SHE’S GONNA BLOW!

Outpatient Management of Hypertensive Urgency and Emergency

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Learning Objectives

• Define hypertensive urgency and emergency
• Review blood pressure assessment techniques
• Understand important elements of history and physical exam in the patient with hypertension
• Understand when to refer the hypertensive patient to the emergency department
• Discuss in office testing that can be done to evaluate for end organ damage in the outpatient with hypertension
• Formulate a treatment approach to the hypertensive patient
DISCLAIMER

• These concepts apply to nonpregnant, adult patients only
BACKGROUND INFO
Definitions

American College of Cardiologists/American Heart Association 2017 suggests:

- Normal BP: <120/<80
- Elevated BP: 120-129/80-89
- HTN:
  - Stage 1: 130-139/80-89
  - Stage 2: >140/>90
Primary HTN Risk Factors

• Advancing age—”TMB”
• Family history
• Race (African Americans)
• Obesity
• High sodium diet
• Excessive alcohol consumption
• Physical inactivity
Urgency vs Emergency?

**URGENCY**
- Systolic ≥180 and/or diastolic ≥110 mmHg
- Typically non-compliant with meds or lost to follow up

**EMERGENCY**
- Systolic ≥180 and/or diastolic ≥110 mmHg
  
  **PLUS:**
- Evidence of end organ damage
  - Cerebral hemorrhage
  - Stroke
  - Retinal hemorrhages
  - Papilledema
  - Kidney injury
  - Angina
  - MI
What do you do first?

• Recheck the blood pressure!
  – Use appropriate size cuff
  – Take at least 2 readings, 5 minutes apart
  – Initially take BP in both arms

• Another question to ask:
  Did you take the blood pressure manually?
### Guidelines for the measurement of blood pressure to diagnose and treat hypertension

#### Patient conditions

<table>
<thead>
<tr>
<th>Posture</th>
<th>Initially, check for postural changes by taking readings after five minutes supine, then immediately and two minutes after standing; this is particularly important in patients over age 65 years, diabetics, or those taking antihypertensive drugs. Sitting pressures are recommended for routine follow-up; the patient should sit quietly with the back supported for five minutes and the arm supported at the level of the heart.</th>
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<tbody>
<tr>
<td>Circumstances</td>
<td>No caffeine during the hour preceding the reading, and no smoking during the preceding 30 minutes. No exogenous adrenergic stimulants, such as phenylephrine in decongestants or eye drops for pupillary dilatation. A quiet, warm setting. Home readings should be taken upon varying circumstances.</td>
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#### Equipment

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<tr>
<th>Cuff size</th>
<th>The length of the bladder should be 80%, and the width of the bladder should be at least 40% of the circumference of the upper arm.</th>
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<tbody>
<tr>
<td>Manometer</td>
<td>Aneroid gauges should be calibrated every six months against a mercury manometer.</td>
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#### Technique

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<tr>
<th>Number of readings</th>
<th>Take at least two readings on each visit, separated by as much time as possible; if readings vary by more than 5 mmHg, take additional readings until two consecutive readings are close. For the diagnosis of hypertension, take three readings at least one week apart. Initially, take blood pressure in both arms; if pressures differ, use the higher arm. If the arm pressure is elevated, take the pressure in one leg, particularly in patients under age 30 years.</th>
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<tbody>
<tr>
<td>Performance</td>
<td>Inflate the bladder quickly to 20 mmHg above the systolic pressure as estimated from loss of radial pulse. Deflate the bladder by 3 mmHg per second. Record the Korotkoff phase V (disappearance) as the diastolic pressure except in children in whom use of phase IV (muffling) may be preferable. If the Korotkoff sounds are weak, have the patient raise the arm, open and close the hand 5 to 10 times, and then inflate the bladder quickly.</td>
</tr>
<tr>
<td>Recordings</td>
<td>Note the pressure, patient position, arm, and cuff size: e.g., 140/90, seated, right arm, large adult cuff.</td>
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EVALUATION OF THE PATIENT
History and Physical

- Hypertensive history
  - Duration of dx
  - Prior treatment
- Other Rx’s/supplements/OTC?
- Presence of risk factors?
- Consider secondary HTN causes
- Exclude End-Organ Damage
  - Neurologic
  - Cardiac/Vascular
  - Ocular
  - Renal
Consider Other Causes

