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Hypertension 2017

Putting the Guidelines into Practice

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Disclosures

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

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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

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Mitigating Potential Bias

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

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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

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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

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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)

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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

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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?

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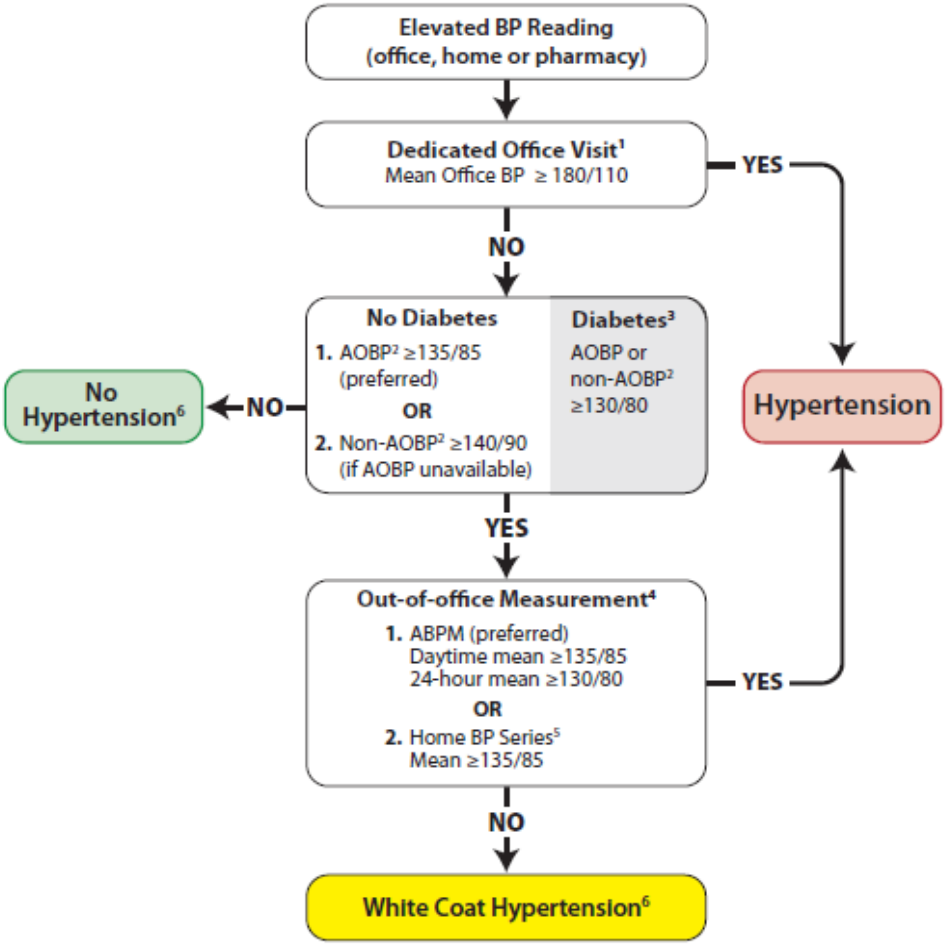
Hypertension Diagnostic Algorithm

