What’s New from the 2025 Hypertension Canada Guidelines?

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Co-Chair of the Hypertension Canada Guidelines Committee

Disclosures

- Research grant funding from:
  - CIHR
  - Kidney Foundation of Canada
  - TOHAMO

Objectives

- Provide an overview of hypertension treatment and control in Canada
- Detail Hypertension Canada’s new guideline approach
- Review the new primary care guideline recommendations and algorithms
- Discuss the upcoming comprehensive guidelines

Canada

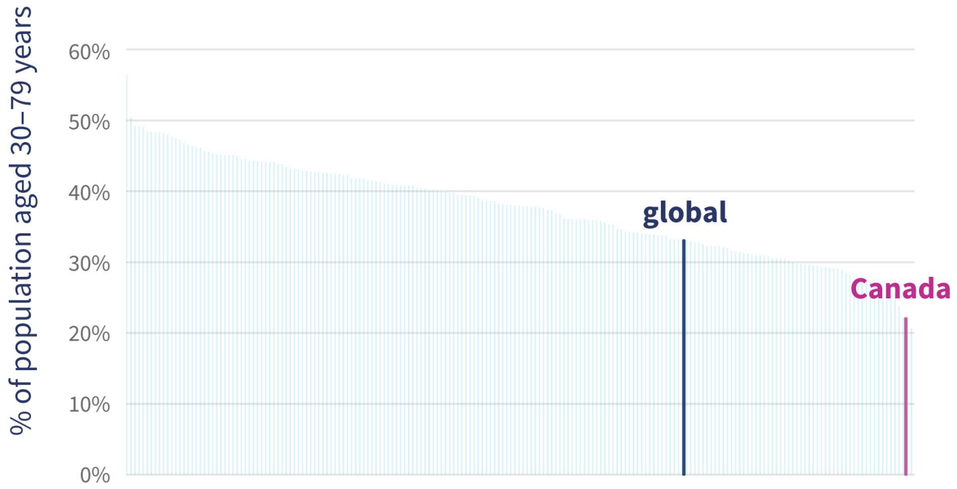
Hypertension profile

Total population (2019): 37 523 000

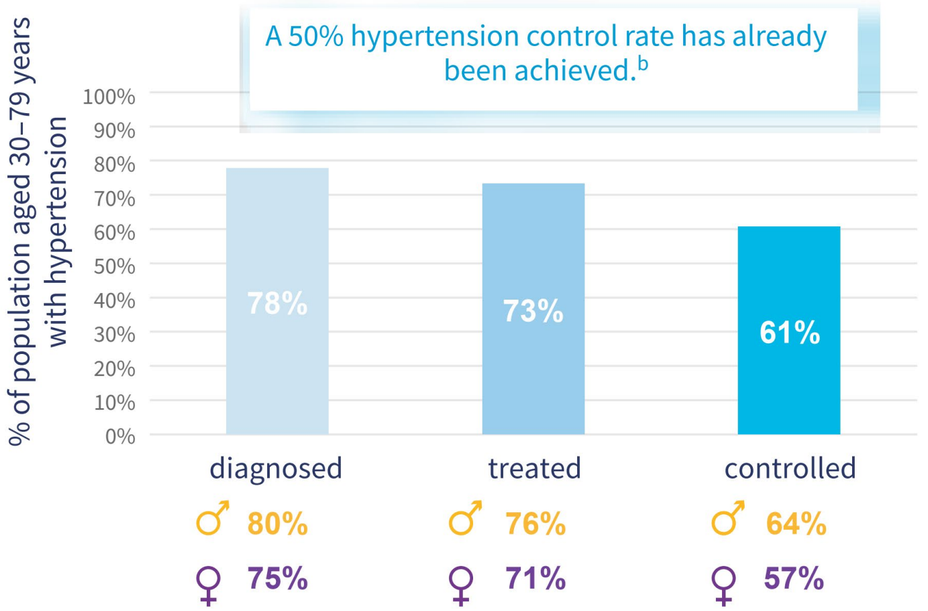
Total deaths (2019): 278 000

Age-standardized prevalence of hypertension among adults aged 30–79 years (2019)[a] ⚥ **22%** ♂ **24%** ♀ **20%**

