Beyond the Numbers
Lipid Control Webinar Series

The Deal with Blood Pressure

March 30, 2021 at 3PM ET
Mended Hearts®' mission is “to inspire hope and improve the quality of life of heart patients and their families through ongoing peer-to-peer support, education and advocacy.”

The National Lipid Association’s (NLA) mission is “to enhance the practice of lipid management in clinical medicine.”

The Foundation of the NLA’s mission is “to improve the welfare of patients and families affected by cholesterol and triglyceride problems.”
Before we begin

- All attendees are in listen-only mode
- If you cannot hear, check the audio button on your personal computer to assure the sound is on.
- Please type your questions into the Q&A box at any time during the presentation. Questions will be read and answered after the presentation.
  - Note: The presenter will not be able to answer questions about you as a patient (or a loved one), specifically, as he/she is not the treating physician.
- The PDF version of the slides, as well as the recording of this presentation, will be available on the Mended Hearts website following the event.
Before we get started, please respond to our brief polling questions as they present on screen.
Poll #1

What increases your chances of having high blood pressure ("Hypertension")?

a. Underweight
b. Exercising too much
c. Not enough salt (sodium)
d. Low potassium
Poll #2

What blood pressure reading is considered to be the starting level to define high blood pressure or hypertension?

a. 120 / 70 mm Hg or above
b. 130 / 80 mm Hg or above
c. 140 / 90 mm Hg or above
d. 150 / 100 mm Hg or above
The Deal With Blood Pressure (BP)

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Professor of Medicine
Tulane University School of Medicine
New Orleans, LA
@kcferdmd

Beyond the Numbers: Lipid Education & Support Program
March 30, 2021
Disclosures

• Any real or apparent COIs related to the presentation have been resolved
• Speaker’s Bureau- None
• Consultant- Amgen, Novartis, Medtronic
• Stocks- None
• Patents- None
Objectives

1. Discuss the target organ damage and appropriate diagnosis for high blood pressure (HBP) or hypertension

2. Highlight how to best engage in lifestyle education and self-measured blood pressure monitoring (SMBP)

3. Summarize best means to control HBP and improve outcomes
HEART DISEASE AND STROKE

Together, #1 Cause of Death
Heart Disease in Women:
#1 Cause of Mortality
CVD Risk Factors Common in Patients With Hypertension (HTN)

<table>
<thead>
<tr>
<th>Modifiable Risk Factors*</th>
<th>Relatively Fixed Risk Factors†</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Current cigarette smoking, secondhand smoking</td>
<td>• CKD</td>
</tr>
<tr>
<td>• Diabetes mellitus</td>
<td>• Family history</td>
</tr>
<tr>
<td>• Dyslipidemia/ hypercholesterolemia</td>
<td>• Increased age</td>
</tr>
<tr>
<td>• Overweight/obesity</td>
<td>• Low socioeconomic/educational status</td>
</tr>
<tr>
<td>• Physical inactivity/low fitness</td>
<td>• Male sex</td>
</tr>
<tr>
<td>• Unhealthy diet</td>
<td>• Obstructive sleep apnea</td>
</tr>
<tr>
<td></td>
<td>• Psychosocial stress</td>
</tr>
</tbody>
</table>

*Factors that can be changed and, if changed, may reduce CVD risk.
†Factors that are difficult to change (CKD, low socioeconomic/educational status, obstructive sleep apnea, cannot be changed (family history, increased age, male sex), or, if changed through the use of current intervention techniques, may not reduce CVD risk (psychosocial stress). CKD indicates chronic kidney disease; and CVD, cardiovascular disease.
The Surgeon General's Call to Action to Control Hypertension

**Goal 1.** Make HTN control a national priority.

**Goal 2.** Ensure that the places where people live, learn, work, and play support HTN control.

**Goal 3.** Optimize patient care for HTN

Goals and Strategies to Improve Hypertension Control

Prioritize Control Nationally
- Increase Awareness of Health Risks
- Recognize Economic Burden
- Eliminate Disparities

Cultivate Community Supports
- Promote Physical Activity Opportunities
- Promote Healthy Food Opportunities
- Connect to Lifestyle Change Resources

