
Organizing your clinic for optimal blood pressure control

Presenter:

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Hosted by:

Oregon Health Authority Transformation Center



HEALTH POLICY AND ANALYTICS
Transformation Center

Presenter



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Organizing your clinic for optimal blood pressure control

Mark Backus, M.D. FACP



Hypertension

- Target audience for this presentation:
 - Clinic administrators
 - Physician leaders
 - Physician department chairs
 - CCO, tribal and other health system leaders
 - Any provider wanting to improve blood pressure care 😊



Conflicts of interest?

- Minor Stock Holdings
 - Biogen
 - Celgene
 - Bioverative
 - Resmed

No other relationships with any entity producing, selling, marketing, or distributing healthcare goods or services consumed by, or used on, patient



Today's outline

- Hypertension background information
- Review goals and guidelines
- What is considered good control?
- How is good control assessed? CCO metrics
- Identify blood pressure control in a system
- Strategies for control in clinic and system



The Scope of the Problem

- NEW per AHA: over 100 million with HTN; 46% of adults
- Over ½ are not controlled! (52-61% in the U.S.A.)
- Compliance is a big issue (ethnic groups more so)
- Worldwide 9.4 million deaths/year—most of the disease burden in low or middle income economies
- Worldwide control only 13.8%!
- Control decreases risk for heart attack, stroke, kidney disease, heart failure – by large amounts 20–50% over time – well documented




Health Care Costs

- US costs per GDP 17 % in 2015
- Per capita \$9990 in 2015
- Causes of Death:
 - 1) Heart Disease
 - 2) Cancer
 - 3) Stroke



Health Care Costs

- Causes of hospitalization over age 50:
 - Stroke, heart attack and heart failure dwarf other reasons for admission
 - 32% of all health care costs spent on the hospital – it's the number one category of expenditure
- 



Goals and Guidelines

- ACCORD study 2010
- JNC 8: 2014
- SPRINT study: 2015
- AHA/ACC November 2017 comprehensive guidelines



Joint National Commission

- JNC 7: 2003, goals <140/90 (<130/80 DM and CKD)
- JNC 8*: Age greater than 60: <150/90 and Age 18–59: <140/90. Dissent amongst the experts!
- CKD or DM: <140/90
- General agreement that age greater than 80: <150/90
 - European Society of Hypertension
 - Cardiology Joint Committee
 - American Society of Hypertension
 - International Society of Hypertension
- AHA/ACC November 2017 Guidelines: See below. Aggressive reduction in BP!
- *JAMA 2014; 311:507

American College of Cardiology



Hypertension

MY ALERTS SIGN IN JOIN

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ACC/AHA/AAPA/ABC/ACPM/AGS/APHA/ASH/ASPC/NMA/PCNA CLINICAL PRACTICE GUIDELINE

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

Paul K. Whelton, Robert M. Carey, Wilbert S. Aronow, Donald E. Casey, Karen J. Collins, Cheryl Dennison Himmelfarb, Sondra M. DePalma, Samuel Gidding, Kenneth A. Jamerson, Daniel W. Jones, Eric J. MacLaughlin, Paul Muntner, Bruce Ovbiagele, Sidney C. Smith, Crystal C. Spencer, Randall S. Stafford, Sandra J. Taler, Randal J. Thomas, Kim A. Williams, Jeff D. Williamson, Jackson T. Wright



American College of Cardiology

- National Heart and Lung Institute: NHLBI
- Started JNC 1977. When disagreements arose in 2013, NHLBI transferred the responsibility from JNC 8, to ACC/AHA, in partnership with 9 other societies to develop the document that just came out in 2017
- 15 sections, and 106 graded recommendations, each with a class of recommendation and level of evidence: 283-page document

American College of Cardiology

Table 1. Applying Class of Recommendation and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care* (Updated August 2015)

CLASS (STRENGTH) OF RECOMMENDATION	LEVEL (QUALITY) OF EVIDENCE†
CLASS I (STRONG) Benefit >>> Risk Suggested phrases for writing recommendations: <ul style="list-style-type: none"> Is recommended Is indicated/useful/effective/beneficial Should be performed/administered/other Comparative Effectiveness Phrases‡: <ul style="list-style-type: none"> Treatment/strategy A is recommended/indicated in preference to treatment B Treatment A should be chosen over treatment B 	LEVEL A <ul style="list-style-type: none"> High-quality evidence§ from more than 1 RCT Meta-analyses of high-quality RCTs One or more RCTs corroborated by high-quality registry studies
CLASS IIa (MODERATE) Benefit >> Risk Suggested phrases for writing recommendations: <ul style="list-style-type: none"> Is reasonable Can be useful/effective/beneficial Comparative Effectiveness Phrases‡: <ul style="list-style-type: none"> Treatment/strategy A is probably recommended/indicated in preference to treatment B It is reasonable to choose treatment A over treatment B 	LEVEL B-R (Randomized) <ul style="list-style-type: none"> Moderate-quality evidence§ from 1 or more RCTs Meta-analyses of moderate-quality RCTs
CLASS IIb (WEAK) Benefit > Risk Suggested phrases for writing recommendations: <ul style="list-style-type: none"> May/might be reasonable May/might be considered Usefulness/effectiveness is unknown/unclear/uncertain or not well established 	LEVEL B-NR (Nonrandomized) <ul style="list-style-type: none"> Moderate-quality evidence§ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies Meta-analyses of such studies
CLASS III: No Benefit (MODERATE) Benefit = Risk <i>(Generally, LOE = A or B are used)</i> Suggested phrases for writing recommendations: <ul style="list-style-type: none"> Is not recommended Is not indicated/useful/effective/beneficial Should not be performed/administered/other 	LEVEL C-LD (Limited Data) <ul style="list-style-type: none"> Randomized or nonrandomized observational or registry studies with limitations of design or execution Meta-analyses of such studies Physiological or mechanistic studies in human subjects
CLASS III: Harm (STRONG) Risk > Benefit Suggested phrases for writing recommendations: <ul style="list-style-type: none"> Potentially harmful Causes harm Associated with excess morbidity/mortality Should not be performed/administered/other 	LEVEL C-EO (Expert Opinion) Consensus of expert opinion based on clinical experience

COR and LOE are determined independently (any COR may be paired with any LOE).

A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCTs are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).

† For comparative effectiveness recommendations (COR I and IIa, LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

‡ The method of assessing quality is evolving, including the application of standardized, widely used, and preferably validated evidence grading tools; and for systematic reviews, the incorporation of an Evidence Review Committee.

COR indicates Class of Recommendation; EO, expert opinion; LD, limited data; LOE, Level of Evidence; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial.

Library
at
ACC.ORG

ACC
American College of Cardiology

ACC/AHA 2017

Understanding the 2017 Hypertension Guidelines			
BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (SEE YOUR DOCTOR IMMEDIATELY)	HIGHER THAN 180	and/or	HIGHER THAN 120

ACC/AHA 2017

Whelton PK, et al.

2017 High Blood Pressure Clinical Practice Guideline

8.1.2. BP Treatment Threshold and the Use of CVD Risk Estimation to Guide Drug Treatment of Hypertension

Recommendations for BP Treatment Threshold and Use of Risk Estimation* to Guide Drug Treatment of Hypertension

References that support recommendations are summarized in Online Data Supplement 23.

COR	LOE	Recommendations
I	SBP: A	1. Use of BP-lowering medications is recommended for secondary prevention of recurrent CVD events in patients with clinical CVD and an average SBP of 130 mm Hg or higher or an average DBP of 80 mm Hg or higher, and for primary prevention in adults with an estimated 10-year atherosclerotic cardiovascular disease (ASCVD) risk of 10% or higher and an average SBP 130 mm Hg or higher or an average DBP 80 mm Hg or higher (1-9).
	DBP: C-EO	
I	C-LD	2. Use of BP-lowering medication is recommended for primary prevention of CVD in adults with no history of CVD and with an estimated 10-year ASCVD risk <10% and an SBP of 140 mm Hg or higher or a DBP of 90 mm Hg or higher (3, 10-13).

*ACC/AHA Pooled Cohort Equations (<http://tools.acc.org/ASCVD-Risk-Estimator/>) (13a) to estimate 10-year risk of atherosclerotic CVD. ASCVD was defined as a first CHD death, non-fatal MI or fatal or non-fatal stroke.