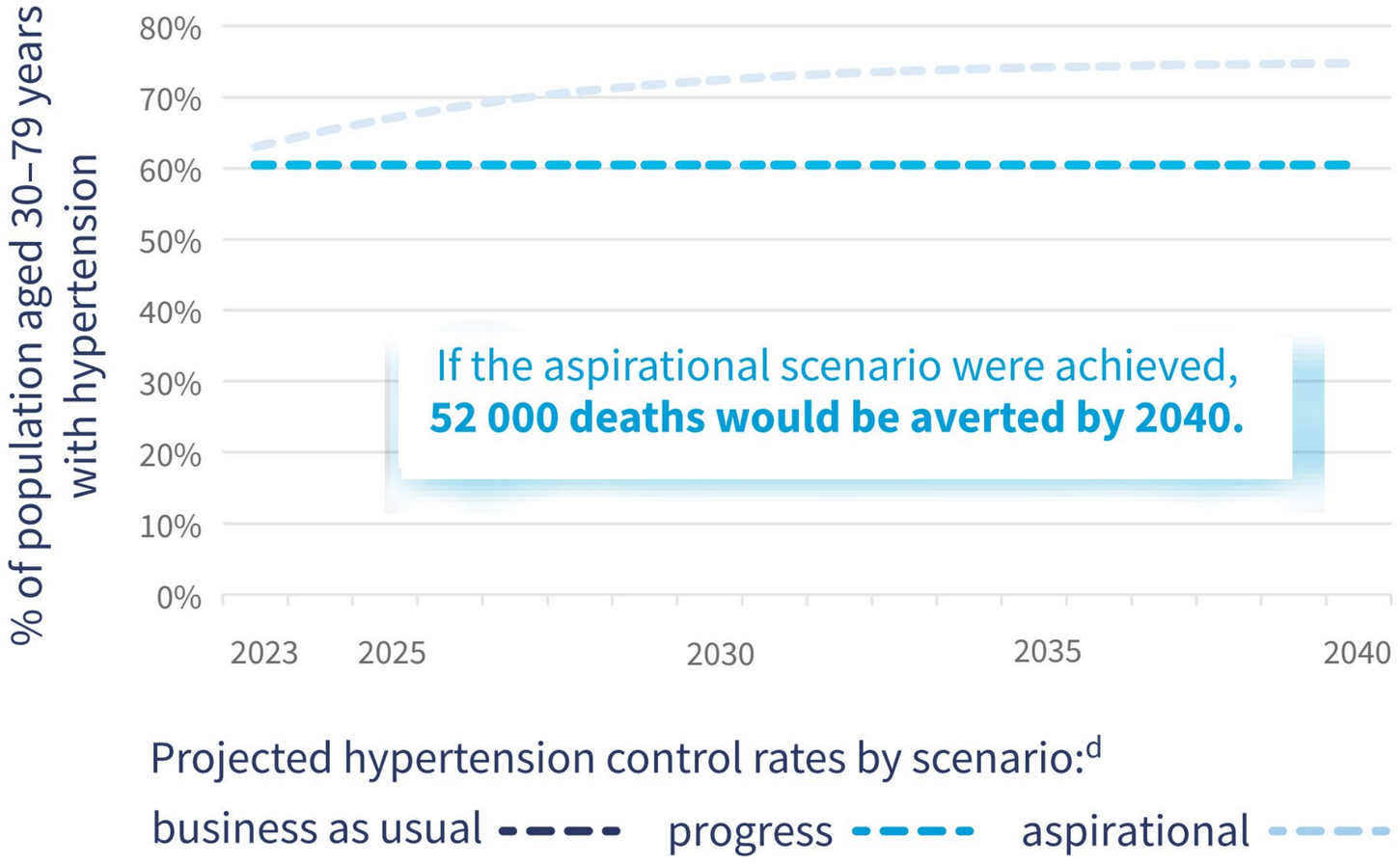
Prevalence of hypertension – global comparison (both sexes)[a]



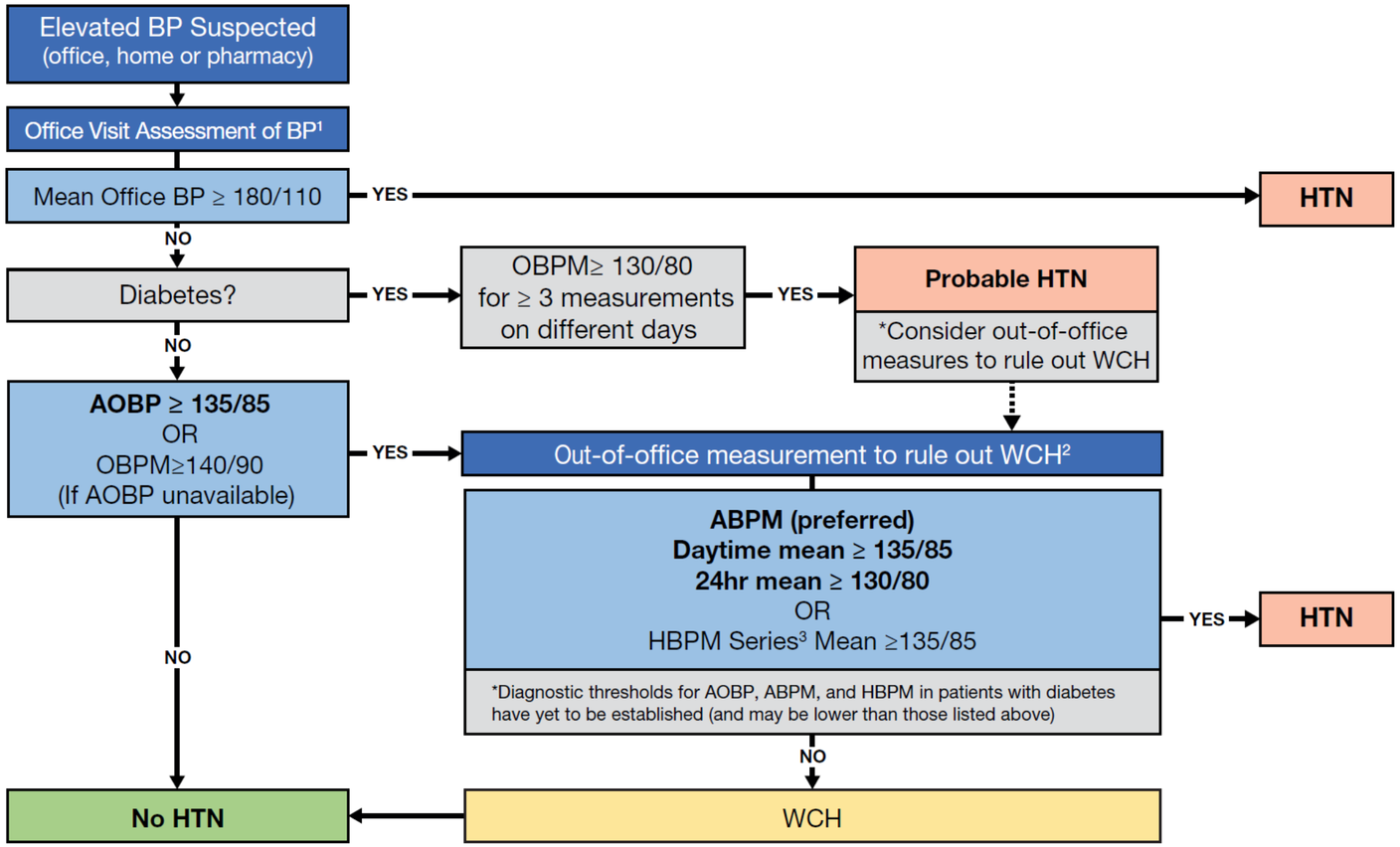
Of the **6.3 million** adults aged 30–79 years with hypertension:



