

Efficacy of a Patient-Engagement Platform in Reducing Uncontrolled Hypertension in Community Health Clinics

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Background

- Over 37 million US adults have blood pressure (BP) higher than 140/90 mmHg, which can lead to serious sequelae like myocardial infarction and stroke.
- Medication to treat hypertension is effective, yet, approximately 50% of patients do not take medication as prescribed.
- Non-adherence to cardioprotective medications increases a patient's risk of death from 50% to 80%.

Objective

- To measure rates of BP control before and after introduction of a novel digital hypertension management program at federally qualified health centers (FQHCs).

Method

Program overview

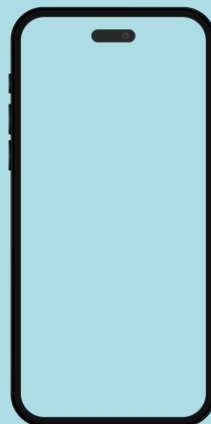
Physician
Rx



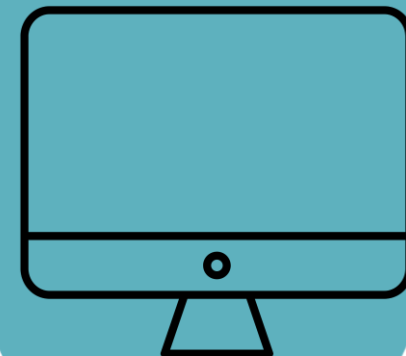
Staff
Onboard



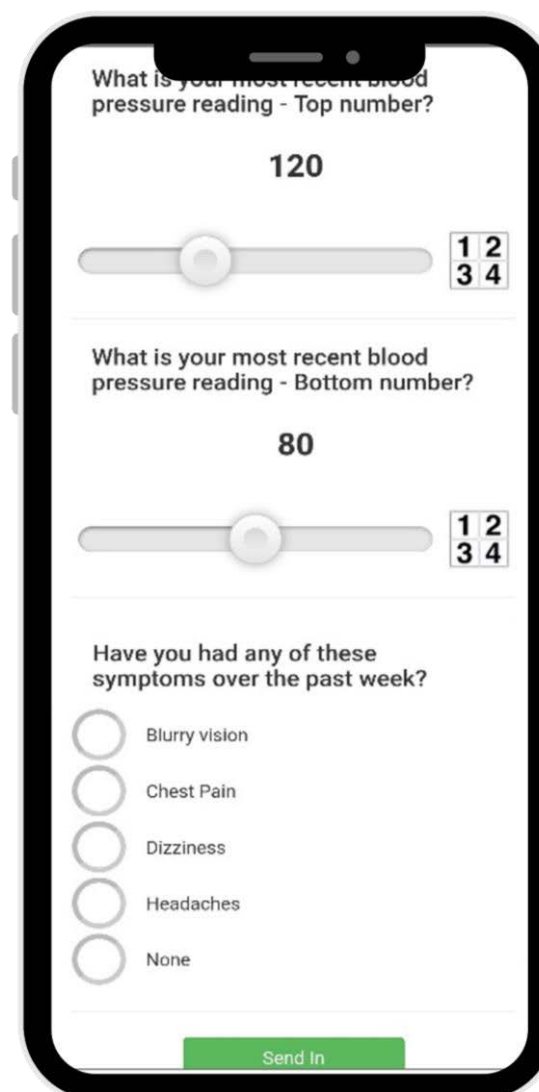
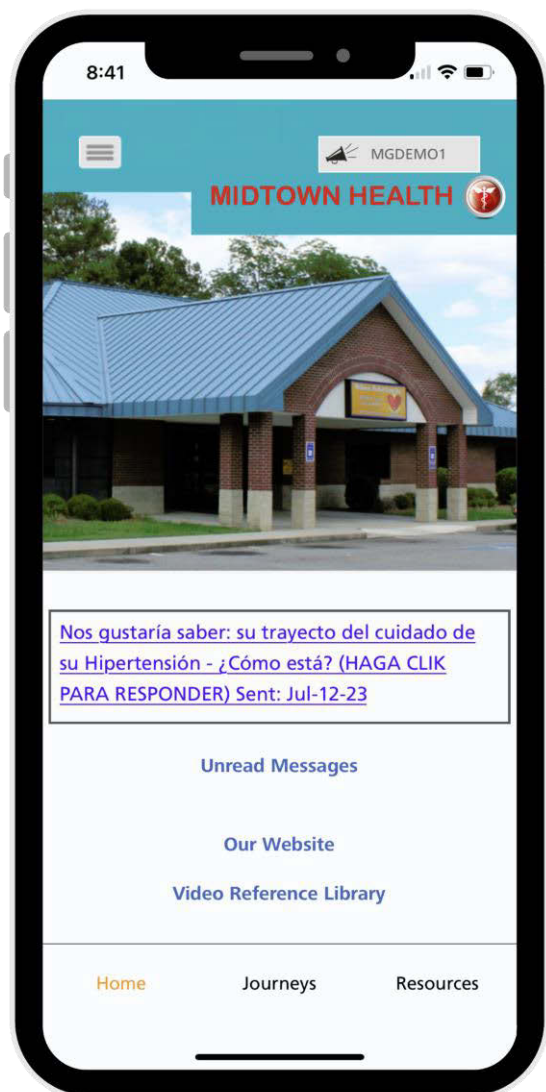
Patient
Check In