Pooled Cohort Risk

- (<http://tools.acc.org/ASCVD-Risk-Estimator/>)

Pooled Cohort Risk Assessment Equations

Predicts 10-year risk for a first atherosclerotic cardiovascular disease (ASCVD) event


 ClinCalc.com » Cardiology » Pooled Cohort 10-Year ASCVD Risk Assessment Equations

Risk Factors for ASCVD

Gender	<input checked="" type="radio"/> Male <input type="radio"/> Female	Systolic BP	<input type="text"/> mmHg
Age	<input type="text"/> years	Receiving treatment for high blood pressure (if SBP > 120 mmHg)	<input type="radio"/> No <input type="radio"/> Yes
Race	White or other <input type="text"/>	Diabetes	<input type="radio"/> No <input type="radio"/> Yes
Total Cholesterol	<input type="text"/> mg/dL	Smoker	<input type="radio"/> No <input type="radio"/> Yes
HDL Cholesterol	<input type="text"/> mg/dL		

Reset

Calculate

 US units

Cardiovascular Risk Realism

- Do we choose to medicate natural aging?
- What percent of adults have all 7 ideal factors:
 - 0.5 to 15% over various populations**
- For cardiovascular risk, most adult men will cross the 10% risk threshold in their 60s or earlier, even if they have low cholesterol.
- Example: 65 y.o. male: SBP 120, Total chol 180, HDL 50—
 - ASCVD risk **10.6%**

■ **JAMA January 9, 2018, vol 319, Num 2



Cardiovascular Risk Realism

- Ideal cardiovascular health: Ideal Seven **
 - No smoking
 - Fasting glucose less than 100
 - Total cholesterol less than 200
 - Blood pressure less than 120/80
 - BMI normal (18.5–25)
 - Exercise 150 min per week, moderate intensity
 - Diet with fruit, vegetables, whole grains, low fat dairy, fish, nuts and limit red meat and sugar
- **AHA, 2010

Systolic Pressure Intervention Trial



The NEW ENGLAND
JOURNAL of MEDICINE

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ORIGINAL ARTICLE

A Randomized Trial of Intensive versus Standard Blood-Pressure Control

The SPRINT Research Group*

N Engl J Med 2015; 373:2103-2116 | November 26, 2015 | DOI: 10.1056/NEJMoa1511939

Share: [f](#) [t](#) [g+](#) [in](#) [+](#)

Abstract	Article	References	Citing Articles (755)	Letters	Metrics
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BACKGROUND

The most appropriate targets for systolic blood pressure to reduce cardiovascular morbidity and mortality among persons without diabetes remain uncertain.

MEDIA IN THIS ARTICLE

QUICK TAKE VIDEO SUMMARY

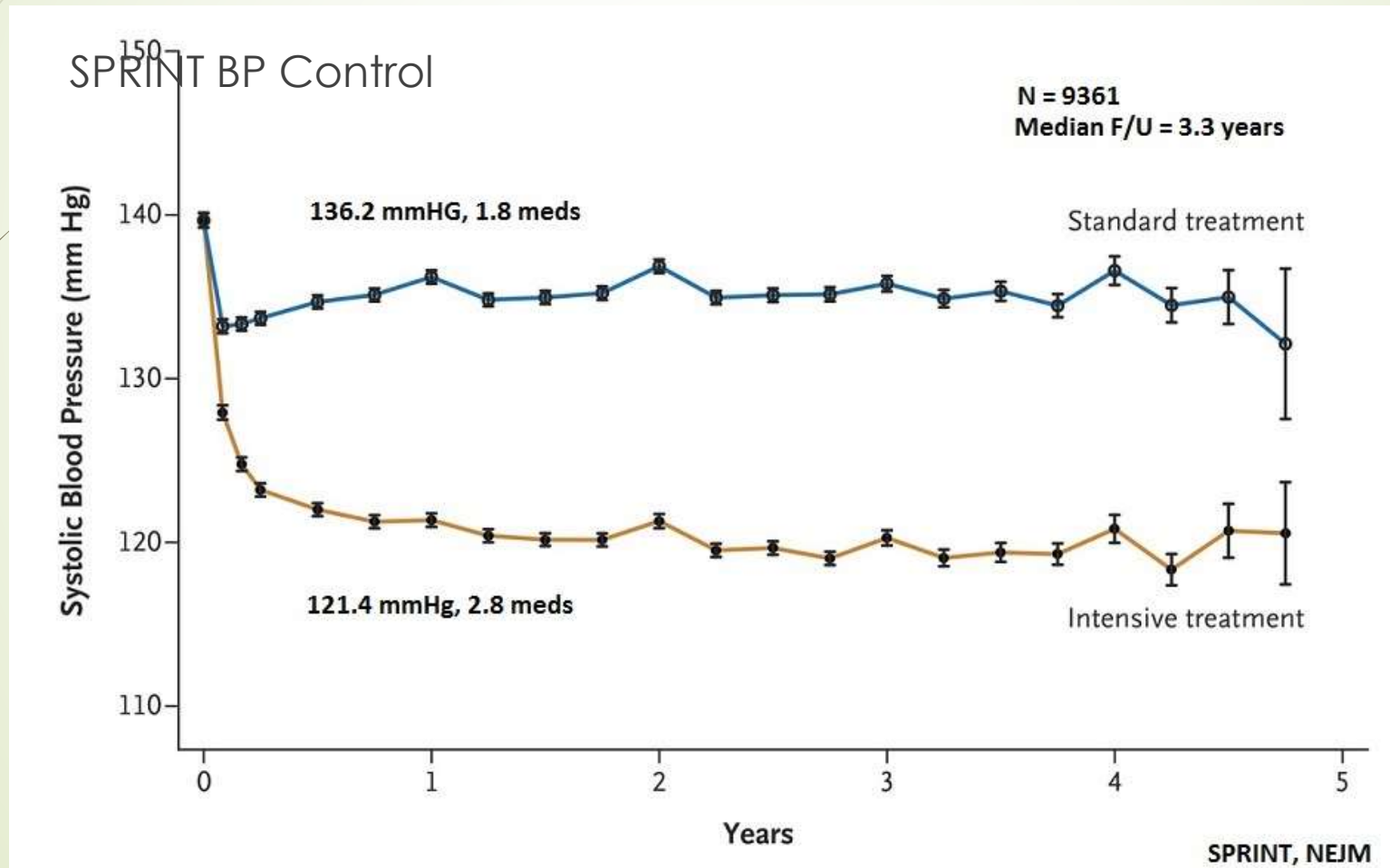
<120 mm Hg



Systolic PRessure INtervention Trial

- 14,692 patients assessed for eligibility
- 5331 ineligible
- 9361 randomized
- Close to 500 patients on each side discontinued intervention, lost to follow-up or withdrew consent

Systolic Pressure Intervention Trial





SPRINT Outcomes

- Much less endpoint events (243 vs 319): MI, CHF, CVA, acute coronary syndrome
- Death any cause: 155 vs 210
- No outcome difference in patients with CKD (1330 patients vs 1316 patients at baseline (GFR 20–59) as far as long term dialysis or >50% reduction in estimated GFR
- Number needed to treat: 61 for any outcome

➤ * NEJM 2015; 373:2103



SPRINT Serious Adverse Events

- 37% serious events, but not significantly different
- 1793/4678 vs 1736/4683
- Slightly more hypotension, syncope, electrolyte changes, creatinine elevation, NOT more falls or orthostasis
- Serious adverse events most likely related to the intervention: (4.7%vs 2.5%) **Number needed to harm: 45**



SPRINT >74 years old

- Subgroup pre-specified was 2636 patients
- Mean age 79.9, 38% women
- Median follow up 3.14 years, significantly decreased events and mortality
- Serious adverse events same in both groups



Summary of SBP goal

- Choice of patients for tighter control includes:
 - **Higher cardiac risk**
 - Patient preference
 - Particular patient concern for stroke (better evidence)
 - Lack of glaucoma or retinal ischemia issues
 - Lack of orthostatic symptoms
 - DBP > 60
 - Your own philosophy of medicine



CCO Incentive Measure Specifics

- Why did <140/<90 get chosen for designating the patient as “controlled”?
- **2018 Benchmark: 70.6%** (from the 2016 Medicaid 90th percentile)
- **Individual CCO improvement target: 10% reduction in gap between the baseline and benchmark, with 2% floor** (for quality pool payments)
- Prior benchmarks:
 - 2014 64.6%
 - 2015 64.7%
 - 2016 65.9%
 - 2017 68.3%



CCO Incentive Measure Specifics

- Denominator: number of 110 patients of age minus exclusions
- Numerator: number of patients from the denominator with systolic blood pressure less than 140 and diastolic blood pressure less than 90 = “controlled”
- Most recent visit
- Home, or hospital, ambulatory monitor readings are not accepted
- If more than one reading at a visit – using lowest
- If no readings in recording period, assumed not controlled



Why isn't HTN control better?

