

Too High or Too Low? A Pharmacist's Approach to the Hypertension Guidelines



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Conflicts of Interest

I have no conflicts of interest to disclose in relation to this presentation

Learning Objectives



Discuss the burden of HTN & preventive measures

Review key principles of drug management per ACC/AHA 2017 guidelines

Abbreviations

Abbreviation	Meaning
SBP/DBP	Systolic/Diastolic blood pressure
LVH	Left ventricular hypertrophy
Dx	Disease
Na	Sodium
DASH	Dietary Approaches to Stop Hypertension
Yrs	Years
CC	Chief Complaint
Ins	Insurance
DM	Diabetes
IHD/CHD	Ischemic/Coronary heart disease

Abbreviations Continued

Abbreviation	Meaning
A&F	Amlodipine and Felodipine
D/t	Due to
B/l	Bilateral
Tachy	Tachycardia
DDI	Drug-drug interactions
BB	Beta blocker

Importance

#1 modifiable risk factor for CV disease

#2 modifiable risk factor, after smoking, for all cause mortality

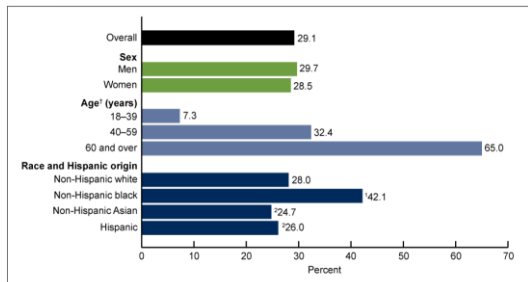
Association with 50% of CV deaths

Association with 25% of CV events

http://www.medscape.org/viewarticle/899338?toc=ANM_CEE201712228_mscpe&_af_gphm=24882A2&mpd=15164048&f=1. Accessed Dec 28 2017.

Hypertension Incidence

Figure 1. Age-specific and age-adjusted prevalence of hypertension among adults aged 18 and over: United States, 2011–2012



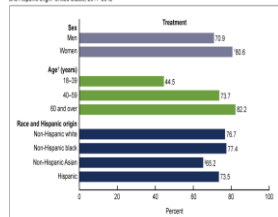
[†] Significant linear trend. [‡] Significantly different from non-Hispanic white. [§] Significantly different from non-Hispanic black. NOTE: Estimates were age-adjusted by the direct method to the Census 2000 population, using the age groups 18–39, 40–59, and 60 and over. SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2011–2012. <https://www.cdc.gov/nchs/products/tables/nhanes/nhanes13.htm>. Accessed Dec 2017.



Clinical Status

TREATMENT

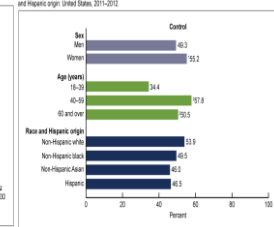
Figure 4. Age-specific and age-adjusted treatment of hypertension among adults with hypertension by sex, age, and race and Hispanic origin: United States, 2011–2012



[†] Significant linear trend. [‡] Significantly different from men. [§] Significantly different from non-Hispanic white and non-Hispanic black. NOTE: Age-adjusted prevalence of treated hypertension was calculated using the substitution of persons with hypertension in 2011–2012. SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2011–2012. <https://www.cdc.gov/nchs/products/tables/nhanes/nhanes13.htm>. Accessed Dec 2017.

CONTROL

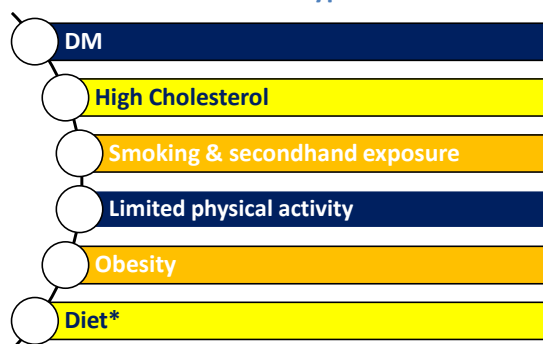
Figure 5. Age-specific and age-adjusted control of hypertension among adults with hypertension by sex, age, and race and Hispanic origin: United States, 2011–2012



[†] Significant linear trend. [‡] Significantly different from men. [§] Significantly different from non-Hispanic white. NOTE: Age-adjusted prevalence of controlled hypertension was calculated using the substitution of persons with hypertension in 2011–2012. SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2011–2012. <https://www.cdc.gov/nchs/products/tables/nhanes/nhanes13.htm>. Accessed Dec 2017.



How Can We Prevent Hypertension?



Whelton PK, et al. 2017 High Blood Pressure Clinical Practice Guidelines. [uptodate.com](https://www.uptodate.com). Accessed Jan 2018.



SALT...did you know?

