

Preventing Heart Attacks & Strokes Everyday



Welcome to the PHASE Learning Community!



PREVENTING HEART ATTACKS & STROKES EVERY DAY

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Hypertension: 2017 Clinical Update *Wireside Chat*



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Welcome and PHASE Program Update

PHASE Initiative Goal

Hypertension: 2017 Clinical Update

Dr. Joseph Young

Q&A

Resources and Upcoming Uvents

Jean Nudelman

Director, Community Benefit Programs – Kaiser Permanente Northern California

PHASE Update: Vision, Goals, and Impact



PHASE 2017-2019



Vision and Initiative-Wide Goal

GOAL

PHASE Initiative prevents heart attacks and strokes in high risk patient populations served by the safety net.

VISION

We aspire to eliminate preventable cardiovascular disease from our communities so that all people in our communities have controlled blood pressure, controlled hemoglobin A1C levels and are tobacco free.

PHASE 2017-2019



Vision and Initiative-Wide Goal

HOW WE WILL GET THERE, TOGETHER:

Kaiser Permanente Northern California aims to support PHASE grantees in being nationally recognized for their excellence in providing cardiovascular disease preventative care, as measured by their performance against nationally established benchmarks.

All PHASE Grantees are:

- Working towards implementing the successful, evidencebased PHASE protocol
- Adopting population health management practices to reinforce the protocol
- Using other quality improvement interventions to deepen their impact

PHASE 2017-2019



PREVENTING HEART ATTACKS & STROKES EVERY DAY

Vision and Initiative-Wide Goal

HOW WE WILL BEGIN: Initial improvement efforts will focus on supporting grantees to achieve or maintain the 75th percentile in one or both HTN-related HEDIS measures.

- For organizations currently below the 75th percentile we will provide focused technical assistance, training and coaching to drive a relative 10% improvement by June 2018.
- We will update targets after mid-point of the grant.
- Grantees will also focus performance improvement efforts based on other PHASE-related priorities identified in their Charter for Improvement.
- The PHASE Support Team and coaches will work with participating organizations to refine and address these goals/targets.

Thank you for being a part of PHASE 2017-2019. We look forward to improving patient care for all people, working side-by-side with you.

Dr. Joseph Young Hypertension Clinical Lead, Kaiser Permanente Northern California

Wireside Chat - 8 August 2017 Kaiser Permanente Research





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Speaker's Financial Disclosure

- I have no financial relationship with any medically related enterprise other than Kaiser Permanente
- I am not an investigator for a pharmaceutical sponsored trial
- I am not on a pharmacy sponsored speakers bureau

Kaiser Permanente Northern California

- More than 4 million members
- Comprehensive
 inpatient & outpatient
 services
- 21 hospitals and 45 medical facilities
- More than 8,000Physicians



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JAMA. 2013;310(7):699-705.

Research

Original Investigation

Improved Blood Pressure Control Associated With a Large-Scale Hypertension Program

Marc G. Jaffe, MD; Grace A. Lee, MD; Joseph D. Young, MD; Stephen Sidney, MD, MPH; Alan S. Go, MD

IMPORTANCE Hypertension control for large populations remains a major challenge.

OBJECTIVE To describe a large-scale hypertension program in Northern California and to compare rates of hypertension control in that program with statewide and national estimates.

DESIGN, SETTING, AND PATIENTS The Kaiser Permanente Northern California (KPNC) hypertension program included a multifaceted approach to blood pressure control. Patients identified as having hypertension within an integrated health care delivery system in Northern California from 2001-2009 were included. The comparison group comprised insured patients in California between 2006-2009 who were included in the Healthcare Effectiveness Data and Information Set (HEDIS) commercial measurement by California health insurance plans participating in the National Committee for Quality Assurance (NCQA) quality measure reporting process. A secondary comparison group was included to obtain the reported national mean NCQA HEDIS commercial rates of hypertension control between 2001-2009 from health plans that participated in the NCQA HEDIS quality measure reporting process.

MAIN OUTCOMES AND MEASURES Hypertension control as defined by NCQA HEDIS.