Staff
Review



Patient interface

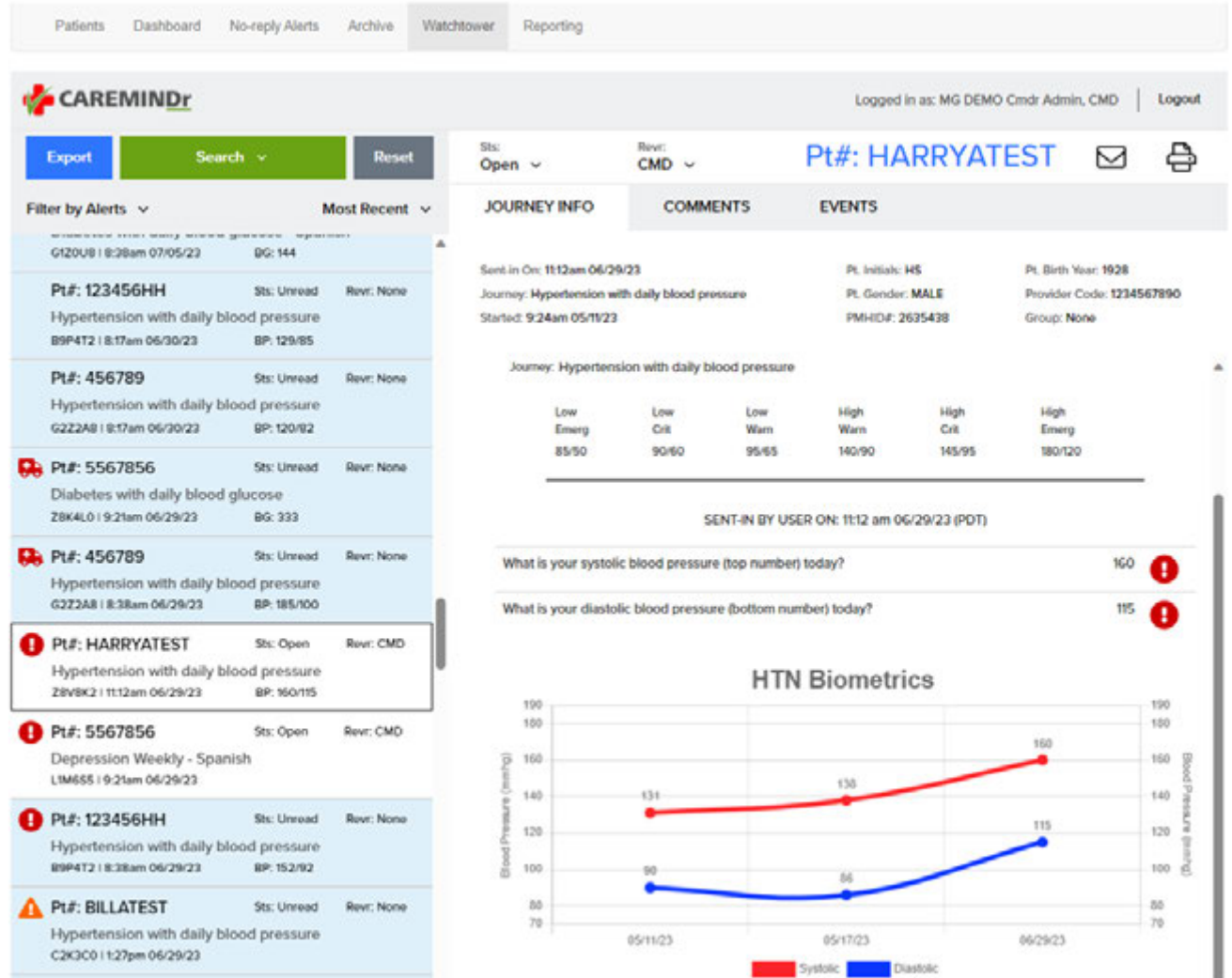


Clinic review of alerts







 Emergency alert: patient received immediate guidance

 High level alert

 Low level alert



The screenshot displays the CAREMINDr interface for patient alert management. The top navigation bar includes 'Patients', 'Dashboard', 'No-reply Alerts', 'Archive', 'Watchtower', and 'Reporting'. The user is logged in as 'MG DEMO Cmdr Admin, CMD'. The patient profile for 'Pt#: HARRYATEST' is shown, including journey info, comments, and events. A table of biometrics shows systolic and diastolic blood pressure readings over time. The alert list on the left includes various alerts, with the current alert for 'Pt#: HARRYATEST' highlighted.

Alert ID	Alert Description	Status	Review
G120U8 8:39am 07/05/23	BG: 144		
Pt#: 123456HH	Hypertension with daily blood pressure B9P4T2 8:17am 06/30/23	Unread	None
Pt#: 456789	Hypertension with daily blood pressure G2Z2A8 8:17am 06/30/23	Unread	None
 Pt#: 5567856	Diabetes with daily blood glucose Z8K4L0 9:21am 06/29/23	Unread	None
 Pt#: 456789	Hypertension with daily blood pressure G2Z2A8 8:38am 06/29/23	Unread	None
 Pt#: HARRYATEST	Hypertension with daily blood pressure Z8V8K2 11:12am 06/29/23	Open	CMD
 Pt#: 5567856	Depression Weekly - Spanish L1M655 9:21am 06/29/23	Open	CMD
 Pt#: 123456HH	Hypertension with daily blood pressure B9P4T2 8:38am 06/29/23	Unread	None
 Pt#: BILLATEST	Hypertension with daily blood pressure C2K3C0 1:27pm 06/29/23	Unread	None

