Is white-coat hypertension benign?

My comments and questions pertain to the summary of the new Canadian Hypertension Education Program recommendations by Gelfer and colleagues,[1] specifically the following:

> The out-of-office assessment should preferably be done using 24-hour ambulatory BP [blood pressure] measurement (ABPM). A series of measurements with home BP measurement (HBPM) can be done if ABPM is not available or not tolerated by the patient (level II evidence).
>
> If the average of the out-of-office readings is normal, a diagnosis of WCH [white-coat hypertension] is made. Patients with WCH should have their BP assessed annually and should not be treated pharmacologically, although a healthy lifestyle should be encouraged and supported at all times (level II evidence).[1]

My concerns are the following:

- Regarding out-of-office BP measurement, most of my patients do not have private insurance and refuse to do 24-hour ABPM owing to the high cost.
- Is there an evidence-based way of checking home BP measurements? What I have read to do is to measure BP twice in the morning (between 7 AM and 9 AM), with 1 minute between measurements, and take the average of the 2 measurements, then measure BP twice in the afternoon (between 7 PM and 9 PM), with 1 minute between measurements, and take the average of the 2 measurements. Then take the average of these averages to determine the average BP of that day.
- I question the Canadian Hypertension Education Program's recommendations for not treating WCH.

There are data to suggest that WCH is not benign and might warrant medication. Mancia et al showed that at 10 years' follow-up, 42.6% ($P<.0001$) of patients with WCH had developed hypertension.[2]

Glen et al showed that patients with WCH had similar cardiovascular changes to patients with hypertension. Findings included larger arteries ($P<.05$) and diastolic left ventricular dysfunction ($P<.005$).[3]

Two articles reported that carotid arteriosclerosis was significantly greater in patients with WCH than in normotensive patients ($P<.01$).[4,5]

Also, WCH has been characterized by higher degrees of inflammatory activation (elevated high-sensitivity C-reactive protein [hsCRP] level) and arterial stiffening (elevated pulse wave velocity) compared with normotension and to a lesser degree compared with sustained hypertension.[6] As we know, hsCRP is both a marker of inflammation and a risk factor for cardiovascular mortality.

Finally, Sung et al calculated a hazard ratio of 2.94 for 15-year cardiovascular mortality in patients with WCH compared with patients with prehypertension, after accounting for age, sex, body mass index, smoking, fasting plasma glucose level, and the ratio of total cholesterol to high-density lipoprotein cholesterol.[7]

And Lewington et al showed that cardiovascular mortality doubles in adults aged 40 to 69 years for every increment in BP of 20/10 mm Hg above 115/75 mm Hg.[8]

(I have not read these articles to evaluate their validity, just the abstracts, so if I am incorrect in my conclusions, please comment.)

These are articles with evidence to suggest WCH is not benign and might warrant pharmacotherapy.

At the very least, as WCH might not be benign, serious counseling for modifying diet and lifestyle risk factors should not only be encouraged, but emphasized and supported.

I thank the authors for their article and any comments and advice they might have.

—*David B. Tsai* MD
Toronto, Ont

Competing interests
None declared

References

1. Gelfer M, Dawes M, Kaczorowski J, Padwal R, Cloutier L. Diagnosing hypertension. Evidence supporting the 2015 recommendations of the Canadian Hypertension Education Program. *Can Fam Physician* 2015;61:957-61 (Eng), e499-503 (Fr).
2. Mancia G, Bombelli M, Facchetti R, Madotto F, Quarti-Trevano F, Polo Friz H, et al. Long-term risk of sustained hypertension in white-coat or masked hypertension. *Hypertension* 2009;54(2):226-32. Epub 2009 Jun 29.
3. Glen SK, Elliott HL, Curzio JL, Lees KR, Reid JL. White-coat hypertension as a cause of cardiovascular dysfunction. *Lancet* 1996;348(9028):654-7.
4. Cuspidi C, Sala C, Tadic M, Rescaldani M, Grassi G, Mancia G. Is white-coat hypertension a risk factor for carotid atherosclerosis? A review and meta-analysis. *Blood Press Monit* 2015;20(2):57-63.
5. Martin CA, McGrath BP. White-coat hypertension. *Clin Exp Pharmacol Physiol* 2014;41(1):22-9.
6. Andrikou I, Tsioufis C, Dimitriadis K, Syrseloudis D, Valenti P, Almiroudi M, et al. Similar levels of low-grade inflammation and arterial stiffness in masked and white-coat hypertension: comparisons with sustained hypertension and normotension. *Blood Press Monit* 2011;16(5):218-23.
7. Sung SH, Cheng HM, Wang KL, Yu WC, Chuang SY, Ting CT, et al. White coat hypertension is more risky than prehypertension: important role of arterial wave reflections. *Hypertension* 2013;61(6):1346-53. Epub 2013 Apr 22.
8. Lewington S, Clarke R, Qizilbash N, Peto R, Collins R; Prospective Studies Collaboration. Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet* 2002;360(9349):1903-13. Erratum in: *Lancet* 2003;361(9362):1060.