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It's All About Implementation

It has to work in the real world



Key Elements of a Comprehensive Hypertension Control Program

- Hypertension Registry, Comprehensive
 - > Performance Metrics, Transparent and Widely Visible
- Clinic-level feedback to facilitate operational and system-level change.
- Treatment Algorithm
 - Evidence-Based
 - > Simple, Implementable
- Single Pill Combination (SPC) pharmacotherapy
- Medical-Assistant BP Checks
 - Better leverage ancillary staff skills
 - Reduced barriers to patients



Resources

Evidence-based Treatment Protocols for Improving Blood Pressure Control*

Million Hearts® encourages widespread adoption and use of standardized treatment protocols for improving blood pressure control. Simple, evidence-based treatment protocols can have a powerful impact in improving control by clarifying titration intervals and treatment options, by expanding the types of staff that can assist in timely follow-up with patients, and when embedded in electronic health records, by serving as clinical decision support at the point of care so no opportunities are missed to achieve control. A variety of evidence-based hypertension treatment protocols are available for practices and health care systems to select from, including the following protocols, or a custom protocol can be developed using the template.

*The hypertension protocols featured are examples of a wide variety of available evidence-based hypertension treatment protocols that practices and health care systems may consider for adoption and use. Linking to non-federal sites does not constitute an endorsement by the Department of Health and Human Services, the Centers for Disease Control and Prevention, or any of their employees of the sponsors or the information or products presented on the sites. Links to non-federal sites containing hypertension protocols serve only as a source of guidance. Health care professionals should always consider the individual clinical circumstances of each person seeking hypertension control. Links to the hypertension protocols are not intended to be a substitute for professional medical advice; individuals should seek advice from their health care professionals.

Template to Create a Hypertension Treatment Protocol



KP HTN Treatment Algorithm

3 Meds to Max Dose in 6 Steps





30% of ACEI Rx's dispensed as Fixed Dose Combination Therapy



% Of All ACEI Rxs

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Why Treating HTN Matters? It Saves Lives!

Stage 1 HTN +

- 1 or more CV risk factors and
- 12 mm drop in SBP for 10 years

Prevents 1 death for every 11 pts

Ogden LG, et al, Hypertension, 2000;35:539-43.

Lifestyle Modifications

Modification	Approximate SBP Reduction (range)	
Weight Reduction	5-10 mmHg/10kg	
Adopt DASH eating plan	8-14 mmHg	
Dietary sodium reduction	2-8 mmHg	
Physical activity	4-9 mmHg	
Moderation of alcohol consumption	2–4 mmHg	

Cumulative Event Rates for the Primary Outcome (Fatal CHD or Nonfatal MI) by ALLHAT Treatment Group



ALLHAT

ALLHAT Cumulative Event Rates for Heart Failure by ALLHAT Treatment Group



AND Remember: Safety First! ACE / ARB's & Statins May be Teratogenic

Avoid ACE-Is, ARBs and Statins in women of child-bearing age unless she is using a highly reliable method of contraception.

Cooper, et. Al., NEJM 354;23, June 8, 2006

Why is Spironolactone Now Best 4th Agent? PATHWAYS-2

 RCT: Spironolactone vs Placebo, Doxazosin and Bisoprolol for control of resistant HTN*
 *Uncontrolled on ACE/ARB + diuretic + CCB.

58% of pts controlled on **S**pironolactone!

Williams B, MacDonald TM, et al., www.thelancet.com Published online September 21, 2015 http://dx.doi.org/10.1016/S0140-6736(15)00257-3

PATHWAYS-2: Spironolactone is the Best!



Figure 2: Home systolic and diastolic blood pressures comparing spironolactone with each of the other cycles

PATHWAYS-2: Spironolactone is the Best!



Figure 2: Home systolic and diastolic blood pressures comparing spironolactone with each of the other cycles

AOBPM Technique

- Oscillometric device
- Average of three readings:
 - -Following 5 minutes of rest
 - -Three readings at 1 minute intervals
- Patient unobserved:
 - -Clinic staff prepares patient, pushes button and then leaves patient unattended.
 - -Readings and calculated average displayed on device.