HTN Biometrics

Date	Systolic (mmHg)	Diastolic (mmHg)
05/11/23	131	90
05/17/23	130	86
06/29/23	160	115

Clinic review of engagement

20

No patient response for ≥ 20 days

40

No patient response for ≥ 40 days

The screenshot shows the CAREMINDr interface. At the top, it says 'CAREMINDr' and 'Logged in as: MG DEMO Cmdr Admin, CMD | Logout'. Below this are buttons for 'Export', 'Search', and 'Reset'. The main area is divided into two columns. The left column is a list of alerts, and the right column shows details for a selected patient, JOHNATEST.

Alerts List:

Pt#	Alert Description	Sts	Revr
G120U8	8:45am 06/14/23		
40 Pt#: 89963254	Depression weekly M5J4L9 8:40am 06/14/23	Unread	None
40 Pt#: 89963254	Diabetes with daily blood glucose K4N5J1 8:40am 06/14/23	Unread	None
! Pt#: 25488765	Hypertension with daily blood pressure - Spanish B4V1W0 11:59am 06/12/23 BP: 112/56	Open	CMD
Pt#: 25488765	Hypertension with daily blood pressure - Spanish B4V1W0 11:15am 06/12/23	Unread	None
20 Pt#: CHERIATEST	Hypertension with daily blood pressure F0G9K1 3:00am 06/08/23	Open	CMD
20 Pt#: JOHNATEST	Hypertension with daily blood pressure X8R8Q7 2:55pm 06/07/23	Open	CMD
20 Pt#: HARRYATEST	Hypertension with daily blood pressure Z8V8K2 12:15pm 06/06/23	Unread	None
20 Pt#: RANDYATEST	Hypertension with daily blood pressure D1Z9S5 9:50am 06/06/23	Unread	None
20 Pt#: 456789	Hypertension with daily blood pressure G2Z2A8 8:55am 06/06/23	Unread	None

