Special Considerations in the Management of Blood Pressure in the Frail Elderly

M. ANNE MONAHAN, MA, MD, CCFP, COE,
BRUYERE GERIATRIC DAY HOSPITAL,
BRUYERE CONTINUING CARE
Objectives/Overview of Presentation

- To review epidemiology of hypertension
- To highlight traditional treatment goals in hypertension
- To examine whether the evidence supports application of standard treatment benchmarks in the very elderly (> 80 years of age)
- To provide the background to the development of a BP target tool for the frail elderly at the Bruyere’s Geriatric Day Hospital
- To offer practical guidance on the treatment of hypertension in the very elderly population
### Burden of Disease in Hypertension

- **According to the WHO, hypertension is the most significant preventable risk factor for premature death worldwide** ("Global Health Risks: mortality and burden of disease attributable to Selected Major Risks." *World Health Organization 2009*)

- **A known risk factor for**
  - Ischemic heart disease and myocardial infarction
  - Heart failure
  - Cerebrovascular disease
  - Peripheral vascular disease
  - Chronic kidney disease
  - Cognitive Impairment
  - Hypertensive Retinopathy
Hypertension in Aging Adults

- Blood pressure tends to rise as we age
- Over 2/3 of adults >65 years of age afflicted with high blood pressure
- This segment of the population also reputed to have the worst BP control rates (JNC 7 Express: The Seventh Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure US Department of Health and Human Services 2003)
- Systolic hypertension most common in elderly (ISH)
- Widened pulse pressure also characteristic
- Stiffening of larger arteries
- Greater propensity to postural hypotension
- Polypharmacy more common in older adults
Hypertension in Aging Adults

Blood Pressure Distribution in the Population According to Age

Men

Women

PP = Pulse Pressure

General Treatment Goals in Management of HTN

- Treat to target <140/90 in those aged 60-79 years, including those with non-diabetic chronic kidney disease
- Target <130/80 for patients with diabetes
- Clear benefits on several fronts for this population, including (with reduction BP 15/6 mmHg)
  - Reduction in overall mortality (15%)
  - Reduction in cardiovascular mortality by 36%
  - Reduction in incidence of stroke by 35%
  - Reduction in incidence coronary artery disease by 18%
    - (CHP GUIDELINES 2012)
What About for Those >80 years of age: The Case of Mrs. H

- 88 year-old widow living alone in apt.
- History of falls, balance difficulty x few years, including with HI and SDH last year, previous fracture to wrist
- PMHx otherwise includes:
  - hypothyroidism
  - CKD (CrCl 35 ml/min)
  - osteoporosis
  - possible cognitive impairment
Mrs. H (cont’d.)

- Sometimes c/o “dizziness” upon arising from chair
- Office readings range from 110/50 – 130/70 (supine)
- Has evidence of significant orthostasis, with drops from 120/70 to 100/55 on postural change (3 occasions)
- Has been taking Atenolol 25 daily, HCTZ 25 daily, Altace 5 daily (longstanding regimen)
- May be issues with adherence to meds given possible cognitive impairment
Managing Mrs. H’s Blood Pressure

- Is Mrs. H’s blood pressure acceptable?
- Would you apply the same treatment goals to her as to her 75 year-old younger sister?
- What would you change, if anything, with her blood pressure medications?
- What might be an acceptable target BP for her?
Putting Mrs. H into Context: Hypertension in the Very Old

- Epidemiological evidence from several studies suggests there may be a survival benefit to hypertension in those 85 years of age and older.
- Evidence suggests there may be a turning point around the age of 80, whereby the previous favorability in having low blood pressure no longer holds; low blood pressure appears to confer an enhanced mortality risk above this age.
- Morbidity may also be increased, with higher risk of adverse cardiovascular events, drowsiness, confusion related to overzealous treatment of BP in this group.
In one study, patients with systolic blood pressure 160-180 had a three-fold higher chance of survival as compared with those with BPs 120-140 (Mattila et al., 1988).

In a Swedish population-based cohort study, low SBP (<120) correlated with greater 4-year all-cause mortality in those >85 years (even with controlling for health status).

Swedish study also showed tendency toward a U-shaped mortality curve, with the lowest mortality occurring at a SBP of 164 mmHg (Mollander et al., 2008).
Evidence from Trials for the >80 year-olds

- Most evidence comes from trials which included mostly “healthy elders” in this age group.
- HYVET (Hypertension in the Very Elderly Trial) randomized almost 4000 patients >80 years with mean SBP >160 to receive either placebo or Indapamide (with/without Perindopril); largest RCT in this age group to date.
- Target BP was <150/80 (higher than most guidelines).
- Proportion of “sick” elders few (e.g. <12% CVD hx, <7% diabetes, no dementia, few with orthostasis).
Active therapy achieved target in 48% of subjects
Mean BP achieved was 143/68
Treatment arm experienced significant mortality benefit from all causes (NNT 47) (never previously observed), along with a significant reduction in cardiovascular outcomes (NNT 34) (Beckett et al., 2008)
HYVET stopped early due to treatment benefit observed
Limitations of HYVET

- Included a healthier group of >80-year-olds than in the general population (so lack of generalisability)
- Included very few >85 years (most 80-84 years of age), so little direction about management of this older group
- Study concluded early (so treatment benefit possibly exaggerated)
- Important to note that target <150/80 (and mean SBP achieved) higher than standard guidelines would advise
Other Significant Trials of Interest