Optimize Patient Care
- Use Standardized Treatment Approaches
- Promote Team-Based Care
- Empower and Equip Patients
- Recognize and Reward Clinicians

Promoting Health Equity

Consequences of HTN: Organ Damage

Hypertension

- TIA, stroke, dementia
- LVH, CHD, CHF, AF
- Retinopathy
- Peripheral arterial disease
- Chronic kidney disease

AF, arterial fibrillation; CHD, coronary heart disease; CHF, congestive heart failure; LVH, left ventricular hypertrophy; TIA, transient ischemic attack

Health Problems Caused by Hypertension

- Stroke
- Cognitive Decline
- Vision Loss
- Heart Attack
- Heart Failure
- Kidney Disease/Failure
- Pregnancy-Related Complications
- Sexual Dysfunction
- Peripheral Artery Disease
# Categories of BP in Adults

<table>
<thead>
<tr>
<th>BP Category</th>
<th>SBP</th>
<th>DBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120 mm Hg</td>
<td>and &lt;80 mm Hg</td>
</tr>
</tbody>
</table>

**Hypertension**

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>130–139 mm Hg</th>
<th>80–89 mm Hg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 2</td>
<td>≥140 mm Hg</td>
<td>or ≥90 mm Hg</td>
</tr>
</tbody>
</table>

Designated to the higher SBP/DBP category. BP average of ≥2 careful readings obtained on ≥2 occasions
HTN and BP Control Trends

- Increased prevalence HTN with $BP \geq 130/80$ mmHg is observed in adults $\geq 65$ years
- Prevalence of HTN in NH Black adults approximately 60% across both genders
- HTN BP control decreased by approximately 10% (53.8% to 43.7%) between 2013-2014 and 2017-2018

*JACC* May 2018, 71 (19) e127-e248
Special Populations: African Americans
Age-adjusted U.S. HTN-related death rates, by race and Hispanic origin: 2000–2013

Hypertension Harms

- **44%**
  - Nearly 44% of Black/African American **men** have cardiovascular disease including heart disease and stroke\(^1\)
  - **4x**
    - Blacks/African Americans are almost four times as likely as whites to develop **kidney failure**\(^3\)

- **48%**
  - 48% of Black/African American **women** have cardiovascular disease\(^1\)

- **2-3x**
  - Blacks/African Americans have two-three times the risk of **stroke** as whites\(^2\)
  - **2x**
    - Blacks/African Americans are nearly twice as likely as whites to **die from preventable heart disease and stroke**\(^4\)

\(^1\) CDC: African Americans Heart Disease and Stroke Fact Sheet  
\(^2\) AHA Heart Disease and Stroke Statistics - 2017 Update  
\(^3\) NIDDK: Race, Ethnicity, and Kidney Disease  
\(^4\) CDC Vital Signs: Preventable Deaths from Heart Disease and Stroke

[https://millionhearts.hhs.gov](https://millionhearts.hhs.gov)
Adjusted ESRD incidence rate, by race categories (1996–2013)

Data Source: Special analyses, USRDS ESRD Database. *Adjusted for age and sex. The standard population was the U.S. population in 2011. Abbreviations: Af Am, African American; ESRD, end-stage renal disease.
Racial differences in prevalence of kidney disease

US African American Population

US ESRD Population

http://www.cdc.gov/minorityhealth/populations/REMP/black.html
The graph shows the life expectancy trends for different races and genders from 2006 to 2017. The life expectancy for Hispanic females has increased from 82.9 years in 2006 to 84.3 years in 2017. For Non-Hispanic white females, the life expectancy has remained stable at around 80.6 years. Hispanic males have seen an increase from 79.1 years in 2006 to 81.0 years in 2017. Non-Hispanic black females have a life expectancy of approximately 78.1 years. Non-Hispanic white males have a life expectancy of around 76.1 years, while Non-Hispanic black males have a life expectancy of 71.5 years. These trends are based on data from the National Vital Statistical System and are published in J Am Coll Cardiol. 2020 Jun, 75 (21) 2746-2748.
How Many Errors In BP Measurement Do You See?