Patient Details (JOHNATEST):

Sts: Open, Revr: CMD, Pt#: JOHNATEST

JOURNEY INFO: Sent-in On: 2:55pm 06/07/23, Journey: Hypertension with daily blood pressure, Started: 1:47pm 05/11/23

COMMENTS: Pt. Initials: JF, Pt. Gender: FEMALE, PMHID#: 2478677, Pt. Birth Year: 1929, Provider Code: 1234567890, Group: None

EVENTS: Pt#: JOHNATESTJF-1234567890, Birth: 1929, Gender: FEMALE, T-Code: X8R8Q7, Journey: Hypertension with daily blood pressure

Activity Alert: No Activity Alert. There has been no activity on this T-Code for 20 days. Last response sent in by patient: SENT-IN BY USER ON: 2:54 pm 05/18/23 (PDT)

Biometrics:

Question	Response
What is your systolic blood pressure (top number) today?	117
What is your diastolic blood pressure (bottom number) today?	82

HTN Biometrics Chart:

Reading	Value (mmHg)
173	173
117	117

Analysis

- We retrospectively evaluated first and last systolic and diastolic BPs of patients who participated for ≥ 90 days (range 90-721 days).
- Study period: April 2021-April 2023.
- We considered BP $< 140/90$ mmHg to be controlled.
- Stratified by language (i.e., English, Spanish).