Provider

- Needs more knowledge on basic treatment of blood pressure
- Needs education on integrating team care
- Needs to be willing to listen to help on follow up and care

Patient

- Continues activities that raise BP
- Doesn't take the pills
- Misses appointment
- Needs help with home monitoring/24 hour monitoring
- White coat hypertension - - anxiety
- Needs information

System Management

- Identification of patients
- Patient compliance on return visit
- Follow-up interval selected by the doctor
- Inaccurate measurement
- Medical assistant and team education



Provider Education

Needs more knowledge on basic treatment of blood pressure

- Up to date with most recent guidelines – recent webinar
- How to present to patients with conviction with so many conflicting guidelines over the past few years

Needs education on integrating team care



Provider Education

Needs to be willing to listen to help on follow-up with nurses or pharmacists

Needs to relinquish control – can be difficult!

Needs regular information about the quality of care and relationship to peers and national standards



Improving provider control

- The number one thing that will improve population control is action after an abnormal reading (usually meaning rapid follow-up). Providers may need reminders on this.
- Any clinic reading over 140 or 90 should prompt: R03.0 or I10 to be on the visit diagnoses and follow up in 4 weeks (possibly longer if lower risk patient)
- Review how to code White Coat syndrome with specific descriptions:
 - I10: white coat blood pressure elevation with underlying hypertension
 - R03.0: white coat blood pressure elevation without underlying hypertension
- Regularly recommending home readings
- Regularly recommending 24-hour blood pressure monitoring



Patient Education

- Education on lifestyle, diet, exercise easily available
- Appointment reminders in multiple formats
- Nurse visits that may be easier to schedule for the patient than to see a provider? Less white coat syndrome
- Have home blood pressure monitors available to check out at the clinic for low income patients
- Make it easy to have 24-hour monitoring – purchase for your clinic
- Chronic care management for patients with compliance issues
- Consequences of untreated high blood pressure



Patient Education

- Continues activities that raise BP



Lifestyle Contributors

- Nicotine use
- Obesity (sleep apnea)
- Exercise
- Diet: Mediterranean Diet, DASH
- Stress
- Sedentary lifestyle
- Alcohol
- Medications

Patient Education – laminated in exam rooms

DID YOU KNOW?
These things raise blood pressure:

- Pain Relievers (NSAIDS such as Advil®, Aleve®, Ibuprofen, Naproxen, or Meloxicam)
- Tobacco
- More than one alcoholic drink a day
- Poor sleep
- Anxiety or worry
- Pain
- Snoring or untreated sleep apnea (most often related to excess weight)
- Exercising within 30 minutes (sometimes more) of taking blood pressure
- Certain other drugs (Venlafaxine, Methylphenidate, and pseudoephedrine)
- High salt diet (aim for diets low in processed foods, fast foods, and no added salt)
- For most people blood pressure is highest in the morning




www.cohealthcouncil.org

Lifestyle



The real reason dinosaurs became extinct



Patient Education

- Missed appointments (a patient and systems problem)
- If higher than expected missed appointments
 - Is the clinic reminder system adequate?
 - Is the provider disliked?
 - How easy is it contact your clinic?



Patient Education

- Poor compliance with pills:
 - Is the provider prescribing an easy compliance regimen?
 - What about reminders for pills auto-generated on the patients phone?
 - Many pharmacy plans send reminders when refills take longer than expected



Patient Education

- Home blood pressure monitoring/positioning:
 - Addresses White coat syndrome and monitoring
- Utility of 24-hour monitoring (Ambulatory blood pressure monitoring)
- Diet and lifestyle

Body Positioning



Frank started to get a funny feeling
that his doctor was a quack.



Body Positioning

- Unsupported back: raises 5–10 mm Hg
- Unsupported or crossed legs: raises 2–8 mm
- Talking during measurement: raises 5–5 mm
- BP arm supported: Unsupported raises 10 mm
- Cuff on bare arm: on clothing raises 10–40 mm
- BP cuff at level of heart, and correct for arm size: raises and lowers variably
- Auscultatory gap up to 20% of elderly patients

WAS YOUR BLOOD PRESSURE MEASURED CORRECTLY TODAY?



Why does it matter?

- Taking your blood pressure the same way, on the same arm every time is important.
- This helps us to get correct numbers, so we can provide the right treatment.

About high blood pressure

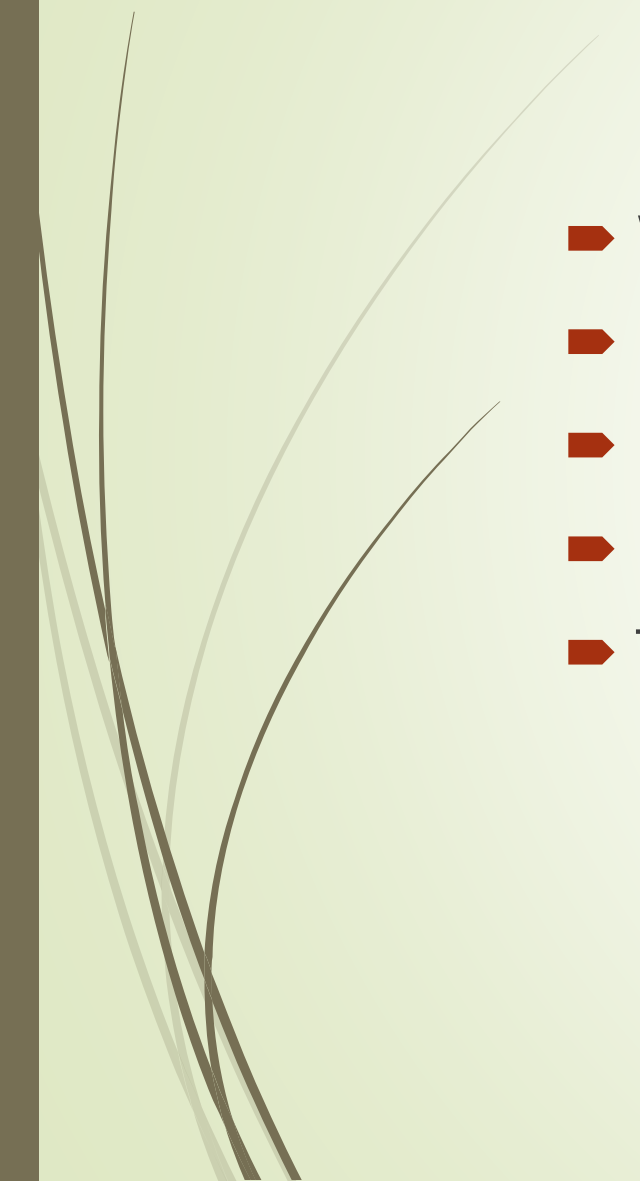
- One in three adults has high blood pressure.
- Most people with high blood pressure have no signs or symptoms.
- High blood pressure is a major risk factor for heart attack, stroke, kidney disease, and diabetes complications.
- High blood pressure contributes to nearly 1,000 deaths each year.

SOURCE: PICKERING, ET AL. CIRCULATION, 2005 AND O'BRIEN, ET AL. J HYPERTENSION, 2008

WE WANT TO GET IT RIGHT!



Non-pharmacologic Strategies

- Weight reduction: 5–20 mmHg/10 kg wt loss
 - DASH: 8–14 mm Hg
 - Physical exercise: 4–9 mm Hg
 - Decrease alcohol: 2–4 mm Hg
 - Treat sleep apnea: 3–5 mm Hg
- 

Dietary Approach to Stop Hypertension


- DASH diet is recommended by many to lower blood pressure, lose weight, and treat insulin resistance. (11.4 mmHg SBP reduction in the trial)**
- It may decrease the risk of certain kinds of cancer, as well as decrease the risk of stroke, heart disease, kidney stones, diabetes, heart failure.
- Low sodium, high in fruits, vegetables, low or non-fat dairy, less refined grains, low to moderate fat.
- Have a handout available at check out if patients want that.

**N Engl J Med 1997; 336:1117-1124

https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf


IN BRIEF:

Your Guide To Lowering Your Blood Pressure With DASH



What you eat affects your chances of developing high blood pressure (hypertension). Research shows that high blood pressure can be prevented—and lowered—by following the Dietary Approaches to Stop Hypertension (DASH) eating plan, which includes eating less sodium.

High blood pressure is blood pressure higher than 140/90 mmHg*, and prehypertension is blood pressure between 120/80 and 139/89 mmHg. High blood pressure is dangerous because it makes your heart work too hard, hardens the walls of your arteries, and can cause the brain to hemorrhage or the kidneys to function poorly or not at all. If not controlled, high blood pressure can lead to heart and kidney disease, stroke, and blindness.



* Blood pressure is usually measured in millimeters of mercury, or mmHg.


But high blood pressure can be prevented—and lowered—if you take these steps:

- Follow a healthy eating plan, such as DASH, that includes foods lower in sodium.
- Maintain a healthy weight.
- Be moderately physically active for at least 2 hours and 30 minutes per week.
- If you drink alcoholic beverages, do so in moderation.