1. Back is not supported
2. Arm is not supported near heart level
3. Cuff is over sweatshirt
4. Legs are crossed
5. Legs are not both flat on the stool
6. She is talking
7. She is not listening
The Correct Way to Measure Blood Pressure

Before your reading
- No food or drink for 30 minutes
- Empty your bladder

During the reading
- No talking
- Arm resting at chest height
- Cuff against bare skin
- Back is supported
- Sit with feet flat on floor

Visit cdc.gov/bloodpressure for tips and resources.
Measure Accurately

7 SIMPLE TIPS TO GET AN ACCURATE BLOOD PRESSURE READING

- Use correct cuff size:
  - Cuff too small adds 2-10 mm Hg
- Don’t have a conversation:
  - Talking or active breathing adds 10 mm Hg
- Put cuff on bare arm:
  - Cuff over clothing adds 5-50 mm Hg
- Support arm at heart level:
  - Unsupported arm adds 10 mm Hg
- Keep legs uncrossed:
  - Crossed legs add 2-6 mm Hg
- Support back/feet:
  - Unsupported back and feet add 5 mm Hg
- Empty bladder first:
  - Full bladder adds 10 mm Hg

Sources:
2. Naylor J. The importance of accurate blood pressure measurement. The Perinatologist/Summer 2008/Volume 13 No. 3 31

This 7 simple tips to get an accurate blood pressure reading was adapted with permission from the American Medical Association and the Johns Hopkins community. The original copyrighted content can be found at https://www.ama-assn.org/ama-physician-hopkins-blood-pressure-resources.

$\text{TARGET:BP}^\text{TM}$ ©2017 American Medical Association. All rights reserved.
### 2017 ACC/AHA HBP Guideline

**Out-of-Office and Self-Monitoring of BP**

<table>
<thead>
<tr>
<th>COR</th>
<th>LOE</th>
<th>Recommendation for Out-of-Office and Self-Monitoring of BP</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>A\textsuperscript{SR}</td>
<td>Out-of-office BP measurements are recommended to confirm the diagnosis of hypertension and for titration of BP-lowering medication, in conjunction with telehealth counseling or clinical interventions.</td>
</tr>
</tbody>
</table>

Table 8 2017 ACC-AHA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults; *Hypertension*; JACC Nov 2017
AHA POLICY STATEMENT

Self-Measured Blood Pressure Monitoring at Home

A Joint Policy Statement From the American Heart Association and American Medical Association
The validation of BP measurement devices for clinical accuracy, April 23, 2020


Validation Protocol(s):

BP devices for wrist or finger not addressed at this time

https://www.validatebp.org/
Nonpharmacological Interventions
Five risk factors constitute the bulk of the hypertension problem:

- Unhealthy diet
- Overweight
- Lack of physical activity
- Too much salt
- Not enough potassium

http://www.iom.edu/Reports/2010
High Strength of Evidence for High Sodium and HBP
The Southern Diet: REGARDS Study

- High Southern diet intake: largest mediator of HTN difference blacks vs. whites for both men and women.
- Fried foods, organ meats, processed meats, eggs/egg dishes, added fats, high-fat dairy foods, sugar-sweetened beverages, and bread.
- Other research, associated increased risk of incident stroke, CHD, ESRD, and CKD, sepsis, cancer mortality, and cognitive decline.

*JAMA. 2018;320(13):1338-1348*
Dietary Approaches to Stop Hypertension (DASH)

- BP can be significantly reduced with a diet abundant in fruits, vegetables, complex carbohydrates, and low-fat dairy products.
- The DASH diet includes these daily servings:

Sacks FM et al. N Engl J Med 2001;344:3-10
Plants Power a Healthy Heart!

ASSOCIATION OF BLACK CARDIOLOGISTS, INC.

