

# **BLOOD PRESSURE BASICS**

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# OVERVIEW

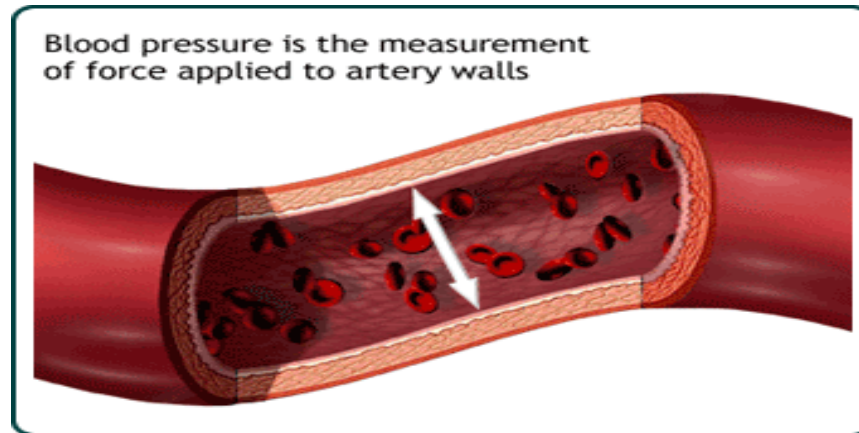
- **Introduction to High Blood Pressure/Hypertension**
- **Prediabetes, Diabetes, and Hypertension**
- **Role of a Lifestyle Coach in Hypertension Screening/Management**
- **How to Measure Blood Pressure**
- **Tips on Self-Monitoring of Blood Pressure**
- **Sodium and Hypertension**
- **Resources**



# INTRODUCTION

## What is blood pressure?

Blood pressure is the **force of blood** pushing against the walls of the arteries that carry blood from the heart to other parts of the body.



# INTRODUCTION

- Blood pressure normally **rises and falls** throughout the day.
- Can damage the heart and cause health problems if it **stays high** for a long time.
- High Blood Pressure (HBP) is also called **Hypertension** (HTN).



# INTRODUCTION

What are the risk factors for hypertension?

- **Advancing age** - blood vessels lose flexibility with age
- **Race** - common among African Americans, earlier age
- **Family history**
- **Being over-weight or obese**
- **Not being physically active**



# INTRODUCTION

What are the risk factors for hypertension?

- **Poor diet:** too much salt
- **Smoking and second-hand smoke**
- **Drinking too much alcohol**
- **Certain chronic conditions** – such as kidney disease, diabetes, and sleep apnea.



# INTRODUCTION

What are the signs and symptoms for hypertension?

- “silent killer”
- no warning signs or symptoms
- rarely headache and vomiting
- people usually do not know they have it
- only one way to know—have a doctor or other health professional measure it.

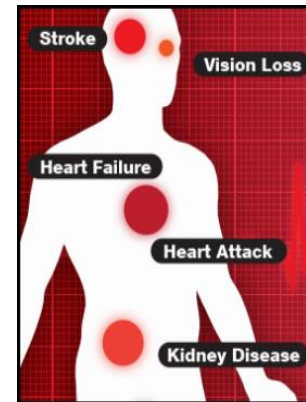


# INTRODUCTION

## What are the effects of hypertension?

Having HBP increases risk for heart disease and stroke, which are leading causes of death in the United States.

- **Damage to the heart and coronary arteries** – chest pain or angina, heart failure, and heart attack
- **Stroke**
- **Kidney damage**
- **Vision loss**
- **Erectile dysfunction**
- **Peripheral artery disease** - which is narrowing of the arteries in the legs.





# INTRODUCTION

## What do the blood pressure numbers mean?

- Blood pressure is measured using two numbers
- Top number: “**systolic blood pressure**” measures the pressure in blood vessels when the heart beats
- Bottom number: “**diastolic blood pressure**” measures the pressure in blood vessels when the heart rests between beats



***A systolic BP reading  $\geq 140$  mm Hg and/or a Diastolic BP reading of  $\geq 90$  mm Hg over repeated measurements is considered as High Blood Pressure***



# INTRODUCTION

## What do the blood pressure numbers mean?

- Blood pressure categories defined by the **Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)**:

Blood Pressure Classification	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)
Normal	<120	and <80
Prehypertension	120-139	or 80-89
Stage I Hypertension	140-159	or 90-99
Stage II Hypertension	>160	or >100

- **Goal of treatment (JNC 7 guidelines):**
  - BP <140/90 mmHg or BP <130/80 mmHg in patients with diabetes or chronic kidney disease.

