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The *voice* of the
community
pharmacist.

Getting to the Heart of It – Clinical Pearls and Workflow Solutions to Improve Outcomes for Patients on Hypertension Medications

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Disclosure Statement

There are no relevant financial relationships with ACPE defined commercial interests for anyone who was in control of the content of the activity.



Pharmacist and Technician Learning Objectives

1. Review current hypertension guidelines.
2. List interventions your pharmacy can integrate into workflow to improve care for patients with hypertension.
3. Discuss support staff's role in blood pressure control.



Agenda

- Review of Hypertension
- Blood Pressure Monitoring 101
- Opportunities for Community Pharmacy
- Published Examples

Hypertension

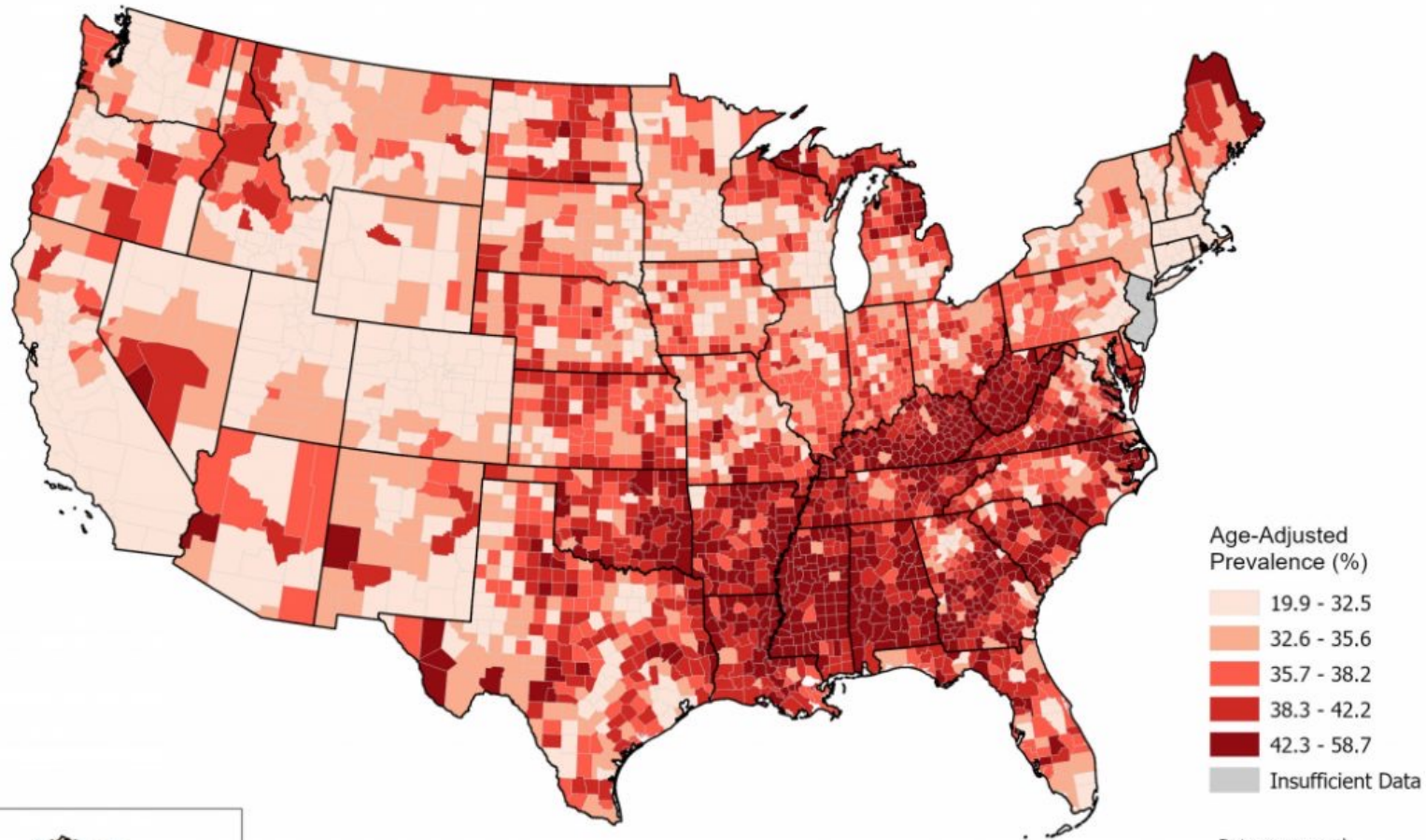
Significance

- Individuals at age 50 without hypertension have a 90% chance of having hypertension by age 80
- Starting at 115/75 mmHg, cardiovascular risk doubles with every 20/10 mmHg increase in blood pressure
- People with treated uncontrolled hypertension or untreated hypertension had higher risk of all-cause, cardiovascular specific, heart disease specific, and cerebrovascular disease specific mortality (treated controlled hypertension did not have the same results)
- In 2020, more than 670,000 deaths had hypertension as the primary or contributory cause

