Hypertension

Ameya Kulkarni, MD FSCAI
Assistant Chief, NOVA Cardiology, MAPMG
Medical Director, Cardiac Catherization Laboratory, Virginia Hospital Center
Key Questions

• What is Hypertension?

• Why is it a big deal?

• What causes hypertension?

• What can I do about it?
Key Questions

• **What is Hypertension?**

• Why is it a big deal?

• **What causes hypertension?**

• **What can I do about it?**
High Blood Pressure

Blood Pressure is:

Pressure generated by the arteries that pump blood to your body

Blood Pressure is affected by:

The force generated by the pump of the heart &

The stiffness of the blood vessels (arteries)

When Arterial stiffness increases or the heart pump function increases, BP increases
Hypertension

High Blood pressure can happen in “normal” situations when you are in pain, sick, anxious or exercising.

Hypertension is a Chronic state of high BP even when your body does not require a high BP.
# Hypertension: The Numbers

## Blood Pressure Categories

<table>
<thead>
<tr>
<th>Blood Pressure Category</th>
<th>Systolic mm Hg (Upper Number)</th>
<th>Diastolic mm Hg (Lower Number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Less than 120</td>
<td>Less than 80</td>
</tr>
<tr>
<td>Elevated</td>
<td>120 – 129</td>
<td>Less than 80</td>
</tr>
<tr>
<td>High Blood Pressure (Hypertension) Stage 1</td>
<td>130 – 139</td>
<td>80 – 89</td>
</tr>
<tr>
<td>High Blood Pressure (Hypertension) Stage 2</td>
<td>140 or Higher</td>
<td>90 or Higher</td>
</tr>
<tr>
<td>Hypertensive Crisis (consult your doctor immediately)</td>
<td>Higher than 180</td>
<td>Higher than 120</td>
</tr>
</tbody>
</table>

[Source: www.heart.org]
Key Questions

• What is Hypertension?

• Why is it a big deal?

• What causes hypertension?

• What can I do about it?
Hypertension: The Effects
Key Questions

• What is Hypertension?

• Why is it a big deal?

• What causes hypertension?

• What can I do about it?
Hypertension: The Causes
Key Questions

• What is Hypertension?

• Why is it a big deal?

• What causes hypertension?

• What can I do about it?
Hypertension: Four steps to reduce your risk

- Step 1: Optimize your diet
- Step 2: Increase your activity
- Step 3: Address your stress
- Step 4: Manage your Habits
Hypertension: Four steps to reduce your risk

▪ Step 1: Optimize your diet
▪ Step 2: Increase your activity
▪ Step 3: Address your stress
▪ Step 4: Manage your Habits
Which diet is best?
A Simple Food Plan

• DROP THE SALT (Less than 2300mg per day)

• Focus on non-starch vegetables and fruits

• When selecting protein, use this order:
  • Beans, nuts, tofu
  • Fish
  • Chicken
  • Beef, Pork, Lamb and other “red meats” (eat sparingly)

• Avoid “junk/processed food” when possible

• Portion Control

• Read the labels
Reading Labels: A “healthy” lunch

1 sesame bagel: 430 mg Sodium
1 slice American Cheese: 282 mg Sodium
3 slices ham: 440 mg Sodium
1 tsp mustard: 80 mg Sodium

Ham and Cheese Sandwich on a sesame bagel = 1232 mg Sodium
Heart Healthy vs. Losing Weight

- **Heart Healthy**
  - Food Content Matters
  - Weight loss does not (necessarily)
  - Journey is the key

- **Weight Loss**
  - Inputs vs. outputs
  - Destination is the key
Hypertension: Four steps to reduce your risk

- **Step 1:** Optimize your diet
- **Step 2:** Increase your activity
- **Step 3:** Address your stress
- **Step 4:** Manage your Habits
Immediate Effects of Exercise

- Dilates blood vessels
- Improves mood
- Increases metabolism
- Increases “good humors”
Long Term Exercise Benefits

• Endothelial Function Improvement

• More “stable” blood vessels
Long Term Exercise Benefits

• Improves the numbers that matter
  • Resting heart rate, blood pressure, cholesterol

• Prepares your heart for “the worst”
  • Ischemic pre-conditioning

• Reduces your risk of death
How much is enough?

• Aerobic exercise 150 minutes per week (30 minutes 5 days per week)
  • *Cumulative* moderate level activity in a week

• Some activity on most days

• Resistance training two days per week
What exercise is good exercise?

• It increases your heart rate (by at least 20-30%)
• You do it most days
• You don’t overdo it
Exercise types

▪ Traditional exercise
  – Going to the gym, treadmill at home, sports
Exercise types

- High Intensity exercise
  - Marathons, Triathalons
  - Insanity, Crossfit, P90X
Exercise types

- Efficiency exercise: 7 minute exercise
Exercise types

• Non-traditional exercises
  • 10,000 steps
  • “Convenient exertion”

• Yoga
Is there bad exercise?

• Too much for your level of fitness

• “Pushing through” cardiovascular symptoms

• Some high intensity exercise?
Hypertension: Four steps to reduce your risk

▪ Step 1: Optimize your diet

▪ Step 2: Increase your activity

▪ Step 3: Address your stress

▪ Step 4: Manage your Habits
Stress and Hypertension

• No clear link with stress, but...

• Stress activates our fight or flight response
  • Increases adrenaline
  • Increases cardiac work
  • Increases Blood pressure

• In small doses, this may be helpful. In large doses it may not
Hypertension: Four steps to reduce your risk

▪ Step 1: Optimize your diet
▪ Step 2: Increase your activity
▪ Step 3: Address your stress
▪ Step 4: Manage your Habits
Habits
Questions?