University of South Florida

GERIATRIC WORKFORCE ENHANCEMENT PROGRAM (GWEP)

Learn@Lunch

Geriatric Education Series

Kathryn Hyer, PhD, MPP
Principal Investigator

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Making Life Better®
Richard Roetzheim, MD, MSPH is Professor and Chair, Department of Family Medicine at the University of South Florida Morsani College of Medicine. Dr. Roetzheim has considerable experience leading NIH funded projects. He has served as PI on randomized trials promoting novel cancer screening interventions in community health centers, testing the effectiveness of patient navigators in promoting early cancer diagnosis, and a community based intervention promoting sun protection behaviors of elementary students in Hillsborough County Florida. Along with Dr. B. Lee Green, he served as co-PI for the Center for Equal Health, an NIMHD Center of Excellence in Health Disparities Research.

Dr. Roetzheim has conducted and published seminal studies funded by the American Cancer Society (Primary Care and Cancer Outcomes among Medicare Beneficiaries) and the Robert Wood Johnson Foundation (The Effect of Primary Medical Care on Breast Cancer Stage at Diagnosis) outlining the important role that primary care plays in the early detection of cancer. He has conducted studies demonstrating the impact that primary care physician supply has on early diagnosis of cancer, cancer incidence, and cancer mortality. He has also demonstrated the impact that primary care access and utilization have on cancer stage, cancer incidence, and cancer outcomes. Dr. Roetzheim is a nationally recognized expert in primary care, and is highly regarded as an instructor and mentor to health professions students.

We are delighted to have Dr. Roetzheim with us today to discuss Managing Hypertension in Older Adult Patients.
Managing Hypertension in Older Adults

Richard Roetzheim, MD, MSPH
Professor & Chair
USF Morsani College of Medicine
Department of Family Medicine
Geriatric Workforce Enhancement Program co-PI
December 8, 2017
Goals

- To understand how age related physiologic changes affect HTN management.
- To understand the BP goals and preferred therapies for older adults.
- To review the new 2017 ACC/AHA guidelines for managing hypertension and contrast with JNC-8.
Case

An 83 year old woman has been receiving care in your practice for more than 20 years. She has history of CKD3, HTN, and Hyperlipidemia. Her blood pressures have been averaging 145/85 on her regimen of hctz 25 mg / Lisinopril 40 mg daily. You wonder if the goals of therapy are different at this point of her life and whether her existing regimen is appropriate.
Physiological Blood Pressure Related Changes with Age

- Reduced arterial compliance (increases systolic BP and pulse pressure)
- Diminished baroreceptor and sympathetic neural responses (more orthostasis)
- Impaired cerebral autoregulation (more lightheadedness and syncope)
- Reduced taste sensitivity to salt (higher sodium intake)
Hypertension Prevalence with Age

Hypertension Prevalence in the US by Age

Which BP Measures Are Most Predictive of CV Outcomes in Older Patients?

a) Systolic BP
b) Diastolic BP
c) Pulse Pressure
d) Systolic BP and Pulse Pressure
e) All measures equally predictive
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Which Is True about BP in the Elderly Compared to Younger Patients?

a) BP more likely to be recognized by patient
b) BP more likely to be treated
c) BP less likely to be at goal
d) All of the above
Which Is True about BP in the Elderly Compared to Younger Patients?

a) More likely to be recognized by patient
b) More likely to be treated
c) Less likely to be at goal
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Studies Showing Improved CV Outcomes in Older Patients

- Systolic Hypertension in the Elderly Program (SHEP)
  - Mean age 72
- Swedish Trial in Old Patients (STOP)
  - Age range 70-84
- Hypertension in Very Elderly Trial (HYVET)
  - Patients 80 and older (mean age 84)
- European Systolic Hypertension in the Elderly (Sys-Eur)
  - Mean age 70
- Chinese Trial on Isolated Systolic Hypertension in Elderly (Syst-China)
  - Mean age 67 years
Studies Showing Improved CV Outcomes in Older Patients

<table>
<thead>
<tr>
<th></th>
<th>HYVET</th>
<th>SHEP</th>
<th>STOP</th>
<th>Syst-Eur</th>
<th>Syst-China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean treatment BP reduction, SBP/DBP, mmHg</td>
<td>-29/-13</td>
<td>-27/-9</td>
<td>-29/-17</td>
<td>-23/-7</td>
<td>-20/-5</td>
</tr>
<tr>
<td>Stroke, percent reduction</td>
<td>-30 percent</td>
<td>-32 percent</td>
<td>-47 percent</td>
<td>-42 percent</td>
<td>-38 percent</td>
</tr>
<tr>
<td>Coronary disease, percent reduction</td>
<td>-23 percent*</td>
<td>-27 percent</td>
<td>-13 percent</td>
<td>-30 percent</td>
<td>+6 percent</td>
</tr>
<tr>
<td>Heart failure, percent reduction</td>
<td>-64 percent</td>
<td>-55 percent</td>
<td>-51 percent</td>
<td>-29 percent</td>
<td>-58 percent</td>
</tr>
</tbody>
</table>
According to JNC-8 guidelines the goal systolic BP for our case patient should be.

a. <150 because patient is over 60
b. <160 because patient is over 80
c. <140 because patient has CKD
d. not applicable – there are no JNC-8 target goals for persons >80
BP Targets: How Low Should We Go?

