

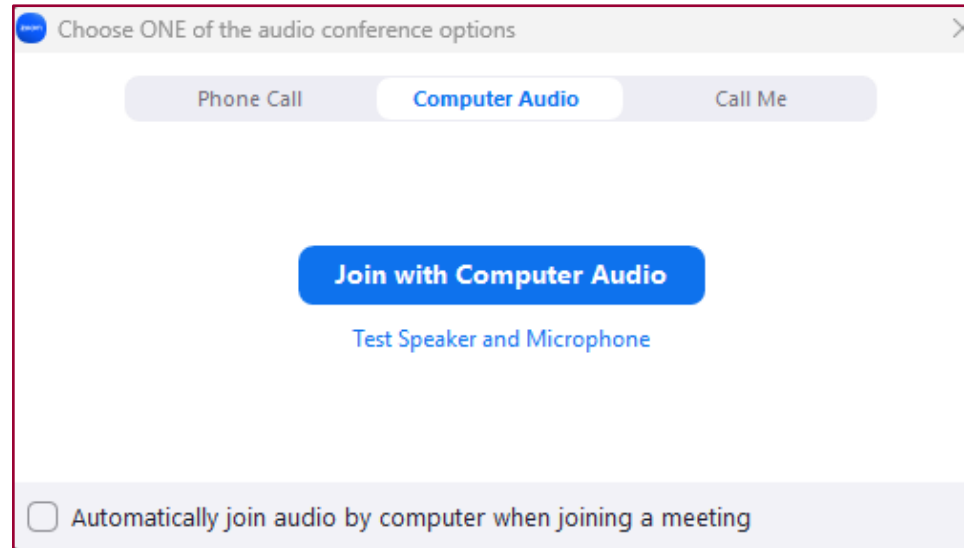
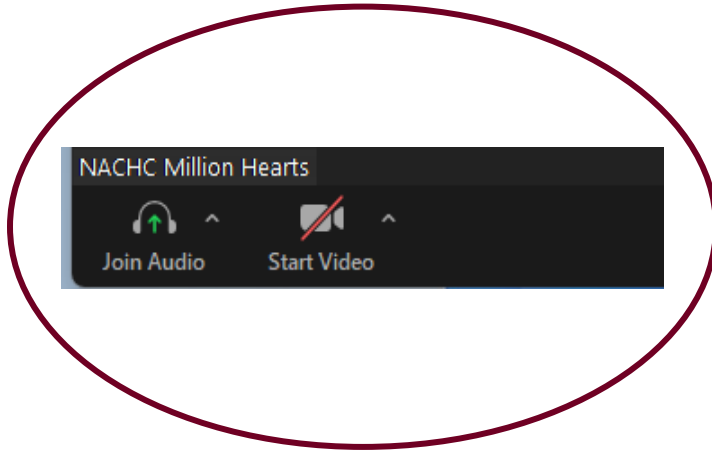
# Ensure you've connected to audio!

## Option 1: "Call In"

Follow the process for the A) Phone Call or B) Call Me options

## Option 2: "Use Computer Audio"

You must have computer speakers and microphone



After connecting, if you don't see a phone/headset icon next to your name in the attendee list, please attempt to connect your audio again!

**Million Hearts®  
Self-Measured Blood Pressure  
Monitoring (SMBP) Forum**

March 16, 2023  
1:00-2:00 PM EST

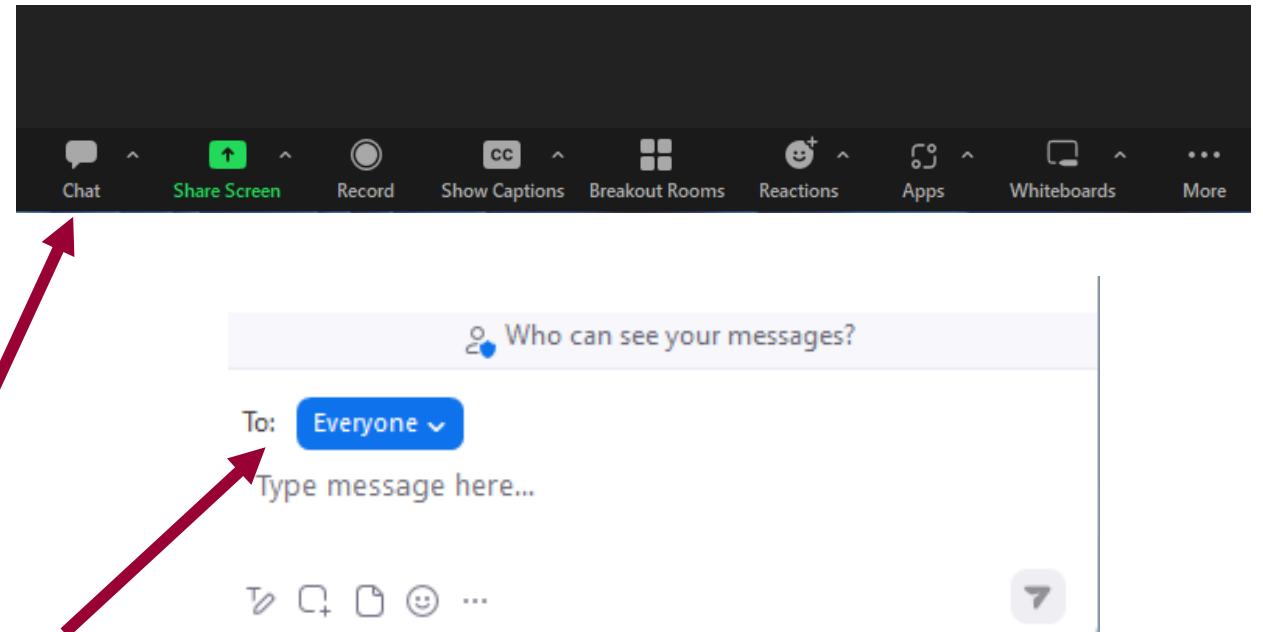


# How to Chat

The chat feature is available to pose questions to the group or make comments anytime throughout today's webinar.

Submit to **"Everyone"** and click the send button.

Introduce yourself!  
Where are you joining us from?  
Share your questions!



# Disclaimer

The opinions expressed by authors contributing to this project do not necessarily reflect the opinions of the US Department of Health and Human Services, the Public Health Service, the Centers for Disease Control and Prevention, or the authors' affiliated institutions. Use of trade names is for identification only and does not imply endorsement by any of the groups named below.



# Agenda

- Welcome, Introductions, and Agenda Overview
- Featured Presenters
  - Dr. Kate Kirley, American Medical Association
  - Dr. Kelsey Bryant, Mount Sinai
  - Dr. Marlon Satchell, Family Practice and Counseling Network
- Open Discussion
- Resources and Updates



# Today's Objectives

- Review the clinical guidance for using SMBP for hypertension diagnosis and treatment
- Highlight examples of how SMBP is used as a tool for providing optimal care
- Feature new findings on the impact and long-term effects of SMBP with different levels of clinical services



# SMBP Tasks By Role

Must Be Done by a Licensed Clinician	Can Be Done by a Non-licensed Person (e.g., medical assistant, local department of health, community health organization, community health workers)	Must Be Done by Patient
<ol style="list-style-type: none"> <li>1. Diagnose hypertension</li> <li>2. Prescribe medication(s)</li> <li>3. Provide SMBP measurement protocol</li> <li>4. Interpret patient-generated SMBP readings</li> <li>5. Provide resultant medication titration advice</li> <li>6. Provide resultant lifestyle modification recommendations</li> </ol>	<ol style="list-style-type: none"> <li>1. Provide guidance on validated SMBP monitor selection</li> <li>2. If needed, provide a validated SMBP monitor (free or loaned)</li> <li>3. Train patients to use a validated SMBP monitor</li> <li>4. Validate home BP monitor against a more robust machine</li> <li>5. Train patients to capture and relay SMBP values to the care team, ideally through remote means</li> <li>6. Provide technical assistance to patients on connecting their SMBP device to their home internet, downloading and using necessary apps, and transmitting their SMBP readings to the care team</li> <li>7. Reinforce clinician-directed SMBP measurement protocol</li> <li>8. Share medication adherence strategies</li> <li>9. Provide lifestyle modification education</li> </ol>	<ol style="list-style-type: none"> <li>1. Take SMBP readings</li> <li>2. Take medications as prescribed</li> <li>3. Make recommended lifestyle modifications</li> <li>4. Convey SMBP readings to care team</li> <li>5. Convey side effects, challenges with lifestyle modifications to care team</li> </ol>

Adapted from National Association of Community Health Centers. Self-measured Blood Pressure Monitoring Implementation Guide for Health Care Delivery Organizations. Bethesda, Maryland: National Association of Community Health Centers; 2018.



