1 HOW LOW DO YOU GO: HYPERTENSION MANAGEMENT

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The New Guidelines Have Been Published!

2 DISCLOSURES

- Leslie Davis has no disclosures relevant to this presentation.
- Leslie Davis does not intend to discuss the use of any off-label use/unapproved use of drugs or devices.

3 OBJECTIVES

- 1. Explore evidence-based guidelines related to hypertension management.
- 2. Analyze the body system and quality of life effects of hypertension management.
- 3. Outline pharmacological and behavioral management of hypertension.

4 GUIDELINES PUBLISHED AHEAD OF PRINT NOV 13, 2017 = SAME DAY AS PUBLIC PRESENTATION


5 STARTED WITH FORMAL SYSTEMATIC REVIEW

- Went to the evidence to answer four critical questions related to HTN
  1. Is self-directed BP monitoring &/or ambulatory BP monitoring better than office based BP measurement by a health care provider? (for preventing bad outcomes & getting better BP control)
  2. What is the optimal target for BP lowering during anti-HTN therapy in adults?
  3. Do various antiHTN drug classes have differing effects on benefits & harms?
  4. Should you start with monotherapy vs fixed dose combo meds = not enough evidence to answer this one

6 WHAT’S COVERED IN THE NEW GUIDELINES

- BP-related risk of cardiovascular disease (CVD)
- Ambulatory BP monitoring (ABPM)
- Home BP monitoring (HBPM)
- BP thresholds to initiate anti-HTN treatment
- BP goals of treatment
- Strategies to improve HTN treatment and control
- Other important issues...
VIDEO (TRAILER FOR WHAT NEW CATEGORIES ARE)

- https://www.youtube.com/watch?v=IFqDj3dNN7s

NEW CLASSIFICATION OF BP

<table>
<thead>
<tr>
<th>Blood Pressure (BP)</th>
<th>Systolic BP</th>
<th>Diastolic BP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt; 120 mm Hg</td>
<td>&lt; 80 mm Hg</td>
</tr>
<tr>
<td>Elevated</td>
<td>120-129 mm Hg</td>
<td>&lt; 80 mm Hg</td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 1</td>
<td>130 – 139 mm Hg</td>
<td>&lt; 80 mm Hg</td>
</tr>
<tr>
<td>Stage 2</td>
<td>≥ 140 mm Hg</td>
<td>or 80 – 90 mm Hg</td>
</tr>
</tbody>
</table>

CAVEATS TO CATEGORIZATION OF BP

Prior to diagnosing someone with hypertension:
- Average based on > 2 readings on > 2 occasions (to estimate level of BP)
- Out-of-office & self-monitoring BP measurements recommended to confirm dx & help with up-titration of medication therapy as indicated

IMPACT OF RECLASSIFICATION ON PREVALENCE

- With new guidelines increase of ~14% as compared to blood pressure categories in the prior guideline.
- Moved from 32% to now 46% adults with HTN.
- Not a mandate for pharmacologic therapy for all *since most of the newly classified patients fall under stage 1.

IMPORTANCE OF TAKING AN ACCURATE BP

- Essential to make sure the BP is correct
- New categories of BP
- To manage BP, especially if very high
- To determine atherosclerotic disease (ASCVD) risk

TIPS FOR ACCURATE BP MEASUREMENT

- Patient in sitting position, at rest, back supported, with arm at heart level for at least 5 minutes
  - Otherwise | DBP ~6 mm Hg
- Remove constricting clothing on the upper extremity (do not push up clothing)
- No caffeine or tobacco use at least 30 minutes prior to BP measurement
- Patients should have both feet planted on a flat surface
  - Crossing legs | SBP ~2-8 mm Hg

TIPS FOR ACCURATE BP MEASUREMENT

• Use the correct size cuff. Ideal cuff bladder: 80% length and 40% width of arm circumference
  – Cuff too large = falsely low BP
  – Cuff too small = falsely elevated BP
• Patient and clinician should not talk during the measurement (↑ BP)
• 1st visit: take 2 readings (average them), 5 minutes apart
  – Confirm elevated reading in contralateral arm; if one arm consistently higher, use that arm for subsequent measurements (~ 20% of individuals have BP differences >10 mm Hg)