According to JNC-8 guidelines our goal systolic BP should be.

a. <150 because patient is over 60
b. <160 because patient is over 80
c. <140 because patient has CKD
d. not applicable – there are no JNC-8 target goals for persons >80

BP Targets: The “Old” Guidelines

JNC-8 targets for BP

- Goal BP is <140/90 for persons <60
- For persons 60+ goal BP is <150/90 (no upper age limit)
- If person 60+ is currently <140/90 and doing well no need to change
- Persons with CKD/DM goal is <140/90 (regardless of age)
Why the Higher Target for Persons 60+?

Japanese Trial to assess optimal systolic BP in elderly hypertension patients

Ages 65-85
average BP’s 136/75 vs. 146/78
No difference in outcomes at two years follow up

Valsartan in elderly isolated systolic hypertension (VALISH)
Mean age 75
Strict target (<140) vs. moderate control (140-150)
No difference in outcomes at 3 years follow up

Studies were underpowered
Based on the findings from the SPRINT trial, which are true statements for our patient?

a. Targeting a goal systolic BP < 120 would improve CV outcomes
b. Intensive treatment would be associated with more falls and injuries
c. The balance of benefits and harms with treatment would be worse for patients >75
d. All of the above
Based on the findings from the SPRINT trial, which are true statements for our patient?

a. Targeting a goal systolic BP < 120 would improve CV outcomes
b. Intensive treatment would be associated with more falls and injuries
c. The balance of benefits and harms would be worse for patients >75
d. All of the above

SPRINT Trial

- Persons 50 and older
- Systolic BP 130-180
- Increased CV risk
  - History of CV disease (except stroke)
  - CKD
- Framingham 10 year CV risk 15% or more
- Diabetic patients excluded
SPRINT Trial

- Systolic BP target <120 vs. <140
- ‘Standard’ medications used to achieve goal

Outcomes (median follow up 3 years)
- Composite CV disease (MI, ACS, CVA, CV deaths), all cause mortality
- Renal outcomes (progression, ESRD)
- AE’s (falls with injuries etc.)
SPRINT Trial - Outcomes

- Average systolic BP 121 vs. 136 (one more med)
- CV composite yearly rate - 25% reduction
  - (2.2% vs. 1.7% P<0.001)
- All cause mortality rates - 27% reduction
  - (1.4% vs. 1.0% P=0.003)
- No difference in outcomes persons >75 (or other subgroups)
- NNT (75+) 27 composite, 41 death
SPRINT Trial – Adverse Events

- Serious AE’s – overall no difference (38.3% vs. 37.1% P=0.25)
- No difference in falls with injury
- Specific AE’s with higher rates
  - hypotension/orthostasis (2.4% vs. 1.4%)
  - Syncope (2.3% vs. 1.7%)
  - electrolyte abnormalities (3.1% vs. 2.3%)
  - AKI (4.1% vs. 2.5%)
Our patient has developed signs of frailty and reduced gait speed. Based on the SPRINT trial which of the following are true regarding intensive BP control?

a) CV benefits are less likely
b) Adverse events and falls would be more common
c) The relative balance of benefits to harms would be less favorable
d) None of the above
Our patient has developed signs of frailty and reduced gait speed. Based on the SPRINT trial which of the following are true regarding intensive BP control?

a) CV benefits are less likely
b) Adverse events and falls are more likely
c) The relative balance of benefits to harms would be less favorable
d) None of the above

Williamson JD et al. JAMA 2016
SPRINT Trial – Persons 75+

- Assessed frailty using frailty index, gait speed, MOCA
- Mean BP’s at follow-up 123/62 vs. 135/67
- No difference in CV benefits of treatment according to frailty or gait speed
- No difference in treatment AE’s according to frailty or gait speed
SPRINT Trial – Summary

- Treating to a goal systolic BP < 120 improves CV outcomes
- ‘Costs’ are one more medication and some AE’s (orthostasis/electrolytes/AKI)
- Benefits/risks same for persons over 75 (including those who are frail)
- Study did not include diabetics and results could differ in “real world settings”
2017 ACC/AHA BP Guidelines