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

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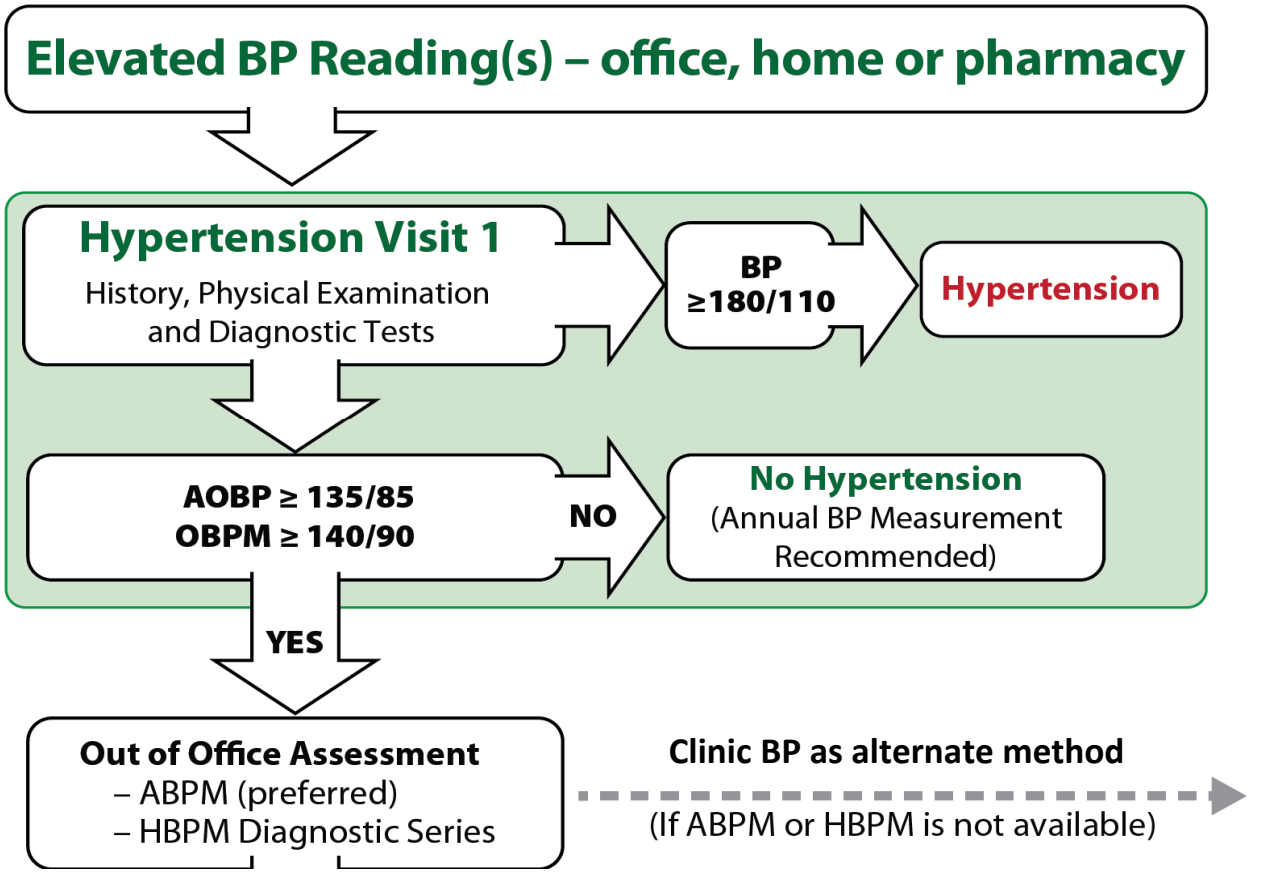
Out-of-Office Assessment is the Preferred Means of Diagnosing Hypertension



AOBP = automated office blood pressure
OBPM = office BP measurement

ABPM = ambulatory BP measurement
HBPM = home BP measurement

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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

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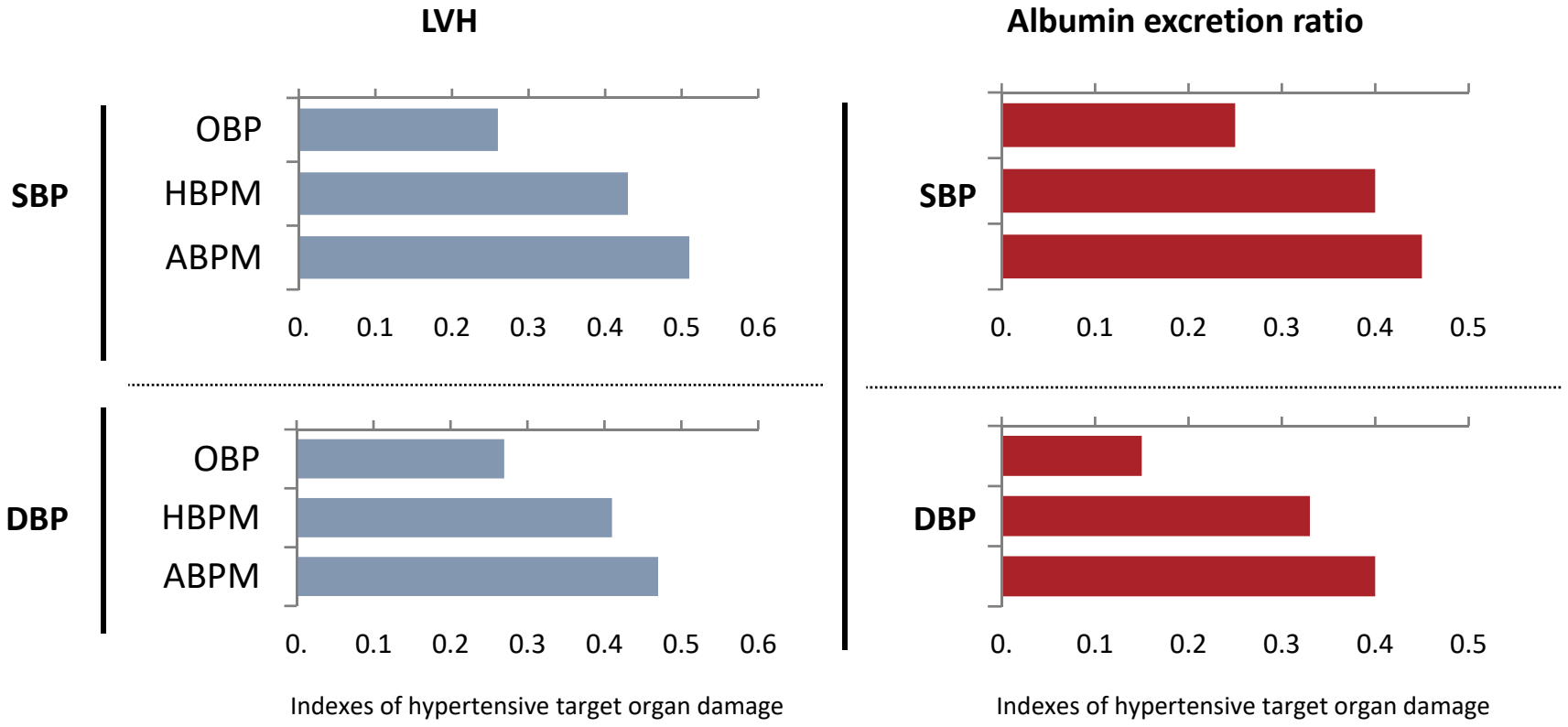
Out-of-Office BP Measurements are More Highly Correlated With BP-Related Risk