- Prescription or OTC meds
- Illicit drug use
- Energy drinks
- Primary renal disease
- Pheochromocytoma
- Endocrine disorders
- Pregnancy
END ORGAN DAMAGE
Neurologic History

• Acute head trauma?
  – MOI, LOC

• Generalized neurologic symptoms
  – headache, agitation, delirium, stupor, seizures, visual changes
  – Don’t forget nausea, vomiting

• Focal neurologic symptoms
  – numbness, tingling, muscle weakness, CN deficits
Neurologic Evaluation

- Quick mental status exam
- CN testing
- Motor
- Reflexes
- Sensation

**CN II:** Visual acuity/fields
- CN II: pupillary light reflex
- CN III/IV/VI: EOMs
- CN V: Facial sensation and strength
- CN VII: facial expression
- CN VIII: hearing/vestibular function
- CN IX/X: palatal movement
- CN IX/X/XII: dysarthria
- CN XI: shoulder shrug
- CN XII: tongue movement
Cardiac/Vascular History

- Chest discomfort or pain
- Acute, severe back pain
- Dyspnea
- Previous treatment for HTN?
  - What meds?
  - Last dose?
Cardiac/Vascular Evaluation

- Auscultation of heart and neck
  - New onset murmur
- Abdominal aorta, examination for bruits
  - AAA
  - Renal artery stenosis
- Presence of edema, assessment of pulses
- ECG
- CXR
Ocular History and Physical

• Findings can overlap other causes
• Funduscopic exam
  – Papilledema: hypertensive encephalopathy
Renal Evaluation

• Urinalysis
• Serum electrolytes, BUN/creatinine
ED or Outpatient Treatment?

• **ED**
  - Objective findings of end organ damage
  - Patients requiring reduction in BP within the first hour
  - Require titration of IV antihypertensives

• **OUTPATIENT**
  - Severe hypertension with comorbidities that have higher risk of end-organ dysfunction
Outpatient Treatment Approach

- How rapidly should BP be lowered?
- What is the blood pressure goal?
- How should we achieve goal?
Rapidity of BP lowering

• Gradual reduction (hours to days) recommended
  – Risk of adverse events if lowered too quickly
    • Can induce cerebral or myocardial ischemia or infarction, AKI
    • Risk increased in older patients
  – BUT, if HTN is severe, potential risk of CV events that may result may motivate lowering BP faster
BP Goal

• Short Term: <160/<100
• MAP should not be lowered by more than 25-30% over first several hours
Therapeutic Strategies

• REST
  – Quiet room
  – Some studies suggest it can decrease BP <20/10 in 1/3 of patients

• If high risk for imminent CV event can use short-acting agents:
  – Captopril
  – Clonidine

• USE OF NIFEDIPINE CONTRAINDUCTED

• Long acting agents
  – Amlodipine
  – Chlorthalidone
Captopril

• ACE inhibitor
• 6.25-25mg, may repeat as needed
• If BP not lowered 20-30mmHg in 30 min, consider different agent

• Adverse effects:
  – Angioedema
  – Teratogenic
Clonidine

- Alpha adrenergic agonist
- Dose: 0.1 to 0.2 mg orally, can repeat hourly up to max dose of 0.7mg
- Can take 1-3 hours to see effect
- Not intended for long term treatment of HTN
- Adverse reactions:
  - Dose related bradycardia
  - Symptomatic hypotension
  - Rebound hypertension
  - Avoid if recent MI
Long Acting Agents

• Alternative approach
• Initiate long acting agent with follow up in 1-2 days
• Amlodipine
  – Ca Channel Blocker
  – 5 mg PO daily, max 10mg daily
• Chlorthalidone
  – Thiazide diuretic
  – 25mg PO daily, max 100mg daily
Lowering over a period of days...

• Patients without significant risk for imminent CV event
• Previously treated for HTN
  – Restart previous meds
  – Increase current dose
  – Add diuretic
• Untreated HTN
  – Agent most appropriate in long term
  – How many drugs to start with?
Follow Up

- If patient’s BP is stable or improving, and remain asymptomatic, can be sent home with close follow up over next several days

- Dose and selection of medication should be adjusted to achieve BP goal over weeks to months
Summary

• Important to obtain detailed history and physical in patients who are severely hypertensive

• Asymptomatic patients without signs of end organ damage can be managed with oral medications and close follow up
Thank you!

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