# INTRODUCTION

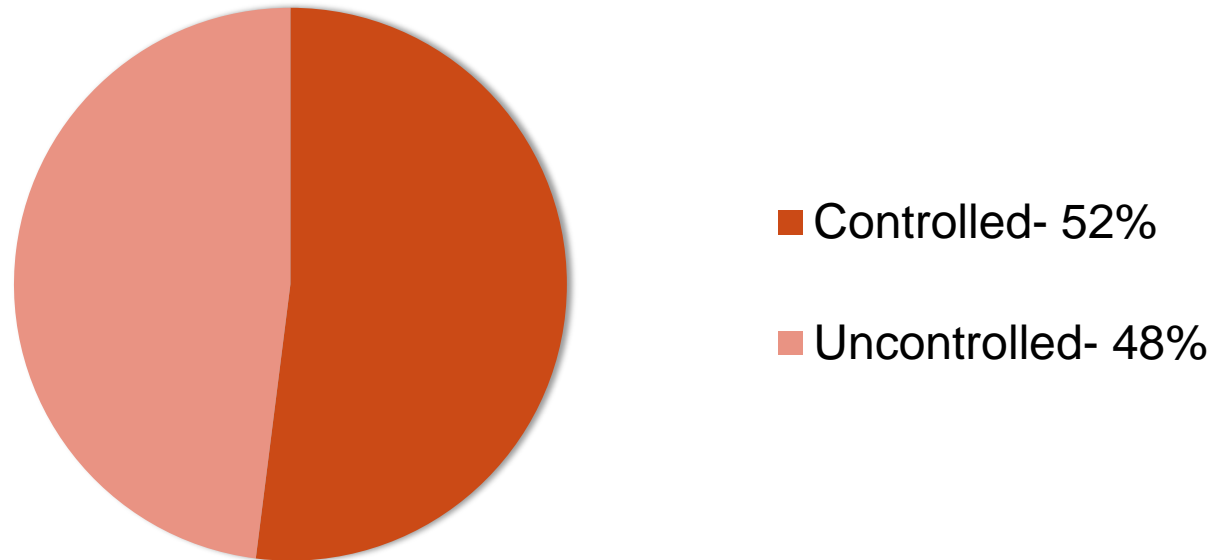


## What is the disease burden of hypertension?

- In NC, in 2012, **Cardiovascular Disease** was the leading cause of death.
- **Hypertension** is a major risk factor for Cardiovascular Disease.
- When your blood pressure is high:
  - You are **4 times** more likely to die from a stroke
  - You are **3 times** more likely to die from heart disease
- Hypertension causes or contributes to at least **30% of all deaths** in NC each year.

# INTRODUCTION

**70 million adults with hypertension in the US (29.1%)**



# INTRODUCTION

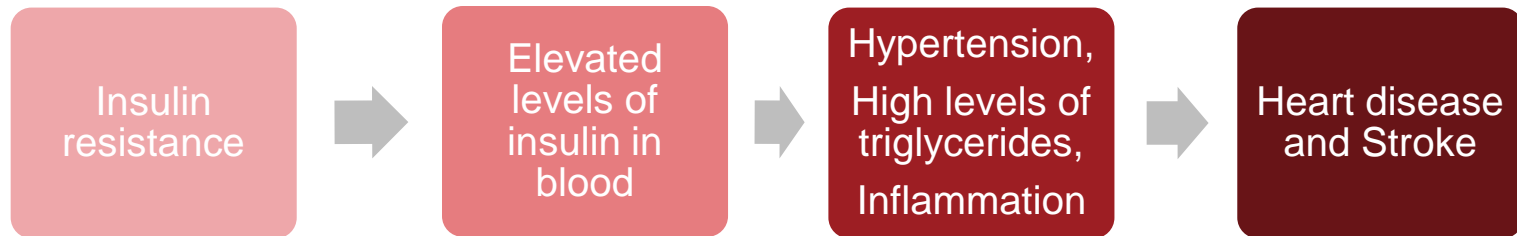
Of the **34 M** adults with uncontrolled hypertension:

- **13 M** are **unaware**
- **17 M** are **aware and treated**
- **5 M** are **aware and untreated**
- **26 M** have seen a doctor at least **twice** the past year



# PREDIABETES, DIABETES, AND HYPERTENSION

- Prediabetes especially linked to **insulin resistance** and **obesity** is in itself an **independent risk factor** for high blood pressure.