The ABC was founded in 1974 to bring special attention to the adverse impact of cardiovascular disease on African Americans. We are an inclusive organization, with membership open to everyone who is interested in assuring that African American children know their grandparents and are on the way to becoming “great” grandparents themselves. This will only be achieved by lowering the high rates of heart disease and stroke in the African American community through:

- Culturally competent healthcare providers
- Equal access to medical care and innovative technologies
- Effective collaboration with industry, government, professional organizations, and individuals

A PLANT-BASED Path

One of the best ways to reduce your risk factors for heart disease is a plant-based, or vegan, diet. Plant-based cooking is a nutritious and delicious way of preparing food that celebrates the goodness of plant-based ingredients. Similar to vegetarian cooking, plant-based cooking uses a full bounty of vegetables, fruits, grains, beans, and nuts, while excluding meat, poultry, and seafood. Plant-based cooking also does not include eggs, dairy products, or honey.

WHY EAT PLANT-BASED?

People choose to eat a plant-based diet for many reasons. Some prefer the animal- and earth-friendly nature of plant-based foods. But a growing number of people are making the switch for another important reason: Plant-based diets are full of health benefits, especially for the heart. You deserve delicious food that is good for you too.

- Helps prevent and treat heart disease
- Helps reduce your risk for stroke
- Helps lower your blood pressure, cholesterol, and risk for blood clots
- Helps you maintain a healthy weight
- Reduces your risk for type 2 diabetes and metabolic syndrome
- May help manage blood glucose levels

A Recipe for Healthy Families: Help future generations get into the habit of eating more heart-healthy, plant-based foods.
**Recommendations for Nonpharmacological Interventions**

<table>
<thead>
<tr>
<th>COR</th>
<th>LOE</th>
<th>Recommendations for Nonpharmacological Interventions</th>
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<tbody>
<tr>
<td>I</td>
<td>A</td>
<td><strong>Increased physical activity</strong> with a structured exercise program is recommended for adults with elevated BP or hypertension.</td>
</tr>
<tr>
<td>I</td>
<td>A</td>
<td>Adult men and women with elevated BP or hypertension who currently consume alcohol should be advised to drink no more than 2 and 1 standard drinks* per day, respectively.</td>
</tr>
</tbody>
</table>

*In the United States, 1 “standard” drink contains roughly 14 g of pure alcohol, which is typically found in 12 oz of regular beer (usually about 5% alcohol), 5 oz of wine (usually about 12% alcohol), and 1.5 oz of distilled spirits (usually about 40% alcohol).*
### Guidelines for Nonpharmacological Interventions

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>I</td>
<td>A</td>
<td><strong>Weight loss</strong> is recommended to reduce BP in adults with elevated BP or hypertension who are overweight or obese.</td>
</tr>
<tr>
<td>I</td>
<td>A</td>
<td>A heart-healthy diet, such as the DASH (Dietary Approaches to Stop Hypertension) diet, that facilitates achieving a desirable weight is recommended for adults with elevated BP or hypertension.</td>
</tr>
<tr>
<td>I</td>
<td>A</td>
<td><strong>Sodium reduction</strong> is recommended for adults with elevated BP or hypertension.</td>
</tr>
<tr>
<td>I</td>
<td>A</td>
<td><strong>Potassium supplementation, preferably in dietary modification</strong>, is recommended for adults with elevated BP or hypertension, unless contraindicated by the presence of CKD or use of drugs that reduce potassium excretion.</td>
</tr>
</tbody>
</table>

Adults need a mix of physical activity to stay healthy.

**Moderate-intensity aerobic activity***
Anything that gets your heart beating faster counts.

- **at least 150 minutes a week**

**Muscle-strengthening activity**
Do activities that make your muscles work harder than usual.

- **at least 2 days a week**

If you prefer vigorous-intensity aerobic activity (like running), aim for at least 75 minutes a week.

If that’s more than you can do right now, **do what you can**. Even 5 minutes of physical activity has real health benefits.

Treating High BP
Literacy and Educational Level Appropriate
NEW Educational Handout on Blood Pressure

**Download** the handout by clicking the link in the Chat box

Your blood pressure reading is reported in **millimeters of mercury**, which is commonly abbreviated as “**mm Hg**”.

Your reading will consist of **2 numbers**, such as 110/65 mm Hg.

