

Hypertension 2017

Putting the Guidelines into Practice

Disclosures

- Relationships with commercial interests:
 - Grants/Research Support:
 - Speakers Bureau/Honoraria:
 - Consulting Fees:
 - Data Safety and Monitoring:



Disclosure of Commercial Support

- This program has received financial support from Servier in the form of an educational grant
- This program has not received any in-kind support
- Potential for conflict(s) of interest:
 - _____ has received an honoraria funding from Servier, who has product(s) in this therapeutic area

Mitigating Potential Bias

- The information presented is based on recent information that is explicitly “evidence-based” and is solely based on Hypertension Canada Guidelines



Evidence-Based Annual Guidelines

- Canada has the world's highest reported national blood pressure control rates
- Hypertension Canada is known as the most credible source for evidence-based hypertension guidelines, with annual updates, a well-validated review process and effective dissemination and implementation techniques across Canada

Learning Objectives

At the conclusion of this activity, participants will be able to:

- Apply appropriate methods for making a diagnosis of hypertension
- Implement evidence-based threshold and target BPs
- Integrate new guidelines for hypertension management including:
 - Use of longer-acting over shorter-acting diuretics
 - Use of single pill combinations as a first-line treatment



Hypertension 2017

What's new?

- Longer acting (thiazide-like) diuretics are preferred vs. shorter acting (thiazides)
- Single pill combinations as a first line treatment (regardless of the extent of BP elevation)



Hypertension 2017

What's still important?

- **The diagnosis of hypertension should be based on out-of-office measurements; in the office, use automated office BP monitoring (AOBP)**
- The threshold and target blood pressures are lower in those at greater risk



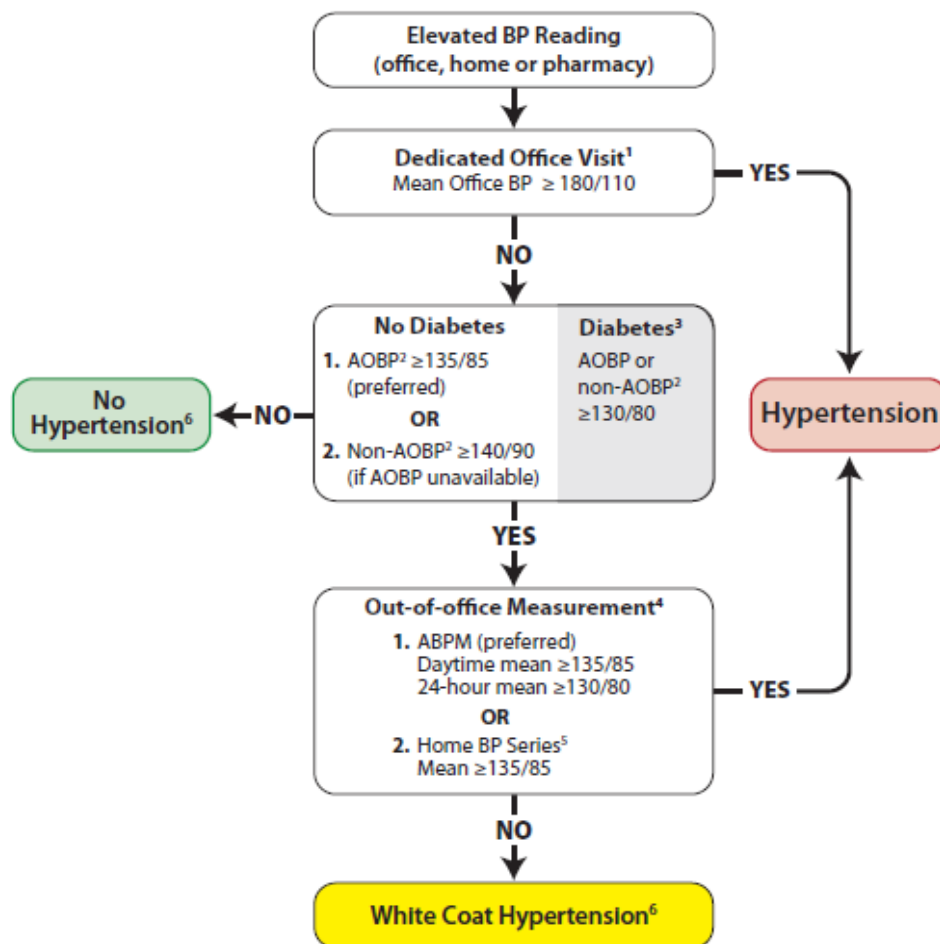
Case 1. Office vs. Out-of-Office

BP Measurements in the DIAGNOSIS of Hypertension: Which One to Believe?