If you already have high blood pressure and your doctor has prescribed medicine, take your medicine, as directed, and follow these steps.

The DASH Eating Plan

The DASH eating plan is rich in fruits, vegetables, fat-free or low-fat milk and milk products, whole grains, fish, poultry, beans, seeds, and nuts. It also contains less sodium; sweets, added sugars, and beverages containing sugar; fats; and red meats than the typical American diet. This heart-healthy way of eating is also lower in saturated fat, trans fat, and cholesterol and rich in nutrients that are associated with lowering blood pressure—mainly potassium, magnesium, calcium, protein, and fiber.



https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf

National Heart,
Lung, and Blood Institute

AT-A-GLANCE:



Lowering Your Blood Pressure With DASH

What you eat affects your chances of developing high blood pressure (hypertension). Research shows that high blood pressure can be prevented—and lowered—by following the Dietary Approaches to Stop Hypertension (DASH) eating plan, which focuses on fruits, vegetables, whole grains, and other foods that are heart healthy and low in salt and sodium.

High blood pressure, which is blood pressure higher than 140/90 mmHg,* affects more than 65 million—or 1 out of every 3—American adults. Another 59 million Americans have prehypertension, which is blood pressure between 120/90 and 140/99 mmHg. This increases their chances of developing high blood pressure and its complications.

High blood pressure is dangerous because it makes your heart work too hard, hardens the walls of your arteries, and can cause the brain to hemorrhage or the kidneys to function poorly or not at all. If not controlled, high blood pressure can lead to heart and kidney disease, stroke, and blindness.

But high blood pressure can be prevented—and lowered—if you take these steps:

- Follow a healthy eating plan, such as DASH, that includes foods lower in salt and sodium.
- Maintain a healthy weight.
- Be moderately physically active for at least 30 minutes on most days of the week.
- If you drink alcoholic beverages, do so in moderation.

If you already have high blood pressure and your doctor has prescribed medicine, take your medicine as directed.

The DASH Eating Plan

The DASH eating plan is rich in fruits, vegetables, fat-free or low-fat milk and milk products, whole grains, fish, poultry, beans, seeds, and nuts. Compared with the typical American diet, it contains less salt and sodium; sweets, added sugars, and sugar-containing beverages; fats; and red meats. This heart healthy way of eating is also lower in saturated fat, trans fat, and cholesterol and rich in nutrients that are associated with lowering blood pressure—mainly potassium, magnesium, calcium, protein, and fiber.

The DASH eating plan requires no special foods and has no hard-to-follow recipes. It simply calls for a certain number of daily servings from various food groups.

The number of servings depends on the number of calories you're allowed each day. Your calorie level depends on your age and, especially, how active you are. Think of this as an energy balance system—if you want to maintain your current weight, you should take in only as many calories as you burn by being physically active. If you need to lose weight, eat fewer calories than you burn or increase your activity level to burn more calories than you eat.

*Blood pressure is usually measured in millimeters of mercury, or mmHg.

U.S. Department of Health and Human Services
National Institutes of Health
National Heart, Lung, and Blood Institute

https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf

Following the DASH diet

The DASH eating plan shown below is based on 2,000 calories a day. The number of daily servings in a food group may vary from those listed depending on your caloric needs. Use this chart to help you plan your menus or take it with you when you go to the store.

Food Group	Daily Servings	Serving Sizes	Examples and Notes	Significance of each food group to the plan
Grains and grain products	6-8	1 slice bread ½-1 cup dry cereal ½ cup cooked rice, pasta, or cereal	whole wheat bread, English muffin, pita bread, bagel, cereals, grits, oatmeal	major sources of energy and fiber
Vegetables	4-5	1 cup raw leafy vegetable ½ cup cooked vegetable 6 oz. vegetable juice	tomatoes, potatoes, peas, carrots, squash, broccoli, turnip greens, collards, kale, spinach, artichokes, beans, sweet potatoes	rich sources of potassium, magnesium and fiber
Fruits	4-5	1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen or canned fruit 1/2 cup fruit juice	apricots, bananas, dates, grapes, oranges, orange juice, grapefruit, grapefruit juice, melons, mangoes, peaches, pineapples, prunes, raisins, strawberries, tangerines	important sources of potassium, magnesium and fiber
Low-fat or fat-free dairy	2-3	1 cup milk 1 cup yogurt 1½ oz. cheese	skim or 1% milk, skim or low-fat buttermilk, nonfat or low-fat yogurt, part skim mozzarella cheese, nonfat cheese	major sources of calcium and protein
Meats, poultry and fish	6 or less	1 oz. cooked meats, poultry or fish 1 egg or 2 egg whites	lean meats (trimmed of visible fat), broiled, roasted or baked; poultry with skin removed, limit egg yolk to four per week	rich sources of protein and magnesium
Nuts, seeds and legumes	4-5 per week	1½ oz. or 1/3 cup nuts 2 Tbsp. natural nut butter ½ oz. or 2 Tbsp. seeds ½ cup cooked legumes (dried beans or peas)	almonds, filberts, mixed nuts, peanuts, walnuts, sunflower seeds, kidney beans, lentils	rich sources of energy, magnesium, potassium, protein and fiber



https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf

Fats and oils	2-3	1 tsp. soft margarine, vegetable oil or regular mayonnaise 1 Tbsp. low-fat margarine or mayonnaise 2 Tbsp. light salad dressing	soft margarine, low-fat mayonnaise, light salad dressing, vegetable oil (such as olive, canola, corn or safflower)	besides fats added to foods, remember to choose foods that contain less fat
Sweets	5 or less per week	1 Tbsp. sugar 1 Tbsp. jelly or jam ½ ounce jelly beans 1 cup lemonade	maple syrup, sugar, jelly, jam, fruit-flavored gelatin, jelly beans, hard candy, fruit punch, sorbet, ices	sweets should be low in fat

Source: The DASH Diet, NIH Publication No. 06-4082.
(Rev. 12/10)

https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf

How Do I Make the DASH?

The DASH eating plan requires no special foods and has no hard-to-follow recipes. It simply calls for a certain number of daily servings from various food groups.

The number of servings depends on the number of calories you're allowed each day. Your calorie level depends on your age and, especially, how active you are. Think of this as an energy balance system—if you want to maintain your current weight, you should take in only as many calories as you burn by being physically active. If you need to lose weight, eat fewer calories than you burn or increase your activity level to burn more calories than you eat.

What is your physical activity level? Are you mostly:

- Sedentary? You do only light physical activity that is part of your typical day-to-day routine.
- Moderately active? You do physical activity equal to walking about 1 to 3 miles a day at 3 to 4 miles per hour, plus light physical activity.
- Active? You do physical activity equal to walking more than 3 miles per day at 3 to 4 miles per hour, plus light physical activity.

Use the chart below to estimate your daily calorie needs.

Your Daily Calorie Needs

Calories Needed for Each Activity Level			
Gender	Age (years)	Sedentary	Moderately Active
Female	16-30	2,000	2,000-2,200
	31-40	1,800	2,000
	41+	1,600	1,800-2,000
Male	16-30	2,400	2,800-3,000
	31-40	2,200	2,800-3,000
	41+	2,000	2,200-2,400

Now that you know how many calories you're allowed each day, find the closest calorie level to yours in the chart on page 3 called "Following the DASH Eating Plan." This shows roughly the number of servings from each food group that you can eat each day.

Next, compare DASH with your current eating pattern. Fill in the "What's on Your Plate and How Much Are You Moving?" chart on page 4 for 1 or 2 days to compare what you usually eat with the DASH eating plan—and note how active you are. This should help you decide what changes you need to make in your food choices—and in the sizes of the portions you eat.

"A Day With the DASH Eating Plan" on page 6 shows a sample menu based on about 2,000 calories a day. Increase or decrease the serving sizes for your own calorie level. This chart also shows the two levels of sodium, 2,300 and 1,500 milligrams (mg), that DASH allows each day. Because fruits and vegetables are naturally lower in sodium than many other foods, DASH makes it easier to eat less sodium. Try it at the 2,300 mg level (about 1 teaspoon of table salt). Then, talk to your doctor about gradually lowering it to 1,500 mg a day. Keep in mind: The less sodium you eat, the more you may be able to lower your blood pressure.

Choose and prepare foods with less sodium and salt, and don't bring the salt shaker to the table. Be creative—try herbs, spices, lemon, lime, vinegar, wine, and salt-free seasoning blends in cooking and at the table. And, because most of the sodium that we eat comes from processed foods, be sure to read food labels to check the amount of sodium in different food products. Aim for foods that contain 5 percent or less of the Daily Value of sodium. Foods with 20 percent or more Daily Value of sodium are considered high. These include baked goods, certain cereals, soy sauce, and some antacids—the range is wide.