Hypertension control rate scenarios



OLD GUIDELINES - Hypertension Canada 2020



Definitions:

Mean Office BP = Average resting BP with the 1st reading discarded and the subsequent readings average

AOBP = Automated Office BP Measurement

OBPM = Manual Office BP Measurement

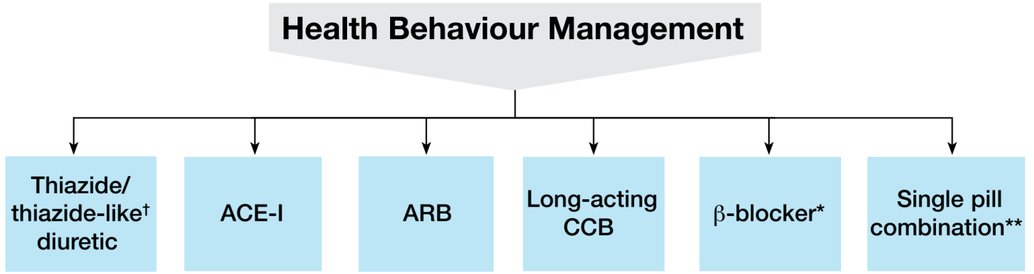
ABPM = Ambulatory BP Measurement

HBPM = Home BP Measurement

WCH = White Coat Hypertension

OLD GUIDELINES - Hypertension Canada 2020

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



† Long-acting diuretics like indapamide and chlorthalidone are preferred over shorter acting diuretics like hydrochlorothiazide.

* β-blockers are not indicated as first-line therapy for age 60 and above.

Short-acting nifedipine should not be used for management of hypertension.

**** 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**

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

SPC = Single Pill Combination

OLD GUIDELINES - Hypertension Canada 2020

THRESHOLDS AND TARGETS

Populations and Stratification

Hypertension Canada stratifies patients by cardiovascular risk and, based on that risk, there are different thresholds and targets for treatment.

Hypertension Canada *High-Risk* Patient*

Diabetes Mellitus

Moderate-to-high Risk
(multiple cardiovascular risk factors & 10-year global risk 10-14%)

Low Risk
(no TOD or cardiovascular risk factors & 10-year global risk < 10%)

*** Hypertension Canada *High-Risk* Patient**

Individuals ≥50y **AND** with SBP 130-180 mmHg **AND** with one or more of the following CV risk factors should be considered for intensive BP management:

- ✓ Clinical or sub-clinical cardiovascular disease

OR

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

OR

- ✓ Estimated 10-year global cardiovascular risk ≥15%

OR

- ✓ Age ≥75 years

Four variable Modification of Diet in Renal Disease (MDRD) equation

± Framingham Risk Score

TOD = Target Organ Damage

OLD GUIDELINES - Hypertension Canada 2020

Thresholds and Targets

In patients with documented hypertension, attaining blood pressure targets is vital to prevent cardiovascular and cerebrovascular complications.