- **Cardiovascular disease** is the leading cause of diabetes-related death.
- When a person has **both hypertension and diabetes**, a common combination, their risk for cardiovascular disease **doubles**.

# **PREDIABETES, DIABETES, AND HYPERTENSION**

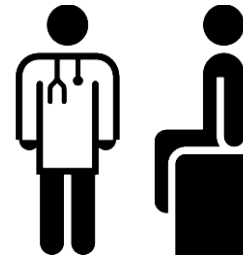
- **Identify and treat risk factors before they turn into disease.**
- **Lifestyle changes such as:**
  - losing weight
  - eating a healthy diet
  - being more physically active

**recommended by the DPP will help prevent/manage comorbidities such as hypertension.**



# ROLE OF A LIFESTYLE COACH IN HYPERTENSION SCREENING/MANAGEMENT

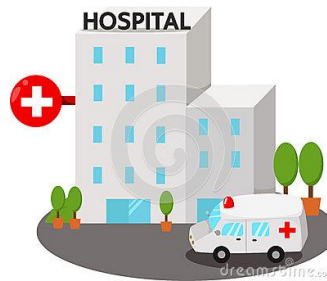
- If you have the available resources (time, expertise, equipment, organizational support etc.) measure BP of your participants
  - At **every visit** (or)
  - At least **once at baseline** and **once at the end** of the program (or)
  - Encourage participants with already diagnosed hypertension to **regularly self-monitor** their BP and,
  - Encourage every participant to **talk to their health care provider** of their risk of hypertension and **be mindful** of their BP numbers.





# HOW TO MEASURE BLOOD PRESSURE?

- BP measurement is **simple, quick, and painless**.
- Can be performed at a healthcare provider's office, hospital, pharmacy, or health fair.
- Unfortunately, BP measurement is performed **“incorrectly”** 60-100% of the time.
- High blood pressure is therefore **over and under diagnosed**.



# HOW TO MEASURE BLOOD PRESSURE?

How to measure blood pressure accurately?

- Keep these **3** things in mind:
  - Equipment
  - Preparation
  - Positioning



# HOW TO MEASURE BLOOD PRESSURE?

## Use the right equipment

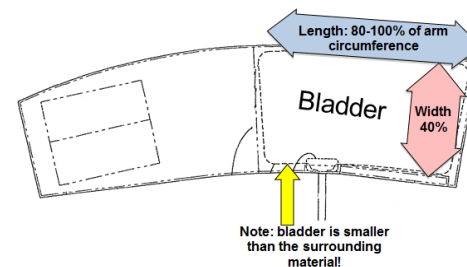
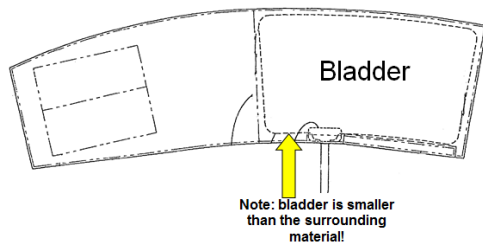
- If using an Aneroid manometer, make sure the instrument is **calibrated** every 6 months or as recommended by the manufacturer.
- For automated electronic devices – buy only **validated devices**. The instrument needs to be checked for accuracy as **recommended by the manufacturer**.
- Visit [www.dableeducational.org](http://www.dableeducational.org) for a list of validated electronic devices.



# HOW TO MEASURE BLOOD PRESSURE?

## Use the right equipment

- **Use the right cuff size.** Measure participant's upper arm size and use the appropriate cuff.
- **If you use a cuff that is too small, the resulting blood pressure reading will be too high. If you use a cuff that is too large, the reading will be too low.**
- **For adults:** The bladder of the cuff length must encircle at least **80%** of the upper arm circumference (100% in children). The width of the bladder must encircle at least **40%** of the arm circumference.



