

HYPERTENSION IN THE ELDERLY: A geriatrician's POV

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70th McGill Family Medicine Annual Refresher Course for Family Physicians (2019)Mon Dec 2nd 2019 at 11h00 & 15h45

Workshops A-02 & B-02, room St-Laurent 8

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Disclosure statement: No conflicts of interest to declare.**LEARNING OBJECTIVES**

With this workshop, the attendee will:

- Learn/debate the definitions of "elderly" and "frailty" as defined in hypertension [HTN] management research trials vs. clinical practice.
- Appreciate how the *method* of blood pressure [BP] measurement may affect treatment decision-making at any age; and the importance of measuring orthostatic vital signs, particularly in the elderly on antihypertensive drugs.
- Learn/review specific BP targets/goals for the treatment of elderly patients with HTN (specifically, isolated systolic HTN) with respect to risks:benefits of treatment; including the question of preventing dementia.
- Discuss some geriatric-specific considerations in treating HTN in the elderly from a geriatrician's POV, such as "tolerable"/non-specific side effects, minimum diastolic blood pressure, choice of antihypertensive drugs beyond usual considerations, and the risks of orthostatic hypotension.

"EXECUTIVE SUMMARY"

Hypertension (HTN), defined by the Framingham Heart Study as a systolic blood pressure (BP) of ≥ 140 or diastolic BP ≥ 80 mmHg – particularly essential isolated systolic HTN - is common in the elderly, with its prevalence rising with increasing age. Negative outcomes of persistent, uncontrolled hypertension are well-established (stroke, chronic kidney disease, ischemic heart disease, congestive heart failure, cardiovascular mortality), especially in the elderly who are at higher risk of complications from HTN given certain changes of normal aging and/or comorbid cardiovascular conditions.

Historically, blood pressure (BP) targets have been "looser" in the elderly given uncertain risk:benefit ratio and observational data showing a "J-shaped curve" of low BP being associated with increased negative outcomes. Concerns over risk of side effects from polypharmacy (particularly falls) and being too old to benefit ("time to benefit" from this preventative manoeuvre) in the elderly also contributed to this concern.

Publication of the HYVET trial (Hypertension in the Very Elderly Trial, NEJM 2008) demonstrated benefit of lowering systolic BP (BPs) to 160mmHg in patients ≥ 80 years old with respect to stroke.

Publication of the SPRINT trial (Systolic Blood Pressure Intervention Trial, NEJM 2015) demonstrated cardiovascular benefits of “intense” lowering of systolic to BP 120 (vs. “standard” treatment to BPs 130) in non-diabetic, community-dwelling older adults without previous stroke; particularly the elderly ≥ 75 years old and purportedly including the “frail” elderly. This benefit was seen without increased risk of falls; though was at the expense of other “serious adverse events” (e.g. deterioration in renal function, orthostatic hypotension [OH], electrolyte disturbances.) Acceptability of treatment was similar in both groups

Numerous other studies of HTN management in specific populations (e.g. diabetics, previous stroke, chronic kidney disease (CKD), etc.) also have shown benefit of preventing cardiovascular complications or slowing progression of CKD with BPs targets ranging from 120-140; with other factors (such as older age and degree of baseline proteinuria) pushing targets up or down.

While current published clinical practice guidelines still recommend target goal BPs of ≤ 140 (≤ 130 in diabetics), including for older patients ≥ 60 years old - with one controversially loosening the BPs upper limit for ≥ 60 years old to <150 (JNC “8”), and some specifying <150 for patients >80 years old (AHH/ACC, ASH/ISH), these all were issued prior to the publication of SPRINT in 2015. Thus based on SPRINT, most cardiovascular organizations (e.g. AHA/ACC 2017, ESH/ESC 2018) now recommend treatment targets the same as non-elderly adults - i.e. target BPs of 120 for “all adults” (CHEP 2018 specifies ≥ 50 years old) - though perhaps with more cautious monitoring for side effects (yet no specific recommendations on how to do this except to check for OH at each visit.)