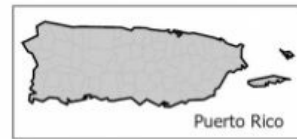
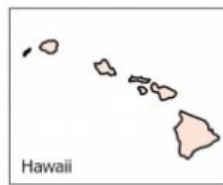
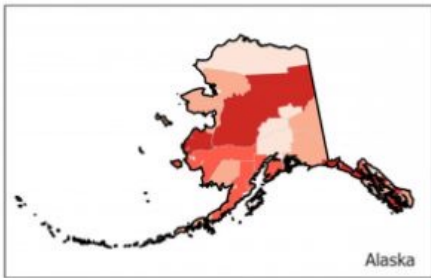
Prevalence

- 116 million US adults have hypertension (47%)
- 76% of US adults with hypertension have it uncontrolled
- More men (50%) than women (44%) have hypertension
- Highest prevalence is in non-Hispanic black adults (56%) followed by non-Hispanic white adults (48%)

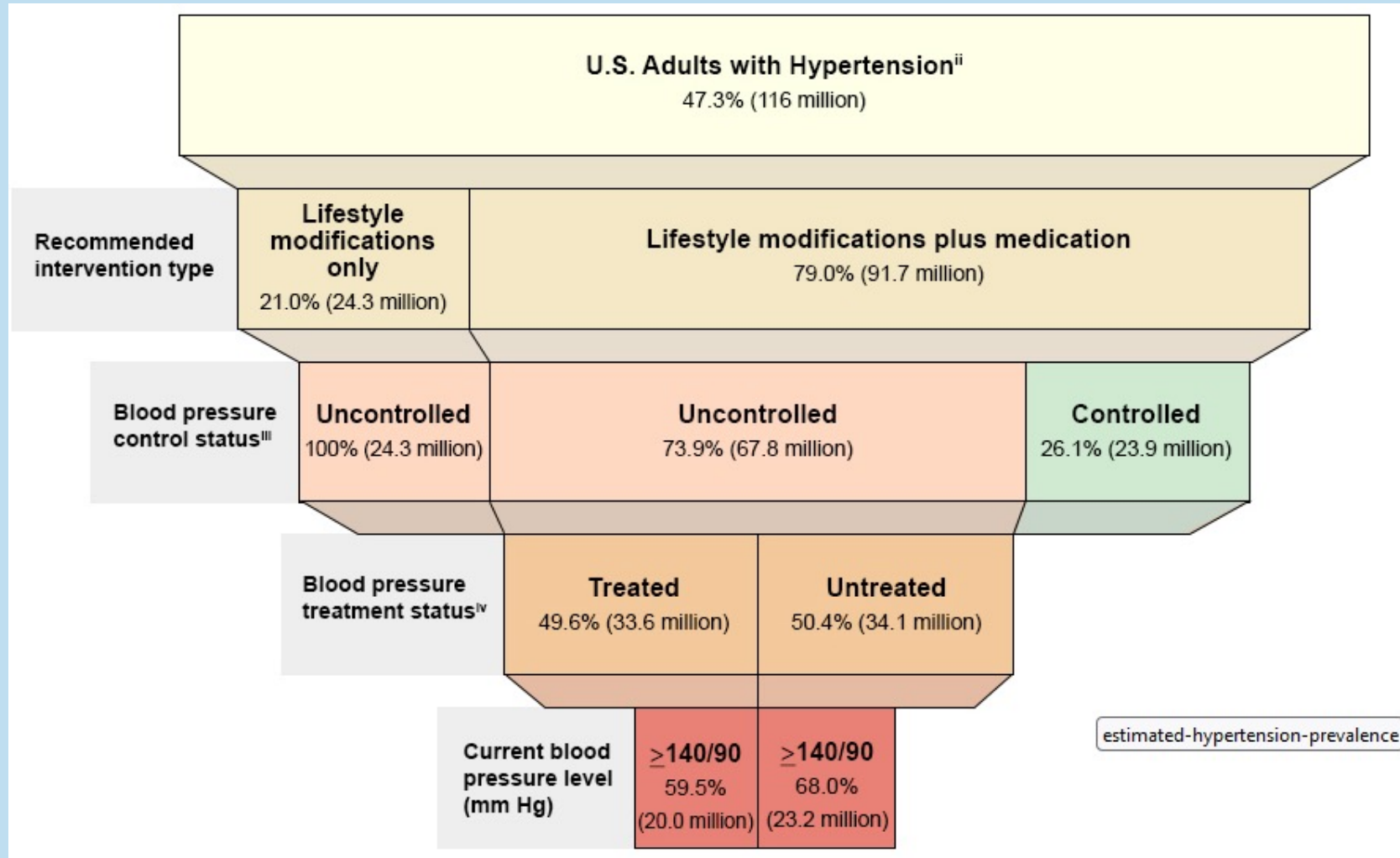
Hypertension Prevalence, 2018 - 2020 Adults, Ages 18+, by County



Data source and methodology found at:
www.cdc.gov/dhisp/maps/atlas/statistical-methods



CDC Hypertension Cascade



CDC. Figure 1. Hypertension Cascade: Hypertension prevalence, treatment, and control estimates among US adults aged 18 years of and older applying the criteria from the American College of Cardiology and American Heart Association's 2017 Hypertension Guideline – NHANES 2015-2018. Atlanta, GA: US Dept of Health and Human Services; 2021.