Mulè G, et al. *J Cardiovasc Risk* 2002;9:123-9.

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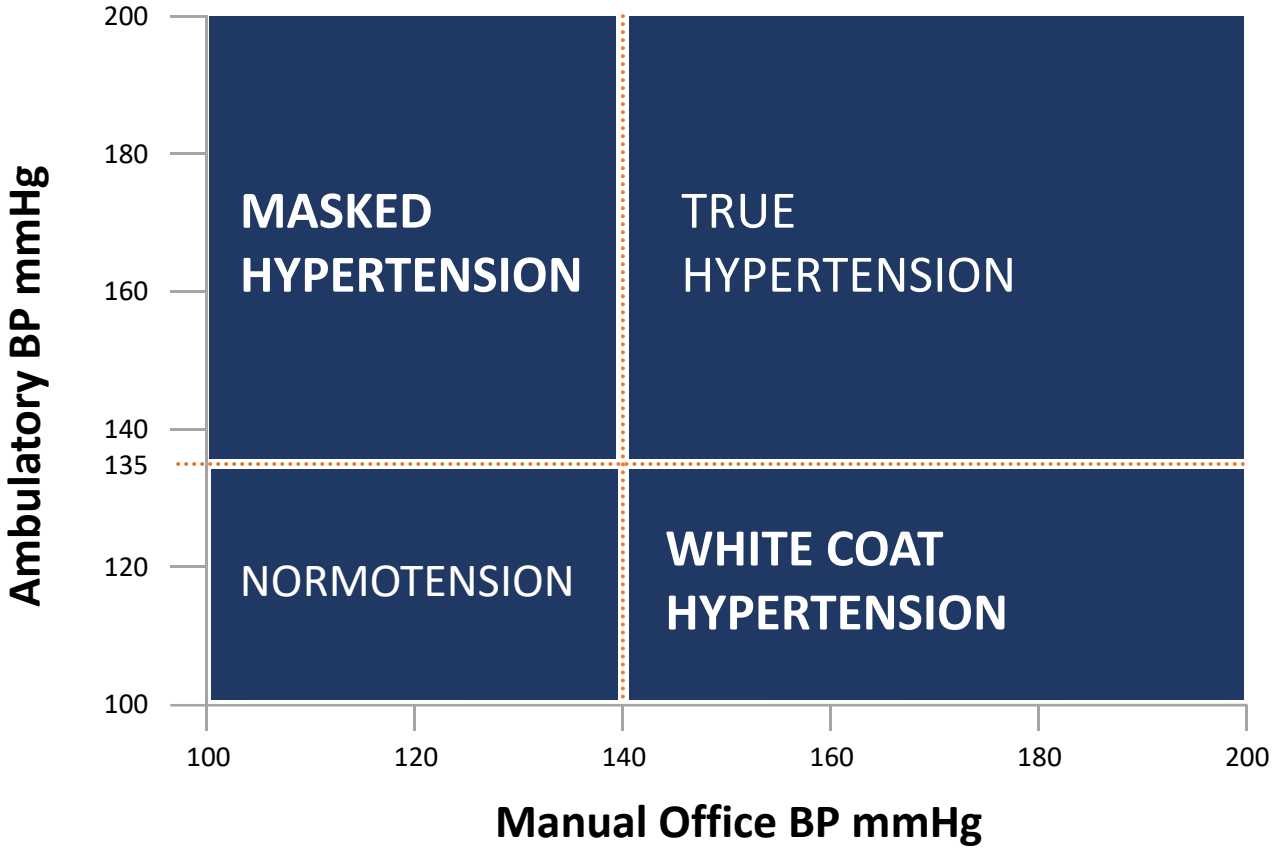
White Coat and *Masked* Hypertension