# Overview of Guidelines for SMBP

**Kate Kirley, MD, MS, FAAFP**  
Director, Chronic Disease Prevention  
American Medical Association



# Self-Measured Blood Pressure (SMBP)

Self-measured blood pressure (SMBP) refers to blood pressure (BP) measurements obtained by the patient outside of a clinical setting, often at home



# Self-Measured Blood Pressure (SMBP) helps patients and providers

- Allows providers to diagnose and manage hypertension more effectively
  - Confirm the diagnosis of hypertension (HTN) **and** for titration of medication
  - Is a recommended strategy to improve BP after initiation of medication
    - Use in conjunction with other strategies like team-based care and telehealth
    - Can improve medication adherence
- Helps patients better self-manage their high blood pressure

Shimbo D, Artinian NT, Basile JN, Krakoff LR, Margolis KL, Rakotz MK, Wozniak G; American Heart Association and the American Medical Association. Self-Measured Blood Pressure Monitoring at Home: A Joint Policy Statement From the American Heart Association and American Medical Association. *Circulation*. 2020 Jul 28;142(4):e42-e63. doi: 10.1161/CIR.0000000000000803. Epub 2020 Jun 22. Erratum in: *Circulation*. 2020 Jul 28;142(4):e64. PMID: 32567342.

# Guideline recommendations for the management of high BP in Adults: Using out-of-office BP measurement

## 2017 ACC/AHA Guideline for High BP in Adults

COR	LOE	RECOMMENDATION
I	A <sup>SR</sup>	1. Out-of-office BP measurements are recommended to confirm the diagnosis of hypertension (Table 11) and for titration of BP-lowering medication, in conjunction with telehealth counseling or clinical interventions (S4.2-1–S4.2-4).
COR	LOE	RECOMMENDATION
I	A	1. Follow-up and monitoring after initiation of drug therapy for hypertension control should include systematic strategies to help improve BP, including use of HBPM, team-based care, and telehealth strategies (S8.3.2-1–S8.3.2-6).

ACC = American College of Cardiology; AHA = American Heart Association

Colantonio LD, Booth JN 3rd, Bress AP, Whelton PK, Shimbo D, Levitan EB, Howard G, Safford MM, Muntner P. 2017 ACC/AHA Blood Pressure Treatment Guideline Recommendations and Cardiovascular Risk. J Am Coll Cardiol. 2018 Sep 11;72(11):1187-1197. doi: 10.1016/j.jacc.2018.05.074. PMID: 30189994; PMCID: PMC6346270.

# Hypertension & SMBP Science Resources

- [2017 ACC/AHA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults](#)
- [Measurement of Blood Pressure in Humans: A Scientific Statement from the American Heart Association \(2019\)](#)
- [Self-Measured Blood Pressure Monitoring at Home: A Joint Policy Statement from the American Heart Association and American Medical Association \(2020\)](#)

# Indications for SMBP

- Confirm the diagnosis of hypertension
- Detect of white-coat hypertension and masked hypertension
- Determine BP control during hypertension treatment
- Exclude false resistant hypertension (i.e., having resistant hypertension based on office BP but with controlled out-of-office BP)
- Use as a tool to empower patients in BP management, including antihypertensive medication adherence

Shimbo D, Artinian NT, Basile JN, Krakoff LR, Margolis KL, Rakotz MK, Wozniak G; American Heart Association and the American Medical Association. Self-Measured Blood Pressure Monitoring at Home: A Joint Policy Statement From the American Heart Association and American Medical Association. *Circulation*. 2020 Jul 28;142(4):e42-e63. doi: 10.1161/CIR.0000000000000803. Epub 2020 Jun 22. Erratum in: *Circulation*. 2020 Jul 28;142(4):e64. PMID: 32567342.

# Interpreting SMBP values

## Corresponding values of SBP/DBP for Office BP and Self-Measured BP Measurements Recommended in the 2017 ACC/AHA Hypertension Clinical Practice Guidelines

Office BP, mm Hg	Self-Measured BP, mm Hg
120/80	120/80
130/80	130/80
140/90	135/85
160/100	145/90

← Threshold for defining high BP in office setting

← Notice the difference in office v. SMBP

← Notice the difference in office v. SMBP

Adapted from Shimbo D, Artinian NT, Basile JN, Krakoff LR, Margolis KL, Rakotz MK, Wozniak G; American Heart Association and the American Medical Association. Self-Measured Blood Pressure Monitoring at Home: A Joint Policy Statement From the American Heart Association and American Medical Association. *Circulation*. 2020 Jul 28;142(4):e42-e63. doi: 10.1161/CIR.0000000000000803. Epub 2020 Jun 22. Erratum in: *Circulation*. 2020 Jul 28;142(4):e64. PMID: 32567342.

# 3 critical considerations for SMBP to be effective

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**Use of a validated BP measurement device**

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**Guideline-driven patient education/user instructions**

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**Access and use of SMBP data**

# 7 steps for SMBP



- 1 Identify patients for SMBP**
- Patients with an existing diagnosis of hypertension
  - Patients with high blood pressure without a diagnosis of hypertension
  - Patients suspected of having hypertension (labile or masked hypertension)

- 2 Confirm device validation and cuff size**
- Make sure patients have automated, validated devices with appropriately sized upper arm cuffs
- Tools:** Use the [US Blood Pressure Validated Device Listing™](#) and [Self-measured blood pressure cuff selection](#)

- 3 Train patients**
- Educate patients on how to perform SMBP using an evidence-based measurement protocol
  - Education should include proper preparation and positioning before taking measurements, as well as resting one minute between measurements
  - Verify patients' understanding and share educational resources
- Tools:** Use the [SMBP training video](#) (see also: [Spanish version](#)) and the [SMBP infographic](#) (see also: [Spanish version](#))

- 4 Have patients perform SMBP**
- Conduct SMBP monitoring whenever BP assessment is desired (e.g., to confirm a diagnosis, to assess every 2-4 weeks if BP is uncontrolled or at physician discretion)
  - Provide instructions on the duration of monitoring and the number of measurements to take each day
    - 7 days of monitoring recommended; 3 days (i.e., 12 readings) minimum
    - Measurements should be taken twice daily (morning and evening) with at least two measurements taken each time
  - Determine when and how patients will share results back to care team
    - Examples include phone, portal or secure messaging
- Tool:** Use the [SMBP recording log](#)

- 5 Average results**
- Average all SMBP measurements received from patients for monitoring period
  - Document average systolic and average diastolic blood pressure in medical record
    - Use the average systolic and average diastolic blood pressure for clinical decision making
    - 3 days of measurements (i.e., 12 readings) are recommended as a minimum for clinical decision-making
- Tool:** Use the [SMBP averaging tool](#)

- 6 Interpret results**
- Make diagnosis and/or assess control
  - Initiate, intensify or continue treatment as needed
- Tool:** Use the [SMBP interpretation tables](#)

- 7 Document plans and communicate to patients**
- Document treatment and follow-up plans and communicate to patients
  - Confirm patients' agreement and understanding

CPT® codes for SMBP are available and can be submitted for services related to patient training on SMBP, interpretation of SMBP measurements and management based on results.