Comparisons of blood pressure readings obtained in clinical settings using different methods of blood pressure measurement

	Mean blood pressure* (mmHg)		
	Centre for Studies in Primary Care ₁	ABPM referral unit ₂	CAMBO trial ₃
Routine manual office BP	151/83	152/87	150/81
Automated office BP	140/80	132/75	135/77
Awake ambulatory BP	142/80	134/77	133/74

*The automated office blood pressure (BP) and awake ambulatory BP were similar, and both were lower than the routine manual BP obtained in community practice. 1. Beckett L et al , BMC Cardiovasc. Disord. 2005; 5: 18. 2. Myers MG et al, J. Hypertens. 2009; 27: 280. 3. Myers MG, et al. BMJ 2011; 342: d286.

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BP Measurement in SPRINT vs. Other Trials

Unattended Blood Pressure Measurements in the Systolic, Blood Pressure Intervention Trial Implications for Entry and Achieved Blood Pressure Values Compared With Other Trials

"... BPs taken in SPRINT cannot be directly compared with BPs in other trials and (2) the treatment arm <120 mm Hg in SPRINT compares with a higher SBP value in the other trials.

For generalization, the number of mm Hg that should be added must be clarified; suggestions vary from 5 to 10 mm Hg up to 10–20 mm Hg and a recent study indicates 16 mm Hg.

Overall, it means that the lower treatment arm in SPRINT translates into SBP <136 mm Hg, not very different from SBP <140 mm Hg, which is the currently recommended SBP target for most hypertensive people by all hypertension treatment guidelines."

Kjeldsen SE et al, Hypertension. 2016; May67(5):808-12...

"BP measurements taken without observing these conditions are likely to overestimate BP and result in overtreatment, with the potential for higher rates of serious adverse effects and greater utilization of resources. This issue should be carefully considered in the development of any practice-based performance measures for BP control in hypertension that are derived from the SPRINT results."

Cushman WC, Whelton PK, Fine LJ, Wright JT Jr, Reboussin DM, Johnson KC, Oparil S; SPRINT Study Research Group. SPRINT Trial Results: Latest News in Hypertension Management. *Hypertension*.2016;67:263–265.



SPRINT design details available at:

- ClinicalTrials.gov (NCT01206062)
- Ambrosius WT et al. Clin. Trials. 2014;11:532-546.



SPRINT Enrollment Criteria

INCLUSION CRITERIA

- ≥ 50 years old
- SBP 130 to 180 mm Hg
 - SBP < 150 if on 4 meds at enrollment
- One or more of the following
 - CVD (clinical or subclinical)
 - 20 < eGFR < 60</p>
 - 10-year Framingham Risk <u>></u> 15%
 - Age <u>></u> 75 years

EXCLUSION CRITERIA

- Prior Stroke
- Diabetes Mellitus
- Standing SBP < 110
 mm Hg
- Polycystic Kidney Disease
- CHF, symptomatic or with ef < 35%
- Proteinuria > 1 g / day
- -eGFR < 20
- Adherence Concerns

Primary and Secondary Outcomes

Primary Outcomes

- CVD Composite, 1st occurrence of:
 - MI
 - ACS (non-MI ACS)
 - Stroke
 - HF, acute, decompensated
 - CV death

Secondary Outcomes

- All cause mortality

- Primary Outcomes + All-cause mortality
- $\ge 50\%$ decline in eGFR in patients with CKD
- > 30% decline in eGFR in patients WITHOUT CKD
- Incident albuminuria

Mean Achieved BPs in SPRINT

Intensive Treatment Arm – 121.4 mm Hg
 Standard Treatment Arm – 136.2 mm Hg

BPs as measured (very well) in SPRINT via AOBPM, correlate to higher conventional office readings of 5 mm Hg or more*

SPRINT Intensive arm, mean achieved BP corresponds to conventional readings of mid 120s mm Hg or higher

*Myers MG et al. Measurement of blood pressure in the office: recognizing the problem and proposing the solution. *Hypertension*. 2010;55:195–200.

*Filipovský J et al. Automated compared to manual office blood pressure and to home blood pressure in hypertensive patients. *Blood Press*. 2016 Aug;25(4):228-34.

25% reduction in 1° Outcomes (p < 0.001)



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Hypotension Consequences in SPRINT are nuanced

Statistically Significant

Syncope

Orthostatic Hypotension LESS frequent in Intensive Treatment Arm.