Derived from Pickering TG, et al. *Hypertension* 2002:40:795-6.

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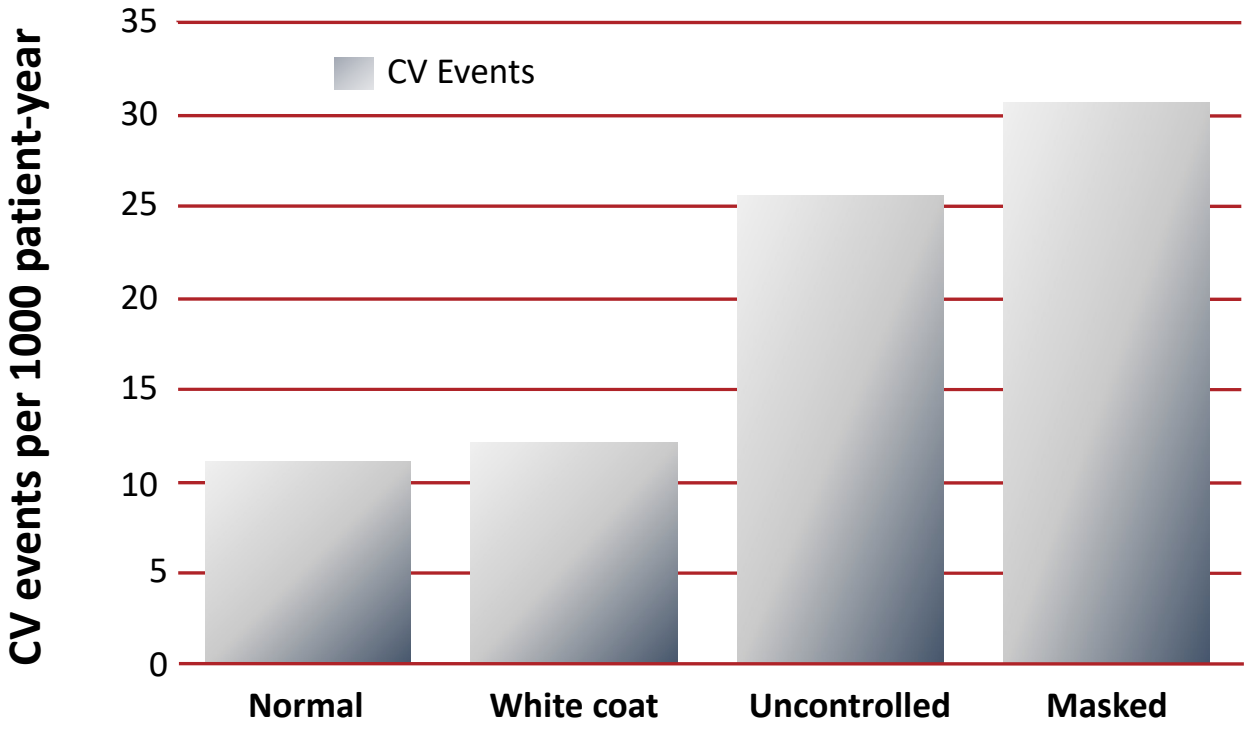
The Prognosis of *White Coat* and *Masked* Hypertension



Okhubo T, et al. *J Am Coll Cardiol* 2005;46;508-15

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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)

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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 ABPM[4-6]

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.

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Reflection Case 1

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

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What's still important?

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- The threshold and target blood pressures are lower in those at greater risk

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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?