## 7-step SMBP quick guide

[www.ama-assn.org/smbp-guide](http://www.ama-assn.org/smbp-guide)



Physicians' powerful ally in patient care

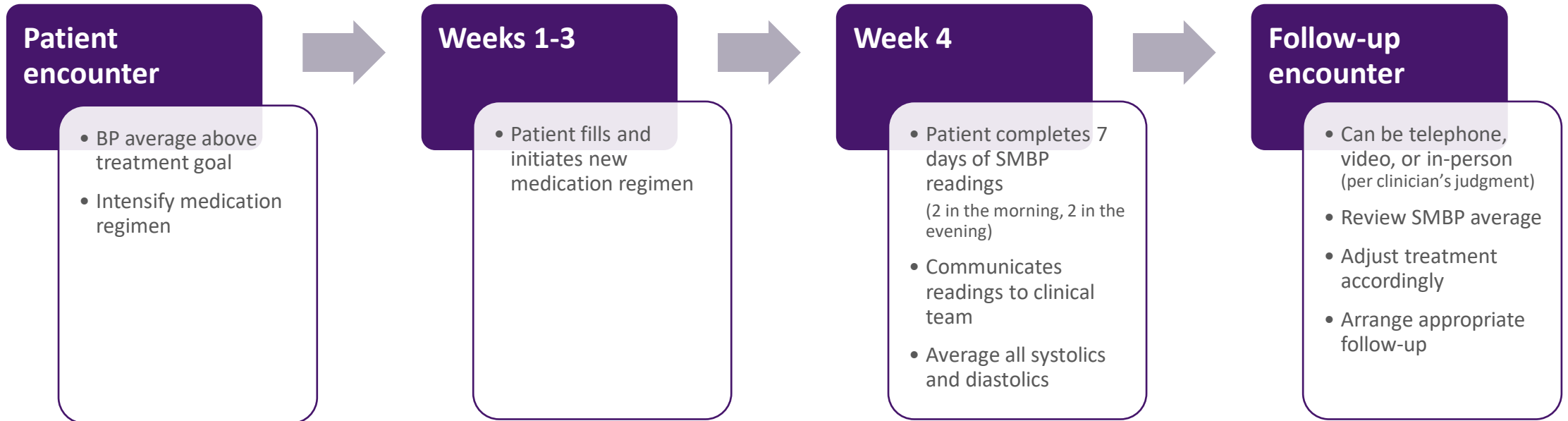


# Resources to Get Started with SMBP

- [AMA 7-step SMBP Quick Guide](#)
- [AMA US Blood Pressure Validated Device Listing \(VDL™\)](#)
- [NACHC SMBP Implementation Toolkit](#)
- [NACHC Choosing a Home Blood Pressure Monitor At a Glance Comparison](#)

# SMBP to monitor treatment

*Example follow-up plan*



# SMBP as a Tool: Research and Real World

**Kelsey B. Bryant MD, MPH, MS**

Assistant Professor of Medicine

Assistant Director of Chronic Disease Programs, Internal Medicine Associates

Icahn School of Medicine at Mount Sinai

**Brandon K. Bellows, PharmD, MS**

Assistant Professor of Medical Sciences

Division of General Medicine

Columbia University



# Disclosures

- Research funding is from the National Institutes of Health and American Heart Association
- No other relevant disclosures to declare








# Objectives

- Review “Impact of Self-Monitoring of Blood Pressure on Processes of Hypertension Care and Long-Term Blood Pressure Control”
- Discuss SMBP implementation successes and challenges

ORIGINAL RESEARCH



## Impact of Self-Monitoring of Blood Pressure on Processes of Hypertension Care and Long-Term Blood Pressure Control

Kelsey B. Bryant, MD, MPH  ; James P. Sheppard, PhD  ; Natalia Ruiz-Negrón, PharmD; Ian M. Kronish, MD, MPH  ; Valy Fontil, MD, MAS; Jordan B. King, PharmD, MS  ; Mark J. Pletcher, MD, MPH; Kirsten Bibbins-Domingo, MD, PhD; Andrew E. Moran, MD, MPH; Richard J. McManus, MA, PhD, MBBS; Brandon K. Bellows, PharmD, MS 



# Overview

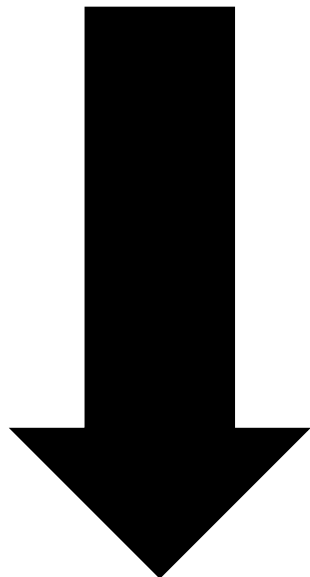
- SMBP is a recommended clinical tool for blood pressure control
- SMBP with increasing levels of clinical support is associated with greater impact
- SMBP alone has little impact on blood pressure
- What do we know about the long term?

# Methods

- Pooled individual participant data from TASMIN (Treatment of Hypertension Based on Home or Office Blood Trial), 4 clinical trials in the UK investigating SMBP with increasing levels of support (N=2590)
- Simulated impact of use of SMBP with varying levels of support using the Blood Pressure Control Model