Blood pressure thresholds for initiation of antihypertensive therapy and treatment targets in adults:

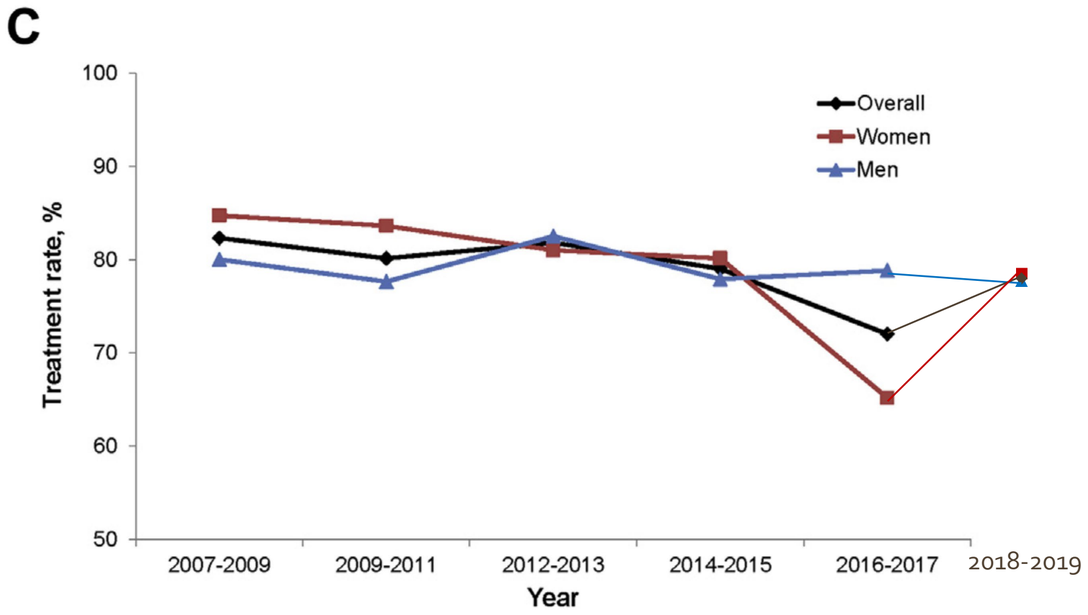
Patient population	BP threshold for initiation of antihypertensive therapy		BP treatment target	
	SBP mmHg	DBP mmHg	SBP mmHg	DBP mmHg
Hypertension Canada High-Risk Patient*	≥ 130	N/A	< 120	N/A
Diabetes mellitus**	≥ 130	≥ 80	< 130	< 80
Moderate-to-high Risk (TOD or CV risk factors)**	≥ 140	≥ 90	< 140	< 90
Low Risk (No TOD or CV risk factors)**	≥ 160	≥ 100	< 140	< 90

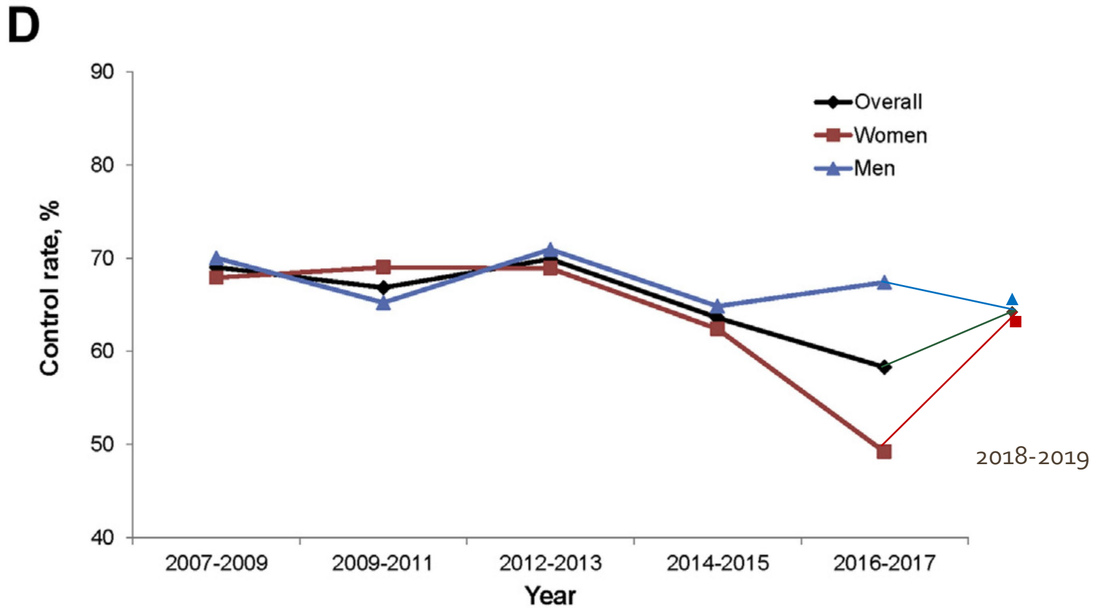
* BP treatment threshold and target based on AOBP measurements
**BP treatment thresholds and targets based on OBPM.

TOD = Target Organ Damage

Is it time to change our approach?

