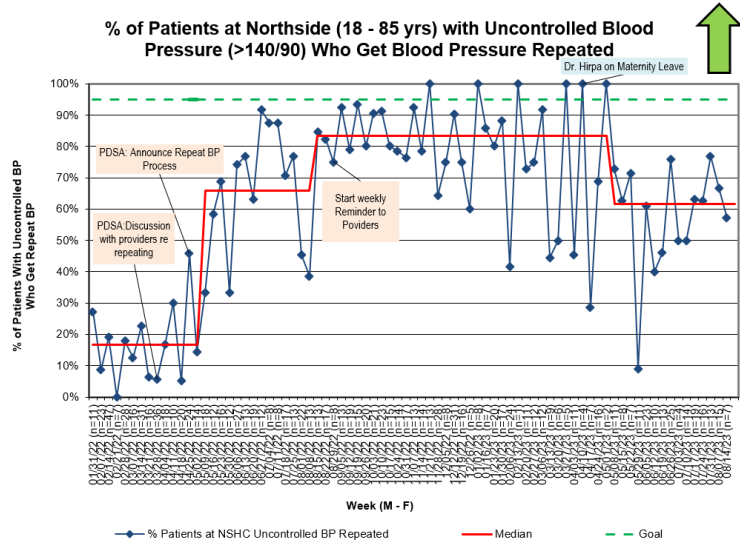
After intervention: 87% of BPs are controlled

Run/Control Chart-Northside and Bobbie Sterne

Change Package:

1. Repeat Elevated BP
2. Address Uncontrolled HTN at each visit
3. Frequent follow up
4. SMBP & healthy lifestyle education

