Adult and Elderly Hypertension: A M.A.P. for Improving Blood Pressure Control

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At the AMA, Dr. Rakotz oversees efforts to develop and implement national quality improvement initiatives aimed at improving blood pressure control and preventing type 2 diabetes. He is the AMA's clinical lead of Target: BP, a nationwide, multi-year collaboration with the American Heart Association (AHA) that is designed to reduce the number of American adults living with uncontrolled hypertension. A practicing family physician for more than 20 years, Dr. Rakotz recently served as the Director of Population Health and Virtual Medicine at Northwestern Medical Group in Chicago, Illinois. In 2014, his office was one of 30 sites in the United States to earn designation as a Million Hearts® Hypertension Control Champion. He fulfills his passion for educating medical students and residents, and for promoting innovative health care technology by serving as Assistant Clinical Professor of Family and Community Medicine at the Feinberg School of Medicine at Northwestern University, Chicago, Illinois, and as a fellow for the Office of the National Coordinator for Health Information Technology (ONC).

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Learning Objectives

1. Consider current management of hypertension in adult patients, as compared to current JNC 8 guidelines and AAFP/USPSTF screening recommendations.
2. Counsel patients on how to make healthy behavior changes to reduce their risk for developing hypertension or prehypertension.
3. Address barriers to care among patients in your practice, especially elderly and minority patients, and identify or develop tools to help address hypertension.
4. Prepare treatment regimens of antihypertensive medications and tools with an emphasis on patient adherence.
Associated Session(s)

- Adult and Elderly Hypertension: Ask the Expert

Agenda

1. Describe current epidemiology of hypertension (HTN) in U.S. adults and barriers to care for patients in your practice
2. Define current AAFP/USPSTF recommendations for HTN screening in adult patients and confirmation of diagnosis
3. Recognize variations in practice compared to JNC 8/AAFP-ACP recommendations for the management of HTN
4. Apply the M.A.P. framework for improving blood pressure control in your practice
Clinical Case

- Angela is a 62 year old woman (with a very stressful job) who returns for follow up for elevated BP
- No prior diagnosis of hypertension and never treated
- Rising office BPs over the last 3 years, now 156/94, 158/92, 159/96 last 3 visits this year
- Cancer screening up to date
- No labs last 3 years

Would you make the diagnosis of hypertension now?
Initiate therapy?

AES POLL QUESTION

When you suspect a new diagnosis of HTN in one of your patients, how often do you use either 24-hour ambulatory BP monitoring (ABPM) or home blood pressure monitoring (HBPM) to confirm the diagnosis?

A. Never
B. Rarely
C. Frequently
D. Always

Recommendations for screening and diagnosis

JNC-7 Definition of Hypertension

The average of two or more properly measured, seated BP readings > 140/90 mm Hg on each of two or more office visits

Screening for Hypertension in Adults

The problem with office BP measurement

“The disadvantages of diagnosing hypertension solely in the office setting include measurement errors; the limited number of measurements that can be made conveniently, and the confounding risk for isolated clinic hypertension”
The problem with office BP measurement

15% to 30% of the population believed to have hypertension may have lower blood pressure outside of the office setting = white-coat hypertension

ABPM may be used to confirm a diagnosis of HTN

• USPSTF found convincing evidence that 24-hour ambulatory blood pressure monitoring (ABPM) is the best method for diagnosing HTN
• Significant discordance between office diagnosis of HTN and 12- and 24-hour average BPs using ABPM
• Elevated ambulatory systolic BP was consistently and significantly associated with increased risk of stroke and cardiovascular events, independent of office BP

Home BP monitoring (HBPM) may be used to confirm a diagnosis of HTN

• USPSTF found acceptable evidence for confirmation of HTN with HBPM
• USPSTF acknowledges that the use of ABPM may be problematic in some situations
• Several studies showed that elevated home BP was significantly associated with increased risk for CV events, stroke, and all-cause mortality, independent of office blood pressure
• Fewer studies have compared HBPM with office BPM, so the evidence is not as substantial as for ABPM

Screening Interval for Hypertension

• Adults aged 18 to 39 years with normal blood pressure without other risk factors should be rescreened every 3 to 5 years
• The USPSTF recommends annual screening for adults aged 40 years or older and for those who are at increased risk* for high blood pressure.
*Increased risk include those who have high-normal blood pressure (130 to 139/85 to 89 mm Hg), those who are overweight or obese and African Americans

Clinical Case

• Angela has now met the criteria for a new diagnosis of HTN
• A week of twice daily paired HBPM readings yields an average home BP of 154/94mmHg and CONFIRMS the diagnosis
• She feels well and denies symptoms (she is an excellent historian)

What would you do next?