Data among Canadian adults using the Canadian Health Measures Survey (CHMS)





Leung et al.
Hypertension in Canada From 2007 to 2017

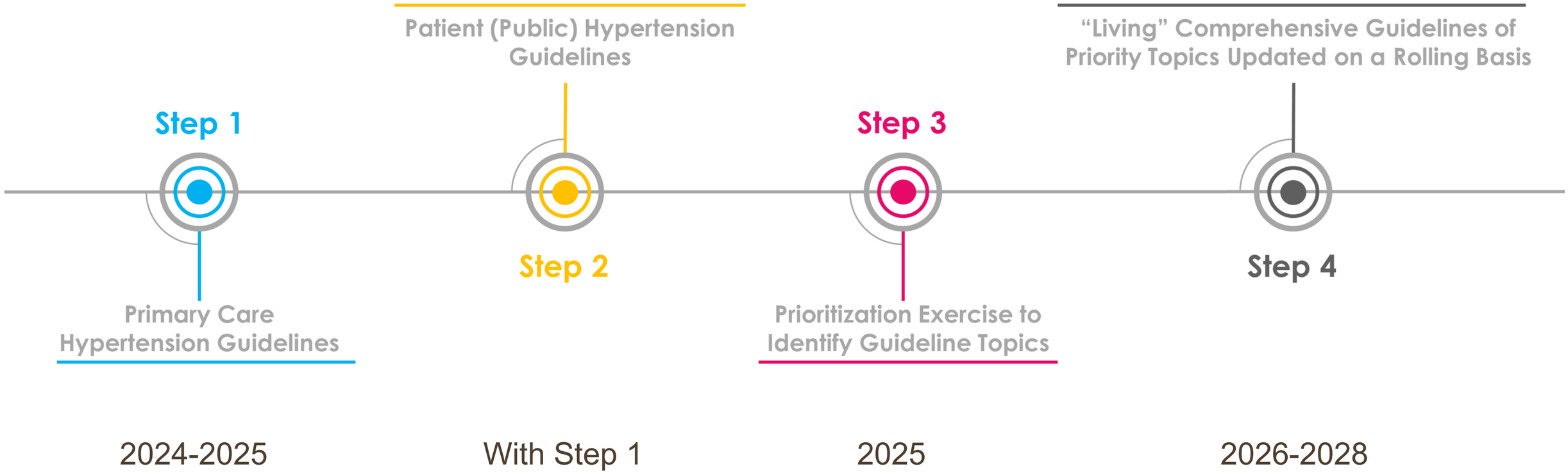
CJC Open 6 (2024) 1099–1107 Canadian Journal of Cardiology 36 (2020) 732–739

Possible causes of declining control rates

- Discordance in optimal therapeutic targets
- Complexity of recommendations
- Inadequate implementation strategies
- Suboptimal engagement of primary care professionals (family MDs, NPs, nurses, pharmacists)
- Loss of industry support for training activities

Leung AA, CMAJ 2021

Hypertension Canada 2024-2028



Goupil, CJC 2024

Hypertension Canada guideline for the diagnosis and treatment of hypertension in adults in primary care

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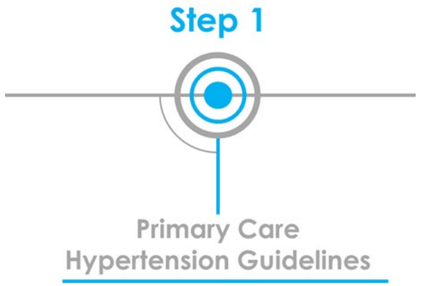


Why primary care guidelines?

- Management of > 90% of patients with hypertension
- Complexity of guidelines can lead to suboptimal uptake of recommendations and therapeutic inertia
- Numerous requests to simplify diagnostic and management algorithms

Clear need to provide evidenced-based, pragmatic, streamlined, and easy-to-implement recommendations tailored for primary care

Step 1

Primary Care Hypertension Guidelines

Methodology

- Created for and by primary care professionals (family medicine, nursing, pharmacy) and patient-partners

- Based on the HEARTS framework (developed by the WHO)
  - See webinar for more details
  - Underlying principle = Adoption of pragmatic streamlined algorithms

- ADAPTED Evidence Review Process
  - Review of WHO, AHA, ESC data

- Optimization of recommendations and algorithms following a peer review process (Fall 2024)

HEARTS IN THE AMERICAS

Step 1

Primary Care
Hypertension Guidelines

6 Pillars of HEARTS

HEARTS IN THE AMERICAS

Step 1

Primary Care Hypertension Guidelines

HEARTS Background

HEARTS IN THE AMERICAS

Original Investigation

Improved Blood Pressure Control Associated With a Large-Scale Hypertension Program

Marc G. Jaffe, MD; Grace A. Lee, MD; Joseph D. Young, MD; Stephen Sidney, MD, MPH; Alan S. Go, MD

Table 1. Summary of Evidence-Based Clinical Practice Guideline for Initial Therapy and Treatment Intensification for the Kaiser Permanente Northern California Hypertension Program, by Year

Step	2001	2003	2005	2007	2009
1	Thiazide diuretic or β-blocker	Thiazide diuretic	Thiazide diuretic or thiazide diuretic + ACE inhibitor	Thiazide diuretic or thiazide diuretic + ACE inhibitor	Thiazide diuretic or thiazide diuretic + ACE inhibitor
2	Thiazide diuretic + β-blocker	Thiazide diuretic + ACE inhibitor or thiazide diuretic + β-blocker	Thiazide diuretic + ACE inhibitor	Thiazide diuretic + ACE inhibitor	Thiazide diuretic + ACE inhibitor
3	Thiazide diuretic + β-blocker + ACE inhibitor	Thiazide diuretic + β-blocker + ACE inhibitor	Thiazide diuretic + β-blocker + ACE inhibitor	Thiazide diuretic + β-blocker + ACE inhibitor	Thiazide diuretic + ACE inhibitor + DCCB
4	Thiazide diuretic + β-blocker + ACE inhibitor + DCCB	Thiazide diuretic + β-blocker + ACE inhibitor + DCCB	Thiazide diuretic + β-blocker + ACE inhibitor + DCCB	Thiazide diuretic + β-blocker + ACE inhibitor + DCCB	Thiazide diuretic + ACE inhibitor + DCCB + β-blocker or spironolactone

Abbreviations: ACE, angiotensin-converting enzyme; DCCB, dihydropyridine calcium channel blocker.