Northside



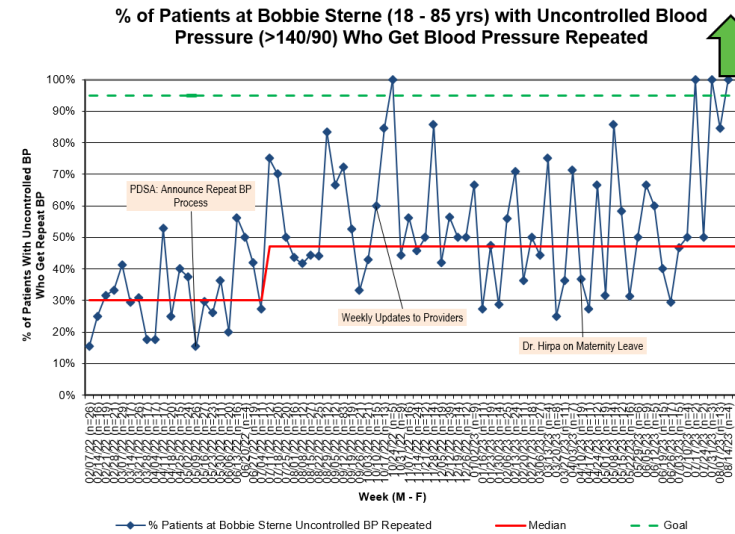
REPEATING ELEVATED BPs

Goal: To repeat >95% of elevated BPs

Before intervention: Only 17% of elevated BPs were repeated

After intervention: 62% of elevated BPs were repeated

Bobbie Sterne

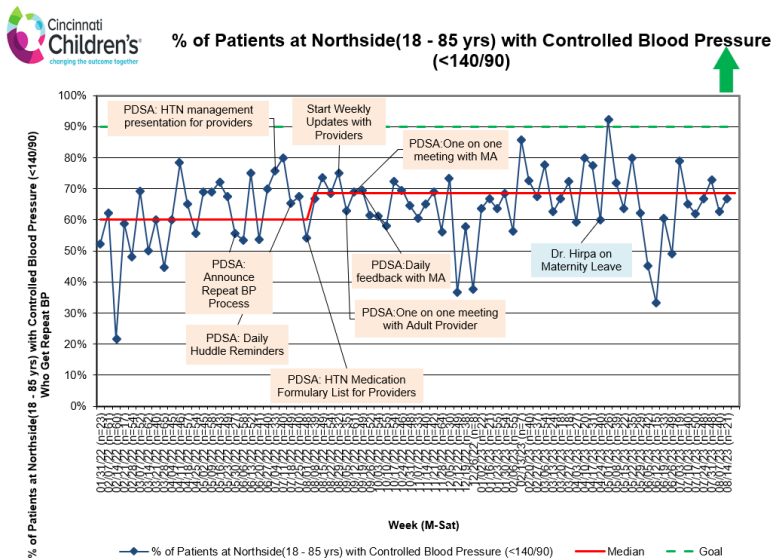


REPEATING ELEVATED BPs

Goal: To repeat >95% of elevated BPs

Before intervention: Only 30% of elevated BPs were repeated

After intervention: 47% of elevated BPs were repeated

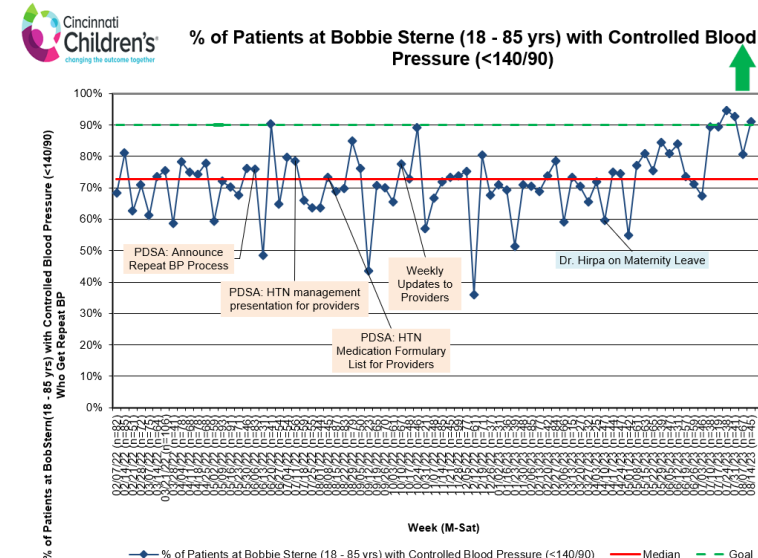


% Controlled BP

Goal: To have >90% patients with BPs controlled (<140/90)

Before intervention: 60% of BPs were controlled

After intervention: 69% of BPs were controlled



% Controlled BP

Goal: To have >90% patients with BPs controlled (<140/90)

Before intervention: 73% of BPs were controlled

After intervention: No significant change in outcome measure yet.

Run/Control Chart-Ambrose and Braxton Cann

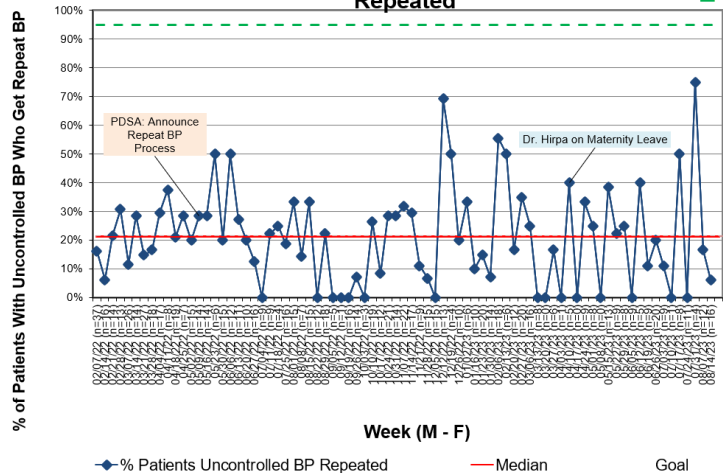
Change Package:

1. Repeat Elevated BP
2. Address Uncontrolled HTN at each visit
3. Frequent follow up
4. SMBP & healthy lifestyle education