# HOW TO MEASURE BLOOD PRESSURE?

## Prepare the participant

- **The participant must:**
  - **rest** for at least 5 minutes prior to the first measurement
  - **not smoke, drink caffeinated beverages, or exercise** within the 30 minutes before measuring blood pressure
  - **go to the toilet** first (a full bladder can increase blood pressure slightly)

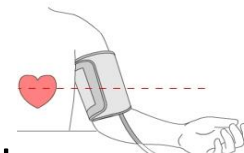


# HOW TO MEASURE BLOOD PRESSURE?

## Proper positioning

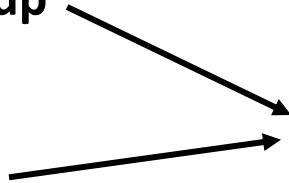
### The participant must:

- Sit with **back straight and supported**
- Place **feet flat on the floor** and **legs uncrossed**
- The **forearm should be supported** on a flat surface (such as a table) with the **upper arm at heart level** and slightly flexed
- Palm **facing up**
- Place the cuff **snugly** on **bare skin**
- Middle of the cuff should be placed **directly above** the eye of the elbow (approximately one inch above the elbow)
- Lower edge of the cuff should be at least **1"** (2-1/2 cm) above the bend in the elbow
- Be **still** and **not talk**

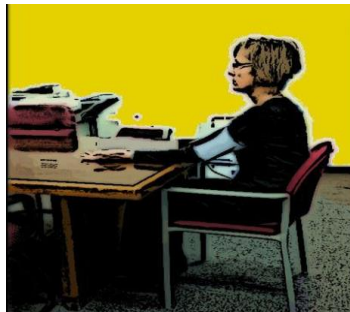


# HOW TO MEASURE BLOOD PRESSURE?

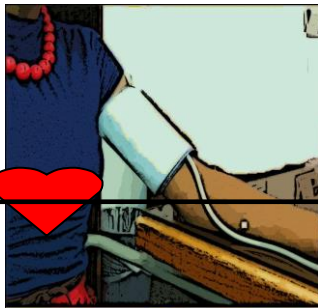
Palm facing up



Use proper sized cuff



Back well supported



Cuff must be at heart level



Feet flat on the floor



# TIPS ON SELF-MONITORING OF BLOOD PRESSURE

- **Self-measured blood pressure monitoring (SMBP)** refers to the regular measurement of a patient's own blood pressure (BP).
- Synonymous with **home blood pressure monitoring**.
- **Who should monitor?**
  - People starting treatment for HTN to determine effectiveness
  - People requiring closer monitoring - coronary heart disease, diabetes and/or kidney disease.
  - Pregnant women with hypertension
  - Elderly people





# TIPS ON SELF-MONITORING OF BLOOD PRESSURE

Choosing the right type of home BP monitor:

- *The American Heart Association recommends an automatic, cuff-style, bicep (upper-arm) monitor. Wrist and finger monitors are not recommended because they yield less reliable readings.*
- Ask your **healthcare professional** for advice in selecting and using a device to monitor your blood pressure at home.
- Purchase a **validated monitor** - list of validated monitors is available on [www.dableducational.org](http://www.dableducational.org).
- Have the device **checked** by your healthcare provider when it's new and once a year to make sure the readings are accurate.



# TIPS ON SELF-MONITORING OF BLOOD PRESSURE

## Choosing the right type of home BP monitor:

- Make sure the **cuff fits**.
- **Measure** around your upper arm and choose a monitor that comes with the correct size cuff.
- Adults with smaller or larger than average-sized arms may need special-sized cuffs.
- If you cannot find a cuff big enough for your upper arm, ask your doctor about fitting a cuff to your lower arm or wrist. These types of cuffs can be **difficult to use correctly**. Ask your doctor if they might be options for you and how they should be used.



# TIPS ON SELF-MONITORING OF BLOOD PRESSURE

## Measuring BP at home:

1. **Don't** smoke, drink caffeinated beverages, or exercise within the 30 minutes before measuring your blood pressure. Also, go to the toilet first.
2. Be **still**. Do not talk while taking BP readings.
3. Sit correctly, with your **back straight and supported** (on a dining chair, for example, rather than a sofa).
4. Place **feet flat** on the floor and do not cross your legs.
5. The arm should be **supported** on a flat surface (such as a table) with the upper arm **at heart level**, and palm facing up.
6. Make sure the middle of the cuff is placed **directly above** the eye of the elbow (approximately one inch above the elbow).
7. Place the cuff on **bare skin**. Check your monitor's instructions for an illustration or have your healthcare provider show you how. Follow directions on the BP device to start the reading.