- 57-year-old account executive presents for BP follow-up visit
- Elevated BP identified 2 months ago during annual exam
- Interim BPs taken at local pharmacies have all been normal
- Normal hematology, biochemistry, renal function and electrolytes
- Normal EKG with no evidence of LVH
- Office BP using auscultatory wall-mounted mercury sphygmomanometer: 152/102 mmHg
- How would you explain this observation?

Hypertension Diagnostic Algorithm

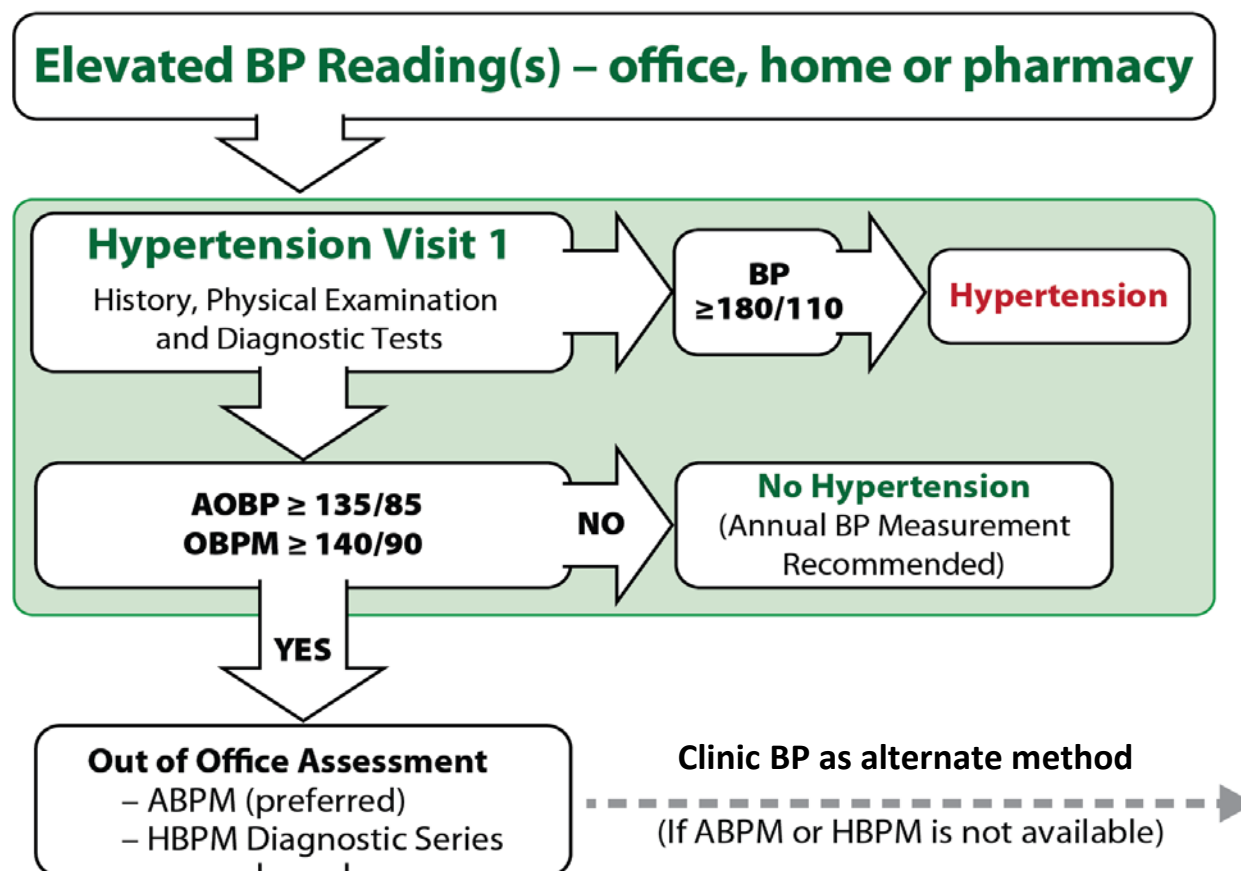
1. **Out of office** assessment is the preferred means of hypertension Dx
2. **Measurement using electronic** (oscillometric) upper arm devices is preferred over auscultation



ABPM = ambulatory blood pressure measurement
AOBP = automated office blood pressure



Out-of-Office Assessment is the Preferred Means of Diagnosing Hypertension



AOBP = automated office blood pressure
OBPM = office BP measurement

ABPM = ambulatory BP measurement
HBPM = home BP measurement

Out-of-Office BP Measurements

- Out-of-office measurement identifies white coat hypertension and masked hypertension
- ABPM has better predictive ability than OBPM and is the recommended out-of-office measurement method
- HBPM has better predictive ability than OBPM and is recommended if ABPM is not tolerated, not readily available or due to patient preference