Ambrose Clement

% of Patients at Ambrose (18 - 85 yrs) with Uncontrolled Blood Pressure (>140/90) Who Get Blood Pressure Repeated



REPEATING ELEVATED BPs

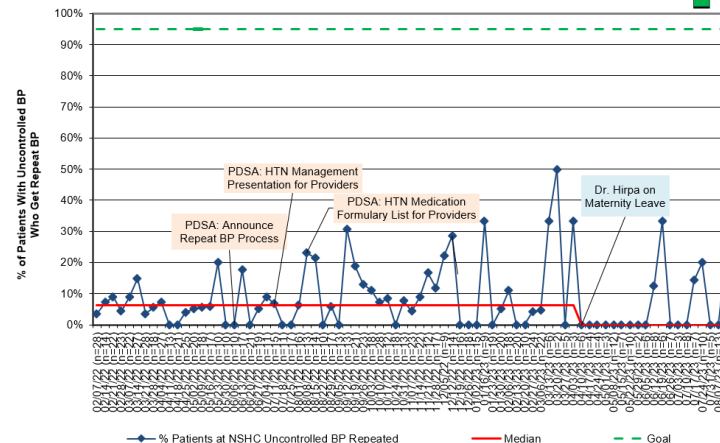
Goal: To repeat >95% of elevated BPs

Before intervention: Only 21% of elevated BPs were repeated

After intervention: No significant change in process measure yet.

Braxton Cann

% of Patients at Braxton (18 - 85 yrs) with Uncontrolled Blood Pressure (>140/90) Who Get Blood Pressure Repeated



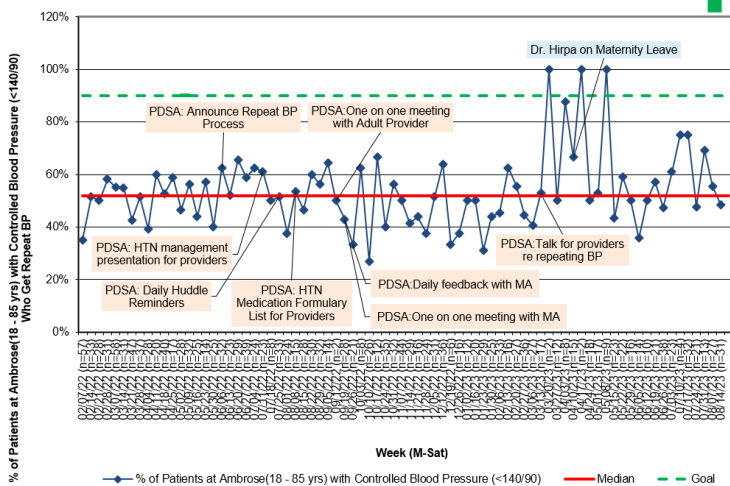
REPEATING ELEVATED BPs

Goal: To repeat >95% of elevated BPs

Before intervention: Only 6% of elevated BPs were repeated

After intervention: 0% of BPs were controlled

Cincinnati Children's % of Patients at Ambrose(18 - 85 yrs) with Controlled Blood Pressure (<140/90)



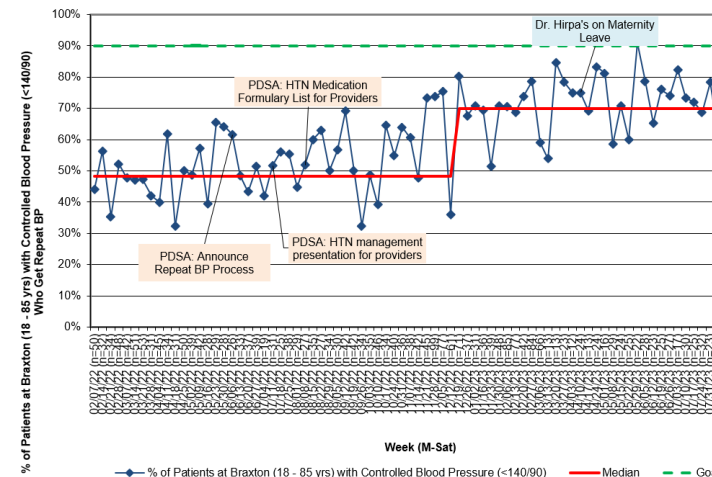
% Controlled BP

Goal: To have >90% patients with BPs controlled (<140/90)

Before intervention: 52% of BPs were controlled

After intervention: No significant change in outcome measure yet.