- 80% hidden: added by food industry...think “processed”
- Independent, direct impact: LVH, CVA, kidney dx
- INTER-SALT Study: 52 centers, BP & 24h urine Na collection, >10,000 patients: average 6-12g/day intake
 - ↑ of 6g in Na daily over 30 years = ↑ **9mmHg SBP**
- **5g/day salt = 17% CV risk, 23% stroke over 3.5-19 years**
- Current intake across countries: **9-12g/day**

F. J. He et al. Nutrition in Cardiovascular Disease: Salt in Hypertension and Heart Failure. Feb 2011. https://www.atsjg.org/atsjg/abstracts_abstracts_guidelines.pdf. Accessed Dec 2017.



How Impactful Are Lifestyle Modifications?

Intervention	Reduction in BP (SBP/DBP mmHG)
DASH Diet	11/3
Weight loss per 1kg	1
Na restriction (2.3g/day); at least 1g/day reduction	5/6
Aerobic physical activity (90-150 minutes/week)	5/8



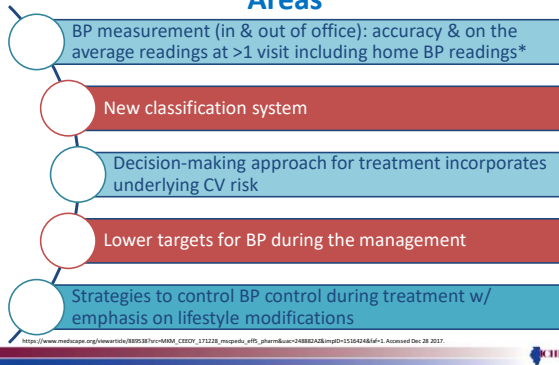
Obtaining Results

- Realistic, “too easy” lifestyle goals
- Weight loss ↓ of 5% in 3 months w/ sustained ↓
- Use your resources: smart phone weight loss apps, bariatric surgery

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Updated Guidelines: A Focus on 5 Areas



JS is a 39 y/o AAF who comes to your clinic. Her BP is 150/90. You are surprised & request home logging x 1 week. The average is 145/85. How is her BP categorized according to the 2017 ACC/AHA Guidelines?

- Normal
- Elevated
- Stage 1 HTN
- Stage 2 HTN
- Home readings are usually incorrect. Recheck BP in clinic to determine stage of HTN

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JS reports that her diet is low in sodium. After reviewing her diet, you find her average intake is 5g/day. Would her BP improve with additional salt restriction?

- Yes
- No

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Principle #1: BP Classification

Category	SBP	DBP	JNC 7 Category
Normal	<120	AND <80	Normal
Elevated	120-129	AND <80	Pre-HTN
HTN Stage 1	130-139	OR 80-89	
HTN Stage 2	≥140	OR ≥90	Stage 1 (140-159 OR 90-99)

Interdisciplinary Recommendations

- American Academy of Family Practice Physicians: no endorsement
- KDIGO: no formal update, nephrologists adopt key points, exercise caution
- American Diabetes Association 2018 Standards of Care: selective acceptance, universal safe BP goal <140/90

<https://www.aafp.org/afp/2018/07/16/p072.html>, Accessed Aug 31 2018
https://www.kidney.org/DocID/1213/Content/Content_105_146611, Accessed Aug 31 2018
<https://www.researchprotocols.org/2017/1/e12577.html>, Accessed Aug 31 2018

Patient Case CH

54 y/o
AAM

CC: head aches, blurred vision, SOB

PMH: HTN, DM, OA, MDD, GAD

Social: (-) smoke, (+)6 drinks/ day

County Care ICP Ins

ROS & Vitals

- Ht: 5'6" & Wt: 180 kg
- BP: 170/96 mmHg & P: 75

Lab Values & Information:

- CMP & CBC trends = WNL
- LDL: 120, HDL: 35, TC: 160
- TG: 220, A1c: 10.1%
- ASCVD risk-10-yr: 16.2%
- ECHO (EF: 55-65%)

CMP: Comprehensive metabolic panel
WNL: within normal limits
HT: height Wt: Weight Hx: History
CHA: cardiovascular history

Home Medications

Medication	Dose & Frequency
Aspirin	81mg PO daily
Multivitamin	PO daily
Clonazepam	1mg PO BID PRN
Citalopram	20mg PO daily
Acetaminophen	500mg PO Q6H
Ibuprofen	400mg PO Q8H
Glipizide	5mg PO BIDAC

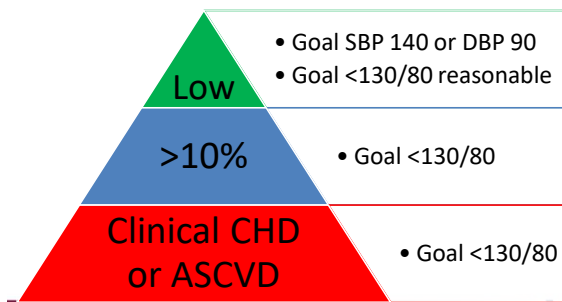
Let's assess CH's BP control. What is his BP goal according to the new guidelines and why?