NO Difference

- Injurious Falls*
- Dizziness
- Patient perceived health status
 - VR12 with physical and mental health sub-scores
 - PHQ-9

*Defined as not resulting from Syncope
Number Needed to Treat/Harm Relative vs. Absolute Risk Reduction

25% Reduction in Composite Primary Outcome.

- 6.8% vs. 5.2% = 1.6% difference

NNT

- Primary Outcome - 61; All-cause mortality - 90*

NNH

-45 (2.2%)**

"On the basis of the SPRINT results, we estimate that for 1000 persons treated over 3.2 years to a systolic BP goal less than 120 mm Hg compared with less than 140 mm Hg, an average of 16 persons will benefit, 22 persons will be seriously harmed, and 962 will not experience benefits or harms"*

Benefit is typically cited as relative risk reduction (big #) Adverse events are typically cited as absolute risk (small #)

* SPRINT Research Group et al. N Engl J Med. 2015 Nov 26;373(22):2103-16.

** Ortiz E, James PA. Ann Intern Med. 2016 May 17;164(10:692-3.

Can SPRINT findings be generalized to patients with DM?

ACCORD Trial:

- Also target < 120 mm Hg SBP vs. < 140 mm Hg SBP
- Primary Composite CV Outcome MI, Stroke, CV Death with trend to benefit in Intensive Arm but not statistically significant
- Underpowered half the size of SPRINT
- Effect of antihypertensive treatment at different blood pressure levels in patients with DM: systematic review and meta-analysis. (BMJ 2016:352:1717)
 - "If baseline SBP was less than 140 mm Hg, however, further treatment increased the risk of cardiovascular mortality (1.15, 1.00 to 1.32), with a tendency towards an increased risk of all cause mortality (1.05, 0.95 to 1.16)."

Can SPRINT findings be generalized to patients with h/o Stroke?

- Secondary Prevention of Small Subcortical Strokes (SPS3) Trial
 - -Patients randomized to target SBP < 130 vs. 130 to 149.
 - -3020 patients randomized.
 - -Mean follow up 3.7 years
- Primary Endpoint: Reduction in all strokes

Recommendations

- For patients that meet SPRINT enrollment criteria, i.e. age > 75 years, age 50-74 years with CVD, < 20 eGFR < 60 or 10-year Framingham risk of > 15%
 - Pending formal evidence review, shared decision making model of care for target SBP of <130 mm Hg* is appropriate
 - When lower target SPB is used, close monitoring for syncope and renal function is warranted
- Trial and observational data does not support expansion of SPRINT goals to patients with DM and / or history of stroke

* Conventional office SBP < 130 mm Hg is roughly equivalent to AOBPM reading of < 120 mm Hg

KP HTN Treatment Algorithm

3 Meds to Max Dose in 6 Steps





CASES!





55 year old man, 156/76, HR 84

-Lisinopril-HCTZ 20-25 mg qd

-Amlodipine 10 mg



55 year old man, 156/76, HR 84

- -Lisinopril-HCTZ 20-25 mg qd
- -Amlodipine 10 mg

> BP 132/70 on same regimen one year ago



- 55 year old man, 156/76, HR 84
 - -Lisinopril-HCTZ 20-25 mg qd
 - -Amlodipine 10 mg
- ➢ BP 132/70 on same regimen one year ago
- Sometimes it's hard to remember to take your medicines. I know I sometimes forget to take a dose of my medicines."



- 55 year old man, 156/76, HR 84
 - -Lisinopril-HCTZ 20-25 mg qd
 - -Amlodipine 10 mg
- > BP 132/70 on same regimen one year ago
- Sometimes it's hard to remember to take your medicines. I know I sometimes forget to take a dose of my medicines."
- Explore possible reasons for non-adherence
 - Forgets would a pillbox help?
 - Side effects?
 - Affordability?



