

## High Blood Pressure Redefined

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## Disclosure

I have had no financial relationship over the past 12 months with any commercial sponsor with a vested interest in this presentation

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## Pharmacy Technician Objectives

1. Select non-pharmacologic treatment options for patients with high blood pressure
2. Identify common medications used to treat high blood pressure

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## Pharmacist Objectives

1. Identify categories of hypertension based on blood pressure readings
2. Evaluate patients to determine when pharmacologic blood pressure management is necessary
3. Describe appropriate medication management of hypertension

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## Background

Focus of presentation will be:  
"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"

This report is a result of the American College of Cardiology (ACC) and American Heart Association (AHA) task force on clinical practice guidelines and will be referred to as the "2017 ACC/AHA" guideline.

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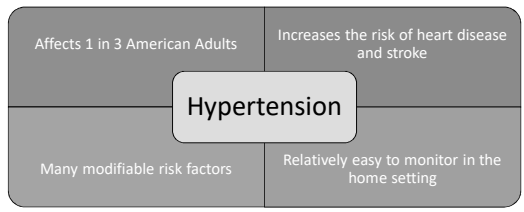
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## WHY is Blood Pressure so Important?



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### Hypertension Pharmacotherapy

<b>Thiazide Diuretics</b> <ul style="list-style-type: none"> <li>• Chlorthalidone</li> <li>• Hydrochlorothiazide</li> <li>• Indapamide</li> <li>• Metolazone</li> </ul>	<b>Calcium Channel Blockers (CCBs)</b> <ul style="list-style-type: none"> <li>• Amlodipine</li> <li>• Felodipine</li> <li>• Nicardipine</li> <li>• Nifedipine</li> </ul>	<b>Angiotensin Converting Enzyme Inhibitors (ACEIs)</b> <ul style="list-style-type: none"> <li>• Benazepril</li> <li>• Captopril</li> <li>• Enalapril</li> <li>• Fosinopril</li> <li>• Lisinopril</li> <li>• Ramipril</li> </ul>	<b>Angiotensin II Receptor Blockers (ARBs)</b> <ul style="list-style-type: none"> <li>• Candesartan</li> <li>• Irbesartan</li> <li>• Losartan</li> <li>• Olmesartan</li> <li>• Valsartan</li> </ul>	<b>Beta-Blockers</b> <ul style="list-style-type: none"> <li>• Atenolol</li> <li>• Carvedilol</li> <li>• Metoprolol</li> <li>• Nadolol</li> <li>• Nebivolol</li> <li>• Propranolol</li> </ul>
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### Etiology and Pathophysiology

**Essential or Primary Hypertension (>90%)**

- Unknown pathophysiologic etiology
- Environmental factors (obesity, sedentary lifestyle, excessive salt intake) and genetic factors

**Secondary Hypertension (<10%)**

- Chronic kidney disease (CKD)
- Adrenal disease
- Sleep apnea
- Drug induced (caffeine, nicotine, alcohol, NSAIDs, amphetamines, illicit drugs, etc...)

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### JNC (Joint National Committee)

**JNC7 (2003)**

Non-systematic literature reviews.  
Recommendations based on consensus of the committee members.

**JNC8 (2014)**

Systematic review of clinical trial evidence (evidence based).  
Recommendations for treatment and BP goals divided into 4 categories:

Age

CKD

Diabetes (DM)

Black/ Nonblack

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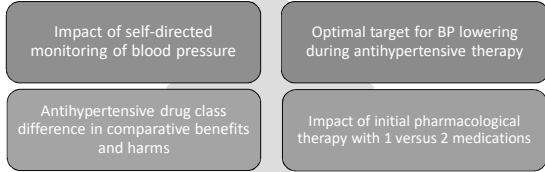
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### 2017 ACC/AHA Guideline

> Extensive evidence review  
> Commissioned an independent evidence review committee (ERC) to prepare a SEPARATE report addressing 4 critical issues (abbreviated):




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### 2014 JNC 8 Treatment Principles

**Initiate drug therapy when SBP \*OR\* DBP (mmHg) is ABOVE target goal:**

- Age 18-59 years of age WITHOUT DM or CKD
  - BP < 140/90 mmHg
- Patients ≥ 60 years of age WITHOUT DM or CKD
  - BP < 150/90 mmHg
- Patients WITH DM and/or CKD (All ages)
  - BP < 140/90 mmHg

**\*\*If treatment results in a lower SYSTOLIC BP (<140) and is well tolerated it does not need to be adjusted.\*\***

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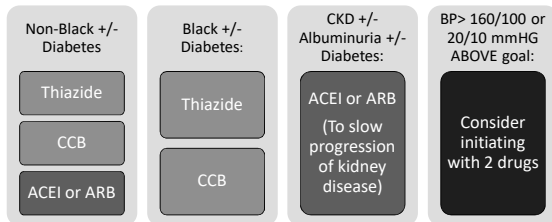
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### 2014 JNC 8 Initial Pharmacotherapy




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## 2017 ACC/AHA Guideline Summary

<b>Normal:</b> < 120/80	<ul style="list-style-type: none"> <li>Maintain healthy lifestyle habits</li> </ul>
<b>Elevated:</b> 120 - 129 / < 80	<ul style="list-style-type: none"> <li>Encourage lifestyle changes</li> <li>Check for medications that can increase BP</li> </ul>
<b>Stage 1 hypertension:</b> 130 - 139 / 80 - 89	<ul style="list-style-type: none"> <li>Lifestyle changes alone if ACC/AHA 10 year CV risk &lt;10%</li> <li>Pharmacotherapy for patients with CVD, DM, CKD, or 10 year CVD risk ≥10%</li> </ul>
<b>Stage 2 hypertension:</b> ≥ 140/90	<ul style="list-style-type: none"> <li>Reinforce lifestyle changes</li> <li>Pharmacotherapy</li> </ul>