RECOMMENDATIONS FOR PROPER CUFF SIZE

<table>
<thead>
<tr>
<th>PATIENT</th>
<th>RECOMMENDED CUFF SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults (by arm circumference)</td>
<td></td>
</tr>
<tr>
<td>&lt;22 to 26 cm</td>
<td>12 × 22 cm (small adult)</td>
</tr>
<tr>
<td>27 to 34 cm</td>
<td>16 × 30 cm (adult)</td>
</tr>
<tr>
<td>35 to 44 cm</td>
<td>16 × 36 cm (large adult)</td>
</tr>
<tr>
<td>45 to 52 cm</td>
<td>16 × 42 cm (adult thigh)</td>
</tr>
<tr>
<td>Children (by age)</td>
<td></td>
</tr>
<tr>
<td>Newborns and premature infants</td>
<td>4 × 8 cm</td>
</tr>
<tr>
<td>Infants</td>
<td>6 × 12 cm</td>
</tr>
</tbody>
</table>


LINK ABOUT NEW GUIDELINES FROM THE AMERICAN HEART ASSOCIATION

• [http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/SymptomsDiagnosisMonitoringOfHighBloodPressure/HomeBloodPressureMonitoring_UCM_301874_Article.jsp#.WcQNfLKGMnM](http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/SymptomsDiagnosisMonitoringOfHighBloodPressure/HomeBloodPressureMonitoring_UCM_301874_Article.jsp#.WcQNfLKGMnM)

IMPORTANCE OF USING BPS FROM OTHER SETTINGS

• Office BP measurements
• Combine with out of office BP readings
• Ambulatory BP monitoring (ABPM)
• Home BP monitoring (HBPM) = also called self-measured
• Helps assess for “white coat” and “masked” HTN

CORRESPONDENCE OF BP FROM DIFFERENT SETTINGS

<table>
<thead>
<tr>
<th>Setting</th>
<th>Corresponding BP in mm Hg</th>
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<tbody>
<tr>
<td>Office/clinic</td>
<td>140/90</td>
</tr>
<tr>
<td>Home BP Monitoring (HBPM)</td>
<td>135/85</td>
</tr>
<tr>
<td>Daytime Ambulatory BP Monitoring (ABPM)</td>
<td>135/85</td>
</tr>
<tr>
<td>Night-time ABPM</td>
<td>120/70</td>
</tr>
<tr>
<td>24-hour ABPM</td>
<td>130/80</td>
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SCREENING FOR WHITE COAT HTN

• If person has untreated elevated BP (as per below), reasonable to screen for white coat hypertension.
  • Systolic BP > 130 but < 160 mm Hg
  • Diastolic BP > 80 but < 100 mm Hg
• Either day-time ABPM or HBPM prior to making the diagnosis of HTN
19 SCREENING FOR MASKED HTN

• If person has elevated office BP (120-129/<80), but not meeting criteria for hypertension, reasonable to screen for masked HTN
• Either day-time ABPM or HBPM is reasonable
• To avoid “missing” someone with really high BP outside the office

20 TREATMENT GOALS: LOWER TARGETS

• Based on the evidence:
  • Target is <130/80 if confirmed CVD or >10% ten-year ASCVD risk
• Based on expert opinion:
  • If confirmed hypertension target is <130/80

21 NONPHARMACOLOGIC THERAPY

• Weight loss for overweight or obese patients
• Heart healthy diet *many use the DASH Diet
• Lower sodium & increase potassium
• Increase structured physical activity/exercise program
• Moderation or avoidance of alcohol
  • Men no more than 2 & women no more than 1 standard drink(s) per day
• Tobacco cessation

22 WHEN TO START MEDS

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<th>Category and ASCVD risk</th>
<th>Low ASCVD risk with elevated BP or stage I HTN</th>
<th>Stage 1 HTN &amp; high ASCVD risk (≥10% ten-year risk)</th>
<th>Stage 2 HTN</th>
<th>Very high BP (SBP ≥160 or DBP ≥100)</th>
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<td>BP repeated after 3-6 months of lifestyle</td>
<td>Manage lifestyle &amp; anti-HTN drug therapy with repeat BP in one month</td>
<td>Combo of lifestyle &amp; 2 anti-HTN meds. See PCP within 1 month of diagnosis</td>
<td>Prompt eval &amp; drug treatment along with lifestyle; upward dose adjustment will be needed</td>
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23 FOLLOW-UP CARE

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24 GENERAL PRINCIPLES: MEDICATION CLASSES TO USE TO TREAT HYPERTENSION (DIURETICS)