Results

2,500 patients participated for ≥ 90 days

39%

male

n=965

227 days

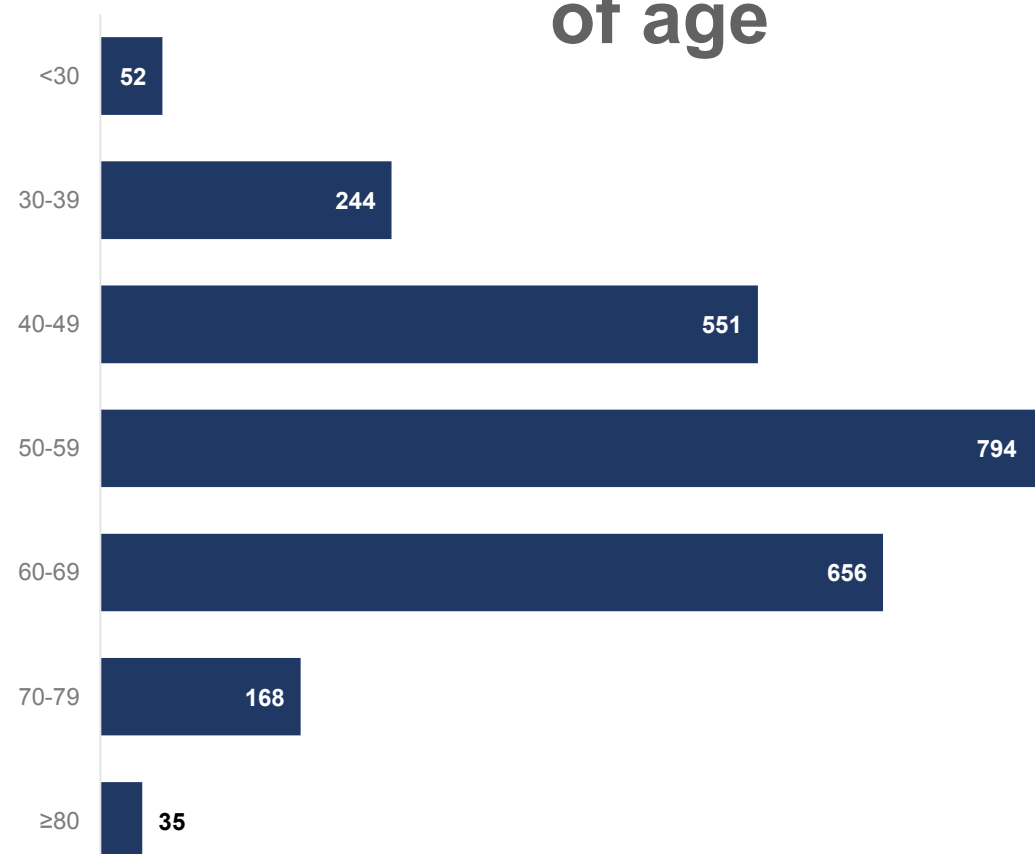
mean study period

22%

used Spanish language version

n=551

80% of patients 40-69 years of age



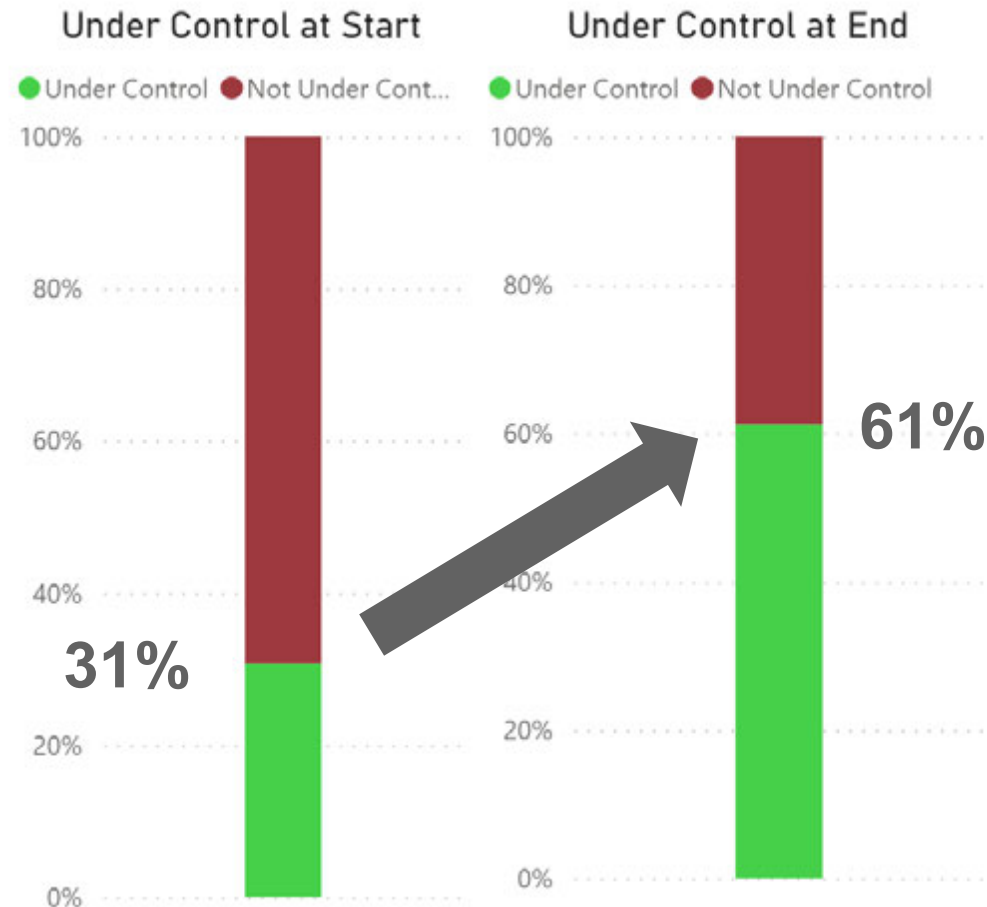
Mean (range): 53.9 (14-100) years

Patients were treated at 54 FQHCs



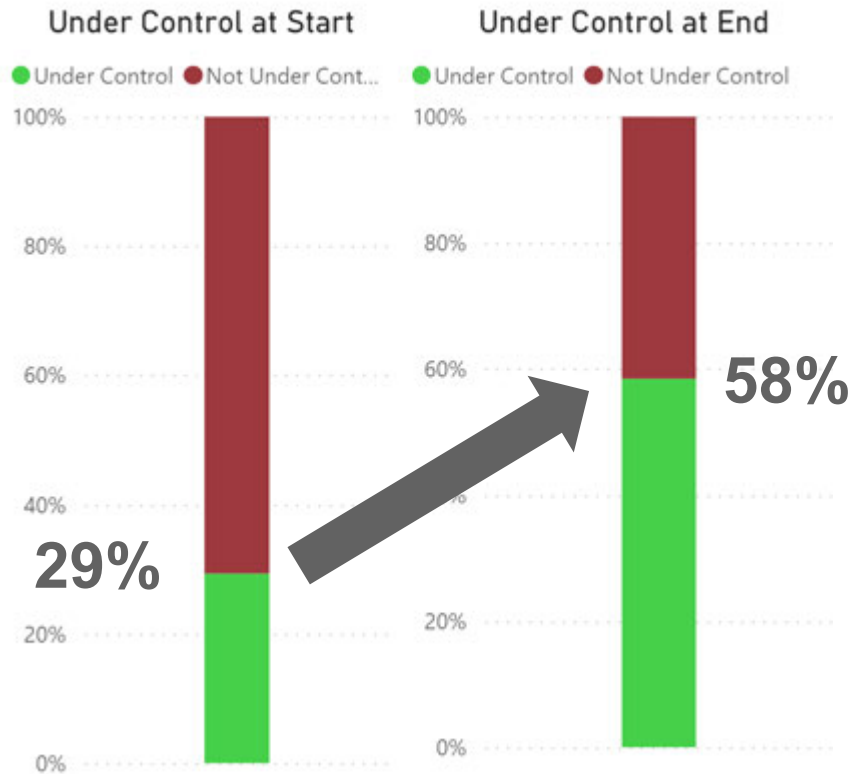
FQHC: Federally Qualified Health Center

55% of patients with uncontrolled BP achieved a controlled BP



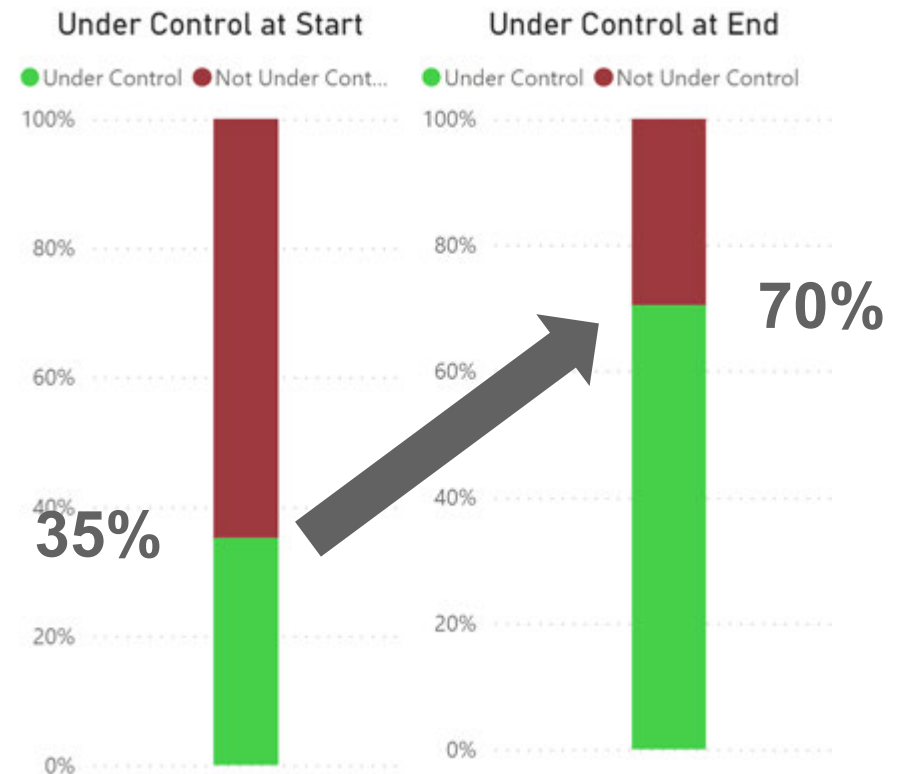
Patients using the Spanish version achieved better BP control

English



53% of uncontrolled to controlled

Spanish



66% of uncontrolled to controlled

Limitations

- This study did not include a comparator cohort that received standard of care.
- This study includes a traditionally underserved FQHC population and results may not be generalizable.

Conclusions

- This novel hypertension control program, which used technology to gather and prioritize data, improved BP control rates by over 55% in a real-world, underserved population with uncontrolled hypertension.
- BP control was higher in the Spanish-speaking population.
- Remote digital monitoring with intervention can improve clinical outcomes without significantly increasing the overall cost of care, thereby promoting value-based care strategies for chronic diseases such as hypertension.

Next steps

- Test different versions of the program to identify drivers of positive outcomes.
- Use this program as part of treatment plan for other conditions.

Questions?