- **Measures the force of blood in your arteries as your heart beats,** known as “**systolic pressure.**”
- **Measures the force of blood in your arteries when your heart relaxes between beats,** known as “**diastolic pressure.**”

**High blood pressure occurs when one or both of these numbers are too high.**

High blood pressure is defined as a systolic pressure greater than or equal to (≥) 130 mm Hg or a diastolic blood pressure ≥ 80 mm Hg.
Treatment Of HTN with High Cardiac Risk And Diabetes

**Treatment Goal**

BP _less_ than:

130/80 mm Hg
<table>
<thead>
<tr>
<th>TABLE 17</th>
<th>Basic and Optional Laboratory Tests for Primary Hypertension</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic testing</strong></td>
<td>Fasting blood glucose*</td>
</tr>
<tr>
<td></td>
<td>Lipid profile</td>
</tr>
<tr>
<td></td>
<td>Serum sodium, potassium, calcium*</td>
</tr>
<tr>
<td></td>
<td>Urinalysis</td>
</tr>
<tr>
<td><strong>Optional testing</strong></td>
<td>Echocardiogram</td>
</tr>
<tr>
<td></td>
<td>Urinary albumin to creatinine ratio</td>
</tr>
</tbody>
</table>
Adherence is Main Problem In CVD Treatment!
## Antihypertensive Medication Adherence Strategies

<table>
<thead>
<tr>
<th>COR</th>
<th>LOE</th>
<th>Recommendations for Antihypertensive Medication Adherence Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>B-R</td>
<td>In adults with hypertension, dosing of antihypertensive medication once daily rather than multiple times daily is beneficial to improve adherence.</td>
</tr>
<tr>
<td>IIa</td>
<td>B-NR</td>
<td>Use of combination pills rather than free individual components can be useful to improve adherence to antihypertensive therapy.</td>
</tr>
</tbody>
</table>
Strategies to Improve Hypertension Treatment and Control

- **Adherence strategies**
  - Once daily dosing
  - Combination pills
- **Strategies to promote lifestyle modification**
- **Team-based care**
  - Health professionals: physicians, nurses, pharmacists
  - Patient
  - Staff: office staff and community health workers
  - Others: spouse, relatives, friends
- **Use of EHR and Patient Registries**
- **Telehealth strategies**
- **Performance measures and Quality Improvement initiatives**
- **Financial incentives**
The tragedy of the electronic health record

My Second Chance to Live Heart Healthy: Mr. C.A.'s story.

http://millionhearts.hhs.gov

Million Hearts 2016 article placed in over 2,300 US news publications and reached over 29 million.

http://www.houmatimes.com/online
Healthy Heart Community Prevention Program: Community Influenza and Coronavirus Vaccination
Conclusion

• High blood pressure is a continuous, direct risk for heart disease and stroke
• Age and diabetes are associated with significant CVD burden and death
• Controlling HTN is essential with older adults and DM
• Team care necessary with tighter control with older adults
• Lifestyle and evidence-based treatment with multiple antihypertension drugs
Thank You!

https://healthyheartcpp.org
For additional questions, please email: Andrea.baer@mendedhearts.org

Join us for the next session of the series:
**Beyond Total Cholesterol: Understanding Your Lipid Panel**
April 6, 2021 at 3:00 PM ET

Presenter: Dr. Catherine J. McNeal, MD, PhD
Patient Representative: Mandy Sandkuhler
Moderator: Andrea Baer, MS, BCPA

Questions are the path to learning

This webinar series is brought to you by Mended Hearts®, The National Lipid Association (NLA), and The Foundation of the NLA.
This activity is supported by Amgen, Esperion and Novartis.
Poll #3

What blood pressure reading is considered to the starting level to define high blood pressure or hypertension?

a. 120 / 70 mm Hg or above
b. 130 / 80 mm Hg or above
c. 140 / 90 mm Hg or above
d. 150 / 100 mm Hg or above
Poll #4

Based on my participation in this webinar, I:

a. Learned something new that has inspired me to make changes
b. Need more information before I will make any changes
c. My routine is already consistent with what is recommended
d. Will not make changes / Do not agree with recommendations