Most trials demonstrated greatest benefit of BP lowering in patients at “high risk” of cardiovascular events – i.e. patients with a higher baseline risk of CV events demonstrated a greater absolute risk reduction (thus a lower number-needed-to-treat) than those with a lower baseline risk. Baseline risk as inclusion criteria for SPRINT included “clinical or subclinical” cardiovascular disease (except stroke), cardiac systolic dysfunction (e.g. LVEF $<35\%$), elevated cardiovascular event risk score (Framingham CV risk $>10\%$, e.g. <https://myhealthcheckup.com/> [CMA & CHEP endorsed]), mild-severe chronic kidney disease (e-GFR 20-60) - and older age ≥ 75 years old.

Since SPRINT, there has been more discussion about BP measurement methods affecting accuracy and comparability of BP readings thus treatment targets. “Standard office based” BP measurements were typically ~ 5 (up to 10!) mmHg higher than “non-standard” methods using automatic oscillatory BP monitoring (which averages several measurements) without an observer in the exam room, averaged home BP measurements or 24-hour ambulatory BP monitoring. As such, the BPs treatment target recommended by some authors for most adults including the elderly is more like ~ 125 mmHg.

SPRINT-Mind (JAMA 2018), a sub-study of SPRINT (average age: 67.9 years, baseline median MoCA score 23/30 [i.e. MCI at baseline?]), did not show reduction in the development of major neurocognitive disorder (NCD, dementia) with “intensive” BPs target of 120; but did show statistically significantly lower incidence of minor NCD (mild cognitive impairment/MCI) and combined outcome of incidence of MCI and dementia. However previous trials of HTN management and slowing progression of chronic ischemic white matter changes on brain imaging, which have been associated with MCI, have been mixed (e.g. pro: PROGRESS 2005, con: PROGRESS 2012.) Various authors/editorials have expressed that HTN management to prevent cognitive impairment must be started sooner than in older age (i.e. ‘closing the barn door after the horse has bolted’), as has been expressed about several proposed preventative treatment strategies for neurodegenerative conditions.

However from a geriatrics point of view, several caveats must be taken into consideration:

- The “frail” in SPRINT were not frail by geriatric / real-life clinical standards.
- The study populations all were community-dwelling and ambulatory, thus do not necessarily apply to patients in long-term care.
- The SPRINT study population excluded some common comorbidities in the elderly, specifically diabetes and previous stroke.
- The “tolerability” and consequences of the adverse effects were not clear (e.g. association of OH with increased cardiovascular mortality), keeping in mind the frailer elderly may present with atypical or non-specific symptoms.
- The SPRINT-Mind study did not have a long enough follow up period to detect incident dementia due to the SPRINT trial being terminated early given cardiovascular benefit; and though a 2-year extension is planned (funded by the US Alzheimer’s Association), the study may be confounded by several biases, particularly selection bias.

Other “geriatric” considerations suggested to be taken into account when planning HTN management in the elderly:

- Lifestyle changes may be more challenging to implement in the frail elderly due to a greater burden of comorbidities that could affect functional autonomy. At the same time, the elderly appear to be more sensitive (respond better) to salt restriction (e.g. <5g/day of sodium chloride in the treatment plan.)
- “Start low, go slow...but go!” In the absence of HTN urgency / crisis, titrate BP antihypertensive drug(s) over months, especially if baseline BPs was high >160.
- Postural vital signs must be taken in monitoring HTN, as OH was associated with increased risk of adverse outcomes in “intense” BP lowering (and in other studies, negative cardiovascular outcomes, falls and mortality.)
 - Orthostatic hypotension measurement: Drop in BPs ≥ 20 or BPd ≥ 10 , from resting supine to standing 1 minute - not seated unless cannot stand, probably no need for >1 minute - while also noting if any dizziness or pre-syncopal symptoms.
- Lowering BP to the point of diastolic BP (BPd) < 60mmHg may be counterproductive as low perfusion pressure may cause end-organ ischemia.