## Clinical Support Increases



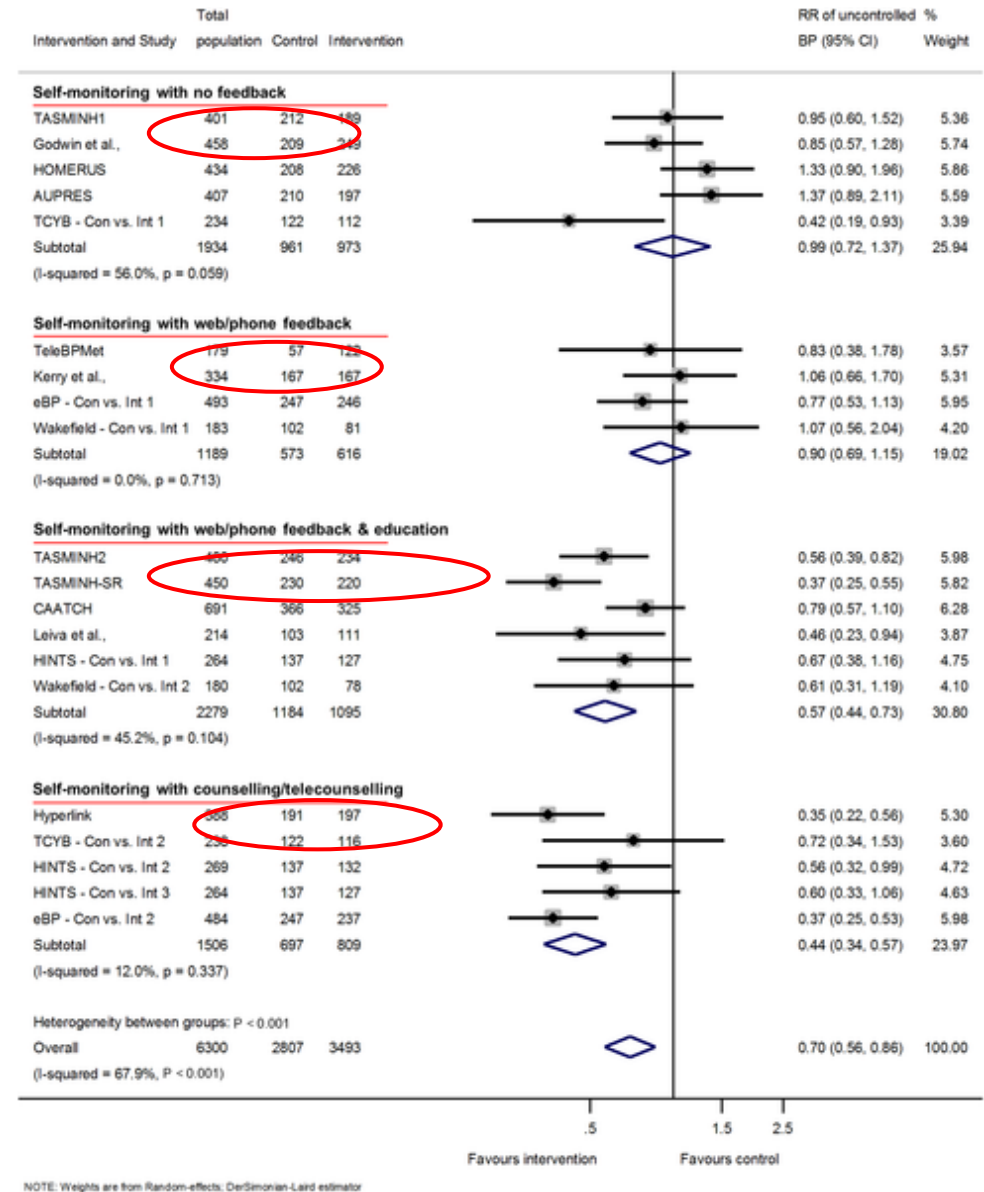
**Table 1.** Summary of the Original TASMINH Trial SMBP Interventions ([Table view](#))

Study	SMBP Level <sup>2</sup> and Description of Intervention*
TASMINH <sup>6</sup>	Level 1—In-clinic SMBP: Patients performed SMBP in the clinic once each month and were given cards with BP goals and when to seek medical appointment
TASMINH <sup>4</sup>	Level 2—Home SMBP: Patients performed SMBP at home 2 times per day, received instructions when to contact physician, and sent BP readings to provider through the mail Level 3—Home SMBP+telemonitoring: In addition to Level 2 home SMBP, telemonitoring service included patients sending BP readings to provider via text, alerted patients to contact office for very high or low BP readings, sent reminders if too few readings sent, and sent readings to general practitioner office
TASMINH <sup>2</sup> <sup>1</sup> and TASMINSR <sup>8</sup>	Level 3—Home SMBP+self-titration: Patients performed SMBP at home 2 times per day and given a color-coded system to rate BP measurements. If BP was “above target” for ≥2 consecutive months, patients could self-titrate according to predetermined schedule

BP indicates blood pressure; SMBP, self-monitoring of BP; TASMINSR, Targets and Self-Management for the control of blood pressure in Stroke and at Risk groups; and TASMINH, Telemonitoring And Self-Management in the Control of Hypertension.

\* All trials examined patients with uncontrolled BP in UK primary care settings. Usual care without SMBP was the comparator in each trial. No SMBP interventions included regular one-to-one contact with provider for BP management.

- Relative risk of uncontrolled BP after 12 months of using SMBP →



Tucker KL, Sheppard JP, Stevens R, et al. Self-monitoring of blood pressure in hypertension: A systematic review and individual patient data meta-analysis. PLoS Med. 2017;14(9):e1002389. Published 2017 Sep 19. doi:10.1371/journal.pmed.1002389. <https://pubmed.ncbi.nlm.nih.gov/28926573/>

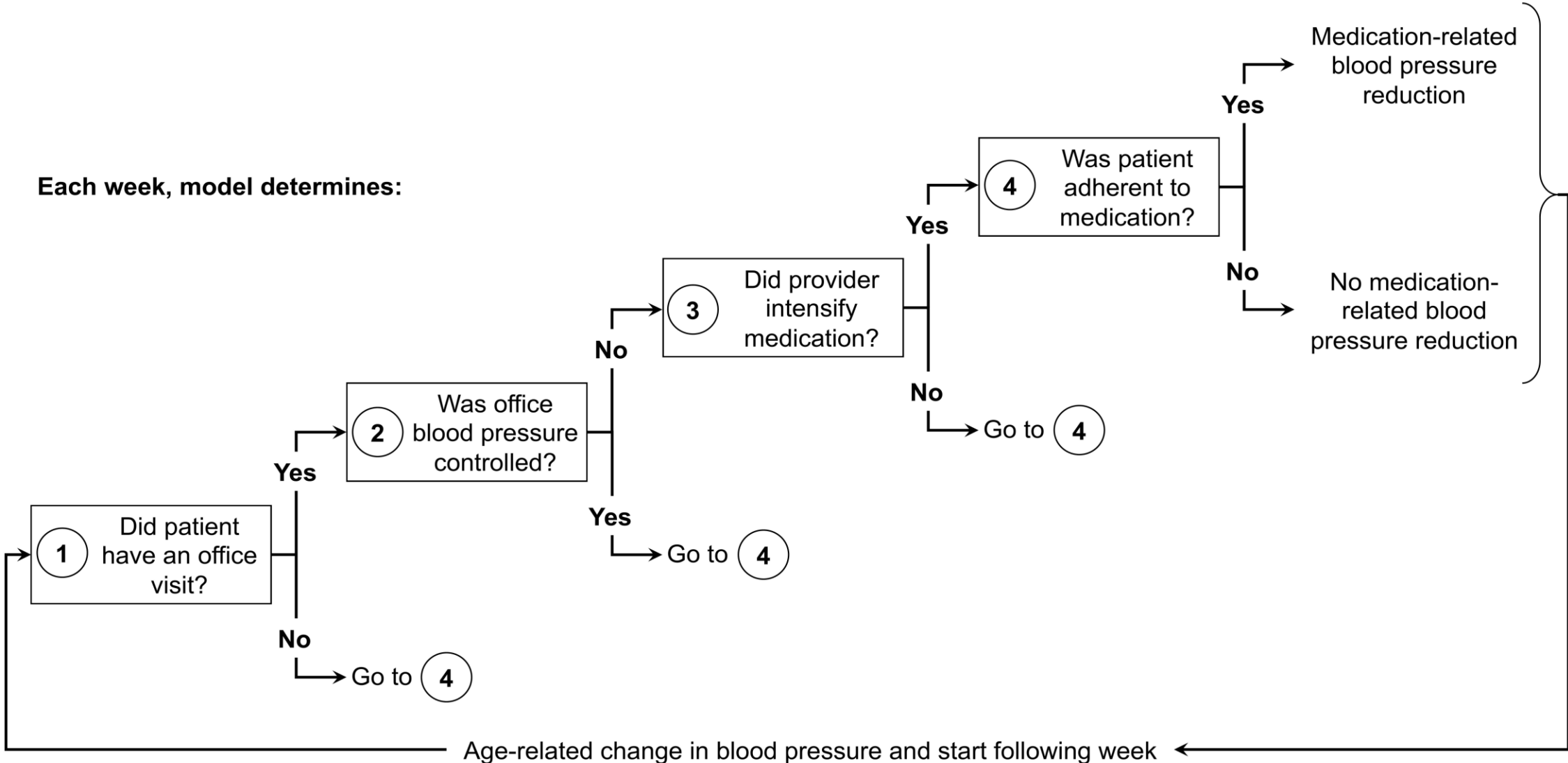
# BPCM Overview

- Microsimulation (i.e., individual patient simulation) model developed in TreeAge
- Simulates the week-to-week clinic-based process of BP management to predict “true” and “measured” BP
- Estimates BP outcomes up to ten years
- Inputs derived from national survey data, meta-analyses, and other published literature
- Modified to include SMBP for this analysis