HEARTS – Does it work?

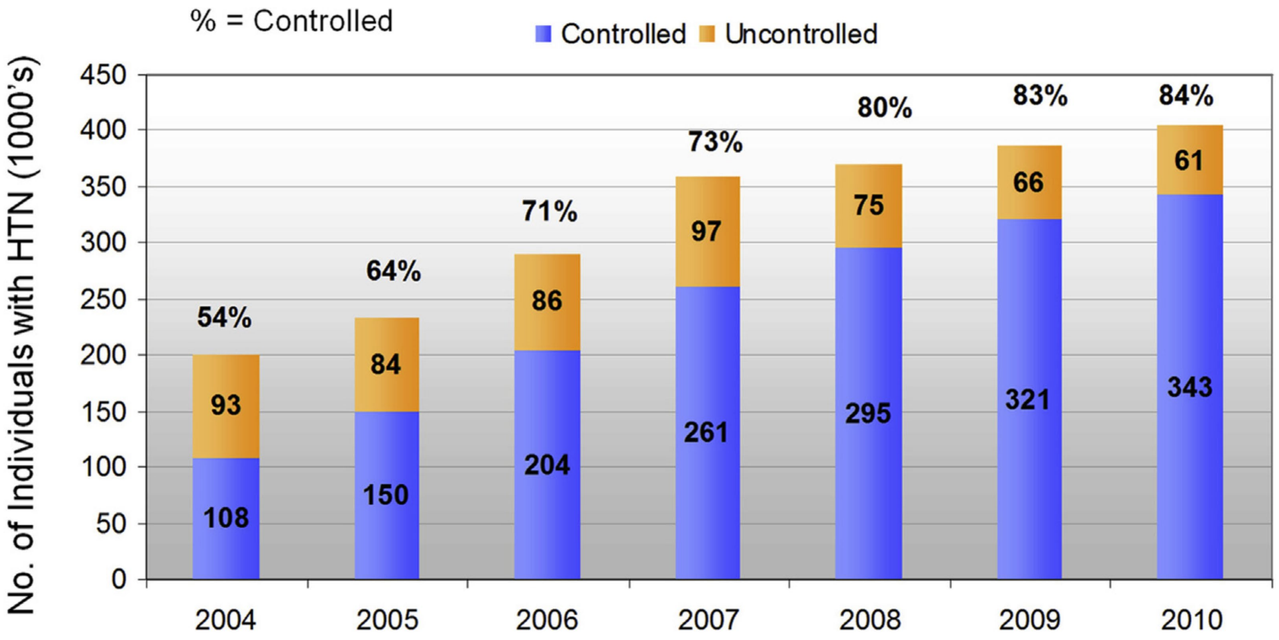
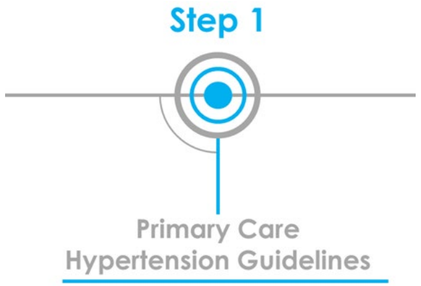


Figure 1. Kaiser Permanente Southern California hypertension control rates. HTN, hypertension.

- Global acceptability
- Implementation in 40+ countries
- 17M+ individuals integrated into the program
- Not a rigid protocol
- Designed to be adapted to meet each country's unique needs

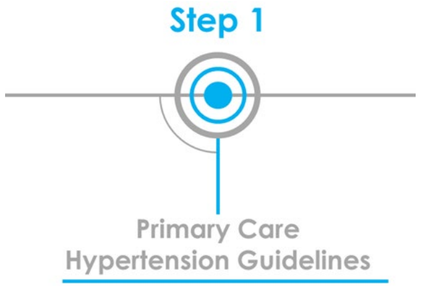
Canadian Journal of Cardiology 30 (2014) 544–552



Scope

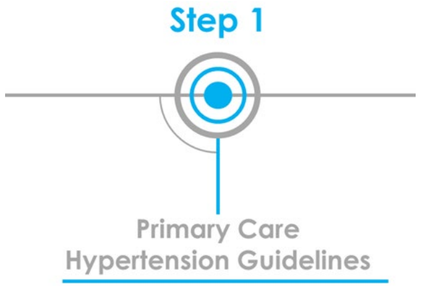
- Target users: primary care providers
  - ✓ Family physicians
  - ✓ Physician assistants
  - ✓ Nurse practitioners
  - ✓ Nurses
  - ✓ Pharmacists