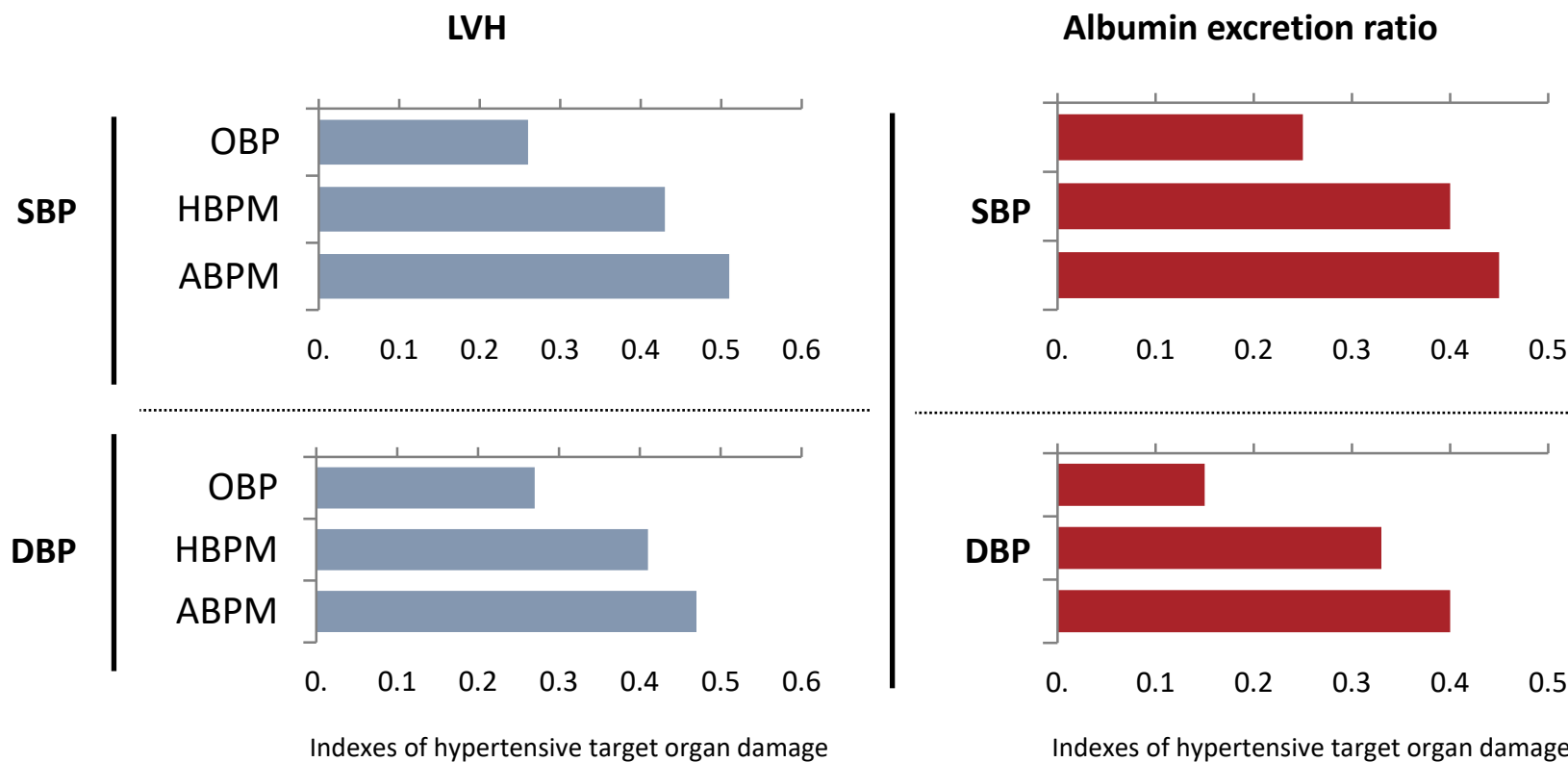
ABPM = ambulatory blood pressure measurement