# Model Structure

Each week, model determines:

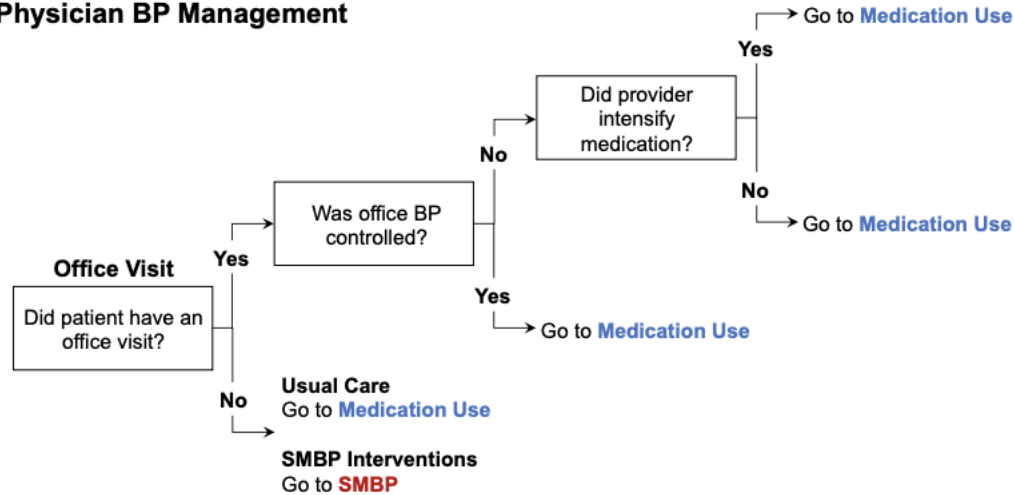


1. Bellows et al. *Circ Cardiovasc Qual Outcomes*. 2019.

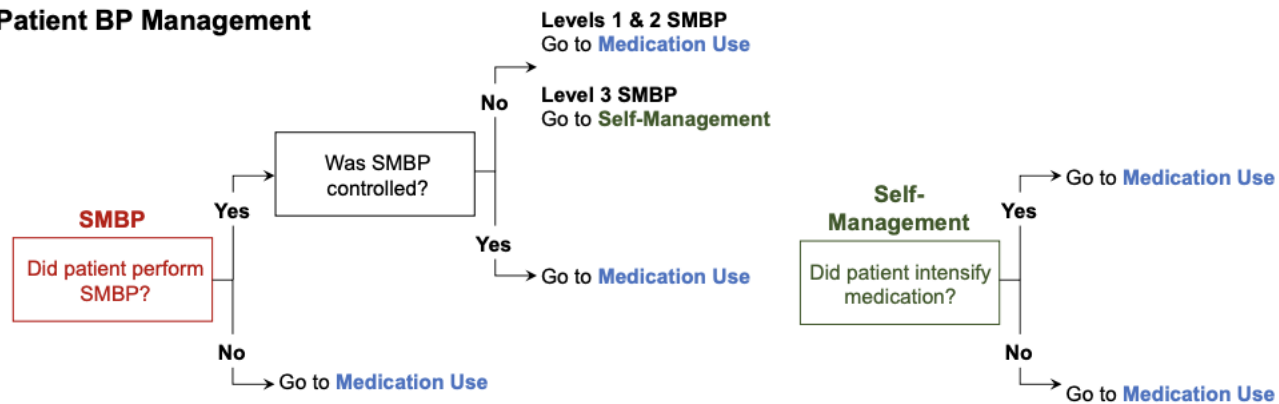
# SMBP Modifications

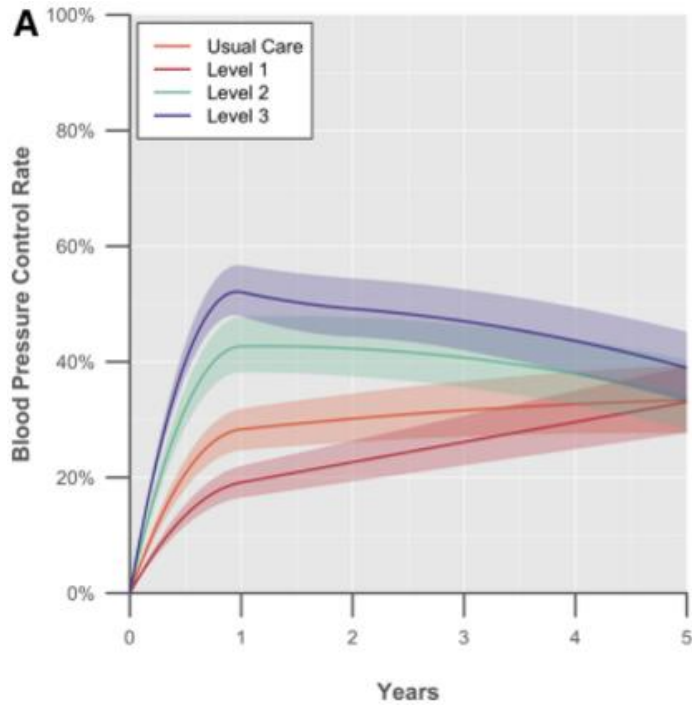
Each week, model determines:

## Physician BP Management

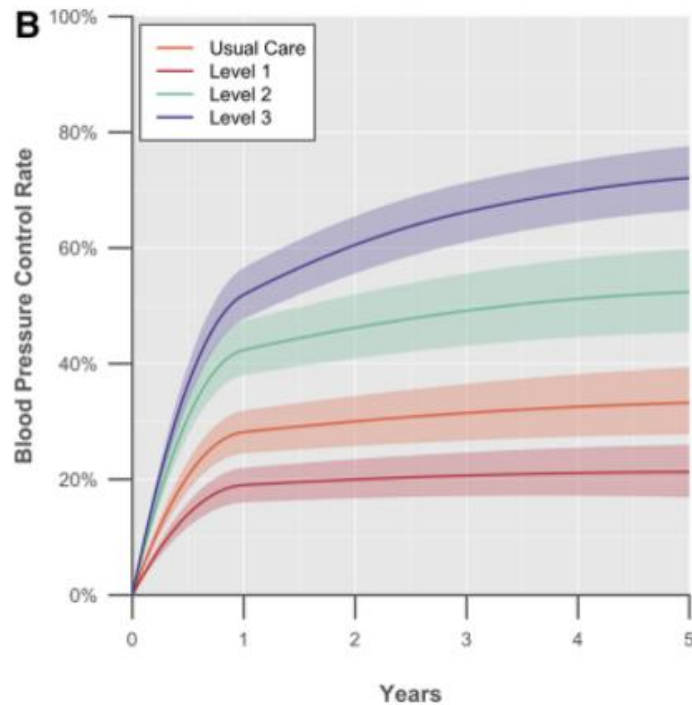


## Patient BP Management

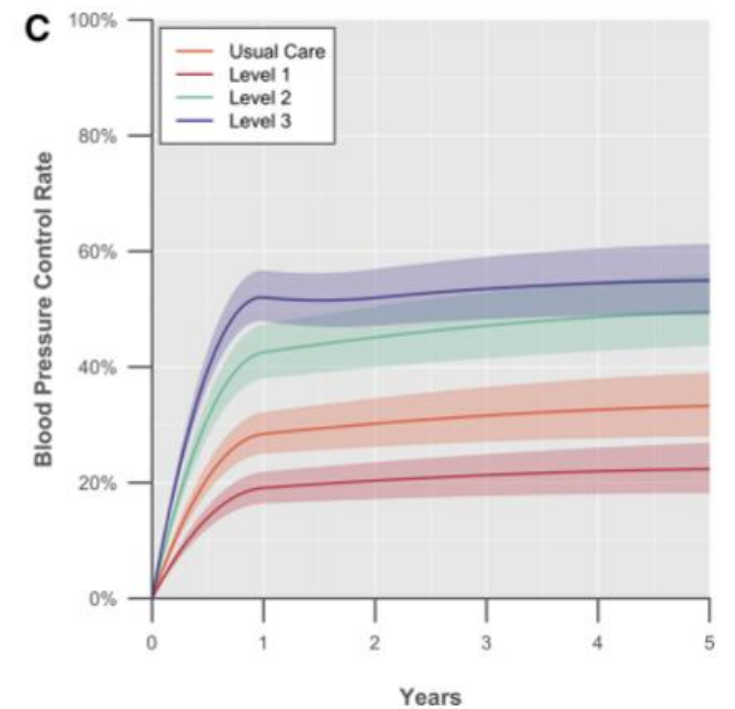




- One Year SMBP
- Return to Usual Care

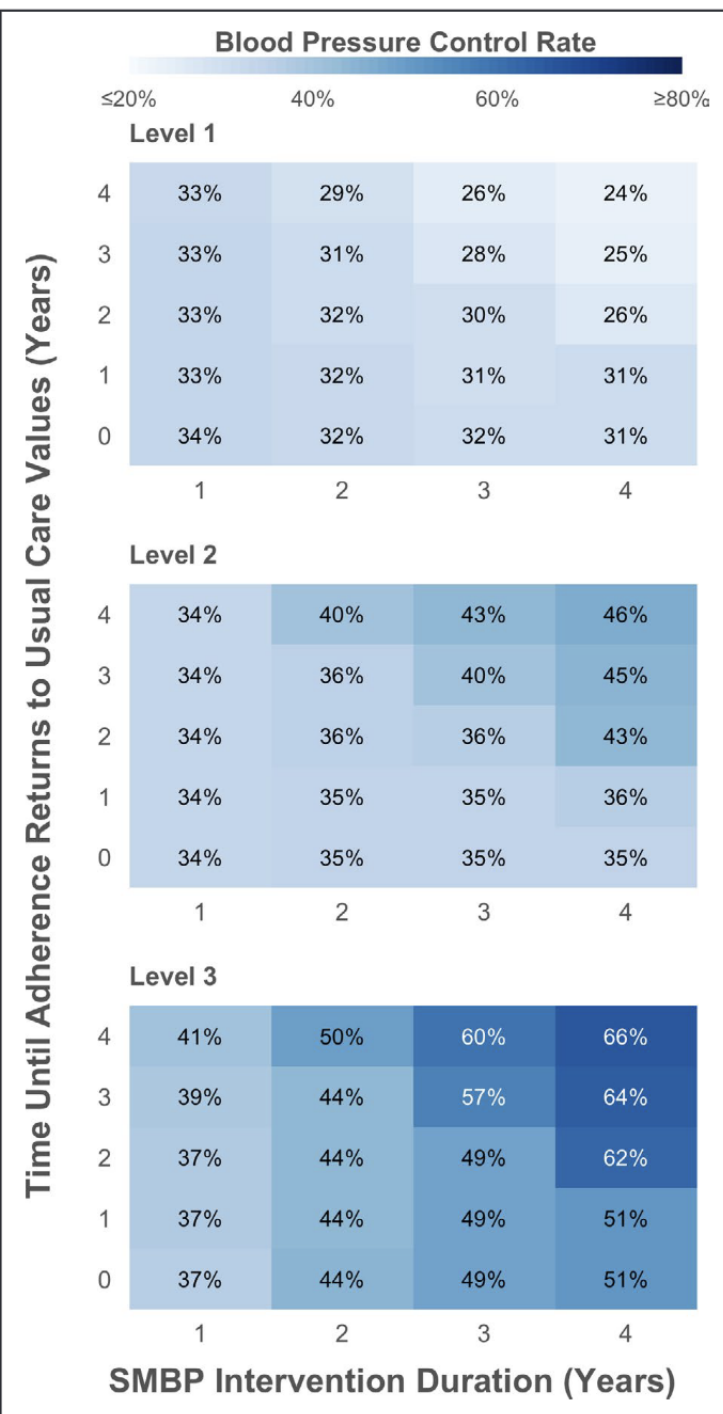


- Five Years SMBP



- One Year SMBP
- Return to Usual Care
- Maintain adherence benefits





- Blood pressure control rate increases with:
- Increased clinical support
  - Increased duration
  - And/or persistence of adherence benefits

# What did we learn?

- SMBP with clinical support may improve long-term BP control
- Short term interventions are unlikely to sustain BP control unless impacts on medication adherence sustains
- SMBP without clinical support has little impact initially or over time



# SMBP in Real Life

# Barriers to Implementation

- Coverage of valid monitors (varies by state)
- Teaching patients proper technique
- Data review plan
  - Connected vs non-connected device
  - Personnel → Can they intensify medications or route back to physician
- Patient engagement



# Data Inflow Strategies

Strategy	Pro	Cons
Patient brings log	Less between visit work	Patient may forget, need to average value during limited appointment time
Patient submits to EHR	Less work between visits, EHR may calculate average	Need to clarify follow up plan (between visit, just for review at next visit)
Team outreaches patient	Possible additional patient engagement, opportunity for education and titration (if MD, PharmD, NP, PA)	Time consuming for team, need dedicated time to conduct May have to calculate average in real time if patient device does not
Connected device  (Remote Patient Monitoring/RPM)	Direct transmission/average to EHR	Need response/review protocol in place Expensive and sometimes reimbursement is complication



# Monitoring PLUS Support

What do you need?	Who can do it?
Monitors	Patients can purchase Partner with DME vendor Institution can purchase
Patient education for proper monitoring	RN, NP, MA, MD, PharmD
Infrastructure to log values	EHR/patient entered flowsheets, connected devices
Clinical personnel for data review	RN, NP, MD, PharmD (non-physician providers that can Rx are more effective)
Plan for review/response	Clinical leader: MD, NP, PharmD
Titration algorithm	MD/PharmD