DASH Tips for Gradual Change

Make these changes over a couple of days or weeks to give yourself a chance to adjust and make them part of your daily routine:

- Add a serving of vegetables at lunch one day and dinner the next, and add fruit at one meal or as a snack.
- Increase your use of fat-free and low-fat milk products to three servings a day.
- Limit lean meats to 6 ounces a day—3 ounces a meal, which is about the size of a deck of cards. If you usually eat large portions of meats, cut them back over a couple of days—by half or a third at each meal.
- Include two or more vegetarian-style, or meatless, meals each week.

https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf

Following the DASH Eating Plan

Use this chart to help you plan your menus—or take it with you when you go to the store.

Food Group	Servings Per Day			Serving Sizes	Examples and Notes	Significance of Each Food Group to the DASH Eating Plan
	1,600 Calories	2,000 Calories	2,400 Calories			
Grains*	6	8-9	10-11	1 slice bread 1 oz dry cereal† ½ cup cooked rice, pasta, or cereal	Whole wheat bread and rolls, whole wheat pasta, English muffin, pita bread, bagel, cereal, grits, oatmeal, brown rice, unsalted pretzels and popcorn	Major source of energy and fiber
Vegetables	3-4	4-5	5-6	1 cup raw leafy vegetable ¾ cup cut-up raw or cooked vegetable ½ cup vegetable juice	Broccoli, carrots, collards, green beans, green peas, kale, lima beans, potatoes, spinach, squash, sweet potatoes, tomatoes	Rich sources of potassium, magnesium, and fiber
Fruits	4	4-5	5-6	1 medium fruit ½ cup dried fruit ½ cup fresh, frozen, or canned fruit ¼ cup fruit juice	Apples, apricots, bananas, dates, grapes, oranges, grapefruit, grapefruit juice, mangoes, melons, peaches, pineapples, pears, strawberries, tangerines	Important sources of potassium, magnesium, and fiber
Fat-free or low-fat milk and milk products	2-3	2-3	3	1 cup milk or yogurt 1½ oz cheese	Fat-free (skim) or low-fat (1%) milk or buttermilk; fat-free, low-fat, or reduced-fat cheese; fat-free or low-fat regular or frozen yogurt	Major sources of calcium and protein
Lean meats, poultry, and fish	3-6	0 or less	0	1 oz cooked meat, poultry, or fish 1 egg‡	Select only lean meats; trim away visible fat; broil, roast, or poach; remove skin from poultry	Rich sources of protein and magnesium
Nuts, seeds, and legumes	2 per week	4-5 per week	1	¼ cup or 1½ oz nuts 2 Tbsp peanut butter 3 Tbsp or ¼ oz seeds ½ cup cooked legumes (dry beans and peas)	Almonds, hazelnuts, mixed nuts, pecans, walnuts, sunflower seeds, peanut butter, soybean, white, split peas	Rich sources of energy, magnesium, protein, and fiber
Fats and oils	2	2-3	3	1 tsp soft margarine 1 tsp vegetable oil 1 Tbsp mayonnaise 2 Tbsp salad dressing	Soft margarine, vegetable oil (such as canola, corn, olive, or safflower), low-fat mayonnaise, light salad dressing	The DASH study had 37 percent of calories as fat, including fat in or added to foods
Sweets and added sugars	0	0 or less per week	½‡	1 Tbsp sugar 1 Tbsp jelly or jam ½ cup sorbet, gelatin 1 cup lemonade	Fruit-flavored gelatin, fruit punch, hard candy, jelly, maple syrup, sorbet and ice, sugar	Sweets should be low in fat

* Whole grains are recommended for most grain servings as a good source of fiber and nutrients.

† Serving sizes vary between ½ cup and 1½ cups, depending on cereal type. Check the product's Nutrition Facts label.

‡ Because eggs are high in cholesterol, limit egg yolk intake to no more than four per week; two egg whites have the same protein content as 1 oz of meat.

§ Fat content changes serving amount for fats and oils. For example, 1 Tbsp of regular salad dressing equals one serving; 1 Tbsp of a low-fat dressing equals one-half serving; 1 Tbsp of a fat-free dressing equals zero servings.

Abbreviations: oz = ounce; Tbsp = tablespoon; tsp = teaspoon



https://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf

- Increase servings of vegetables, brown rice, whole wheat pasta, and cooked dry beans. Try casseroles and stir-fry dishes, which have less meat and more vegetables, grains, and dry beans.
- For snacks and desserts, use fruits or other foods low in saturated fat, trans fat, cholesterol, sodium, sugar, and calories—for example, unsalted rice cakes; unsalted nuts or seeds; raisins; graham crackers; fat-free, low-fat, or frozen yogurt; popcorn with no salt or butter added; or raw vegetables.
- Use fresh, frozen, or low-sodium canned vegetables and fruits.

DASH Hints

- Be aware that the DASH eating plan has more servings of fruits, vegetables, and whole grain foods than you may be used to eating. These foods are high in fiber and may cause some bloating and diarrhea. To avoid these problems, gradually increase the amount of fruit, vegetables, and whole grain foods that you eat over several weeks.
- If you have trouble digesting milk products, try taking lactase-enzyme pills (available at drug stores and groceries) with milk products. Or buy lactase-free milk, which includes the lactase enzyme.
- If you don't like or are allergic to nuts, use seeds or legumes (cooked dried beans or peas).
- If you take medicines to control your high blood pressure, keep taking them. But tell your doctor that you are now eating the DASH way.

Other Lifestyle Changes

Making other lifestyle changes while following the DASH eating plan is the best way to prevent and control high blood pressure.

Lose Weight, If Necessary, While Following DASH
DASH is rich in lower-calorie foods, such as fruits and vegetables, so it easily can be changed to support weight loss. You can reduce calories even more by replacing higher-calorie foods, such as sweets, with more fruits and vegetables. The best way to take off pounds is to do it slowly, over time, by getting more physical activity and eating fewer calories. To develop a weight-loss or weight-maintenance program that's tailored for you, talk to your doctor or a registered dietitian.

Be Physically Active While Following the DASH Eating Plan

Combining DASH with a regular physical activity program, such as walking or swimming, will help you shed pounds and stay trim for the long term. Start with a simple 15-minute walk during your favorite time of day, and gradually increase the amount of time you are active. You can do an activity for 30 minutes at one time, or choose shorter periods of at least 10 minutes each. The important thing is to total at least 2 hours and 30 minutes per week of activities at a moderate intensity level. For more health benefits, gradually increase to 5 hours per week.

Make the DASH for Life

DASH can help you prevent and control high blood pressure. It also can help you lose weight, if you need to. It meets your nutritional needs and has other health benefits for your heart. So get started today, and make the DASH for a healthy life.

To Learn More

Contact the National Heart, Lung, and Blood Institute (NHLBI) for information on heart disease and heart health.

NHLBI Health Information Center
P.O. Box 30105
Bethesda, MD 20824-0105
Phone: 301-592-8573
TTY: 240-629-3255
Fax: 301-592-8563

Also check out these heart health resources:

NHLBI Website: <http://www.nhlbi.nih.gov>

"Aim for a Healthy Weight": http://www.nhlbi.nih.gov/health/educational/lose_wt/index.htm

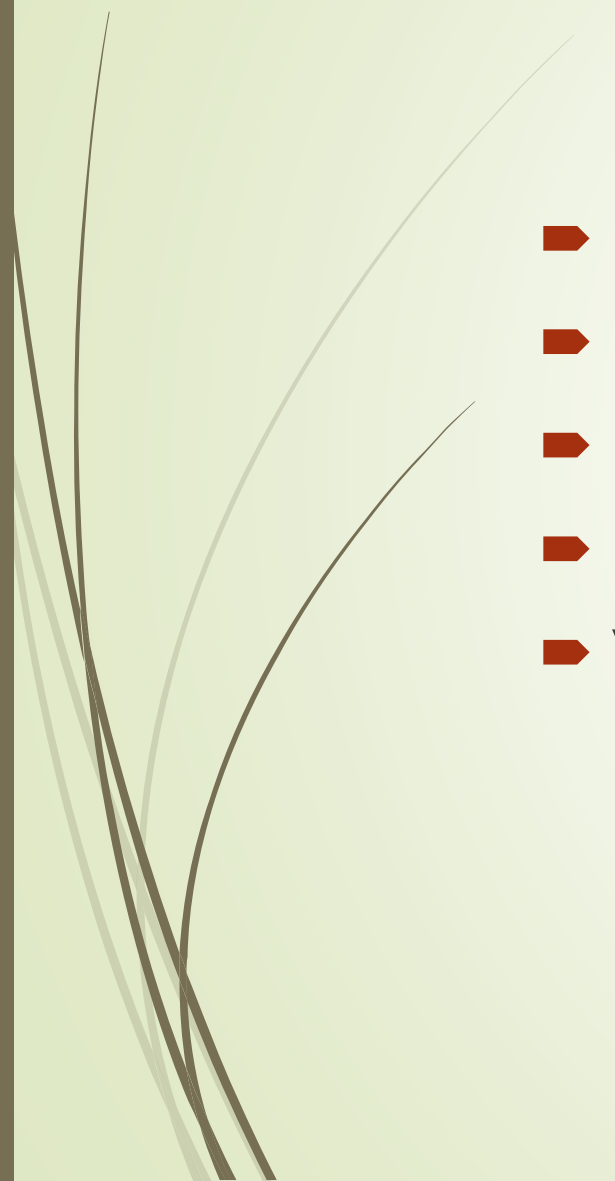
DASH Health Topics: <https://www.nhlbi.nih.gov/health/health-topics/topics/dash>

"Dietary Guidelines for Americans 2010": <http://www.health.gov/dietaryguidelines/>

NHLBI Delicious Heart Healthy Recipes: <https://healthyeating.nhlbi.nih.gov/>




Consequences of High Blood Pressure

- People seem most afraid of stroke
 - Early death
 - Kidney disease
 - Dementia
 - Vision loss
- 



Systems Improvement!