# TIPS ON SELF-MONITORING OF BLOOD PRESSURE

## Measuring BP at home:

8. Take **multiple readings**. Each time you take your blood pressure, do it two or three times, one minute apart, and record all results.

9. Measure your BP twice daily, once in the morning (before breakfast and medications) and once at night, or **as recommended** by your healthcare provider.

It is also important to take the readings at the **same time each day**.

10. **Record** all of your readings, including the date and time taken. Share your blood pressure records with your healthcare team.



**A single high reading of blood pressure is not an immediate cause for alarm. However, if you get a high reading, take your blood pressure several more times and consult your healthcare professional to make sure you (or your monitor) don't have a problem.**

**When blood pressure reaches a systolic (top number) of 180 or higher OR diastolic (bottom number) of 110 or higher, emergency medical treatment is required.**

# SODIUM AND HYPERTENSION

- Consider using this with participants to discuss sodium reduction as a way to reduce or control blood pressure.
- Encourage participants to:
  - Read the nutrition label
  - Eat at home more often
  - Add flavor without adding sodium
  - Eat fresh foods and vegetables
  - Rinse canned vegetables
  - Ask about salt content while dining out
  - Check their condiments



# SODIUM AND HYPERTENSION



## Control your sodium

To reduce your risk of chronic disease limit your sodium intake to the following:

**1500 mg/d limit**

- Persons 51 and older
- African Americans
- Persons with hypertension
- Persons with diabetes
- Persons with chronic kidney disease
- Children

**2300 mg/d limit for**

- Any other adult

We get much of our sodium from processed foods.

INGREDIENTS: WHEAT BRAN, ROLLED OATS, SUGAR, RAISINS, CORN, DATES, BARLEY FLAKES, PEANUT PARTIALLY HYDROGENATED SOYBEAN AND/OR COTTONSEED OIL, GLYCERIN, BARLEY MALT EXTRACT, SALT, HONEY, RICE, INULSIN, NONFAT MILK, HIGH FRUCTOSE CORN SYRUP, CORN SYRUP, VITAMINS AND MINERALS: SODIUM ASCORBATE AND ASCORBIC ACID, FERRIC OXYPHOSPHATE, NIACINAMIDE, ZINC OXIDE, VITAMIN A PALMITATE, PYRIDOXINE HYDROCHLORIDE, INOSITOL, THIAMIN HYDROCHLORIDE, FOLIC ACID, VITAMIN D, VITAMIN B12.

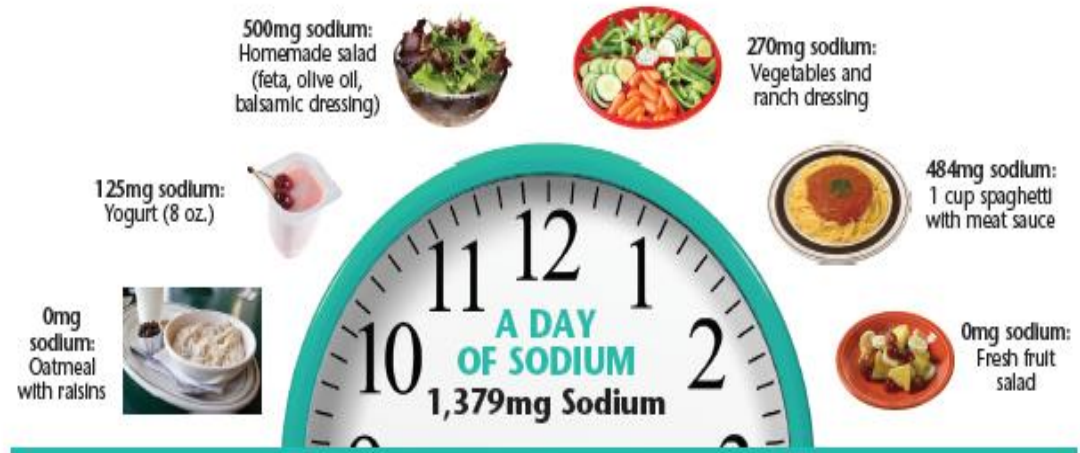
The ingredient list on a package can help us decide if the food is processed. The longer the ingredient list, the more processing that has occurred.