Cincinnati Children's % of Patients at Braxton (18 - 85 yrs) with Controlled Blood Pressure (<140/90)



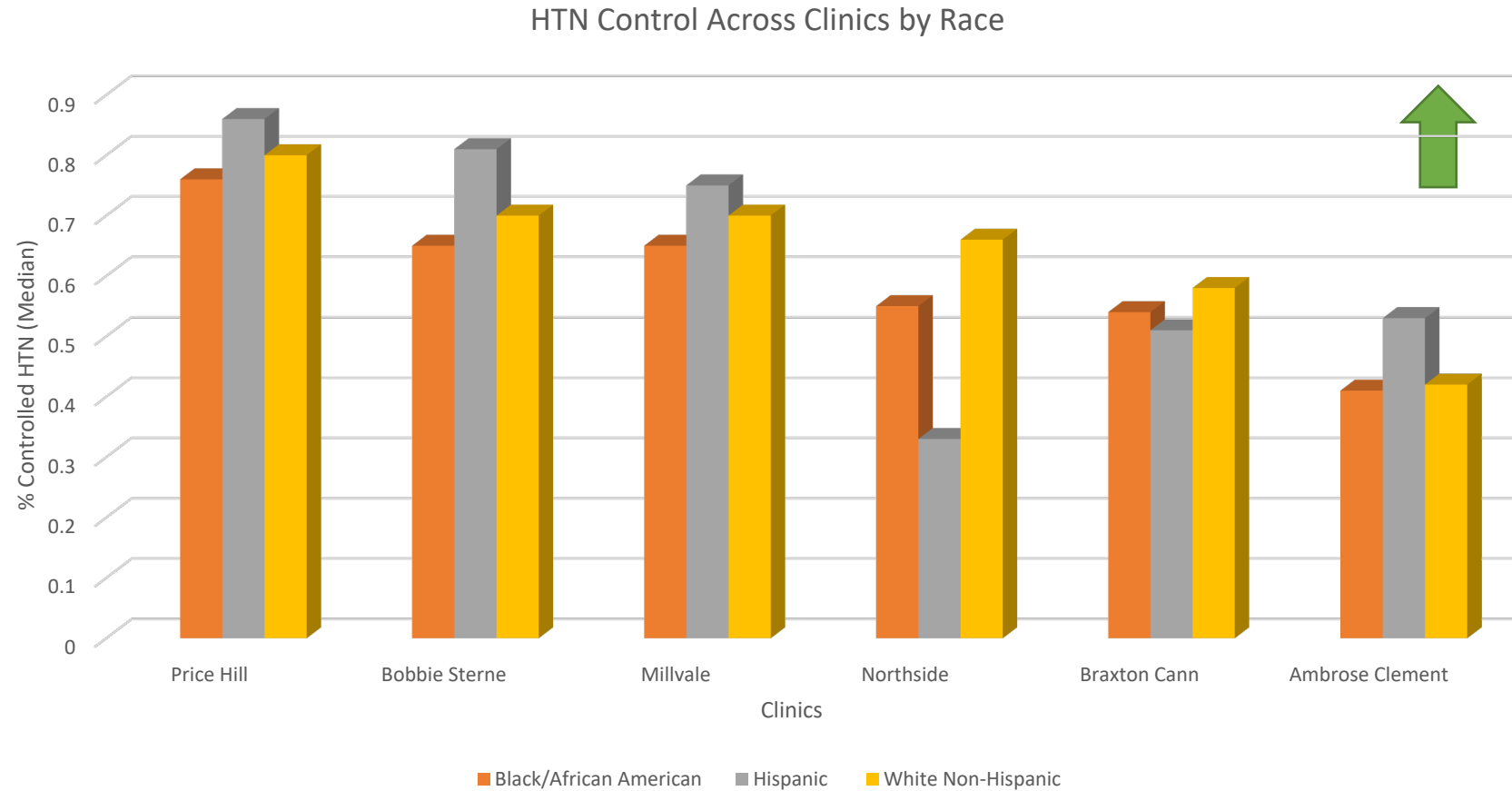
% Controlled BP

Goal: To have >90% patients with BPs controlled (<140/90)