HBPM = home BP measurement

OBPM = office BP measurement

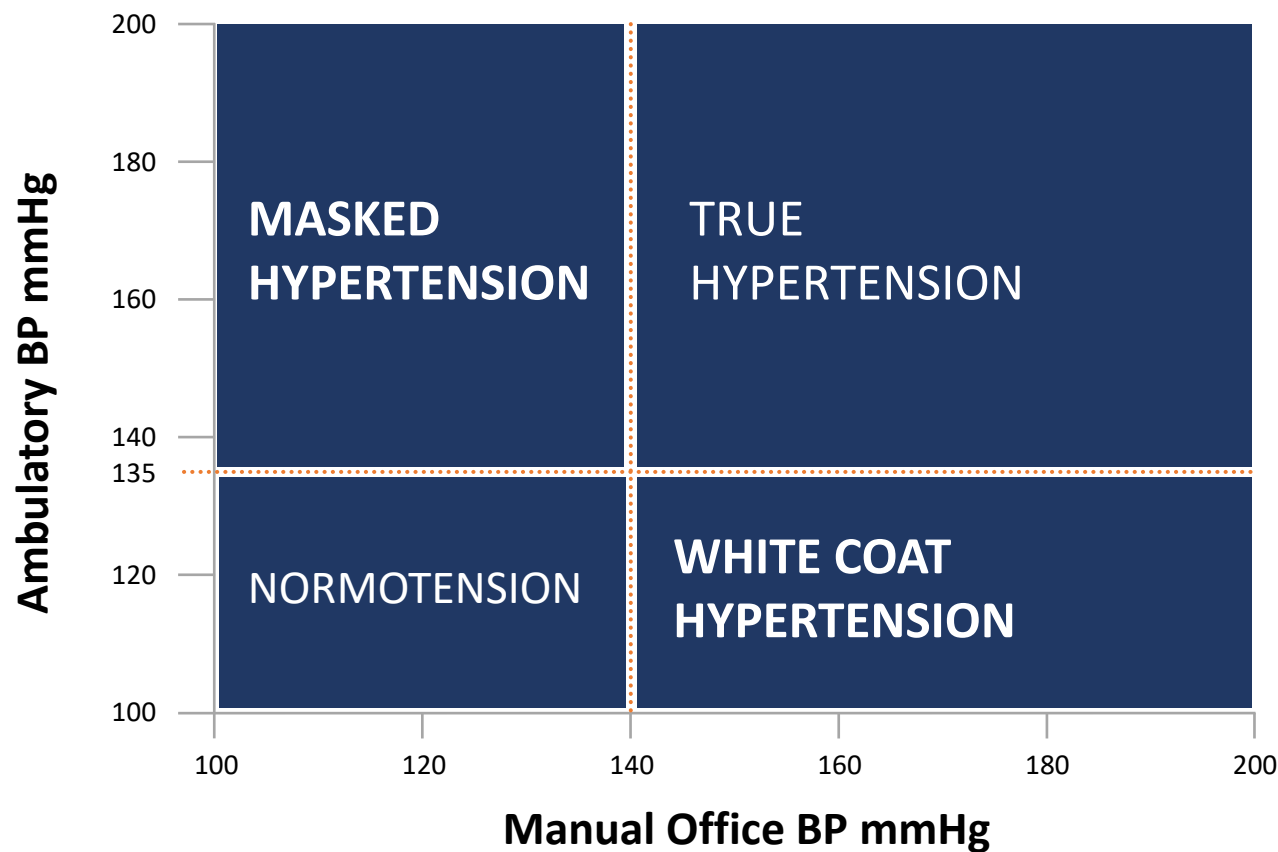


Out-of-Office BP Measurements are More Highly Correlated With BP-Related Risk



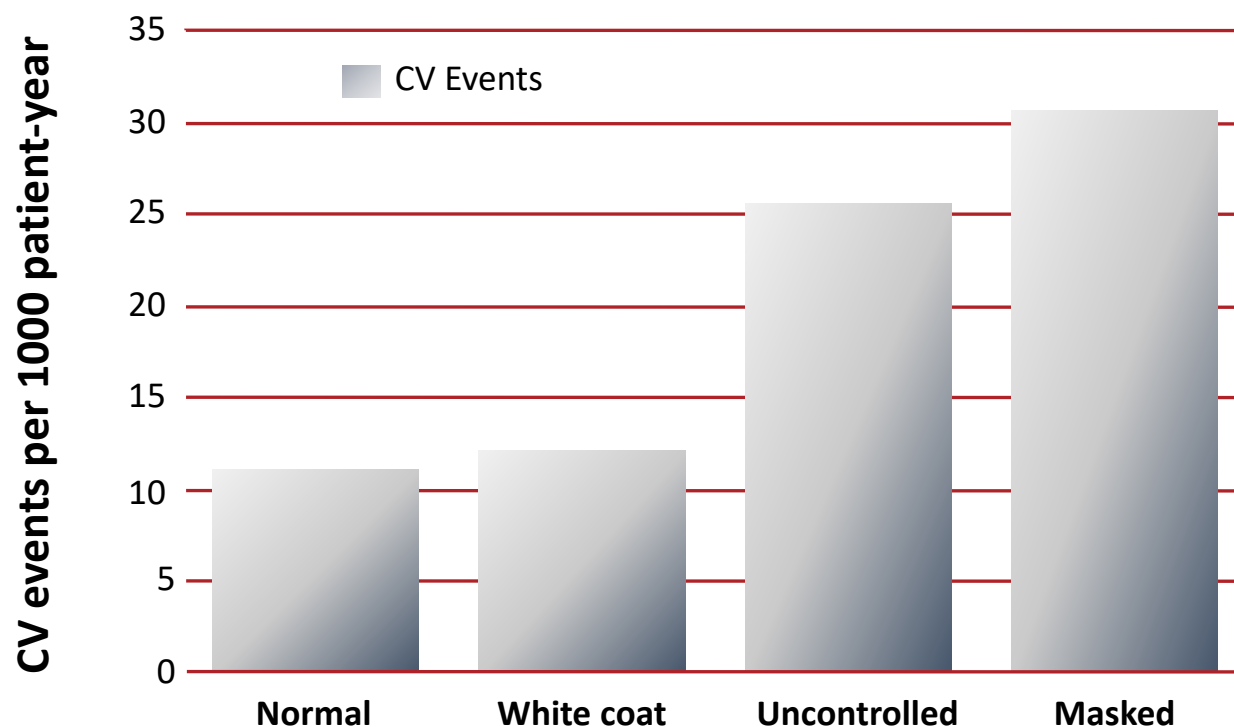


White Coat and Masked Hypertension





The Prognosis of *White Coat* and *Masked* Hypertension



Automated Office BP Measurement Preferred

- Automated office blood pressure (AOBP) is the preferred method of performing in-office BP measurement

Automated Office (unattended, AOBP)
Oscillometric (electronic)





Automated Office BP Measurement

- More closely approximates ABPM than routine office BPs (mitigates white coat effect)¹⁻³
- Is more predictive of end organ damage (LVMI, proteinuria and cIMT), similar to ABPM⁴⁻⁶

ABPM = ambulatory blood pressure measurement

LVMI = left ventricular mass index

cIMT = carotid intima media thickness

1. Beckett L, et al. *BMC Cardiovasc Disord* 2005;5:18;
2. Myers MG, et al. *J Hypertens* 2009;27:280-6;
3. Myers MG, et al. *BMJ* 2011;342:d286;
4. Campbell NRC, et al. *J Hum Hypertens* 2007;21:588-90;
5. Andreadis EA, et al. *Am J Hypertens* 2011;24:661-6;
6. Andreadis EA, et al. *Am J Hypertens* 2012;25:969-73.

Reflection Case 1

- What device do you currently use in the office to measure BP?
- What do you tell patients about home BP assessment?

Hypertension 2017

What's still important?

- The diagnosis of hypertension should be based on out-of-office measurements; in the office, use automatic office BP monitoring (AOBP)
- The threshold and target blood pressures are lower in those at greater risk

Case 2. BP Control: A Moving Target?

- Jim is 76 years old, recent MI 2 years ago
- Comes to the office for hypertension follow-up, no residual angina
- Hypertension known for the last 20 years with BP ~135/80 mmHg average at home
- Rx: amlodipine 5 mg qd, olmesartan 20 mg qd, hydrochlorothiazide 25 mg qd, bisoprolol 5 mg qd for hypertension