Categories of Blood Pressure (BP)

BP Category	Systolic		Diastolic
Normal	<120 mmHg	And	<80 mmHg
Elevated	120-129 mmHg	And	<80 mmHg
Hypertension			
Stage 1	130-139 mmHg	Or	80-89 mmHg
Stage 2	≥140 mmHg	Or	≥90 mmHg

SPRINT Trial

	Randomized, controlled, open-label trial across 102 clinical sites
Purpose	Identify blood pressure target to reduce cardiovascular morbidity and mortality
Participants	9,361 individuals age ≥ 50 , systolic blood pressure 130-150 mmHg and increased risk of cardiovascular events without diabetes
Method	Intensive treatment target < 120 mmHg or standard treatment < 140 mmHg
Results	Trial stopped early after 3.26 years
	Significant 25% reduction in composite outcomes of myocardial infarction, acute coronary syndrome, stroke, acute decompensated heart failure or death from cardiovascular causes ($P < 0.001$)
	Significant 27% reduction in all-cause mortality ($P = 0.003$)
Clinical Application	For individuals with high cardiovascular risk, a systolic target of <u>≤ 120 mmHg</u> results in lower rates of fatal and nonfatal major cardiovascular events and death from any cause

STEP Trial

	Randomized, controlled trial across 102 clinical sites
Purpose	Identify blood pressure target to reduce cardiovascular risk in older patients
Participants	8,511 individuals age 60-80 with hypertension
Method	Intensive treatment target 110-129 mmHg or standard treatment 130-149 mmHg
Results	Mean systolic blood pressures were 127.5 mmHg and 135.3 mmHg Significant 26% reduction in composite outcomes of stroke, acute coronary syndrome, acute decompensated heart failure, coronary revascularization, atrial fibrillation, or death from CV causes (P=0.007)
Clinical Application	For older patients with hypertension, a systolic target of <u>110-129 mmHg</u> lowered the incidence of CV events