Before intervention: 48% of BPs were controlled

After intervention: 70% of BPs were controlled

Disparities in Hypertension Control by Race

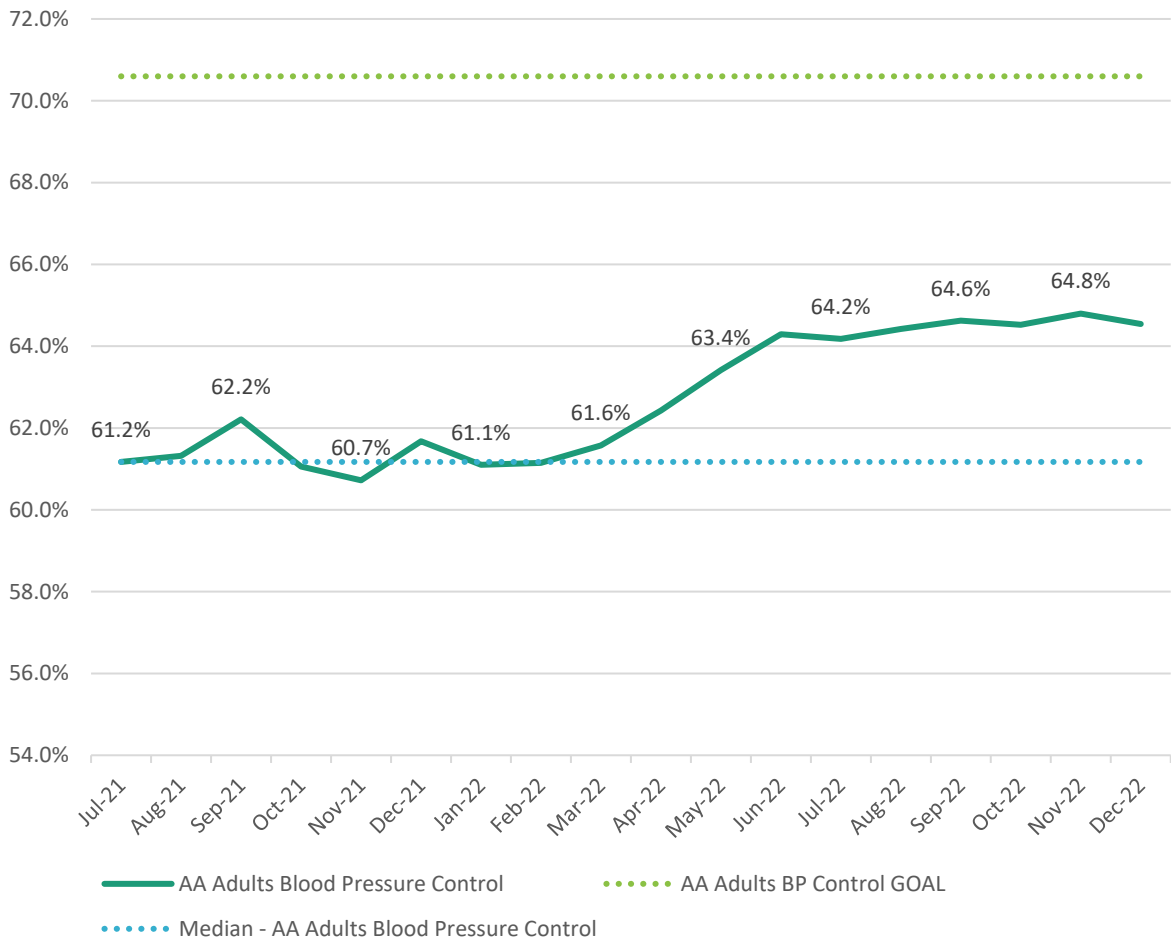


- BP control rates vary by race with lowest control rate in Non-Hispanic Blacks.