- Normal cardiovascular exam today, office BP 135/80 mmHg
- Normal hematology, LDL-C at target, creatinine and electrolytes within normal limits
- EKG with anterior infarct, no LVH, normal LV function on echo
- What should be his BP target?



Usual Office BP Threshold Values for Initiation of Pharmacological Treatment

Population	SBP	DBP
High Risk (SPRINT population) #	≥ 130	NA
Diabetes	≥ 130	≥ 80
Moderate *	≥ 140	≥ 90
Low risk (no TOD or CV risk factors)	≥ 160	≥ 100

AOBP = automated office blood pressure

TOD = target organ damage

SBP = systolic blood pressure

DBP = diastolic blood pressure

Based on AOBP

*AOBP threshold $\geq 135/85$ mmHg



Recommended Office BP Treatment Targets

Treatment consists of health behaviour \pm pharmacological management

Population	SBP	DBP
High Risk [#]	≤ 120	NA
Diabetes	< 130	< 80
All others*	< 140	< 90

[#] Based on AOBP

*AOBP threshold $\geq 135/85$ mmHg

New Guideline Post-SPRINT

- For high-risk patients, aged ≥ 50 years, with systolic BP levels ≥ 130 mm Hg, intensive management to target a systolic BP ≤ 120 mm Hg should be considered
- Intensive management should be guided by automated office BP measurements
- Patient selection for intensive management is recommended and caution should be taken in certain high-risk groups



New Thresholds/Targets for the High-Risk Patient Post-SPRINT: *Who does this apply to?*

Clinical or sub-clinical cardiovascular disease

OR

Chronic kidney disease (non-diabetic nephropathy, proteinuria <1 g/d,
*estimated glomerular filtration rate 20-59 mL/min/1.73m²)

OR

[†]Estimated 10-year global cardiovascular risk $\geq 15\%$

OR

Age ≥ 75 years

- There was an increased risk of renal deterioration, potassium abnormalities and hypotension with intensified therapy
- Patients with one or more clinical indications should consent to intensive management