# Million Hearts March SMBP Forum

Marlon Satchell, PhD MPH

FPCN Quality Manager

March 16, 2023

# SMBP Program Background/Overview

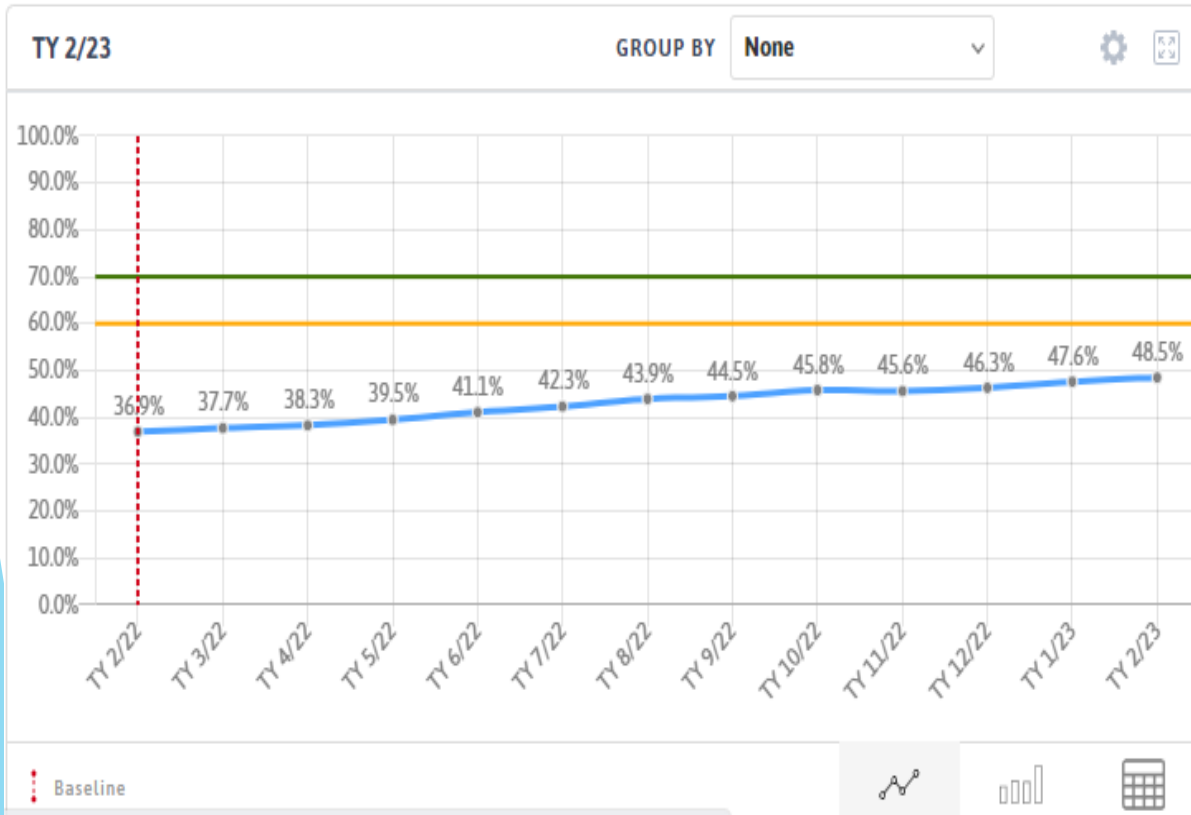
- ▶ Piloting program over the past year+ (starting ~February 2022)
- ▶ Initial pilot at one site with one CRNP and a RN; switched to another site with same providers (Health Annex)
- ▶ Addition of Digital Navigator to SMBP team (July 2022)
- ▶ ‘Soft’ expansion to other providers at Health Annex (Fall 2022)
- ▶ Provider education on SMBP workflow (January-February 2023)
- ▶ Expansion to other sites across network (March-April 2023)

# SMBP Successes

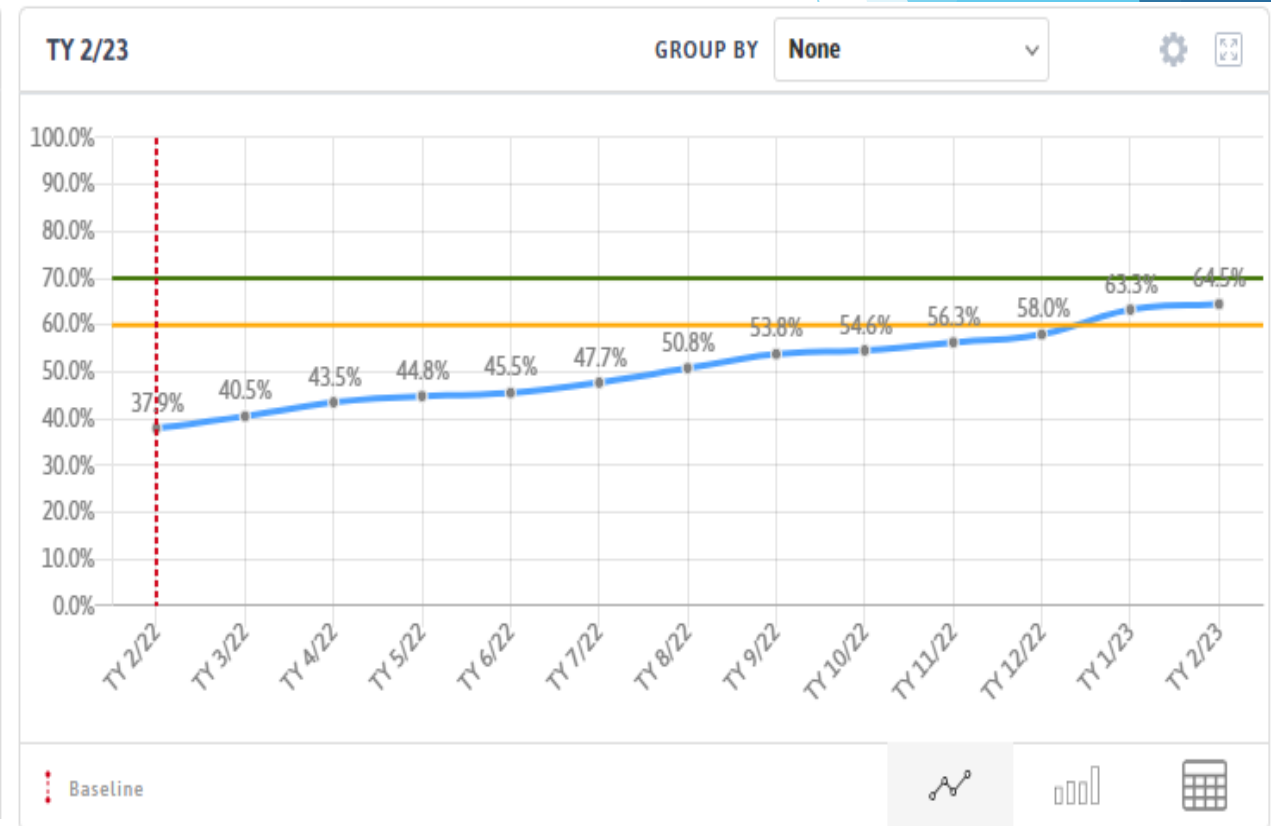
- ▶ Improvement in clinical outcomes for patients enrolled in SMBP program compared to patient not enrolled
- ▶ Opportunity to reinforce clinical workflows,
- ▶ Integration of AHA 'Act Rapidly' module into new hire/annual training for clinical providers
- ▶ Standardized treatment algorithms
- ▶ Integration of new HTN and SMBP forms into EHR
- ▶ Standardized patient education on using SMBP devices and enrollment into SMBP program
- ▶ Success of SMBP program for provider piloting the program has encouraged other providers and increased enthusiasm

# SMBP Clinical Outcomes

- ▶ All Providers, TY February 2023
- ▶ 11.6% improvement



- ▶ Kyle Faye only
- ▶ 26.6% improvement





# SMBP Challenges

- ▶ Technical challenges - integration with EHR
- ▶ Scaling up
- ▶ Provider buy-in initially
- ▶ Staffing

# SMBP Next Steps

- ▶ Expansion to other sites across the network officially began week of 3/6/23
- ▶ In addition to expansion of SMBP to other sites across network, additional focus is being placed on medication management, and medication intensification standards
- ▶ Filling staff vacancies will help ensure that all of the roles that are necessary to successfully implement and sustain our SMBP program are in place

# Thank you!

Marlon Satchell, PhD MPH

Quality Manager, Family Practice and Counseling Network

[msatchell@fpcn.com](mailto:msatchell@fpcn.com)

Kyle Faye, DNP

Nurse Practitioner, Health Annex and Annex West

[kfaye@fpcn.com](mailto:kfaye@fpcn.com)