Blood Pressure Goal

< 130/80 mmHg

Recommended Algorithm

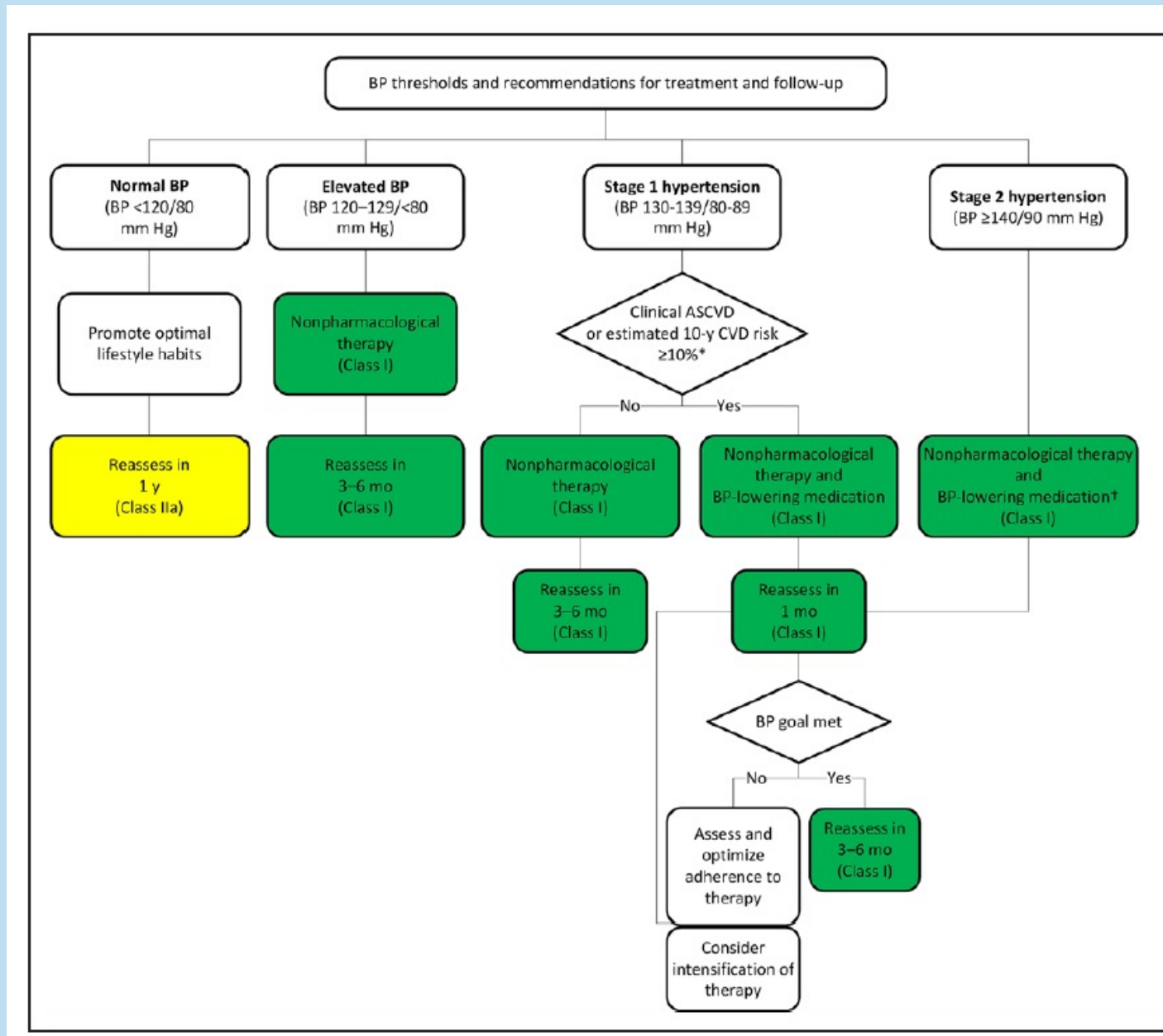


Figure 4 from 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol.* 2018; 71:e127-e248. Pradhan A, et al. A 20/20 match: ACC/AHA 2017 versus ESC/ESH 2018 guidelines for management of hypertension. *Int J Angiol.* 2021;30:243-248.

Nonpharmacological Treatment

Intervention	Recommendation	Impact on SBP with hypertension	...SBP with normotension
Weight loss	1 kg reduction in body weight	-5 mmHg	-2/3 mmHg
DASH diet	Fruits, vegetables, whole grains, and low-fat dairy	-11 mmHg	-3 mmHg
Dietary sodium	<1500 mg/day	-5/6 mmHg	-2/3 mmHg
Dietary potassium	3500-5000 mg/day	-4/5 mmHg	-2 mmHg
Aerobic physical activity	90-150 min/week, 65-75% heart rate reserve	-5/8 mmHg	-2/4 mmHg
Dynamic resistance physical activity	90-150 min/week, 50-80% 1 rep maximum, 6 exercises, 3 sets/exercise, 10 repetitions/set	-4 mmHg	-2 mmHg
Isometric resistance physical activity	4 x 2 min (hand grip), 30-40% max voluntary contraction, 3 sessions/week	-5 mmHg	-4 mmHg
Moderate alcohol consumption	Men: ≤2 drinks/day Women: ≤1 drink/day	-4 mmHg	-3 mmHg

SBP: systolic blood pressure

Adapted from Table 15 in 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. *J Am Coll Cardiol.* 2018; 71:e127-e248

Pharmacological Treatment

Thiazide
Diuretics

Calcium
Channel
Blockers (CCB)

Angiotensin-
converting
Enzyme
Inhibitors (ACEi)

Angiotensin-
receptor
Blockers (ARB)

Clinical Pearls – Initial Therapy

- Beta blockers are only indicated with initial therapy if there is another comorbid condition such as heart failure or myocardial infarction
- Thiazide-diuretics and CCB are preferred as first line in black patients (except in chronic kidney disease or heart failure, ACEi / ARB preferred)
- Beginning treatment with 2 drugs is recommended when blood pressure is $\geq 20/10$ mmHg above goal

Clinical Pearls – Diuretic Updates

- Chlorthalidone vs. hydrochlorothiazide
 - No significant difference with reducing risk of myocardial infarction, hospitalized heart failure, or stroke
 - Chlorthalidone associated with significantly higher risk of hypokalemia (HR 2.72, CI 2.38-3.12), hyponatremia (HR 1.31, CI 1.16-1.47), acute renal failure (HR 1.37, CI 1.15-1.63), chronic kidney disease (HR 1.24, CI 1.09-1.42) and type 2 diabetes (HR 1.21, CI 1.12-1.30)

Clinical Pearls – Pregnancy

- Methyldopa
- Calcium channel blockers
- Already established on thiazide or thiazide-like diuretics, okay to continue taking it
- Beta blockers associated with increased rates of cleft lip/palate and cardiovascular and neural tube defects

CVD Risk Factors

MODIFIABLE

- Cigarette Smoking
- Diabetes
- Dyslipidemia
- Overweight / Obesity
- Physical Inactivity / low fitness
- Unhealthy Diet

FIXED

- Chronic kidney disease
- Family history
- Increased age
- Low socioeconomic status / educational status
- Male sex
- Obstructive sleep apnea
- Psychosocial stress

Performance Measures

Guidelines

ACC/AHA developed 22 new measures, 6 performance measures, 6 process quality measures and 10 structural quality measures

National Reporting Programs

National Quality Forum (NQF)

Centers for Medicare and Medicaid (CMS)

National Committee for Quality Assurance (NCQA)

Healthcare Effectiveness Data and Information Set (HEDIS)