* Four variable MDRD equation

[†] Framingham Risk Score, D'Agostino, Circulation 2008



New Thresholds/Targets for the High-Risk Patient

Post-SPRINT: *Who does this NOT apply to?*

Limited or No Evidence:

- Heart failure (EF <35%) or recent MI (within last 3 months)
- Indication for, but not currently receiving, a beta-blocker
- Institutionalized elderly

Inconclusive Evidence:

- Diabetes mellitus
- Prior stroke
- eGFR < 20 ml/min/1.73m²

Contraindications:

- Patient unwilling or unable to adhere to multiple medications
- Standing SBP <110 mmHg
- Inability to measure SBP accurately
- Known secondary cause(s) of hypertension

Reflection Case 2

- Do you document BP targets on the patient's chart/EMR?
- How do you communicate BP targets to your patient?

Hypertension 2017

What's new?

- Longer acting (thiazide-like) diuretics are preferred vs. shorter acting (thiazides)
- Single pill combinations should be used as a first line treatment (regardless of the extent of BP elevation)



Hypertension
CANADA

Case 3. Diuretics for Hypertension: A Fluid Situation?

- Matthew, a smoker, 53 years of age, is director of finances at your hospital
- A diagnosis of stage 1 HTN was made at his annual medical exam 2 years ago
- He lost 15 pounds, walks to work everyday, but is unable to stop smoking
- HbA1c and lipids are normal
- No signs or symptoms of target organ damage
- His initial Rx was hydrochlorothiazide 25 mg qd but with home BP readings averaging 154/90 mmHg in the AM before meds and 132/84 in the PM
- You consider other options: leave things as they are? add another drug?



Longer-acting Diuretics Should be Preferred (i.e., thiazide-like are preferred to thiazides)