# Q&A and Open Discussion



# Discussion Panelist

- **Moderator: Hilary Wall (CDC)**
- Dr. Kate Kirley, American Medical Association
- Dr. Kelsey Bryant, Mount Sinai
- Dr. Marlon Satchell, Family Practice and Counselling Network



# Updates

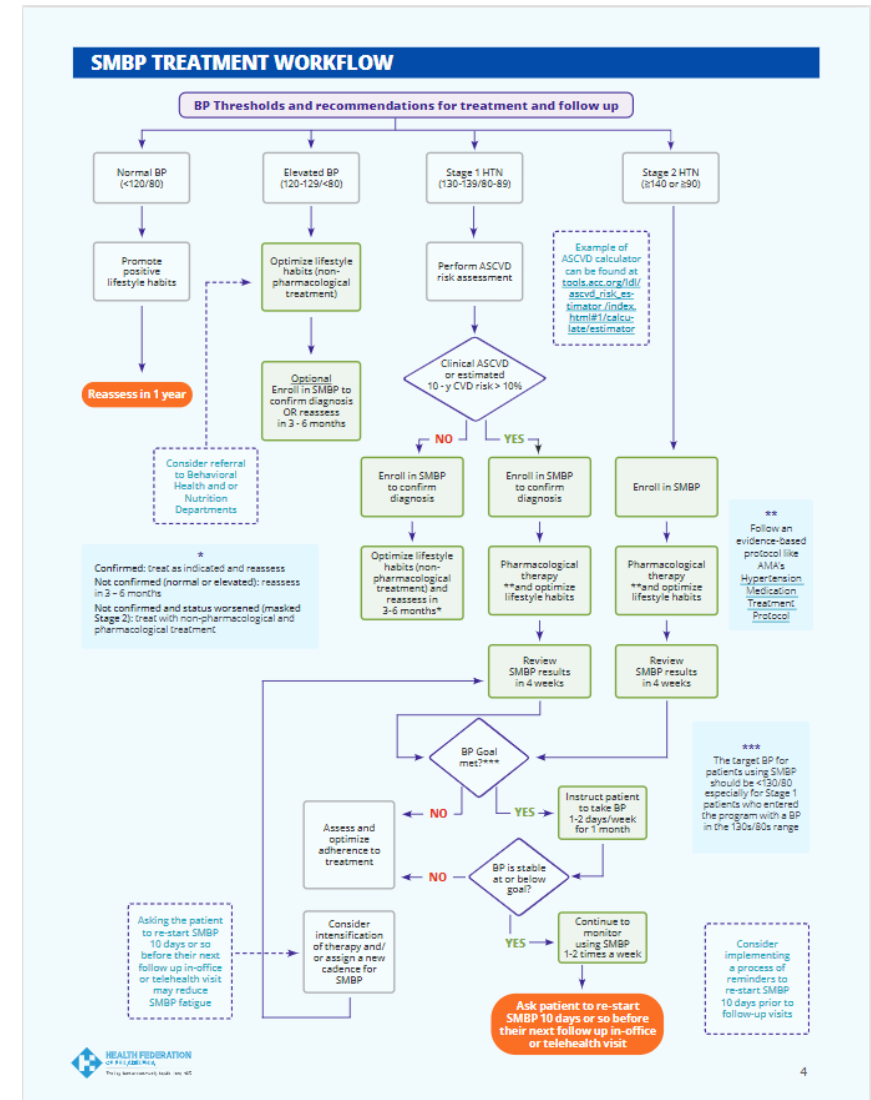


# REVISED SMBP TOOLKIT – SMBP Treatment Workflow



## Self-Measured Blood Pressure Monitoring (SMBP) Implementation Toolkit

MARCH 2023



## NACHC Million Hearts® Initiative - NACHC

# 2022 Million Hearts® Hypertension Control Champions

- Cardiovascular Institute of the South, Houma, LA
- Cardiovascular Institute of the South, Meridian, MS†
- Community Health Center of Southeast Kansas, Pittsburg, KS\*
- Forest Park Internal Medicine and Pediatrics, Cincinnati, OH
- Manu Seghal, MD, Milford, DE
- Norton Sound Health Corporation, Nome, AK\*†
- Stonecreek Family Physicians, Manhattan, KS
- Sunrise Medical PC, Corona, NY
- Valley Professionals Community Health Center - N Terre Haute, Terre Haute, IN\*



\* = HRSA-funded health center † = first Hypertension Control Champion in the state



# 2023 Million Hearts® Hypertension Control Challenge

- Apply to be a 2023 Hypertension Control Champion: **Feb 27 – Apr 14, 2023**
- **≥ 80%** blood pressure control
- **Apply at:**  
[millionhearts.hhs.gov](https://millionhearts.hhs.gov)



The banner features a stylized heart icon with a purple ribbon across it containing the year '2023'. To the right of the icon, the text reads '2023 Million Hearts® Hypertension Control Challenge'. Below this, a dark purple bar contains the text 'Enter the Challenge at millionhearts.hhs.gov'. At the bottom, there are logos for the CDC and Million Hearts.

2023 Million Hearts®  
Hypertension Control Challenge

Enter the Challenge at [millionhearts.hhs.gov](https://millionhearts.hhs.gov)



**We're especially looking for Champions in AL, AR, ID, ME, NC, NV, SD, and VT.**

# Upcoming Million Hearts® and Partner Events

Date/Time	Title	Host	Live Audience	Links or Contact Information
March 29, 2023 2:00-3:00pm ET	Fireside Chat on Hypertension and the Impact on Brain Health	National Hypertension Control Roundtable	All partners	<a href="#">Registration Link</a>
April 13, 2023 12:00-1:30pm ET	Million Hearts® Climate Change and Cardiovascular Disease Collaborative: Leading on Climate Resilience and Mitigation in Your Organization	CDC, OCCHE, NCEH, and EPA	All partners	<a href="#">Registration Link</a>
April 14, 2023 11:59pm ET	Deadline to apply for Hypertension Control Champion	CDC	Clinicians and medical practices	<a href="#">Apply here</a>
May 17, 2023 3:00-3:45pm ET	Million Hearts Learning Lab: Medication Therapy Management in Trusted Spaces - Role of Pharmacists in Managing Hypertension	CDC/ NACHC	All partners	<a href="#">Registration Link</a>  Click <a href="#">here</a> for information on claiming CME credits.

# HEALTH CENTER **INNOVATION** INCUBATOR

Use a **human-centered design approach** to build innovative solutions to improve health equity by **addressing digital and health literacy**.\*

**Award Amount: \$40,000 / Application Due: March 27**

**Email Questions to [innovation@nachc.org](mailto:innovation@nachc.org)**

**[bit.ly/NACHC-CHCIncubator](https://bit.ly/NACHC-CHCIncubator)**

\* - Please review application for eligibility requirements



# Closing Questions or Thoughts

- Any remaining questions from today's conversation?



- Suggestions for future topics?

# We Want to Hear From You!

Do you have resources or updates to share with the Million Hearts<sup>®</sup> SMBP Forum?

Please send information to [MillionHeartsSMBP@nachc.org](mailto:MillionHeartsSMBP@nachc.org)



# Thank You!

The next SMBP Forum to be held June 8, 2023.

Register at <https://bit.ly/SMBPForumRegistration2023>



Please complete the post call survey:

[https://nachc.co1.qualtrics.com/jfe/form/SV\\_6eWPA7Klq4lfxZQ](https://nachc.co1.qualtrics.com/jfe/form/SV_6eWPA7Klq4lfxZQ)

Send questions or comments to [MillionHeartsSMBP@nachc.org](mailto:MillionHeartsSMBP@nachc.org).