- Hypertension is BP ≥130/80
- Persons with CV disease and those with 10 year CV risks 10% or more (includes DM / CKD)
  - Goal BP is <130/80
- Persons without CV disease (or DM/CKD) and 10 year risk <10%
  - Goal BP is <140/90

## Comparison of BP Targets

<table>
<thead>
<tr>
<th>Category</th>
<th>JNC-8</th>
<th>2017 AHA/ACC</th>
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<tbody>
<tr>
<td>Low risk patients</td>
<td>140/90</td>
<td>140/90</td>
</tr>
<tr>
<td>High risk patients (CVD/DM/CKD, 10% CV risk)</td>
<td>140/90</td>
<td>130/80</td>
</tr>
<tr>
<td>Age ≥65</td>
<td>150/90</td>
<td>130/80</td>
</tr>
</tbody>
</table>
Non Pharmacologic Treatment

- Weight loss
- Heart healthy diet (DASH diet, Mediterranean diet)
- Sodium restriction
- Physical activity
- Moderate ETOH intake
Treatment Strategies for BP

- **120-129**
  - Lifestyle changes

**Stage 1 Hypertension**

- **130-139 (low risk)**
  - Lifestyle changes

- **130-139 (high risk)**
  - + medications
  - f/u 3-6 months

**Stage 2 Hypertension**

- **140+**
  - two meds if more than 20 mm Hg above target
  - f/u monthly
Preferred Medications

- **Primary drugs**
  - Thiazides (Chlorthalidone preferred)
  - ACEI/ARB
  - CCB

- **Black patients**
  - Start thiazide / CCB

- **Consider comorbidities and compelling indications**
  - (CAD, heart failure, CKD, DM)
Are There Preferred Combinations?

- Few trials comparing combinations
  - ACCOMPLISH Trial – For patients at high CV risk
    benazapril plus amlodipine greater CV benefits than
    benazapril plus HCTZ
- Don’t combine meds of same class
  - No ACEI with ARB
  - Don’t combine CCB of same class (e.g. verapamil / diltiazem)
  - Ok for CCB of different class (amlodipine and verapamil)
  - Ok for different class diuretics (thiazide and loop, thiazide with potassium sparing diuretic)
Ischemic Heart Disease

- **Initial drugs**
  - Beta Blockers (atenolol less effective)
  - ACEI/ARB
- **Patients with angina**
  - Can add Dihydropyridine CCB
- **Secondary drugs**
  - Thiazides
  - Dihydropyridine CCB
Heart Failure

- Reduced ejection fraction
  - Diuretics
  - ACEI/ARB
  - Angiotensin-neprilysin inhibitor (Entresto)
  - Mineralcorticoid antagonist (e.g. spironolactone)
  - Beta blockers (carvedilol, metoprolol, bisoprolol)
  - Avoid non-dihydropyridine CCB (verapamil)
Diabetes

• All first line drugs effective
  • Thiazide diuretics
  • CCB
  • ACEI/ARB
• If albuminuria
  • ACEI/ARB
Chronic Kidney Disease

- Note tighter control of BP is based on reduced CV risk, not less progression of CKD
  - Sprint showed no changes in rates of progression
  - Declines in GFR in Sprint are hemodynamic
- CKD stage 3 or any stage with albumin/Cr ratio > 300
  - ACEI
  - ARB if ACEI not tolerated
- Otherwise any of the first choice meds
Caveats treating older patients

- For patients $\geq 65$ treat to goal of $<130/80$
- Assumed that majority of older adults are high risk
- Consider risks/benefits if high burden of comorbidity, limited life expectancy
- Guidelines apply to ambulatory community dwelling patients (not SNF, ALF)
- Caution if starting two drugs
- Monitor for orthostasis
BP Control and Cognitive Impairment

- Hypertension risk factor for
  - Small vessel ischemic changes
  - Dementia including Alzheimer’s Dementia
- 4/5 clinical trials of BP control have shown reduced dementia incidence
- 2/7 clinical trials of BP control have shown lower rates of cognitive decline
- No studies have shown worsened outcomes
Conclusion

• New BP goals for persons 65+ 130/80 (even frail!)
• First line medications
  • Thiazide diuretics (chlorthalidone)
  • ACEI/ARB (except black patients)
  • CCB
• Benefits of new goal (25% reduction in CV outcomes, ?less dementia / cognitive decline)
• Risks include AKI/orthostasis/electrolyte problems
• Will require one additional drug on average
Case

An 83 year old woman has been receiving care in your practice for more than 20 years. She has history of CKD₃, HTN, and Hyperlipidemia. Her blood pressures have been averaging 145/85 on her regimen of hctz 25 mg / Lisinopril 40 mg daily. You wonder if the goals of therapy are different at this point of her life and whether her existing regimen is appropriate.
Questions?

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