**120/80 mm Hg.** Keep YOUR blood pressure under control to reduce YOUR risk.



# SODIUM AND HYPERTENSION



# SODIUM AND HYPERTENSION

Be a label reader to make the best choice



Canned Spaghetti and Meatballs 1 cup: 925mg



Frozen Spaghetti and Meatballs 1 cup: 568 mg



Spaghetti and Meat Sauce made from canned meat sauce 1 cup: 484 mg

## Nutrition Facts

Serving Size 1 cup (228g)  
Servings Per Container 2

Amount Per Serving	
<b>Calories</b> 250	Calories from Fat 110
	<b>% Daily Value*</b>
<b>Total Fat</b> 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
<b>Cholesterol</b> 30mg	10%
<b>Sodium</b> 470mg	10%
<b>Total Carbohydrate</b> 31g	10%
Dietary Fiber 0g	0%
Sugars 0g	
<b>Protein</b> 5g	

Look for sodium on the food label to make the best choice.



To keep your sodium intake low:

- Prepare YOUR meals.
- Enjoy MORE fruits and vegetables.
- Limit processed foods.



# SODIUM AND HYPERTENSION

**THE EFFECTS OF EXCESSIVE SODIUM ON YOUR Health & Appearance**

**9 out of 10** Americans consume too much sodium.

**WHERE DOES IT COME FROM?**

- 65%** supermarkets, convenience stores
- 25%** restaurants
- 10%** other sources

**3,400 milligrams** the amount of sodium the average American consumes in a day

**1,500 milligrams or less** recommended daily allowance of sodium

**HIGH BLOOD PRESSURE**

Is a leading risk factor for death in **WOMEN** in the United States, contributing to nearly **200,000** female deaths each year.

{ That's more than five times the 42,000 annual deaths from breast cancer. }

**77.9 million** American **ADULTS** have **high blood pressure**.

**KIDS** who have a high-sodium diet are **twice as likely to develop high blood pressure** as kids who have low-sodium diets

**Your HEALTH**

Excess levels of sodium/salt may put you at **RISK** for:

- STROKE
- HEART FAILURE
- OSTEOPOROSIS
- STOMACH CANCER
- KIDNEY DISEASE
- KIDNEY STONES
- ENLARGED HEART MUSCLE
- HEADACHES

**Your APPEARANCE**

Excess levels of sodium/salt may cause:

**INCREASED WATER RETENTION, LEADING TO:**

- Puffiness
- Bloating
- Weight gain

**heart.org/sodium**

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# RESOURCES FROM AHA

## Consequences of High Blood Pressure

American Heart Association | American Stroke Association

High blood pressure (HBP) can injure or kill you. When high blood pressure is uncontrolled, it can lead to:

- STROKE**  
HBP damages arteries that burst or clog more easily.  
77% of people who have a first stroke have HBP.  
HBP increases your stroke risk by four to six times.
- VISION LOSS**  
HBP can strain the vessels in the eyes.
- HEART ATTACK**  
HBP damages arteries that can become blocked.  
69% of people who have a first heart attack have HBP.
- HEART FAILURE**  
HBP can cause the heart to enlarge and fail to supply blood to the body.  
75% of people with congestive heart failure have HBP.
- KIDNEY DISEASE/FAILURE**  
HBP can cause arteries around the kidneys to narrow, weaken or harden so the kidneys lose their ability to filter blood.  
HBP is the second-leading cause of kidney failure.
- ERECTILE DYSFUNCTION**  
HBP leads to erectile dysfunction because of reduced blood flow throughout the body.

These conditions can happen over several years, but they can be prevented by controlling blood pressure.

### Did You Know?

- At 50, total life expectancy is five years longer for people with normal blood pressure.
- The estimated cost of HBP in 2010 (the most-recent statistics available) is \$46.4 billion.