55 year old man



55 year old man

AOBP reading 1: 144/76



- 55 year old man
- AOBP reading 1: 144/76
- AOBP reading 2: 134/74



- 55 year old man
- AOBP reading 1: 144/76
- AOBP reading 2: 134/74
- AOBP reading 3:
- 132/72

- 55 year old man
- AOBP reading 1: 144/76
- AOBP reading 2:
- AOBP reading 3:
- AOBP average:
- 134/74 132/72 137/74

- 55 year old man
- AOBP reading 1: 144/76
- AOBP reading 2: 134/74
- AOBP reading 3:
- AOBP average:
- Is BP controlled?
- 132/72 137/74

- 55 year old man
- AOBP reading 1: 144/76
- AOBP reading 2: 134/74
- AOBP reading 3: 132/72
- AOBP average: 137/74
- Is BP controlled?
 - -No.
 - –Control defined as AOBP Avg. ≤ 134/84





55 year old man, 142/76, HR 66

-Lisinopril-HCTZ 20-25 mg

-Amlodipine 10 mg



55 year old man, 142/76, HR 66

- -Lisinopril-HCTZ 20-25 mg
- -Amlodipine 10 mg

Recommendation



55 year old man, 142/76, HR 66

- -Lisinopril-HCTZ 20-25 mg
- -Amlodipine 10 mg

Recommendation Increase lisinopril-HCTZ 20-25 to ii qd



55 year old man, 142/76, HR 66

- -Lisinopril-HCTZ 20-25 mg
- -Amlodipine 10 mg

Recommendation Increase lisinopril-HCTZ 20-25 to ii qd

Remember not to under-dose the thiazide





- 53 year old woman, 144/64, heart rate 58
 - -Chlorthalidone 25 mg
 - -Cough on lisinopril



- 53 year old woman, 144/64, heart rate 58
 - -Chlorthalidone 25 mg
 - -Cough on lisinopril



53 year old woman, 144/64, heart rate 58

- -Chlorthalidone 25 mg
- -Cough on lisinopril

Recommendation: Add Iosartan 25 mg





38 y/o women. 140/94. Sexually active, uses condoms -Chlorthalidone 25 mg daily



38 y/o women. 140/94. Sexually active, uses condoms -Chlorthalidone 25 mg daily

Recommendation: add amlodipine 2.5 mg qd



38 y/o women. 140/94. Sexually active, uses condoms -Chlorthalidone 25 mg daily

Recommendation: add amlodipine 2.5 mg qd

ACE-Is and ARBs are potentially teratogenic





- 55 year old man, BP 156/80, HR 78
 - -Lisinopril-HCTZ 20-25 ii qd
 - -Amlodipine 10 i qd
 - -K = 4.2, eGFR > 60

55 year old man, BP 156/80, HR 78

 Lisinopril-HCTZ 20-25 ii qd
 Amlodipine 10 i qd
 K = 4.2, eGFR > 60

Recommendation:



55 year old man, BP 156/80, HR 78

 Lisinopril-HCTZ 20-25 ii qd
 Amlodipine 10 i qd
 K = 4.2, eGFR > 60

Recommendation:
 Add spironolactone 12.5 mg qd
Case 6 – Resistant HTN

55 year old man, BP 156/80, HR 78
Lisinopril-HCTZ 20-25 ii qd
Amlodipine 10 i qd

-K = 4.2, eGFR > 60

Recommendation:
Add spironolactone 12.5 mg qd
Advance to 25 mg qd if needed



- 72 year old man with DM. 148/64, HR 78
 - -Chlorthalidone 25 mg qd
 - -Lisinopril 20 mg qd
 - -Amlodipine 5 mg qd

- 72 year old man with DM. 148/64, HR 78
 - -Chlorthalidone 25 mg qd
 - -Lisinopril 20 mg qd
 - -Amlodipine 5 mg qd
- Recommendation



- 72 year old man with DM. 148/64, HR 78
 - -Chlorthalidone 25 mg qd
 - -Lisinopril 20 mg qd
 - -Amlodipine 5 mg qd
- Recommendation
 - Stand for two minutes and repeat BP



- 72 year old man with DM. 148/64, HR 78
 - -Chlorthalidone 25 mg qd
 - -Lisinopril 20 mg qd
 - -Amlodipine 5 mg qd

Recommendation

- Stand for two minutes and repeat BP
- If SBP > 140, increase amlodipine to 10 mg qd



Questions?



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Don't hesitate to reach out as your 2017 PHASE work unfolds!

Resources

PHASEsupport.org

Monthly PHASE Newsletter

Upcoming Events

Save the date for the November 16th Convening

Office Hours – Sept. 26th 12:00 – 1:00

Look for an announcement for our October Webinar