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## 2017 ACC/AHA Pharmacotherapy

- First Line Agents: Thiazides, CCB, ACEI or ARBs
- Initiate with 2 agents if SBP > 20 or DBP > 10 above goal.
- Concomitant disease state recommendations:

Stable Ischemic Heart Disease	HFrEF	HFpEF	Diabetes	Black w/o HF or CKD	CKD	Stroke or TIA	Atrial Fibrillation
ACEI or ARB	CCB	Diuretic	Thiazide	Thiazide	ACEI or ARB	Thiazide	ARB
Beta Blocker	Avoid non-DHP CCBs	ACEI or ARB*	ACEI or ARB	ACEI or ARB*	ACEI or ARB	ACEI or ARB	
		Beta Blocker*	CCB	CCB*			

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## Summary

- JNC 8 definition of Hypertension: BP greater than 140/90 mmHg.
  - American Academy of Family Physicians (AAFP) still endorses these guidelines.
- 2017 ACC/AHA definition of Hypertension: BP greater than 130/90 mmHg regardless of age.
  - Extensive literature and controlled trial evidence review
  - Endorsed by 11 organizations.
  - Lower target = lower CV risk. Uses ACC/AHA risk estimator to evaluate CV risk.
- Lifestyle modifications are highly encouraged in both guidelines and may avoid need for medication.
- Both recommend initial medication treatment with pharmacotherapy shown to improve outcomes:
  - Thiazides
  - ACEI or ARBs
  - CCBs.

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## ASSESSMENT QUESTIONS

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### Technician Question 1

Which of the following are lifestyle modifications recommended to lower blood pressure according to the new ACC/AHA guidelines? Select all that apply.

1. **Weight loss**
2. **Decrease physical activity**
3. **Decrease sodium in diet**
4. **Reduce alcohol consumption**
5. **Adopt a heart healthy diet such as the DASH diet**

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### Technician Question 1

Which of the following are lifestyle modifications recommended to lower blood pressure according to the new ACC/AHA guidelines? Select all that apply.

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### Technician Question 2

Which of the following medications is classified as a calcium channel blocker (CCB)?

- 1. Lisinopril
- 2. Amlodipine
- 3. Hydrochlorothiazide
- 4. Metoprolol

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### Technician Question 2

Which of the following medications is classified as a calcium channel blocker (CCB)?

- 1. Lisinopril
- 2. **Amlodipine**
- 3. Hydrochlorothiazide
- 4. Metoprolol

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### Pharmacist Question 1

The new 2017 ACC/AHA guidelines define a **normal** blood pressure (mmHg) as which of the following? Select all that apply.

- 1. 120/80 mmHg
- 2. 115/75 mmHg
- 3. 125/75 mmHg
- 4. 130/80 mmHg

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### Pharmacist Question 1

The new 2017 ACC/AHA guidelines define a **normal** blood pressure (mmHg) as which of the following? Select all that apply.

- 1. 120/80 mmHg
- 2. **115/75 mmHg**
- 3. 125/75 mmHg
- 4. 130/80 mmHg

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### Pharmacist Question 2

In which of the following stages of hypertension are lifestyle changes **INSUFFICIENT** as monotherapy?

- 1. Normal: < 120/80 mmHg
- 2. Elevated: 120-129/<80 mmHg
- 3. Stage 1 hypertension: 130-139/80-89 mmHg
- 4. Stage 2 hypertension: > or = 140/90 mmHg

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### Pharmacist Question 2

In which of the following stages of hypertension are lifestyle changes **INSUFFICIENT** as monotherapy?

- 1. Normal: < 120/80 mmHg
- 2. Elevated: 120-129/<80 mmHg
- 3. Stage 1 hypertension: 130-139/80-89 mmHg
- 4. **Stage 2 hypertension: > or = 140/90 mmHg**

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### Pharmacist Question 3

Which of the following medications should NOT be used as FIRST LINE agents to treat high blood pressure? Select all that apply.

- 1. Thiazide diuretics
- 2. Calcium Channel blockers
- 3. Angiotensin Converting Enzyme Inhibitors (ACE inhibitors)
- 4. Beta blockers
- 5. Angiotensin Receptor Blockers (ARBs)

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### Pharmacist Question 3

Which of the following medications should NOT be used as FIRST LINE agents to treat high blood pressure? Select all that apply.

- 1. Thiazide diuretics
- 2. Calcium Channel blockers
- 3. Angiotensin Converting Enzyme Inhibitors (ACE inhibitors)
- 4. **Beta blockers**
- 5. Angiotensin Receptor Blockers (ARBs)

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### References

1-Whelton PK, Carey RM, Aronow WS, Casey DE Jr, Collins KJ, Dennison Himmelfarb C, DePalma SM, Gidding S, Jamerson KA, Jones DW, MacLaughlin EF, Muntner P, Ovblogele B, Smith SC Jr, Spencer CC, Stafford RS, Taler SJ, Thomas RJ, Williams KA Sr, Williamson JD, Wright JT Jr. 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. *Hypertension*. 2017.

2-Article, Re-Evaluate Blood Pressure Goals With New Hypertension Guidelines, Pharmacist's Letter, January 2018

3-Clinical Resource, *Treatment of Hypertension*. Pharmacist's Letter/Prescriber's Letter. January 2018

4-2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC8). *JAMA*. 2014;311:507-520

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## Questions?

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