Longer-acting (thiazide-like): chlorthalidone, indapamide

Shorter-acting (thiazides): hydrochlorothiazide



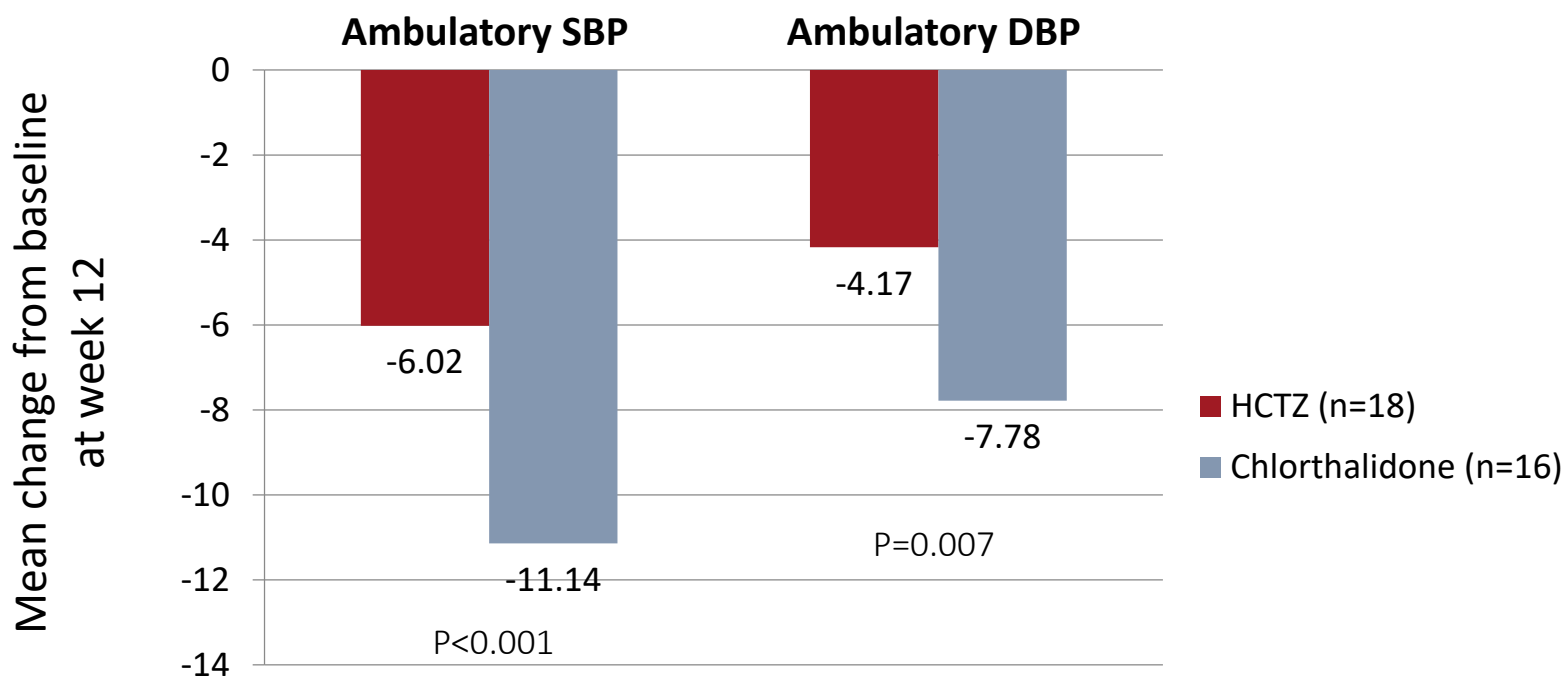
Diuretic Type Meta-Analysis vs. Placebo

- **Both** types of diuretics reduced CV events, cerebrovascular events, and HF
- **Only thiazide-like diuretics** additionally reduced coronary events and all-cause mortality

Event	Thiazide-Type	Thiazide-Like
CV	0.67 (.56-.81)	0.67 (0.60-0.75)
Coronary	0.81 (0.63-1.05)	0.76 (0.61-0.96)
Cerebrovascular	0.52 (0.38-0.69)	0.68 (0.57-0.80)
Heart Failure	0.36 (0.16-0.84)	0.47 (0.36-0.61)
All-cause Mortality	0.86 (0.75-1.00)	0.84 (0.74-0.96)



Chlorthalidone More Effective Than Hydrochlorothiazide in BP Reduction



Kruskal-Wallis test used with Dunn's test for multiple comparisons; comparison between baseline and Wilcoxon signed rank test results. Mean 24h SBP was significantly lower for the chlorthalidone group than for the HCTZ group at week 4 (125.52 vs. 139.71 mmHg, respectively, $P=0.019$) and week 12 (121.87 vs. 136.64 mmHg, respectively, $P=0.013$). Intent-to-treat population.



Summary: Longer-Acting Diuretics Preferred

- Longer-acting (thiazide-like) diuretics appear more effective at reducing **CV events** and SBP & DBP than shorter-acting (thiazide) diuretics

Reflection Case 3

- In patients who are currently taking a short-acting diuretic and have good blood pressure control, should you change their therapy?
- How are you determining what constitutes *good* blood pressure control?

Hypertension 2017

What's new?

- Longer acting (thiazide-like) diuretics are preferred vs. shorter acting (thiazide)
- Single pill combinations should be used as a first line treatment (regardless of the extent of BP elevation)

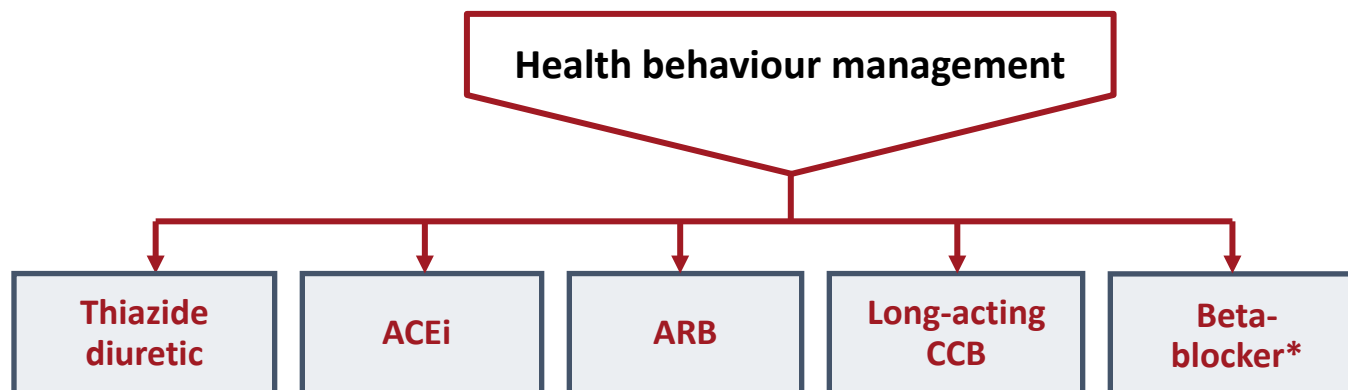


Case 4. Lightening the Load in the Management of the Patient with Multiple Risk Factors

- Wally is a 59-year-old who has a remote history of prediabetes, mild hypertension and dyslipidemia. You haven't seen him for 3 years – he says “I just got tired of taking all those pills.”
- Motivated by his family (older sib just had an MI), Wally presents for reassessment of his CV risks, with these results: BP 146/92, HbA1c = 6.8%, LDL = 3.9.
- As you consider his antihypertensive therapy, Wally says wistfully – “Bet you're gonna load me up with pills again...”
- What antihypertensive therapy would you consider for this patient?