Payment Programs

Medicare Advantage Star Ratings

Medicare Shared Savings Program

Physician Quality Payment Program

HEDIS Performance

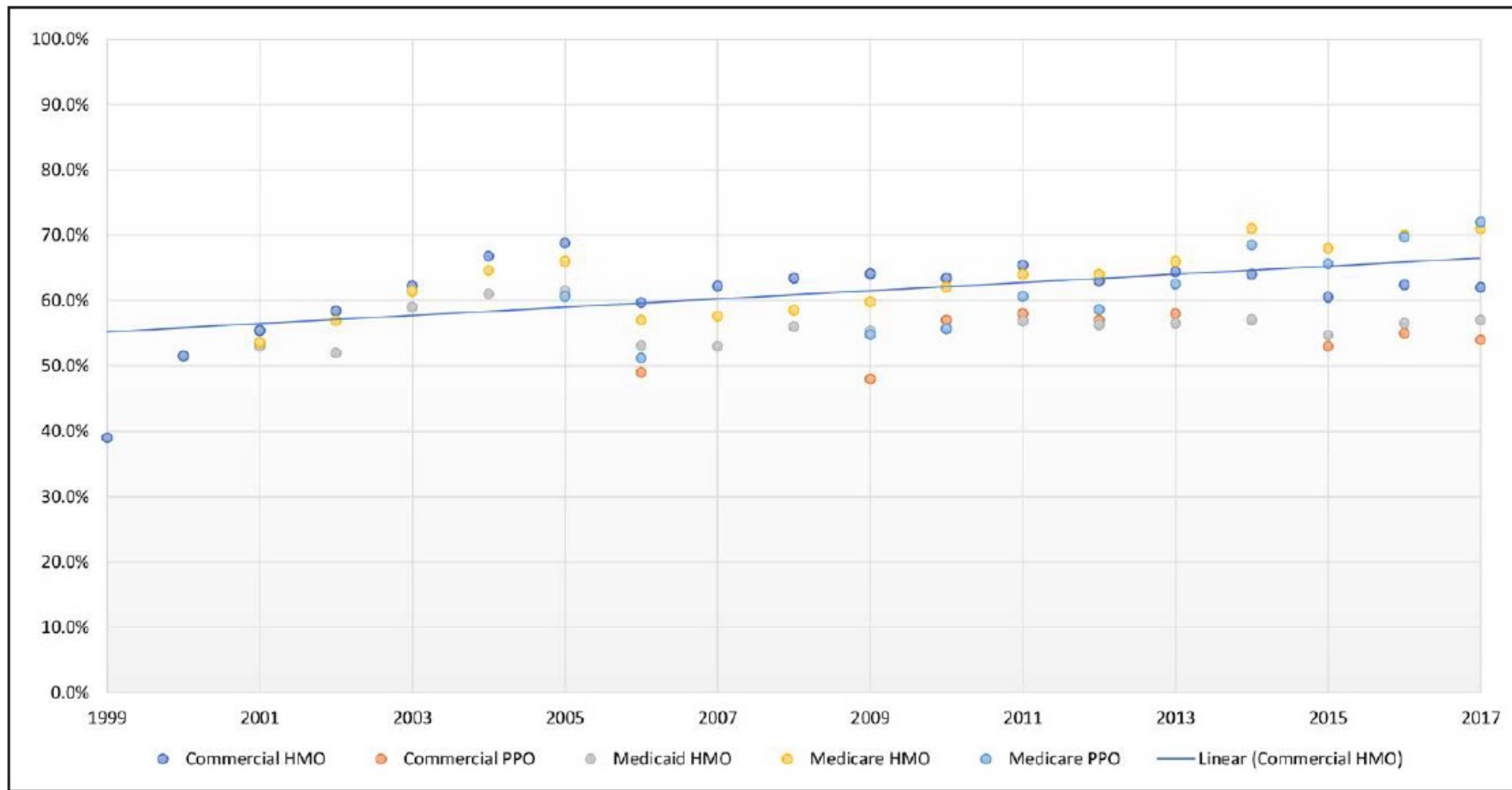


Figure 1. Performance of HEDIS Controlling HBP Measure 1999–2017 (percent of patients with hypertension treated in accordance with the HEDIS Controlling HBP Measure).

The Impact...

Estimated 3 million ASCVD events could be averted over 10 years with achieving blood pressure target <130/80 mmHg

25% do not fill initial antihypertensive prescription and after 1st year, medication possession ratio is 50%