AES POLL QUESTION

After a diagnosis of hypertension has been confirmed in a patient, which of the following should you routinely order?

A. HbA1C or fasting glucose
B. EKG
C. Lipid Panel
D. B and C
E. A, B and C
Evaluation after Diagnosis: History

**CHD Risk Factors:** Tobacco, BMI, Physical inactivity, Dyslipidemia, Dysglycemia, CKD, Age/Gender (>45 men, 55 women), Family History premature CVD (male 55 and female 65), Unhealthy Diet (trans fat, Na)

**Target Organ Damage:** LVH, Angina or MI, PCI, CHF, Stroke or TIA, CKD, PAD, or Retinopathy

Evaluation after Diagnosis: Physical Exam

- Confirm Diagnosis with out-of-office BP
- Test BP in both arms
- Fundoscopic exam or refer out
- Auscultate for bruits
- Palpate thyroid
- Heart and Lungs
- Abdomen for enlarged kidneys, masses, and aorta
- Lower extremity for edema and pulses

Evaluation after Diagnosis: Labs/Diagnostic Testing

- EKG
- Urinalysis
- HgA1C or fasting glucose (or GTT)
- Hematocrit
- Potassium
- Creatinine or eGFR
- Calcium
- Lipid Panel

Clinical Case

- Her history reveals that other than HTN, age and race (she is African American), she has no other risk factors
- You explain treatment options to Angela
- She has never taken medication and is not interested in starting now. She opts for 3 months of lifestyle change.
- She returns in 6 months
- She admits to not changing her lifestyle due to her busy job and life.
- Office BP remains elevated at 158/99
- Repeat HBPM average = 156/96 mmHg
- What would you do next?

AES POLL QUESTION

At what point would you initiate pharmacotherapy for hypertension in this patient?

A. When BP exceeds 160/100 mm Hg (Stage 2 HTN)
B. Now, after a discussion with the patient about the risks and benefits of using medication to treat HTN
C. After 6 more months of attempted lifestyle change
D. A and C

Initiating Treatment: What the guidelines say-2003

- Initiate lifestyle modifications all patients
- Goal is 140/90 mm Hg (130/80 if Diabetes or CKD)
- If BP goal not reached – initiate pharmacotherapy with a single drug
- Start with a thiazide (add ACE/ARB, BB, CCB as needed)
- Follow up monthly until goal is reached
- If BP is >120/80 mm Hg from goal, initiate with 2 drugs
- Drugs for compelling indications as needed
Initiating Treatment: What the guidelines say-2014

- Not a comprehensive guideline
- "Members" of the Panel (not the entire panel)
- Nine recommendations were made
1. Age >60, initiate medication to lower BP at SBP > 150 or DBP > 90
   If BP treatment results in SBP <140 and it is well tolerated, it's ok
2. If age 30-59 initiate treatment to lower DBP <90 mm Hg
3. Age < 60 initiate treatment to lower BP at SBP >140 to a goal < 140
4. Age > 18 w/ CKD, initiate with SBP >140 or DBP > 90 (also goal)
5. Age > 18 w/ Diabetes initiate with SBP >140 or DBP > 90 (also goal)
6. Diabetes, Black, CKD specific recommendations Grade B, C, B
7. The main objective of treatment is to attain and maintain BP goal.
   Follow up monthly.

Initiating Treatment: What the guidelines say-2017

- Not a comprehensive guideline: 3 recommendations
1. Age > 60 with SBP > 150 mm Hg initiate treatment to a target of < 150 mm Hg
2. Consider initiating or intensifying pharmacologic treatment in adults age > 60 with a history of stroke or TIA to achieve a target SBP < 140 mm Hg to reduce risk of recurrent stroke
3. Consider initiating or intensifying pharmacologic treatment in some adults age > 60 at high CV risk, based on individualized assessment, to achieve a target SBP of < 140 mm Hg to reduce the risk for stroke or cardiac events.