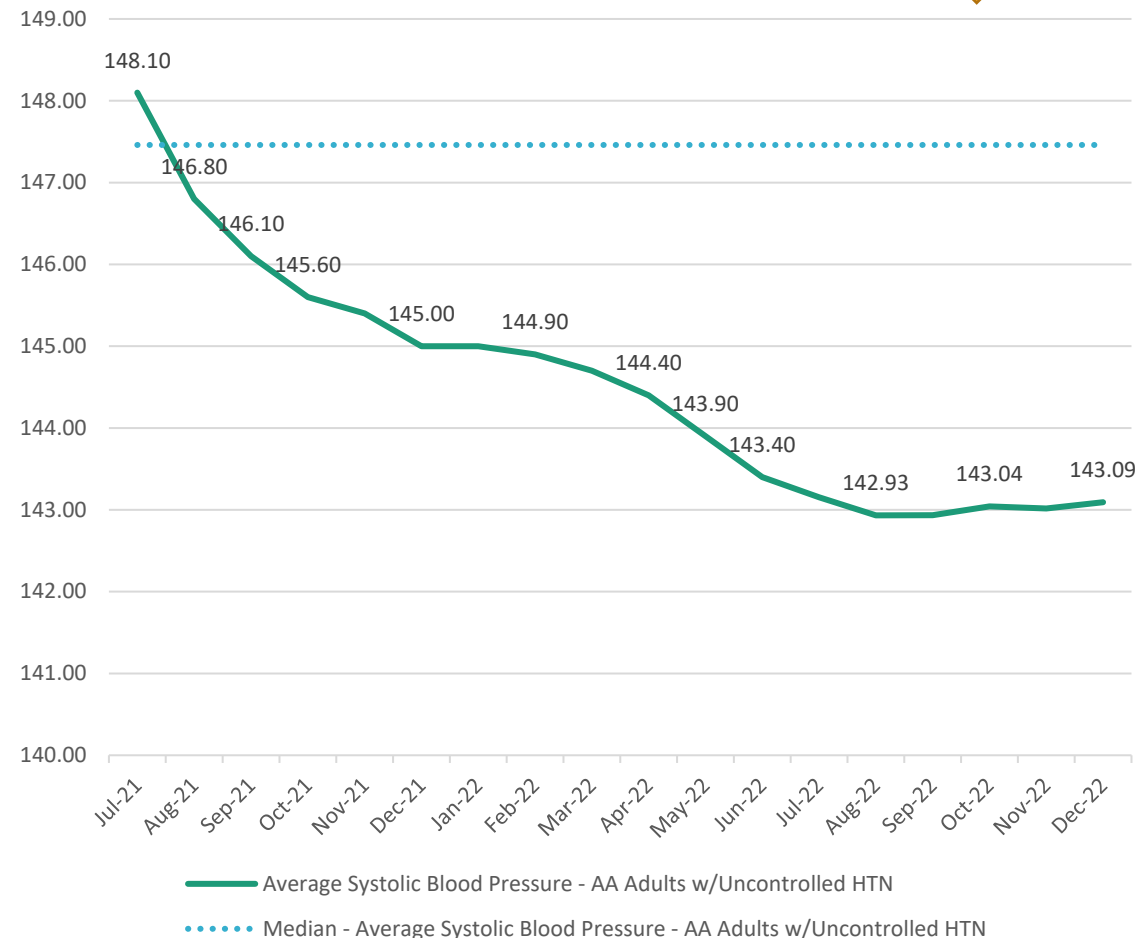
Blood Pressure Control Among African American Patients