Blood Pressure Monitoring

BP Devices

Aneroid

Most accurate and reliable

Usually stethoscope comes attached

Least expensive



Digital

Easy to use

Both manual inflating and automatic inflating available

More expensive



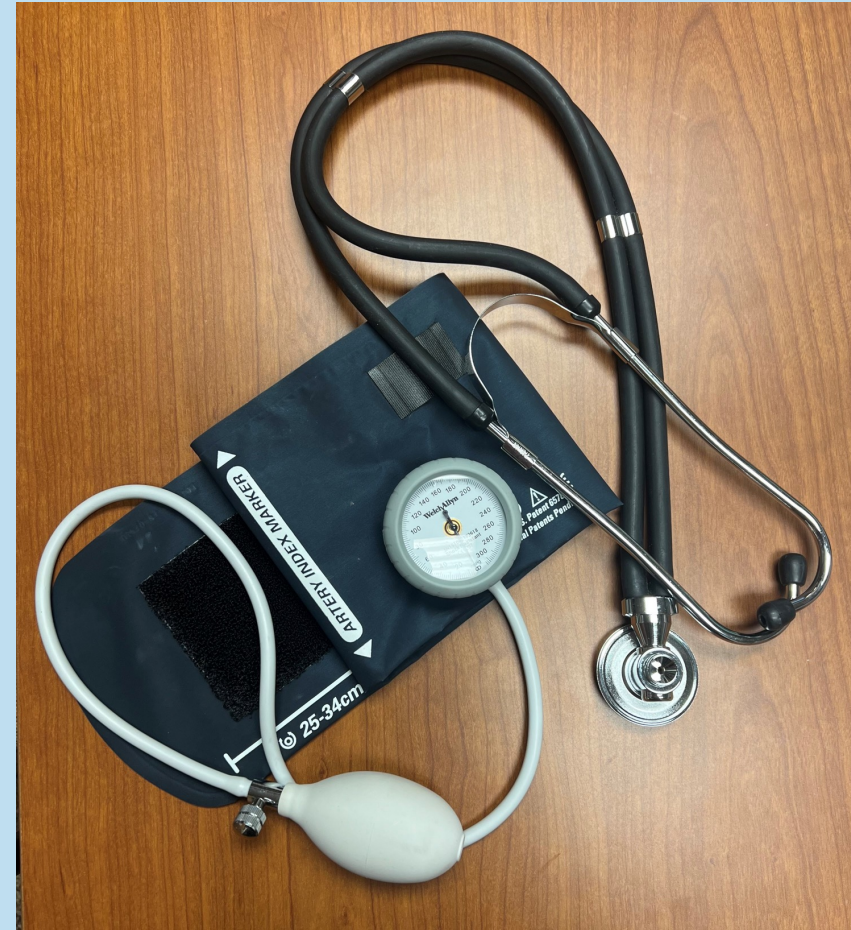
Manual Sphygmomanometer

Team Manual:

- 218 participants, aneroid readings were within 5 mmHg of the mercury monitor 89% of the time vs. <44% of the digital readings
- For the aneroid device, sensitivity 86.7% and specificity 98.7% was higher than the digital device

Team Automated:




- Systematic review of 31 studies including 9,279 participants
- Pooled mean difference of 14.5 mmHg and higher with manual vs. automated



Validated Device List (VDL)

- Hosted by the American Medical Association and the National Opinion Research Center with input from the FDA, manufacturers, healthcare organizations, and clinicians

www.validatebp.org

Brands		Device Types		
All Brands		All Device Types		
Brand/Device Type	Name And Model Number	Validation Protocol	Cuff Sizes	Populations Served
A&D Medical Office	Professional Office Blood Pressure Monitor UM-211 	ISO81060-2:2018/AMD 1:2020	Extra Large (41-50 cm), Extra Small 12-17, Large (31-45 cm), Medium (22-32 cm), and Small (16-24 cm)	General
A&D Medical Office	Professional Office Blood Pressure Monitor UM-212BLE 	ISO81060-2:2018/AMD 1:2020	Extra Large (41-50 cm), Extra Small 12-17, Large (31-45 cm), Medium (22-32 cm), and Small (16-24 cm)	General
Avita Home	ArmType Blood Pressure Monitor BPM636 	ANSI/AAMI/ISO 81060-2:2013	Adult (22-42 cm)	General

Selection and Placement of BP Cuff

- Use a validated device
- Position the middle of the cuff on the upper arm at the level of the right atrium
- Cuff bladder length should be $\geq 80\%$ of arm circumference
- Cuff bladder width should be $\geq 40\%$ of arm circumference

Arm Circumference	Usual Cuff Size
22-26 cm	Small adult (12 x 22 cm)
27-34 cm	Adult (16 x 30 cm)
35-44 cm	Large adult (16 x 36 cm)
45-52 cm	Adult thigh (16 x 42 cm)

Proper Technique – Patient

1. Avoid smoking, caffeine and exercise 30 minutes before reading
2. Empty bladder
3. Sit in a comfortable chair with back supported for at least 5 minutes and relaxed
4. Both feet flat on the ground and keep legs uncrossed
5. Support or rest arm with cuff on a table at chest height
6. Cuff should be on bare skin
7. Do not talk while blood pressure is being measured