AHA/ACC 2017 Guideline to Prevent, Detect and Manage High Blood Pressure

Bundy et al. JAMA Cardiol. doi:10.1001/jamacardio.2017.1421 Published online May 31, 2017
120-124 mm Hg

Brent Egan, UpToDate, Treatment of hypertension in the elderly patient, particularly isolated systolic hypertension May 31, 2017
125-135 mm Hg using manual office BP or 120-125 mm Hg using automated office BP

Bangalore et al. Optimal Systolic Blood Pressure Target After SPRINT: Insights from a Network Meta-Analysis of Randomized Trials. American Journal of Medicine, June 2017
A systolic BP target of <130 mm Hg had optimal balance between efficacy and safety

Are we focused on the right issue?

- 2.8 million adults ages 60-79 have SBP 140 -150 mm Hg (only 1.8 million on treatment based on NHANES 2005-2010) ¹
- 29.2 million adults in U.S. ages 60-79 have SBP > 150 mm Hg ¹
- It is estimated that the proportion of the US population aged ≥65 years will increase from 43 million to 80 million by 2040 ²
- Large scale efforts are needed to address the issue of undertreated populations

When should you initiate treatment?

A M.A.P. to Improving BP Control
Barriers to success in blood pressure control

Patient factors
- Non-adherence to treatment
- Absence of symptoms
- Cost of treatment
- Failure to follow up

Social determinants

Physician factors
- Time crunched
- Competing factors
- Knowledge of evidence & willingness to use it
- Disagreement with guidelines
- Failure to recommend follow up

System factors
- Lack of Team-based Care
- Lack of useful data / dashboards
- Work flow problems
- Buy-in (administration / leadership)
- Lack of outreach / care coordination

The M.A.P. Framework for improving BP control

- Measure blood pressure accurately
- Act rapidly to manage uncontrolled hypertension
- Partner with patients, families and communities

Obtain Screening BPs
- Use a validated, automated upper arm device
- Sit in a chair with back well supported
- Feet flat on floor or step stool
- BP cuff is the correct size for the patient's arm
- BP cuff is placed on the bare skin of the patient's upper arm
- Arm is supported at heart level
- Quiet environment

If initial BPs are ≥140/90 mm Hg, obtain confirmatory measurements.

Common measurement errors and effect on BP

<table>
<thead>
<tr>
<th>Error</th>
<th>Blood pressure change by an estimated*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crossed Legs</td>
<td>2-8 mm Hg</td>
</tr>
<tr>
<td>Cuff over clothing</td>
<td>5-50 mm Hg</td>
</tr>
<tr>
<td>Cuff too small</td>
<td>2-10 mm Hg</td>
</tr>
<tr>
<td>Full bladder</td>
<td>10 mm Hg</td>
</tr>
<tr>
<td>Talking or active listening</td>
<td>10 mm Hg</td>
</tr>
<tr>
<td>Unsupported arm</td>
<td>10 mm Hg</td>
</tr>
<tr>
<td>Unsupported back / feet</td>
<td>6.5 mm Hg</td>
</tr>
</tbody>
</table>

*These values are not cumulative

If Screening BPs are ≥140/90 mm Hg, obtain confirmatory measurements:
- Repeat screening steps above
- Ensure patient has an empty bladder
- Obtain the average of at least three BP measurements, preferably unattended
Most important factors contributing to uncontrolled HTN

Clinicians miss opportunities to treat a patient with a BP > 140/90
- Fail to initiate or escalate therapy during an office visit
- Fail to stress frequent follow up until BP is controlled

Patient non-adherence to treatment plan
- Most often due to not taking medications as instructed

Act Rapidly: to manage uncontrolled BP

If a patient has a BPs > 140/90 mm Hg confirmed:
- Use an evidence-based protocol to guide treatment
- Re-assess patient every 2-4 weeks until BP is controlled
- Prescribe single-pill combination therapy whenever possible