- **SHEP (Systolic Hypertension in the Elderly) trial:**
  - Predated HYVET (1991)
  - Target SBP 20 mmHg below baseline if presenting BP 160-180/<160 if initially >180
  - Mean attained BP 143/78
  - Excluded patients with major illness
  - Demonstrated NNT 18 over 5 years to prevent a major CV event
  - Benefits on mortality less pronounced in >80 years of age group than in younger subjects
    - (SHEP 1991)
Evidence from Other Trials

- Other trials predating HYVET (e.g. European Trial on Isolated Systolic Hypertension in the Elderly/Sys-Eur, 1998) failed to demonstrate a consistent mortality benefit to treating hypertension in those >80 years of age.
- Meta-analysis of several RCTs, including SHEP, showed a reduction in total stroke, but no reduction in total mortality – in fact cardiovascular and total mortality higher in treated subjects (INDANA 1999).
- A more recent systematic review of treatment in >80 yr-olds has shown no mortality benefit in this group (Cochrane 2009).
Developing a BP target tool at the BCC Day Hospital

- Lack of clear direction in current guidelines, trials to date re >80 yr old group led to development of a tool to guide treatment goals for this population
- Undertaken with physician – pharmacist collaboration (as well as input from outside geriatrician and cardiologist)
- Acknowledgment that increased risk of polypharmacy, adverse events, non-adherence in this older group makes treatment choices and benchmarks all the more important
Sets out same treatment goals for patients up to 79 years of age as current guidelines (e.g. CHEP)

Suggests target <150/80 (from HYVET) for ISH in >80 year-olds and/or 20 mmHg less than baseline (SHEP)

Suggests target of <140/90 in older diabetic patients (no benefit to less than this from ACCORD)

Should avoid SBP <120 as may increase mortality

Avoid DBP <60-65 as associated with increased risk CV events, stroke, MI (esp. in CAD patients) (SHEP, INVEST)
The implementation of this tool the subject of a recent chart audit project at the Day Hospital

The project aimed to examine

- whether the tool was being consistently used to highlight BP treatment goals in care plans and charts
- Whether the tool was perceived as helpful by the users
- Whether the tool was guiding pharmacologic (and non-pharmacologic) choices
- Whether treatment goals were being effectively and consistently communicated to family MDs upon patient discharge from Program
Results of the chart audit are currently being analysed

Preliminary information suggests that the BCC Day Hospital MDs have found the tool extremely helpful in establishing consistency of treatment goals

Has improved confidence with therapeutic choices re BP management

Has highlighted anecdotally that as many (if not more) older DH patients present with hypotension due to overzealous HTN treatment than with poorly controlled HTN; entails reduction/discontinuation of meds to avoid risks of too low BP
BP Target Tool and Improved Communication

- Project has led to discussion of various ideas, including:
  - Notion of developing a standard letter to be sent to family MDs along with d/c summary (and perhaps earlier in patient’s admission) outlining challenges of managing BP in older geriatric population, review of current evidence, statement of individualized target for patient in question
  - Making a point of consistently stating patient’s BP target on any prescriptions for BP meds (copies of these Rx’s routinely faxed to family MDs)
Back to the Case of Mrs. H

- Based upon evidence to date, her current BP levels are too low (considering her age, co-morbidities, symptomatic postural BP drops)
- Target should be higher than that for 75-year-old sister (who would still fit “standard” approach)
- Aim for no lower than 120/60 (or SBP>130)
- Ideally should be <150/80; could go higher if still “dizzy”
- Should likely stop Atenolol as to be avoided in patients >60 in absence of CAD (well-known from current guidelines); (will likely also improve OH)
- Monitor BP and consider further reduction in HCTZ, depending on response and symptoms
A Simple Approach to BP Management

- Identify and eliminate/reduce (if possible) medications and OTC products elevating BP, including
  - NSAIDs
  - Pseudoephedrine
  - SSRIs, MAOIs, SNRIs
  - Alcohol
  - Caffeine
  - Steroids
  - Nicotine
  - Sex hormones
Approach to BP Management (cont’d.)

- Consider non-pharmacologic approaches, including
  - weight reduction
  - reduction of sodium intake
  - increase in physical activity
  - reduction of alcohol intake
Pharmacologically, consider starting with
- Low-dose HCTZ/Indapamide/Chlorthalidone
- Add low-dose ACE (e.g. Perindopril); double dose once if needed; (CCB an alternative, esp. if ISH)
- This combo known to reduce risk of stroke (same as that used in HYVET); will result in achievement of target $<150/80$ in about 50% of patients (extrapolated from HYVET)
- Avoid beta-blockers (unless indicated) in >60 yr-olds
Take Away Messages

- An individualized approach is needed to managing BP in the >80 year old patient
- Extremely limited data from trials on those >85 (fastest growing segment of senior population)
- What data we do have suggests increased morbidity and mortality from BP too low in the oldest of the old (but considered “normal” BP for younger patients)
- Higher risk of hypotension remains in older group even when health status factored out
- Trial data to date on >80 year olds suggests that benefits accrue from even modest reductions in BP and more lenient targets than standard guidelines would prescribe
- Be prepared to stop/reduce medications contributing to hypotension in the older geriatric patient
Bibliography


- Farrell, B., Monahan, A., Walsh, K., Dore, N. Piloting a Geriatric Day Hospital Approach to Targeting Blood Pressure in the Very Old. Unpublished draft article; currently being prepared for a publication submission.