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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 ≥ 135/85 mmHg

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Recommended Office BP Treatment Targets

Treatment consists of health behaviour ± pharmacological management

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

Based on AOBP
*AOBP threshold ≥ 135/85 mmHg

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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

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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/1.73m^2)

OR

†Estimated 10-year global cardiovascular risk ≥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'Agastino, Circulation 2008

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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/1.73m^2

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

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Reflection Case 2

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

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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)

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?

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Longer-acting Diuretics Should be Preferred

(i.e., thiazide-like are preferred to thiazides)

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

Shorter-acting (thiazides): hydrochlorothiazide

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Diuretic Type Meta-Analysis vs. Placebo

- **<u>Both</u>** types of diuretics reduced CV events, cerebrovascular events, and HF
- **<u>Only</u> 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)**

Olde Engberink RH. *Hypertension* 2015;65(5):1033-40

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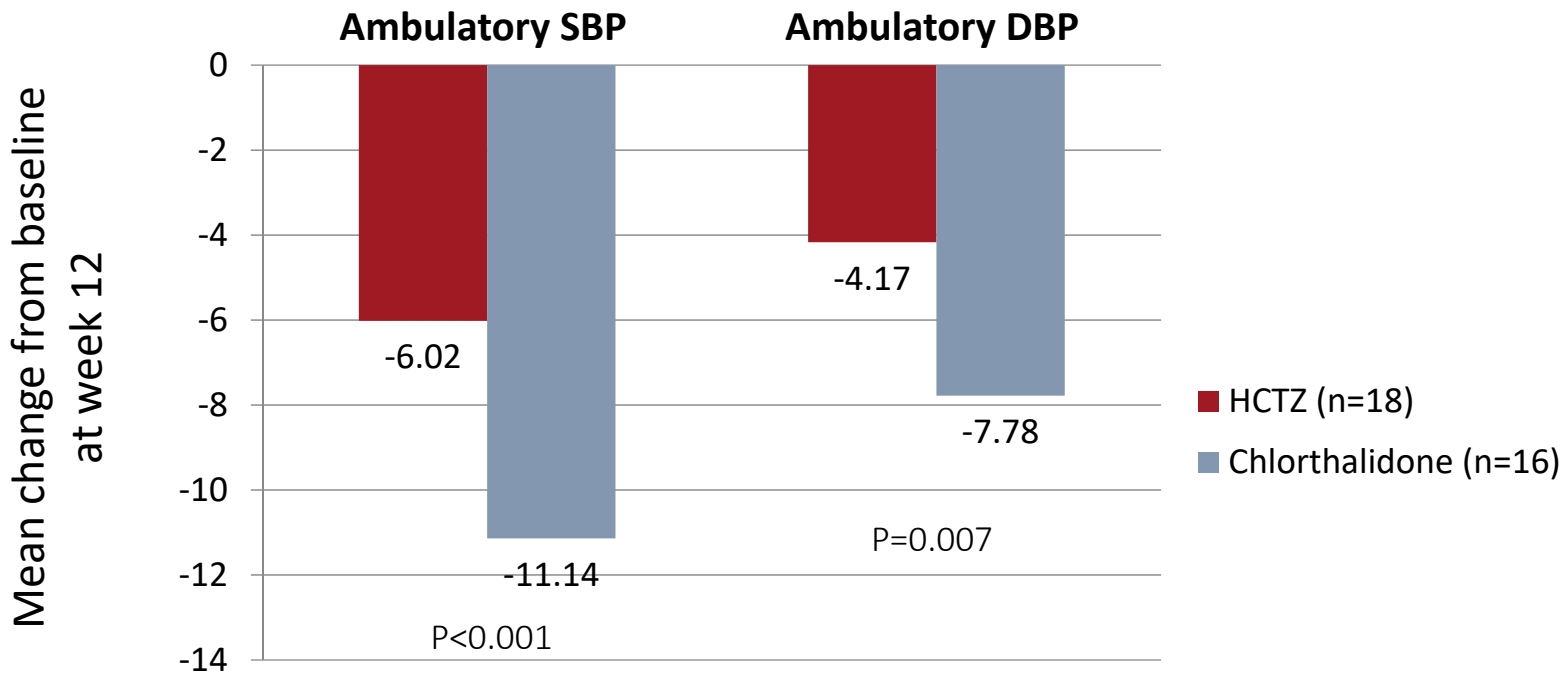
Chlorthalidone More Effective Than Hydrochlorothiazide in BP Reduction



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.