- Be aware of the potential impact of antihypertensive drugs on other “geriatric syndromes” and vice versa (e.g. diuretics aggravating urinary incontinence, dementia affecting medication compliance thus HTN control and side effects.) Specifically, beware of the polypharmacy “prescribing cascade.”

A study of opportunistically intensifying HTN management of elderly patients during hospitalization for non-cardiac conditions did not lower risk of cardiovascular events at 1 year; but did increase the rates of readmission and serious adverse effects within 30 days of hospital discharge (JAMA Int Med, Aug 2019.)

Cost-effectiveness of the lower target of BPs 120 in the context of the aging population (especially of the very old who have the highest prevalence of HTN) remains to be determined; though some authors have estimated benefit relative to treating HTN’s cardiovascular complications.

Lastly, while not studied specifically in the elderly (average age: 60 years old), there is recent evidence favouring simply dosing antihypertensive drug(s) all at bedtime rather than all in the AM upon awakening, with improvement in HTN control and significant reductions in cardiovascular outcomes (Hygia Chronotherapy Trial, Eur Heart J Oct 2019.) Considering also the risks of orthostatic hypotension, this may be very clinically relevant in the care of the elderly hypertensive patient.

The workshop will provide further details on the issues above, and case scenarios will be presented for the group’s discussion / debate about management.

RECOMMENDED READING

Hypertension management in Older and Frail Older Patients.

Benetos A, et al. Circulation Res, 29 March 2019; 124: 1045-60.

<https://www.ahajournals.org/doi/pdf/10.1161/CIRCRESAHA.118.313236> (free access)

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Uptodate.com – sections on (date last updated):

- Treatment of hypertension in older adults, particularly isolated systolic hypertension (2019-7-01.)
- Goal blood pressure in adults with hypertension (2019-10-30.)
- Overview of hypertension in adults (2019-5-02.)
- Diet in the treatment and prevention of hypertension (2019-1-18.)
- Choice of drug therapy in primary (essential) hypertension (2019-9-19.)
- Treatment of hypertension in patients with diabetes mellitus (2017-11-27.)
- Overview of the prevention of cardiovascular disease events in those with established disease (secondary prevention) or at high risk (2019-10-15.)

A Randomized Trial of Intensive versus Standard Blood-Pressure Control. SPRINT Research Group. New Engl J Med, 2015; 373(22): 2103-16.

- Also: Am Coll Cardiol (ACC) commentaries on SPRINT: 2017-11-13, 2015-12-02.

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2017 Guideline for High Blood Pressure in Adults [summary of 2017 ACC / AHA / AAPA / ABC / ACPM / AGS / APhA / ASH / ASPC / NMA / PCNA Guidelines for the Prevention, Detection, Evaluation, and management of high Blood Pressure in Adults: A Report of the American College of Cardiology / American Heart Association Task Force on Clinical Practice Guidelines – a.k.a. "JNC 8."] Am Coll Cardiol, 2018-5-07.

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Hypertension guidelines: Treat patients, not numbers. W Aleyadeh, et al. Clev Clin J Med, 2019; 86(1): 47-56.

Blood pressure targets in the elderly: many guidelines, much confusion. S Ewen, et al. Eur Heart J, 2019; 40(25): 2029-31.

Comprehensive comparative effectiveness and safety of first-line antihypertensive drug classes: a systematic, multinational, large-scale analysis. MA Suchard, et al. Lancet, published online 24 Oct 2019. [https://doi.org/10.1016/S0140-6736\(19\)32317-7](https://doi.org/10.1016/S0140-6736(19)32317-7).

Effect of Intensive vs Standard Blood Pressure Control on Probable Dementia: A Randomized Clinical Trial. The SPRINT MIND Investigators for the SPRINT Research Group. J Am Med Assoc, 2019; 321(6): 553-61.