For more information  
[heart.org/bloodpressure](http://heart.org/bloodpressure)

**Check.  
Change.  
Control.™**

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# RESOURCES FROM AHA

## 5 Simple Steps to Control Your Blood Pressure



High blood pressure can be fatal, so it's important to know your blood pressure reading and what you can do to keep things under control. **The good news is, we have an easy new way to help.**

**JUST FOLLOW THESE 5 SIMPLE STEPS** recommended by blood pressure experts from the American Heart Association, the American College of Cardiology and the U.S. Centers for Disease Control and Prevention. [For more information](#) ▶

1

### Know Your Numbers.

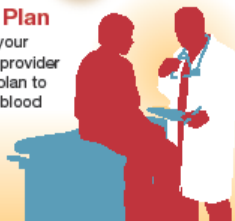
Most people diagnosed with high blood pressure want to stay below 140/90, but your healthcare provider can tell you your personal target blood pressure.



2

### Make a Plan

Work with your healthcare provider to make a plan to lower your blood pressure.



3

### Make a Few Lifestyle Changes.

In many cases this will be your doctor's first recommendation, likely in one of these areas:



**Lose weight.** Strive for a body mass index between 18 and 25.

[For more information](#) ▶



**Eat healthier.** Eat fruit, veggies, low-fat dairy and lean protein, but lower your saturated and total fat.

[For more information](#) ▶



**Reduce sodium.** Stay under 1,500 mg a day, which is associated with the greatest reduction in blood pressure.

[For more information](#) ▶



**Get active.** Shoot for 40 minutes, 3-4 times a week.

[For more information](#) ▶



**Limit alcohol.** Drink no more than 1-2 drinks a day. (1 for most women, 2 for most men)

[For more information](#) ▶

4

### Keep Checking Your Blood Pressure at Home.

Whether you're at home, at a store or anywhere else where you can check your blood pressure, make a habit of checking it regularly, tracking your readings and sharing them with your healthcare provider.



5

### Take Medication as Prescribed

Take medications exactly the way your healthcare provider prescribes them.



For more help lowering your blood pressure, visit [Heart.org/hbp](http://Heart.org/hbp)

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# RESOURCES FROM AHA

## The ABCD's of Blood Pressure Measurement



# RESOURCES FROM AHA

- **Heart360:** is an online tool which helps you track and manage your heart health and provides helpful advice and information
- **Heart Attack Risk Calculator:** Discover your 10-year risk of heart attack or dying from coronary heart disease... and what you can do about it.
- **My Life Check: Live Better With Life's Simple 7.** In just a few minutes with My Life Check, you can learn the state of your heart and what you can do to live a better life.
- [HBP Health Risk Calculator.](#)



# **DIABETES PREVENTION UPDATES**

**Sharon Davis**

**Diabetes Prevention Specialist**

# REMEMBER YOUR RESOURCES

- CDC website - National Diabetes Prevention Program FAQ section (<http://www.cdc.gov/diabetes/prevention/recognition/faqs.htm>)
- National Diabetes Prevention Program Submitting Evaluation Data to DPRP 2015 DPRP Standard PowerPoint ([http://www.cdc.gov/diabetes/prevention/pdf/dprp\\_standardsslides\\_012015.pdf](http://www.cdc.gov/diabetes/prevention/pdf/dprp_standardsslides_012015.pdf))
- Diabetes Prevention Recognition Program (DPRP) email: [dprpAsk@cdc.gov](mailto:dprpAsk@cdc.gov)
  - Specific DPP questions
  - Data upload questions
  - All things Diabetes Prevention Program (DPP)
- State Diabetes Prevention Specialist - Sharon Davis ([sharon.r.davis@dhhs.nc.gov](mailto:sharon.r.davis@dhhs.nc.gov))



# TIPS FOR DIABETES PREVENTION PROGRAMS

## Work Smart

- **Develop a referral process with 1 - 2 medical providers to establish steady referrals to your program.**
- **Contact faith-based organizations for that may be interested in implementing DPP with their congregations**
  - Sustainability
  - Community partnership
  - Divided Responsibility

**A Successful DPP = Community and Clinical Engagement**

# MARKETING YOUR DIABETES PREVENTION PROGRAM

- Name your DPP whatever you'd like!
- Try to make DPP more appealing by considering how you deliver your message.
  - Break it down visually
  - Advertise 16 week commitment vs. 1 Year commitment