Pareek AK, et al. *J Am Coll Cardiol* 2016;67(4):379-89

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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

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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?

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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?

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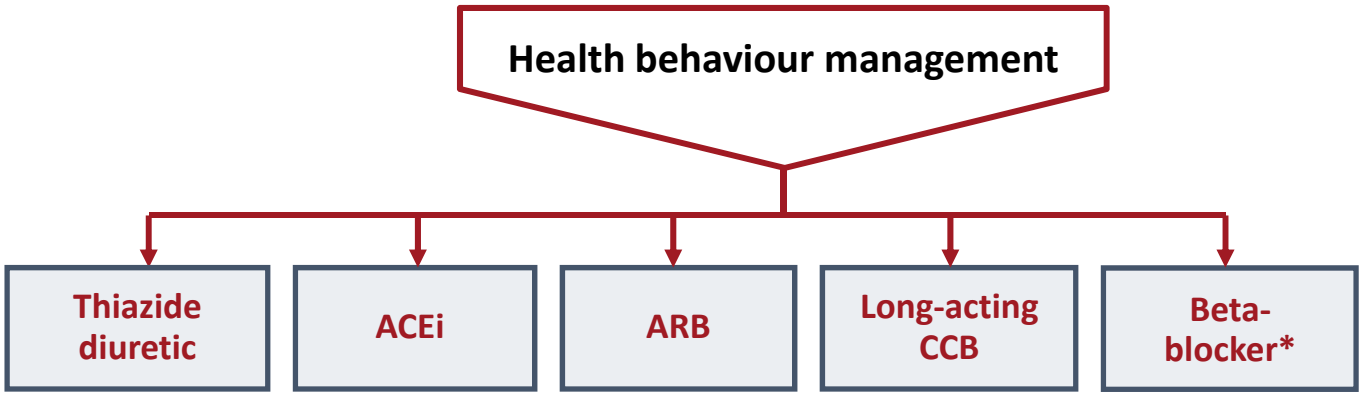
First Line Recommendations Circa 1999-2016

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.

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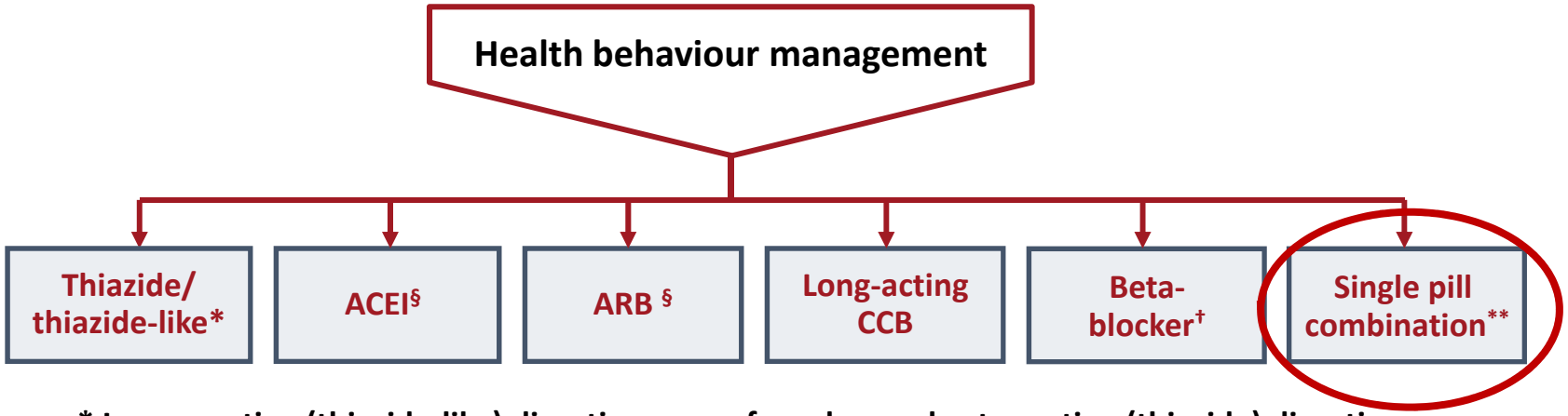
First Line Treatment of Adults with Systolic/Diastolic Hypertension Without Other Compelling Indications

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**

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Advantages of Single Pill Combinations (SPCs)

- SPC therapy is associated with better adherence vs. free combinations[1]
- A regimen featuring initial prescription of SPC leads to better BP control[2]
- 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.

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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

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Reflection Case 4

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

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