Telmisartan on Top of Antihypertensive Treatment does Not Prevent Progression of Cerebral White Matter Lesions in the Prevention Regimen for Effectively Avoiding Second Strokes (PROFESS): MRI Substudy. R Weber, et al. Stroke, 2012; 43: 2336-42.

Effects of Blood Pressure Lowering on Cerebral White Matter Hyperintensities in patients With Stroke: The PROGRESS (Perindopril Protection Against Recurrent Stroke Study) Magnetic Resonance Imaging Substudy. C Dufouil, et al. Circulation, 2005; 112: 1644-50.

Association of History of Dizziness and Long-term Adverse outcomes With Early vs Later Orthostatic Hypotension Assessment Times in Middle-aged Adults. SP Juraschek, et al. JAMA Intern Med, 2017; 177(9): 1316-23.

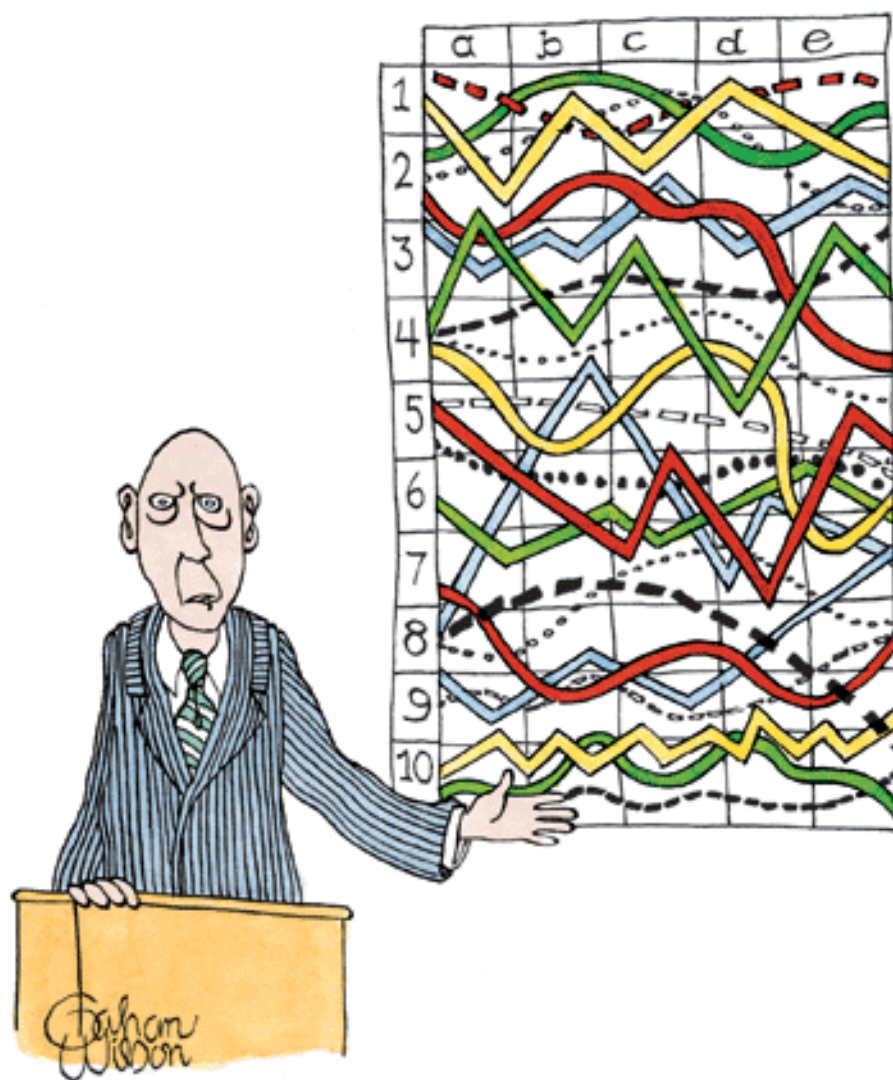
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"I'll pause for a moment so you can let this information sink in."

(Gahan Wilson, The New Yorker Magazine, Dec 2010.)