First Line Recommendations Circa 1999-2016

TARGET < 140 mmHg systolic AND < 90 mmHg diastolic



A combination of 2 first line drugs may be considered as initial therapy if the blood pressure is ≥ 20 mmHg systolic or ≥ 10 mmHg diastolic above target

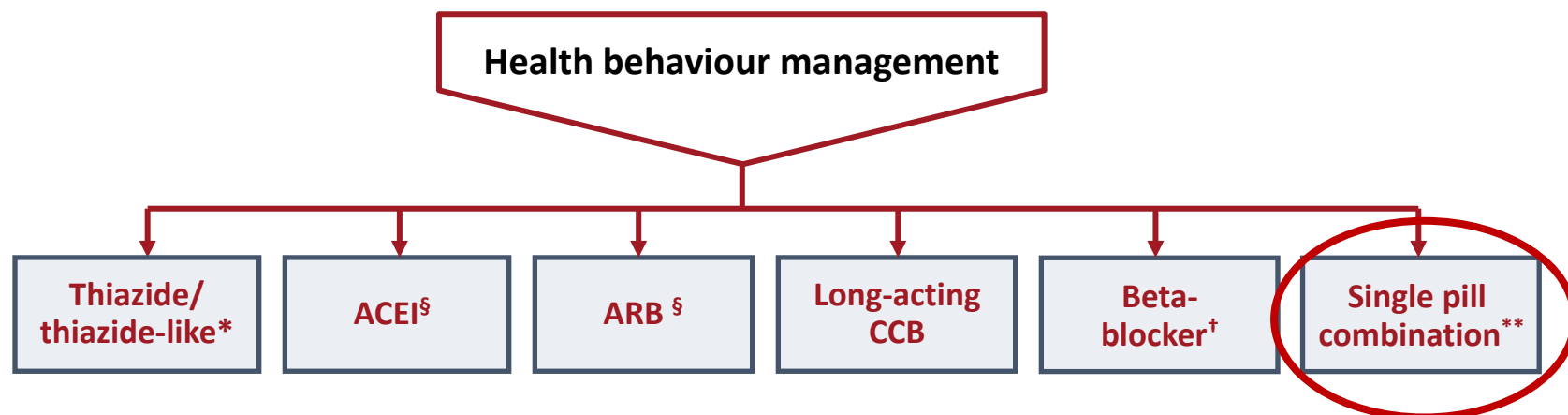
*Not indicated as first line therapy for patients over 60 yrs.

First Line Treatment of Adults with Systolic/Diastolic Hypertension Without Other Compelling Indications

New 2017

TARGET <135/85 mmHg (automated measurement method)

INITIAL TREATMENT



* Longer-acting (thiazide-like) diuretics are preferred over shorter-acting (thiazide) diuretics

† BBs are not indicated as first line therapy for age 60 and above

§ Renin angiotensin system (RAS) inhibitors are contraindicated in pregnancy and caution is required in prescribing to women of child bearing potential

****Recommended SPC choices are those in which an ACE-I is combined with a CCB, an ARB with a CCB, or an ACE-I or ARB with a diuretic**



Advantages of Single Pill Combinations (SPCs)

- SPC therapy is associated with better adherence vs. free combinations¹
- A regimen featuring initial prescription of SPC leads to better BP control²
- Initial combination therapy is associated with ↓ risk of CV events than monotherapy^{3,4}

1. Sherrill B, et al. *J Clin Hypertens* 2011;13:898-909;

2. Feldman RD, et al. *Hypertension* 2009;53:646-53;

3. Corrao G, et al. *Hypertension* 2011;58:566-72;

4. Gradman AH, et al. *Hypertension* 2013;61(2):309-18.

SPC Combining an ACEI/ARB With CCB/Diuretic as First Line Rx

2 key studies establishing the utility of SPCs as first line:

HOPE-3. *N Engl J Med* 2016;374(21):2009-20

Pivotal study demonstrating the superiority of an SPC
(ARB/diuretic) vs. Placebo

ACCOMPLISH. *N Engl J Med* 2008;359(23):2417-28

Demonstration of efficacy of ACEI/CCB SPC vs. active control

Reflection Case 4

- Will you start patients with newly diagnosed mild hypertension on single pill combination therapy?
- What are the barriers to prescribing SPCs?



Hypertension 2017

What's new?

- Longer-acting (thiazide-like) diuretics are preferred vs. shorter-acting (thiazides)
- Single pill combinations as a first line treatment (regardless of the extent of BP elevation)



Hypertension 2017

What's still important?

- The diagnosis of hypertension should be based on out-of-office measurements; in the office, use automated office BP measurement (AOBP)
- The threshold and target blood pressures are lower in those at greater risk



hypertension.ca

For patients:

- Free access to the latest information and resources

For professionals:

- Accredited 15.5 hour interdisciplinary training program
- Free monthly news updates, featured research and educational resources
- Become a member for special privileges and savings