Why Treatment Protocols are Important

- Using treatment protocols can improve BP control
- Having a “playbook” can help the entire care team
- Everyone can better understand:
  1) Who needs treatment
  2) What treatment should be used
  3) When follow up should occur

Why Treatment Protocols are Important

The Number of Pharmacy Visits Impacts Adherence

- Study population: 1.8 million Patients on statins
- Methods: Complexity assessed by # of meds, prescribers, pharmacies, pharmacy visits. Adherence assessed over the next year.
- Results: Patients with the least vs. greatest refill consolidation had 8% lower adherence
- Conclusion: Strategies to simplify refills and # of pharmacy visits may improve adherence.

*The more single pill combinations the better

Medication Adherence Falls as Out-of-Pocket Costs Rise

\[ R^2 = -0.36 \]
Partner with Patients, Families and Communities

To empower patients to control their blood pressure:
- Engage patients using evidence-based communication strategies
- Help patients accurately self-measure BP
- Direct patients and families to resources that support medication adherence and healthy lifestyle

Use Evidence-based Communication Skills

Skills/Strategies
- Begin with open-ended questions about adherence, including recent medication use
- Address "red flags"
- Explore reasons for possible non-adherence
- Elicit patient views on options and priorities to customize a care plan for each patient
- Remain non-judgmental at all times
- Use teach-back to ensure understanding of the care plan

Why use Self-measured BP Monitoring (SMBP)?

- Measurements occur in the patient’s usual environment, typically at home
- Provides multiple BPs over a longer period of time (more representative of a patient’s true BP)
- Eliminates white coat effect

Why use SMBP?

- Confirming elevated office readings
- Differentiating between white coat and sustained HTN
- Helps to identify patients with masked HTN

Clinical Case

- You have a discussion with Angela and she agrees it is time to start medication.
- You start her on 5 mg of amlodipine and ask her to use her home BP monitor to track her BP.
- You ask her to come back one month later and she comes back 8 weeks later. Her BP in the office is 154/92 and her HBPM average for the week prior to the visit is 148/89.

What would you do next?
**AES POLL QUESTION**

Your 62 Y.O. recently diagnosed patient with hypertension is on single drug therapy at steady state, and has a week-long HBPM average of 148/89. The best course of action is to

A. Do nothing as her BP is now controlled at goal
B. Perform 24-hour ABPM
C. Add a second drug or increase the dose of her current medication
D. Stop her medication and use lifestyle modification given she is low risk

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**Lifestyle Changes for Patients with Hypertension**

<table>
<thead>
<tr>
<th>Population</th>
<th>Lifestyle change</th>
<th>BP change</th>
<th>Strength of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults 30 to 80 with or without HTN</td>
<td>Reduce sodium intake by an average of 1,150 mg/day</td>
<td>-3 to 4 mm Hg SBP</td>
<td>High1</td>
</tr>
<tr>
<td>Adults with BP 120-159/80-95</td>
<td>Limit at least to low range of typical American diet</td>
<td>-3 to 4 mm Hg SBP</td>
<td>High1</td>
</tr>
<tr>
<td>All adults with or without HTN</td>
<td>45 minutes of moderate-intensity aerobic exercise 3-4 times per week</td>
<td>-2 to 4 mm Hg SBP</td>
<td>High1</td>
</tr>
<tr>
<td>Overweight Adults</td>
<td>5 Kg weight loss</td>
<td>-4.4 mm Hg SBP</td>
<td>High2</td>
</tr>
</tbody>
</table>


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**Practice Recommendations**

1. **Measure accurately**
   - Use proper technique for in-office measurements – positioning and environment matter!
   - Use out-of-office BP measurements to confirm the diagnosis
2. **Act rapidly to manage uncontrolled hypertension**
   - Use a treatment protocol (just pick one)!
   - Prescribe single-pill combination therapy whenever possible
   - Don’t wait to make changes or arrange follow-up!
3. **Partner with patients, families, and communities**
   - Healthy lifestyles for all people with elevated BP
   - Use evidence-based communication
   - SMBP/HBPM to engage patients in self-care

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**Questions**

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