Changes in your clinic and system are more important for controlling blood pressure than the specific provider, medical assistant or patient population you serve.



Systems Approach is Superior

- Recent Annals of Internal Medicine article***:
- Both multilevel and patient level implementation strategies reduced BP more than usual care in hypertension
 - Either physician or non-physician was effective at the systems level titrating medication with team based care
 - Patient level including health coaching and home BP monitoring
 - Provider education less effective

***Ann Intern Med. 2018;168:110-120

Improving Clinic Systems

Annals of Internal Medicine®

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Comparative Effectiveness of Implementation Strategies for Blood Pressure Control in Hypertensive Patients: A Systematic Review and Meta-analysis

Katherine T. Mills, PhD; Katherine M. Obst, MS; Wei Shen, MS; Sandra Molina, MPH; Hui-Jie Zhang, MD, PhD; Hua He, PhD; Lisa A. Cooper, MD, MPH; Jiang He, MD, PhD

Improving Clinic Systems

Table 1. Descriptions of Implementation Strategy Categories*

Implementation Strategy Category	Description
Patient level	
Health coaching (10)	Multiple sessions for patient-centered health education and motivation delivered with the goal of facilitating lifestyle modification and/or medication adherence.
Home BP monitoring	Self-monitoring of patient BP and recording of measurements either manually or by automatic electronic transmission; BP readings given to providers.
Provider level	
Provider training	Education or training targeting providers on hypertension management, including guideline adherence (treatment goals, lifestyle intervention, and medication titrations), and/or patient communication.
Audit and feedback (11)	Repeated, periodic summaries of patient outcomes given to providers, such as BP values, so they can evaluate and improve patient care; could also include provider training.
Electronic decision-support system (11)	Computerized alerts, reminders, or order sets intended to aid providers in point-of-care decision making; could also include provider training.
Multilevel	
Multilevel strategy without team-based care	Interventions that target barriers to hypertension control at multiple levels but do not include team-based care, such as a combination of provider training and patient health coaching.
Team-based care with physicians titrating medications (12)	Collaborative provision of care for hypertension by ≥ 2 providers, including a primary care physician who titrates medications, working collaboratively with patients to accomplish shared treatment goals.
Team-based care with nonphysician providers titrating medications (12)	Collaborative provision of care for hypertension by ≥ 2 providers, including a nonphysician team member who titrates medications, working collaboratively with patients to accomplish shared treatment goals.

BP = blood pressure.
* Numbers in parentheses are references.



Improving Clinic Systems

- Annals article summary:
- Patient level and multilevel strategies all reduced blood pressure significantly, with multilevel team based strategies the best
- Provider education alone did not make much difference
- Team based care: nurses, pharmacists, medical assistants, and/or community health workers
- Notice that provider involvement is not mandatory



Improving Clinic Systems

- Educating medical assistants
- Blood pressure control visits without the provider (nurse or MA)
- Non provider reminders for follow-up visit interval
- Every patient with blood pressure issues should have a home cuff and bring it in for review to see if it's working, along with home readings
- “Body positioning of the patient” flier posted in the exam room
- Patient education posted in rooms
- Almost always two BP readings, entering the lower reading
- Making sure the EMR has one data point to assess, mapping correctly



Assessing Blood Pressure Control

- The blood pressure control should be evaluated per provider and per clinic
- The general standard is for <140/90, in 70% of hypertensives, although this may change over time, probably up to 80%
- White coat hypertension makes up a lot of uncontrolled patients, typically 10–20% of hypertensive patients
- If **white coat hypertension** and other extenuating circumstances such as severe **orthostatic hypotension**, **advanced chronic kidney disease**, or **pregnancy** are included, then control 85% or more is unusual

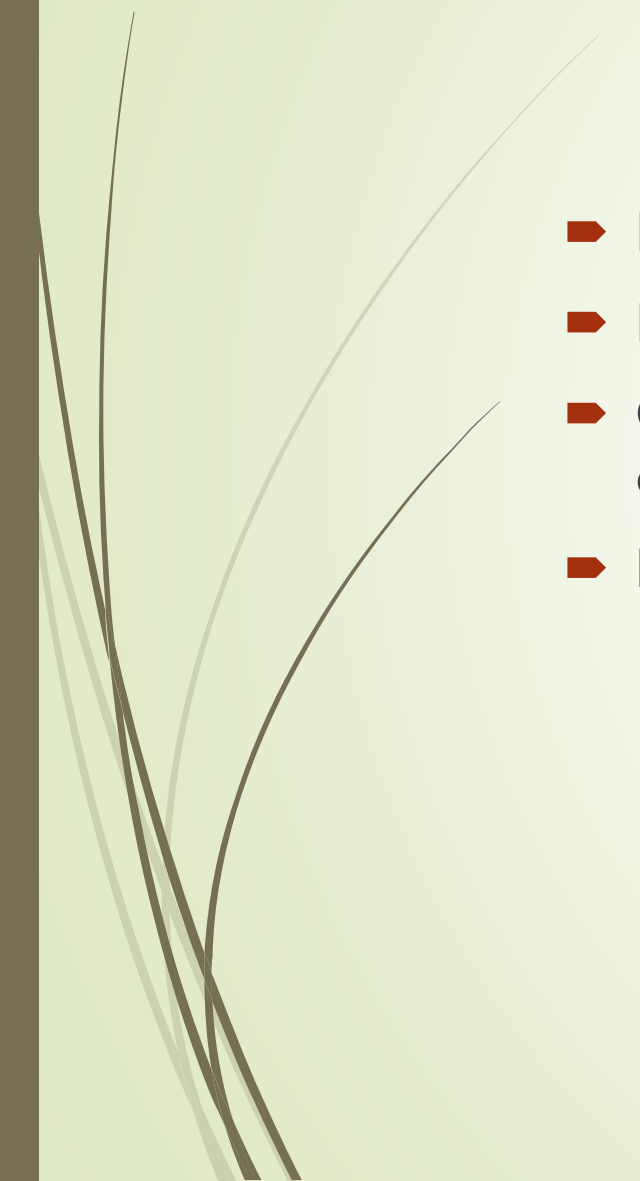



Assessing Provider Control

- Query each provider for total patients (1 year look back)
- Subset for I10, and it used to be about a third of patients would be identified hypertensive patients, with variations between 28 and 33% based on patient demographic if they are all identified
- If the AHA guidelines (11/2017) are widely adopted, it will swell toward 46%, gradually
- Assess for BP > 140 or > 90 and NOT: I10 to look for missing hypertension patients, or the code R03.0



Assessing Provider Control

- Review the data with provider.
 - Run specific lists for patients that need follow up and treatment
 - Create an ongoing system to routinely assess patients needing attention, once a month?
 - Have a designated quality control position – how is that funded?
- 



White Coat Hypertension

- Code this specifically in your progress notes and problem lists to show the world you are aware of the issue.
- Listed as with hypertension (**I10** or without **R03.0**)
- Always document with ambulatory monitor



Improving Clinic Systems – Nurse Visit

- One of the most important changes to practice management of hypertension in the clinic:
 - Identify a reading over 140/90* on any patient at any time
 - Code in that progress note I10 or R03.0
 - Follow up in 4 weeks most of the time – could be a nurse or provider visit

*After sitting at least 5 minutes, two readings if necessary

Improving Clinic Systems – Nurse Visit

Cascade Internal Medicine Specialists work flow:

Nurse/medical assistant blood pressure visits

- Bring patient back and make sure their arm is bare without bunching up clothing. Have them sit in a comfortable position, per the red diagram, with no muscles activated.
- In progress note, use either I10 or R03.0 for assessment diagnosis, depending on which the provider used in the last encounter. If they are on blood pressure medications, it should always be I10.
- Wait 5 minutes (or more) and document under “Plan” the initial time to sit down, then 5 min time.
- Check blood pressure with the automated Welch Allyn cuff (biceps), ensure the size is correct. If it's never been done consider checking both arms, and use the higher reading arm. Differences up to 10 mm Hg are common, more than 20 is abnormal.
- Do three measurements in total.
- Check their cuff if they brought it. It should be within 10 mm Hg for the systolic reading (top).
- Do a fourth standing reading, waiting a minute after standing up to get that reading.
- Document their cuff reading and the four readings in the plan section

Improving Clinic Systems – Nurse Visit

- In the vitals: average all three sitting readings and enter one value: Mean of systolic and diastolic (see example)
- Any systolic value less than 105, or greater than 160 should be run by a provider
- Bill 99211 nurse visit, put “prn” in the follow up and click “done”
- Example: 138/80, 142/78, 128/77
- $138 + 142 + 128 = 408$ divided by three is 136
- $80 + 78 + 77 = 235$ divided by three is 78
- Enter 136/78 in the vitals



Improving Systems Management

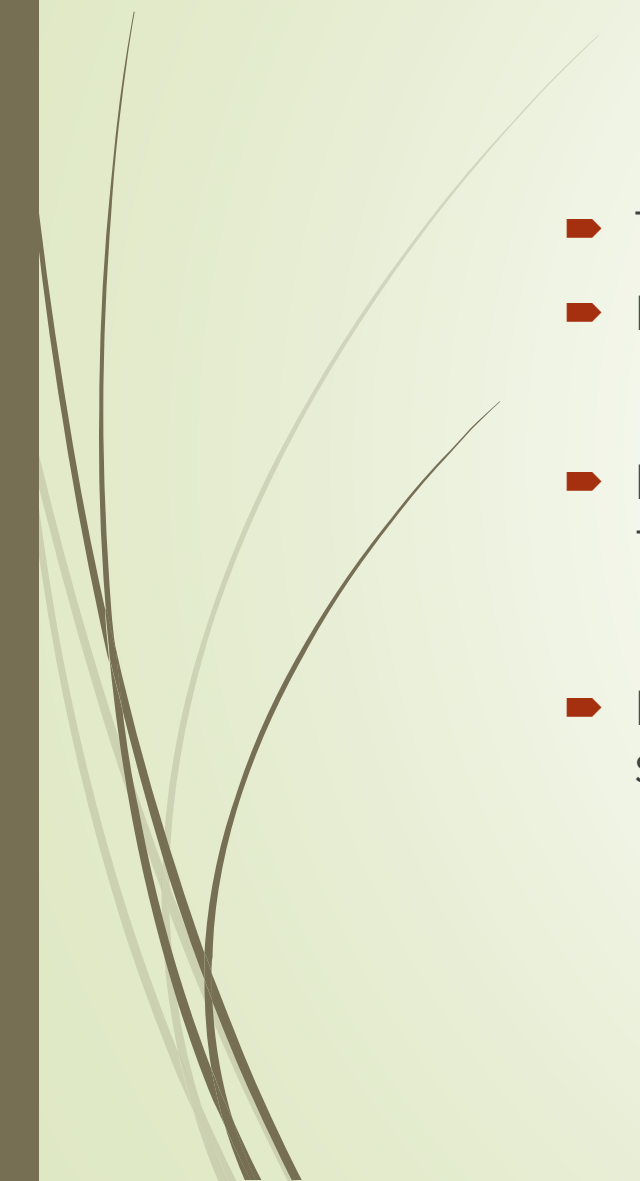
- Consider a physician champion for education of providers and medical assistants
- Consider a proficiency award for over 70%
 - A logo for an award
 - A cash incentive
 - Friendly competition

Veterans Administration is progressive!





Veterans Administration is progressive!

- Telehealth daily calls available
 - Nurse follows up and makes recommendations to the provider
 - Pharmacists can take over BP management and prescribe separate from the provider, and do their own appointments
 - Nurse care managers run their registries and call patients if they need to be seen, and to discuss compliance, diet, and medications
- 

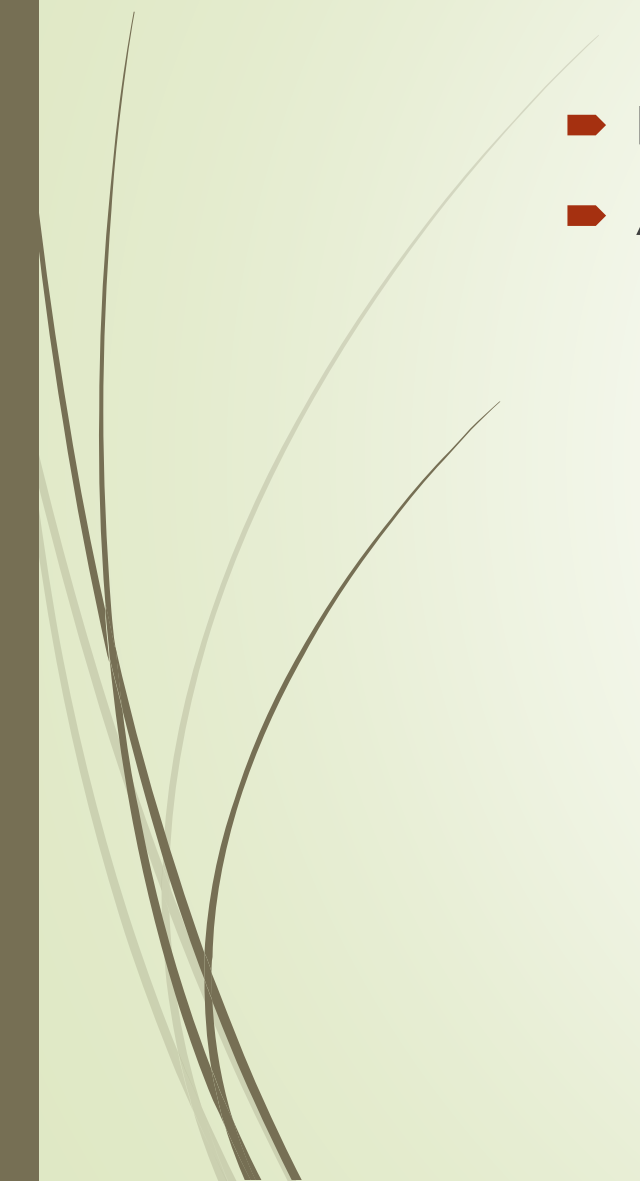


Improving Clinic Systems

- Medical assistant Education:
 - Body positioning with flyer in room
 - No clothing under the BP cuff
 - Two readings with patient at rest
 - Review the auscultatory gap
 - Palpation method for systolic blood pressure




Improving Clinic Systems

- Have information laminated and posted
 - Available for patient if they desire
 - Body positioning visual
 - Body positioning stats for affecting blood pressure
 - Lifestyle contributions
 - Non-pharmacologic strategies
 - Dietary strategies
 - Ideal 7 visual
- 



Newer Ideas for Systems Control

- Chronic care management – reaching out from the clinic for high risk patients, and can be directed at hard to control hypertension patients
 - Community health workers
 - Health coaching at the insurance level
 - Health insurance provisions with home visits
 - Self-monitoring with telemonitoring
- 



Improving Provider Control

- Should have an update on blood pressure education at least once a year
- Could provide an incentive for that
- See separate clinical blood pressure talk already arranged this year
 - <https://www.oregon.gov/oha/HPA/CSI-TC/Pages/Hypertension-TA.aspx>.
 - Is recorded and for CME
- Improving patient compliance by:
 - Once a day drugs
 - Combination drugs
 - Cheap generics
 - Helpful ideas: phone reminders, coffee pot!