AA Adult Blood Pressure Control

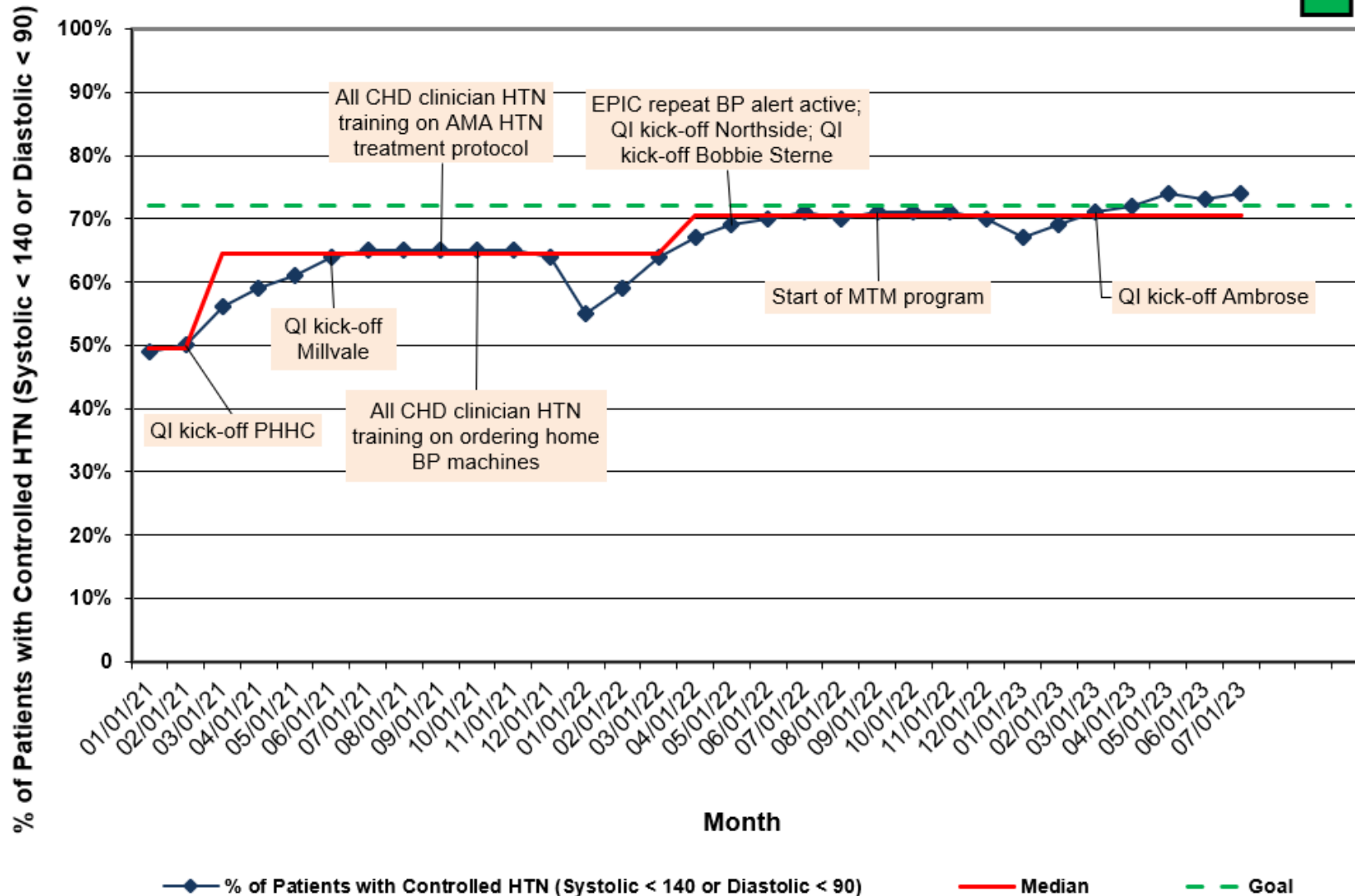


AA Adult Average Systolic Blood Pressure



Measurement
N=3675

HTN Control Across All CHD Clinics



System Transformation Approach: HTN Control Across All CHD Clinics with Population Level Data