Proper Technique – Provider

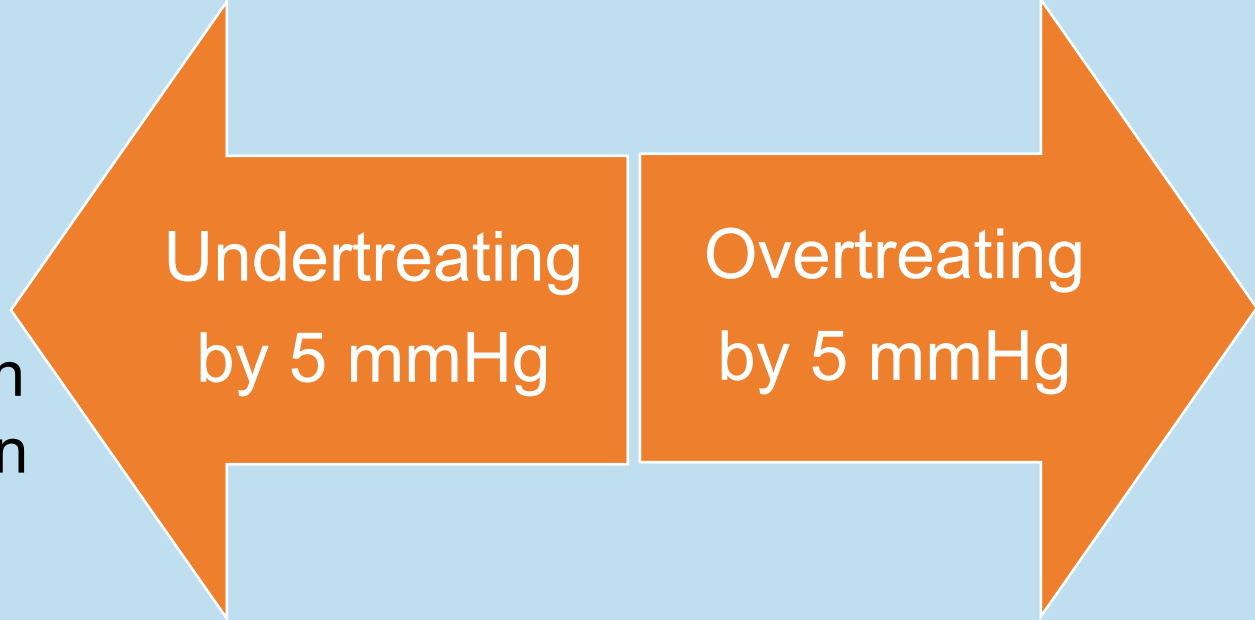
1. Do not talk while measuring blood pressure
2. If first visit, measure both arms and then use arm with higher reading for future readings
3. Inflate cuff 20-30 mmHg above expected
4. Deflate cuff 2 mmHg per second
5. Record systolic as first Korotkoff sound and diastolic as the disappearance of the Korotkoff sound
6. Use an average of ≥ 2 readings obtained on ≥ 2 occasions

BP Changes due to Technique

Factor	BP Change Systolic/Diastolic mmHg
Talking	+ 10 / 10
Cuff over clothing	+ 5-50 /
Cuff too small	+ 10 / 2-8
Smoking within 30 minutes	+ 6-20 /
Back unsupported	+ 6-10 /
Arm unsupported, sitting	+ 6-8 /

Broad Impact of Suboptimal Technique

Mislabeled ~20 million with prehypertension vs. hypertension



Inappropriate treatment in almost 30 million people

Opportunities

Service Opportunities Within the Pharmacy

Hypertension

Weight loss

Diabetes

Dyslipidemia

Smoking
cessation

Cardiovascular
risk reduction

HEDIS

- Controlling high blood pressure
 - Percentage of members age 18-85 who have a diagnosis of hypertension and whose blood pressure is adequately controlled
- Blood pressure control for patients with diabetes
 - Percentage of members age 18-85 with diabetes whose blood pressure is adequately controlled

CMS Star Measures

- Measure = Medication adherence for hypertension RAS antagonists
- Medicare Advantage Part D Score improved from 87.04 in 2022 to 87.20 in 2023
- For Prescription Drug Plans Part D Score improved from 88.45 in 2022 to 88.68 in 2023

Medication Synchronization

- Program that aligns the refill dates for two or more prescriptions (e.g., Simplify My Meds, StarWellness)
- Meta-analysis of 9 studies found that med sync is associated with greater odds of adherence (OR 2.29, CI 1.99-2.64)

Target: BP

- Initiative with American Heart Association and American Medical Association
- Program providing support for organizations focusing on improving blood pressure control
- **Resources:**
 - Guidelines
 - Free training
 - Recognition program

Flip The Pharmacy

- **Key features:**

- Appointment based model
- Medication synchronization
- Utilizing non-pharmacy staff (collect information, take blood pressure)
- Follow-up (community health worker, lifestyle coaching)

Flip The Pharmacy

- **Resources:**

- Care team coordination
- Guidelines
- eCare plan documentation and SNOMED codes (full case examples on website)
- Workflow

eCARE Plans and SNOMED Codes

- Link to example documentation form and SNOMED CT descriptions:
 - <https://www.flipthepharmacy.com/hypertension>

Teamwork! Putting it Altogether

Use pharmacy management system to identify a patient who is several days late filling blood pressure medications



Staff calls patient to schedule a hypertension review appointment



Staff obtains & documents patients blood pressure

Staff enrolls patients in medication synchronization



Pharmacists discusses blood pressure medication role and lifestyle modifications with patient



eCare plan submitted to patient's primary care physician with recommendations

Document SNOMED codes for cost effective medication alternatives and medication synchronization

Published Examples

Five Successful Stories...