• Chlorthalidone (12.5-25 mg) preferred diuretic (long half-life & proven reduction in CVD risk)
• Loop diuretics preferred if GFR < 30 ml/min or if heart failure
• Amiloride & triamterene may be used with thiazides (if low potassium) but avoid if GFR < 45 ml/min
• Spironolactone or eplerenone preferred if primary hyperaldosteronism and/or for resistant HTN
**GENERAL PRINCIPLES: MEDICATION CLASSES TO USE TO TREAT HYPERTENSION (RAAS BLOCKERS)**

- Angiotensin-converting enzyme inhibitors (ACE-I), angiotensin-receptor blockers (ARBs), and direct renin inhibitors should **NOT** be used in combination.
- ACE-Is and ARBs increase risk of hyperkalemia, esp if chronic kidney disease, supplemental potassium, or potassium sparing diuretics.

**GENERAL PRINCIPLES: MEDICATION CLASSES TO USE TO TREAT HYPERTENSION (CCBS)**

- Calcium channel blockers (CCB)
  - CCB dihydropyridines can cause peripheral edema.
  - CCB non-dihydropyridines are assoc with bradycardia & heart block so should be avoided in heart failure with reduced ejection fraction

**GENERAL PRINCIPLES: MEDICATION CLASSES TO USE TO TREAT HYPERTENSION (ALPHA BLOCKERS)**

- Alpha-1 blockers
  - Can cause orthostatic hypotension
  - May be considered for men with symptoms of benign prostatic hyperplasia
  - Should avoid central acting alpha-1 agonists

**GENERAL PRINCIPLES: MEDICATION CLASSES TO USE TO TREAT HYPERTENSION (BETA-BLOCKERS)**

- Beta-blockers
  - **Not** first line anti-HTN therapy
  - **Exceptions**: CAD and heart failure with reduced ejection fraction
    - Best choice for HFrEF: both alpha- and beta-receptor activity (example: carvedilol)
    - Best choice for HFrEF & bronchospastic airway disease: bisoprolol & metoprolol succinate

**MEDICATION CLASSES: FIRST LINE THERAPY**

- Stage 1 HTN: thiazides, CCBs, & ACE-I (choose one in addition to life style changes)
- Stage 2 HTN: two first line meds of different classes (to get ~ 20/10 mm Hg reduction)

  **Causes**
  - If CAD
  - If CKD
  - If stroke & cerebral vascular disease
  - If diabetes

**AGE-RELATED ISSUES (OLDER ADULTS ≥ 65)**

- BP lowering reason to prevent CVD and prevent cognitive decline and dementia.
- Non-institutionalized ambulatory community dwelling adults with average SBP ≥ 130 should be treated with a goal of < 130 mm Hg
- For adults ≥ 65, lots of comorbid conditions &/or limited life expectancy, clinical judgment precludes, patient preference, and team-based approach weighs risks/benefits to determine the best approach
SECONDARY HYPERTENSION

- About 10% adults with HTN have secondary HTN
- Many of these types can be cured or controlled
- Top causes

TEAM-BASED CARE

- Every adult with HTN should have a clear, detailed, evidence-based plan in place
- Needs self-management goals
- Timely follow-up with care team
- Effective strategies for lifestyle modifications
- Team: physician, advanced practice nurses, physician’s assistants, nurses, pharmacists, and others

NONADHERENCE: 3 DIFFERENT TIME PERIODS

- Initiation of treatment strategy
  - Pt doesn’t start med
- Actual implementation of treatment
  - Pt delays taking a dose or starting a life style change
  - Misses dose all together
  - Takes an extra dose
- Maintaining treatment
  - Does not persistently maintain the treatment regimen

STRATEGIES TO IMPROVE ADHERENCE

- Personalized educ about benefits to starting and maintaining regimen
- Reminder packaging avail at many pharmacies
- Top opening easy access containers
- Intake reminders inside box of prescribed therapies
- Instant daily availability (pt is more aware of a missed dose sooner)
- Reminder apps
- Blister packaging

IMPORTANCE OF SHARED DECISION MAKING

- Esp important for older adults with multiple comorbid conditions
- Shared decision making with or without decision aids
- Many decision aids aren’t designed for older adults with lots of comorbidities
- Engaging family members or other caregivers
- Determine priorities of care & treatment strategies
- If polypharmacy a concern – discuss benefit/harm of treatment options
- Open discussions to solicit patient preferences

EXAMPLE DECISION AID

https://www.healthdecision.com/
QUESTIONS?

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