- <140/90mmHg: DM
- <140/90mmHg: primary prevention
- <130/80mmHg: clinical ASCVD >10%
- <130/80mmHg: DM
- Both C and D


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Principle #2: BP Goals According to Risk

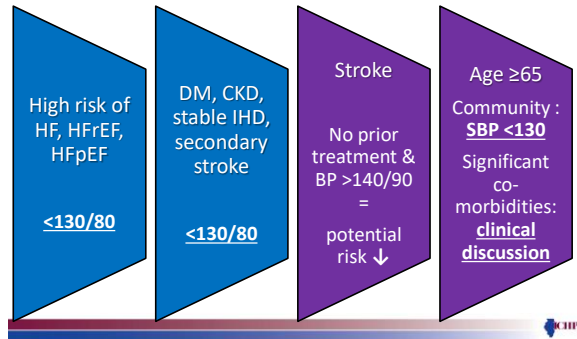


Principle #2: BP Goals According to Risk

Clinical CVD 
 Clinical ASCVD

Term	Definition
Clinical CVD	Heart failure, stroke, coronary heart disease
Clinical ASCVD	Ischemic heart disease, non fatal stroke & MI, TIA from ischemic disease, PAD, arterial revascularization

Principle #3: BP Goals According to Disease State



CH has uncontrolled HTN. What next steps are necessary?

- Advise CH to lose weight, return to clinic in 3 months
- Counsel CH on gradual weight loss & DASH diet & start chlorthalidone 50mg daily
- Counsel CH on gradual weight loss & DASH diet, start amlodipine 5mg daily & chlorthalidone 25mg daily

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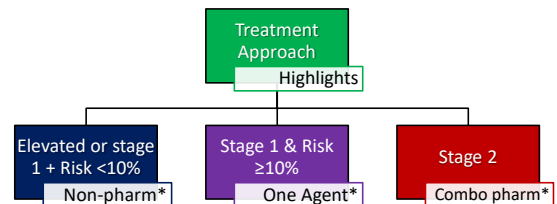
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CMP: Comprehensive metabolic panel
 WNL: within normal limits
 Ht: height, Wt: Weight, Hx: history
 OA: osteoarthritis

CH has uncontrolled HTN. What next steps are necessary?

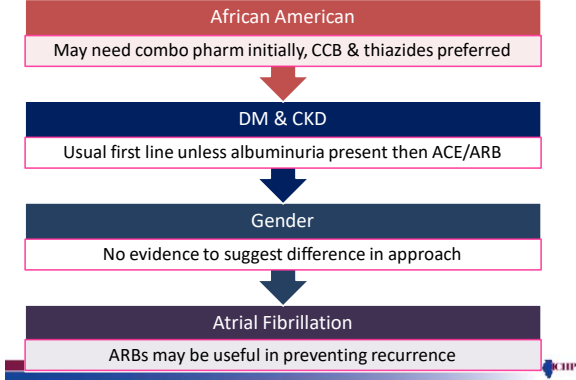
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Principle #4: Treatment Approach

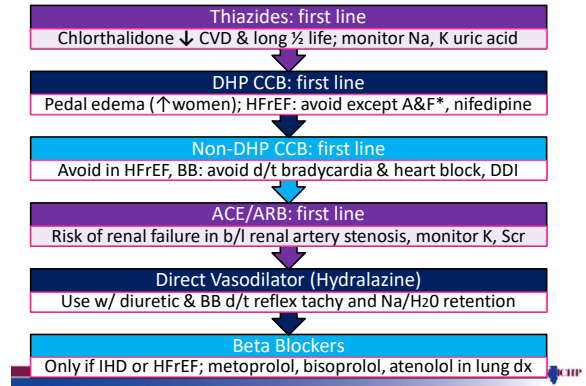


- ❖ Combo pharm: 2 agents to start simultaneously particularly when BP is $\geq 20/10$ mmHg above goal
- ❖ One agent: assess co morbidities to optimize choice (albuminuria, HFrEF, ischemic heart disease)
- ❖ Chlorthalidone should always be initiated as first agent unless inappropriate OR compelling clinical scenario exists

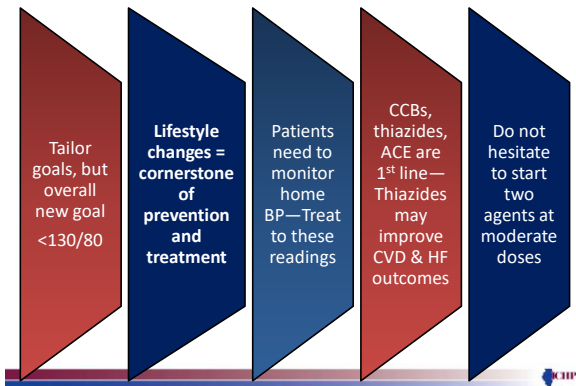
Population Pearls: Most Common Groups



Drug Class Pearls: Most Common Agents



Summary of Recommendations



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