- Using pharmacy students

- Collaborate with academic medical center

- Collaborate with a health clinic

- Collaborate with a health plan

- Sole implementation

Pharmacy Students

Purpose	Assess the clinical impact of a community IPPE focused on health and wellness by P2 students
Participants	147 students at 89 community pharmacies (38 independent, 33 chain and 18 grocery)
Method	1-week 40 hour IPPE with three categories of activities: immunizations, health screenings, and patient counseling
Results	985 blood pressure measurements performed
Clinical Application	Pharmacy students were able to add value added pharmacy services to the pharmacy, help the surrounding community, and gain needed clinical experiences

Academic Medical Center

Purpose	Explore the perceptions of pharmacists and academic medical center administrators from designing and operationalizing a pharmacist hypertension management program
Participants	3 community pharmacies and 1 academic medical center
Method	Patients with blood pressure > 140/90 mmHg were referred to the community pharmacy. Pharmacists obtained blood pressure among other things and made recommendations to the primary care physician. Follow-up occurred every 2-4 weeks until blood pressure was achieved. Pharmacists had access to the EHR. 12 hours of clinical training and 12 hours of EHR training were provided.
Results	Community pharmacists were highly satisfied with service and higher job satisfaction
	Physicians responded to clinical notes/inquiries within EHR in 24 hours
	Pharmacists stated workflow was not impacted but they did feel pressure to get back to filling prescriptions

Family Medicine Clinic

Purpose	Implement the service, evaluate clinical outcomes, and report financial viability of the partnership
Participants	1 independent pharmacy (Greenwood Pharmacy) and 1 family medicine clinic (Northeast Iowa Family Practice) in Waterloo, Iowa
Method	26 patients had at least 1 chronic care management (CCM) encounter which were documented within the EHR. Collaborative practice agreement allowed pharmacists to approve refills as needed and initiate new hypertensive medications. CCM codes 99490, 99487, and 99489 were billed.
Results	Medicare reimbursed for the CCM services (99490 \$31, 99487 \$79, 99489 \$43)
	Mean systolic blood pressure decreased from 140.4 to 133.1 mmHg (P=0.006) and diastolic decreased from 77.9 to 75.5 mmHg (P=0.79)
	Total of 6411 minutes logged over the 9-month study with 142 claims. Total revenue was \$5842 (\$2785 for pharmacy and \$3057 for clinic)

Healthcare Plan

Purpose	Evaluate impact of pharmacists managed hypertensive clinic
Participants	1 independent community pharmacy (University Pharmacy) and 1 employer wellness plan (Wayne State University employees enrolled in Wellness Warriors Program) in Detroit, MI
Method	Participants met with pharmacists or student pharmacists 4 times over a 6-month timeframe, first visit was 45-60 min and subsequent visits were 15-30 min; patients received home blood pressure monitoring kits that had download capability, participants were incentivized by health plan with \$50 after completion of program
Results	152 participants went through program, significant reduction in systolic blood pressure, mean reduction 7.3 mmHg (P<0.001) and diastolic 4.4 mmHg (P<0.001)

Sole Implementation

Purpose	Describe the implementation and effectiveness of a self-measured blood pressure program in a community pharmacy
Participants	1 independent pharmacy (L and S Pharmacy) in rural southeast Missouri. Collaboration with the University of Missouri-Kansas City, Mississippi County Health Department, and CPESN-Missouri
Method	Pharmacist provided medication therapy management, adherence monitoring, immunizations and reimbursed clinical services. Participants had 4 sessions. SNOMED codes used 3915509 (hypertension education), 50723001 (education), and 135840009 (monitoring)
Results	20 participants with all patients being satisfied with service
	Program took 63 minutes of staff time per patient
	Systolic blood pressure decreased by 17 mmHg (P=0.001) and diastolic 12 mmHg (P<0.001)
	Labor cost estimated to be \$63.59 per patient. Reasonable request for \$174/patient

The Marketing Plan in 3 Key Takeaways

1

WHY: High prevalence of hypertension (47%) and uncontrolled hypertension (76%)

2

WHO: Train employees and patients to measure blood pressure properly

3

WHAT, WHERE, and WHEN: Several existing resources (e.g., Flip the Pharmacy) and published methods to help implement services within your pharmacies

You can do it!!!

Helpful Resources - Application

- Flip The Pharmacy – Hypertension
 - <https://www.flipthepharmacy.com/hypertension>
- National Committee for Quality Assurance (NCQA)
 - <https://www.ncqa.org/hedis/measures/>
- CMS Star Measures
 - <https://www.cms.gov/files/document/2023-star-ratings-technical-notes.pdf>

Helpful Resources - Guidelines

- 2018 ACC/AHA Hypertension Guidelines

- <https://www.ahajournals.org/doi/10.1161/HYP.0000000000000065>

- CDC Measure your Blood Pressure

- <https://www.cdc.gov/bloodpressure/measure.htm>

- Pharmacotherapy Overview

- The Medical Letter: Drugs for Hypertension Vol 62 Issue 1598, 2020



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