Improving Provider Control

- In Sri Lanka: Fixed low dose triple combination antihypertensive medication vs usual care for blood pressure control
- 20 mg telmisartan, 2.5 mg amlodipine, and 12.5 mg chlorthalidone
- The triple pill increased the proportion of patients achieving target blood pressure vs usual care at 6 months (70% vs 55% respectively)
- Average difference in blood pressure: -9.8/-5 mm Hg
- Probably most helpful in health care settings around the world that are resource challenged for drug supply, access to care, and limited health care workers, however the concept is still relevant in our country

Bottom Line Checklist

Improving Blood Pressure Control

Administrator checklist

Provider:

- ☐ Has had education: clinical webinar
- ☐ Has a designated nurse or MA for BP follow up available at 4 weeks
- ☐ Understands the tools available to him or her such as handouts, clinic flow, and where to order 24 hour ambulatory monitors
- ☐ Knows his or her BP control and sees it updated monthly
- ☐ Knows how to use I10 and R03.0 codes for any abnormal reading

Clinic Set Up:

- ☐ Regularly identifies BP control and outliers and presents to providers
- ☐ Has organized a separate nurse visit with correct BP technique and billing and how to get that information to the provider
- ☐ Has educated Medical assistants on the correct way to measure blood pressure
- ☐ Has posted information in exam rooms
- ☐ Has information for patients at check out if necessary
- ☐ Consider automated BP monitors for exam rooms

Patient education:

- ☐ Has been advised to get a home monitor by provider or staff
- ☐ Is aware of activities that raise blood pressure
- ☐ Is aware of diet that lowers blood pressure
- ☐ Knows the goal blood pressure goal for his/her care


Summary

- The last slide was the money slide 😊




https://www.heart.org/-/media/data-import/downloadables/pe-abh-what-is-high-blood-pressure-ucm_300310.pdf?la=en&hash=CAC0F1D377BDB7BC3870993918226869524AAC3D

ANSWERS
by heart



Lifestyle + Risk Reduction
High Blood Pressure



What Is High Blood Pressure?

Blood pressure is the force of blood pushing against blood vessel walls. It is measured in millimeters of mercury (mm Hg).

High blood pressure (HBP) means the pressure in your arteries is higher than it should be. Another name for high blood pressure is hypertension.

Blood pressure is written as two numbers, such as 112/78 mm Hg. The top, systolic, number is the pressure when the heart beats. The bottom, diastolic, number is the pressure when the heart rests between beats.

Normal blood pressure is below 120/80 mm Hg. If you're an adult and your systolic pressure is 120 to 129, and your diastolic pressure is less than 80, you have elevated blood pressure. High blood pressure is a pressure of 130 systolic or higher, or 80 diastolic or higher, that stays high over time.

High blood pressure usually has no signs or symptoms. That's why it is so dangerous. But it can be managed.

Nearly half of the American population over age 20 has HBP, and many don't even know it. Not treating high blood pressure is dangerous. HBP increases the risk of heart attack and stroke.

Make sure you get your blood pressure checked regularly and treat it the way your doctor advises.

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)	and	DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

Am I at higher risk of developing HBP?

There are risk factors that increase your chances of developing HBP. Some you can control, and some you can't.

Those that can be controlled are:

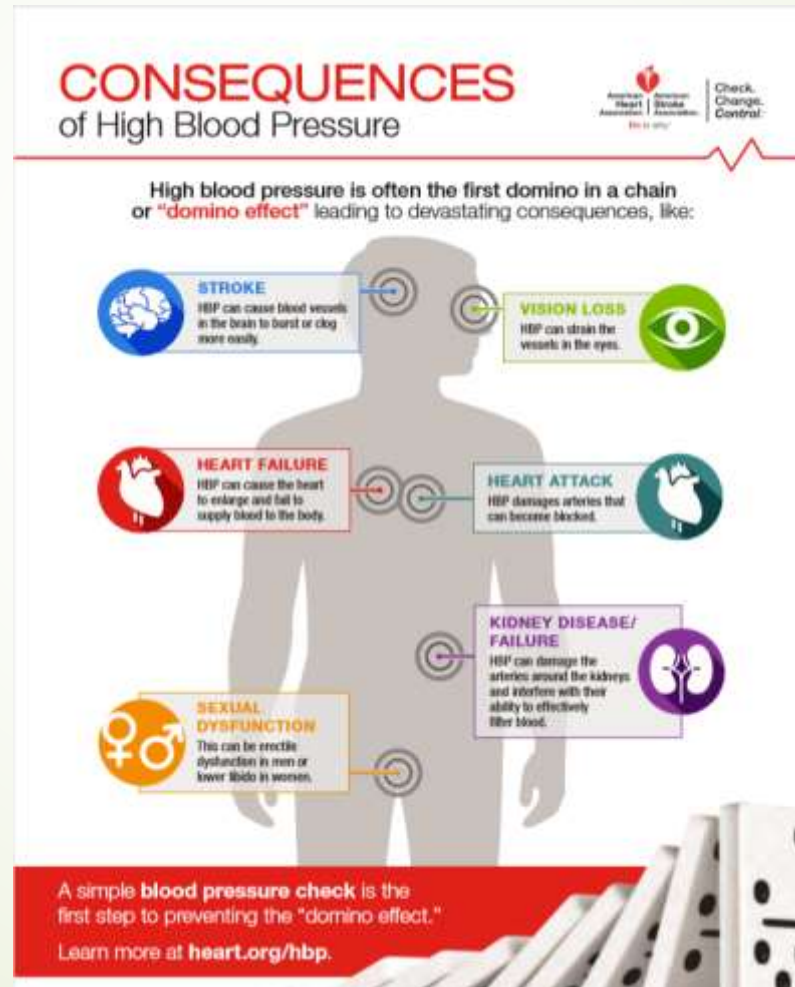
- Smoking and exposure to secondhand smoke
- Diabetes
- Being obese or overweight
- High cholesterol
- Unhealthy diet (high in sodium, low in potassium, and drinking too much alcohol)
- Physical inactivity

Continued





https://www.heart.org/-/media/files/health-topics/high-blood-pressure/how-to-measure-blood-pressure-letter-size-ucm_445846.pdf?la=en&hash=C77CA4D8EC3720A696F77C7A8C5066866B19C402



https://www.heart.org/-/media/files/health-topics/high-blood-pressure/consequences-of-high-blood-pressure-infographic-pdf-ucm_464947.pdf?la=en&hash=4F1F283B68F398CC03A3E522C092CAF6621EDDF9



<https://www.nhlbi.nih.gov/files/docs/public/heart/hbpwallet.pdf>

 <h3>It Is Important To Take Prescribed Blood Pressure Drugs</h3> <p>Ask your doctor to help you fill out the information below.</p> <p>Blood Pressure Medicine:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Special Instructions:</p> <p>.....</p> <p>.....</p> <p>.....</p>	 <h3>Questions To Ask Your Doctor If You Have High Blood Pressure</h3> <ul style="list-style-type: none">• What is my blood pressure reading in numbers?• What is my goal blood pressure?• Is there a healthy eating plan that I should follow to help lower my blood pressure and lose weight?• Is it safe for me to do regular physical activity?• What is the name of my medication? What is the generic name?• What are the possible side effects of my medication?• What time of day should I take my blood pressure medicine?• Should I take it with or without food?• What should I do if I forget to take my blood pressure medication at the recommended time?	 <h3>My Blood Pressure Wallet Card</h3> <p>U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES National Institutes of Health National Heart, Lung, and Blood Institute</p>																														
 <h3>Carry This Card To Help Prevent or Control High Blood Pressure</h3> <p>Doctor's Name:</p> <p>.....</p> <p>Doctor's Address:</p> <p>.....</p> <p>Doctor's Telephone Number:</p> <p>.....</p>  <p>U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES National Institutes of Health National Heart, Lung, and Blood Institute NIH Publication No. 03-5068 November 2003</p>	 <h3>My Blood Pressure Diary</h3> <table border="1"><thead><tr><th>DATE/TIME</th><th>LOCATION</th><th>BLOOD PRESSURE</th></tr></thead><tbody><tr><td>.....</td><td>.....</td><td>.....</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr><tr><td>.....</td><td>.....</td><td>.....</td></tr></tbody></table> <p>My Blood Pressure Goal: <input type="text"/></p>	DATE/TIME	LOCATION	BLOOD PRESSURE	 <h3>Lifestyle Changes To Help Reduce High Blood Pressure</h3> <p>Talk with your doctor about the lifestyle changes that are appropriate for you. Check off the lifestyle changes you are going to use to help lower your blood pressure.</p> <p>MY LIFESTYLE CHANGES</p> <ul style="list-style-type: none"><input type="checkbox"/> Maintain a healthy weight.<input type="checkbox"/> Do physical activity for 30 minutes most days of the week.<input type="checkbox"/> Eat a diet high in fresh fruits and lowfat dairy products with reduced saturated and total fat.<input type="checkbox"/> Choose foods that are lower in salt and other forms of sodium. Read food labels.<input type="checkbox"/> If you drink alcohol, have no more than one drink a day for women, two drinks a day for men.<input type="checkbox"/> Remember to take your blood pressure medicine.
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Summary



- To Improve Blood Pressure Control:
 - Educate **Providers** about new guidelines, follow up in 4 weeks or less for abnormal readings, and use ambulatory blood pressure monitors
 - Educate **Patients** on managing their hypertension with home monitoring, and relevant self care information
 - Structure your **Clinic** around team-based care with well educated ancillary providers contributing separate visits, and readily available information

Farewell Trail near Tumalo Falls





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Thank you!

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