CCPC SYSTEM LEVEL UDS PERFORMANCE 2021

Optimal Direction	2020 Performance	2021 Performance	CCPC Goal	UDS Measure Monthly 2021	January	February	March	April	May	June	July	August	September	October	November	December
↑	58%	66%	72%	Controlling High Blood Pressure	49%	50%	56%	59%	61%	64%	65%	65%	65%	65%	65%	64%

Feb. 2021
QI kick-off PHHC

June 2021
QI Kick-off Millvale

Sep. 2021
All CHD Clinician HTN Training on AMA HTN Treatment Protocol

October 2021
All CHD Clinician HTN Training on Ordering home BP machines

CCPC SYSTEM LEVEL UDS PERFORMANCE 2022

Optimal Direction	2020 Performance	2021 Performance	CCPC Goal	UDS Measure Monthly 2021	January	February	March	April	May	June	July	August	September	October	November	December
↑	58%	66%	72%	Controlling High Blood Pressure	55%	59%	64%	67%	69%	70%	71%	70%	71%	71%	71%	70%

May 2022
-EPIC Repeat BP Alert Active
-QI Kick-off Northside
-QI Kick-off Bobbie Sterne

September 2022
-Start of MTM Program

CCPC SYSTEM LEVEL UDS PERFORMANCE 2023

Optimal Direction	2021 Performance	2022 Performance	CCPC Goal	UDS Measure Monthly 2021	January	February	March	April	May	June	July	August	September	October	November	December
↑	66%	70%	72%	Controlling High Blood Pressure	67%	69%	71%	72%	74%	73%	74%					

March 2023
-QI Kick-off Ambrose

- Increased UDS Hypertension Control system wide from **58%** to **74%** in 2.5 year period.

Summary

- Hypertension is widely prevalent in the United States and disproportionately affects non-Hispanic Blacks.
- Most adults in the United States have uncontrolled hypertension which has enormous medical, economic, and human costs.
- Hypertension control can be improved by adoption of QI strategies that focus on accurate blood pressure measurement, use of evidence-based treatment protocols and patient self-monitoring of blood pressure.

Key Challenges

- **Incorrect assumptions:** regarding repeat BP criteria
 - Not repeating BP when only systolic or diastolic blood pressure was abnormal (Ex. 142/72)
 - Not realizing that borderline elevated BPs need to be repeated (Ex. 140/70 or 132/90)
- **Knowledge gaps:** Not realizing that blood pressures need to be repeated during nurse visits
- **Unreliable processes:** Forgetting to repeat blood pressures
- **Staff turnover**
- **Variation across the system:** BP repeat process and referral system not in place with OB/GYN and Dental clinical teams
- **Daily feedback loops:** Finding best reminder system for daily feedback
- **Equipment failures:** Automatic blood pressure cuff not working

Highlighting Lessons Learned

- **Reliable clinical processes:** Accurate BP measurement is critical to BP control
- **Use of data over time:** Foundational to drive improvement
- **Refining theory of change along the QI journey with:**
 - Rapid cycle improvements and feedback loops effectively used promoted a culture of continuous QI
 - Designing an intentional spread plan across the system
 - Build in Patient engagement strategies
- **CHD taking a System Transformation approach:** helped to accelerate the pace of improvement with the HTN control improvement work

Next Steps

- Continue with spread plan from 4 to all 6 health centers
- Partner with pharmacists to on a hypertension-focused medication therapy management program
- Reduce health disparities in hypertension control
- Pilot use of text-based technologies to outreach patients with uncontrolled hypertension
- CHD and UC MedTAPP QI Hub Collaboration

Questions?