- Intended as a framework for managing most (but not all) cases of hypertension in primary care. Notable exceptions:
  - ✓ Not intended for people who are pregnant or trying to become pregnant
  - ✓ Not intended for children
  - ✓ Clinical discretion must still be applied on a case-by-case basis



Guideline Committee Composition

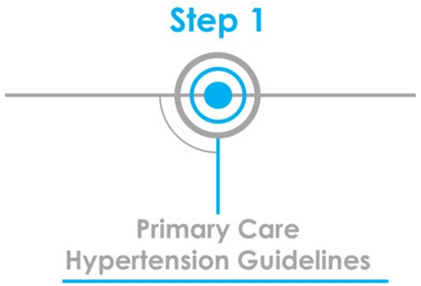
- Family medicine physicians
- Pharmacists
- Nurse practitioner
- Hypertension specialists
- Methodologist with expertise in guideline development
- Patient partners with lived experience with hypertension



Selection of priority topics

- 2023 Canadian Hypertension Congress
  - ✓ Consensus request for developing streamlined, pragmatic, and evidence-based hypertension guidelines specifically focused on primary care

- Emphasis on topics of hypertension diagnosis and management
  - ✓ Limit the number of recommendations to those deemed most relevant to primary care



Methodology

- 9 recommendations
  - ✓ Adaptation process (ADAPTE)
  - ✓ Strength of recommendation and certainty of evidence (GRADE)
  - ✓ Scientific rationale and evidence tables
  - ✓ Values and preferences

- Diagnosis and treatment algorithms based on the above recommendations
  - ✓ Applying HEARTS framework

GRADE System

Table 1: Interpretation of strength of recommendation and certainty of evidence using the Grading of Recommendations Assessment, Development and Evaluation approach[14]

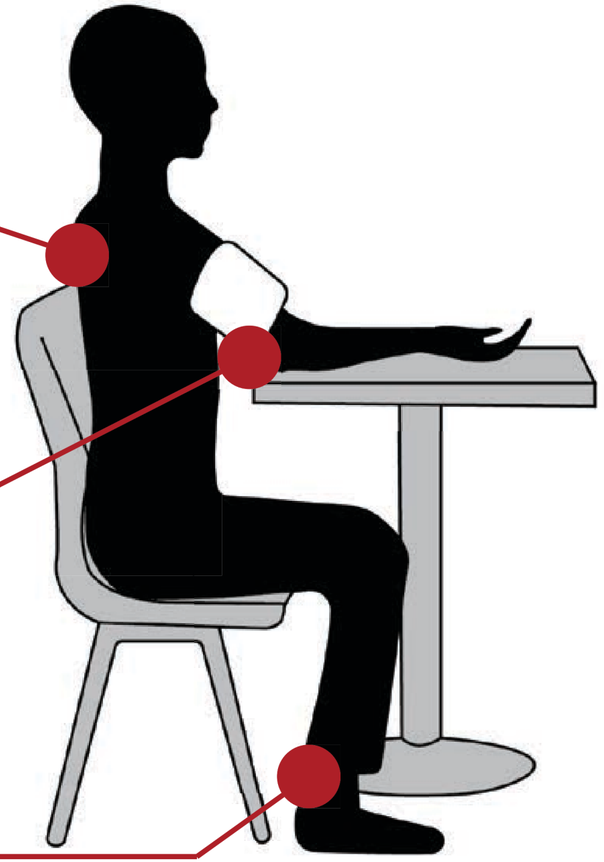
Strength of recommendation	Interpretation
Strong	The desirable effects or consequences of an intervention clearly outweigh its undesirable effects or consequences.
Conditional	The desirable effects or consequences of an intervention probably outweigh its undesirable effects or consequences.
Certainty of evidence	
High	High confidence that the true effect lies close to that of the estimate of effect.
Moderate	The true effect is likely to be close to the estimate of effect, but there is a possibility that it is substantially different.
Low	The true effect may be substantially different from the estimate of effect.
Very low	The true effect is likely to be substantially different from the estimate of effect.

DIAGNOSTIC

Recommendation	Strength of recommendation	Certainty of the evidence
BP assessment with a **validated automated device** and using a **standardized method** is recommended.	Strong	Moderate
Out-of-office BP assessment is recommended to confirm the diagnosis of hypertension or to detect white-coat hypertension and masked hypertension.	Strong	Moderate
The definition of hypertension in adults is recommended as **BP ≥ 130/80 mm Hg** when measured with a validated device under optimal conditions.	Strong	Moderate

Optimal blood pressure measuring technique:

- ✔ Sitting position
- ✔ Back supported
- ✔ Arm bare and supported
- ✔ Use a cuff size appropriate for arm
- ✔ Middle of the cuff at heart level
- ✔ Lower edge of the cuff 3 cm above elbow crease
- ✔ Ask patient not to talk or move during rest period and between measurements
- ✔ Legs uncrossed
- ✔ Feet flat on the floor



Proper preparation:

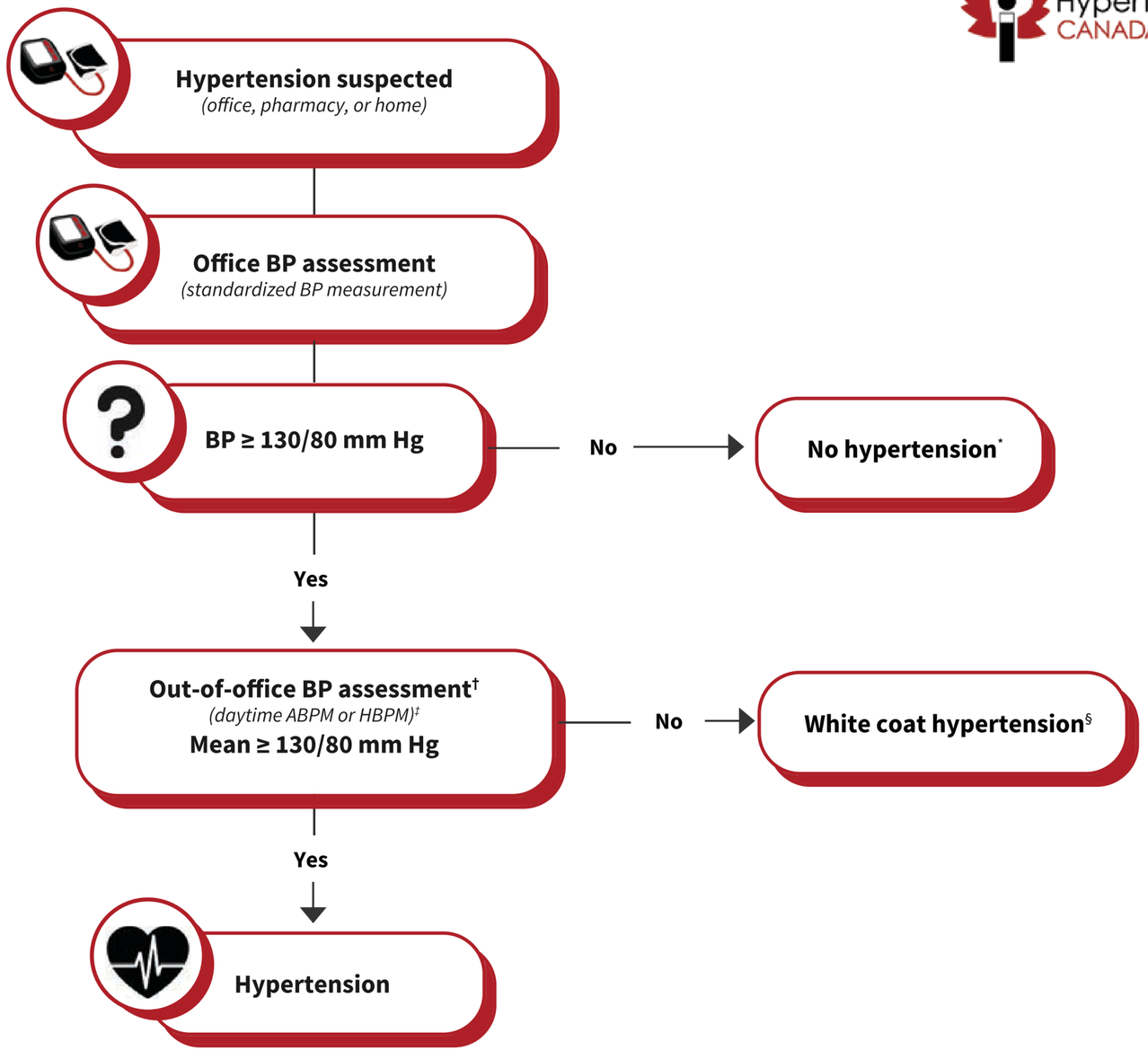
- Quiet and calm room
- No caffeine, tobacco, or exercise in the 30 minutes before the measurements

Appropriate equipment:

- Validated automated BP device (see https://hypertension.ca/public/recommended-devices or ask a pharmacist)
- Wide range of cuff sizes to select the appropriate size

Standardized protocol:

- If feasible, observe a rest period of 1–5 minutes before measurements
- Measure BP 3 times at 1-minute intervals
- Average and record all values


Hypertension suspected
(office, pharmacy, or home)
Office BP assessment
(standardized BP measurement)
BP ≥ 130/80 mm Hg
No
No hypertension*
Yes
Out-of-office BP assessment†
(daytime ABPM or HBPM)‡
Mean ≥ 130/80 mm Hg
No
White coat hypertension§
Yes
Hypertension

Particularities

- A standardized technique (AOBP) using a validated device should be used to implement the recommendations
  - A non-standardized (or auscultatory) technique does not allow for sufficiently reliable and reproducible measurements, and can overestimate the BP by 5-10 mm Hg

- New threshold for defining hypertension in Canada: 130/80 mm Hg *(instead of 135/85 mm Hg)*
  - Approx. 9% more people with hypertension in Canada
  - But < 1.5% more will require pharmacological treatment (*unpublished data*)

- **A single number to remember**
  - A BP of 130/80 mm Hg measured by standardized AOBP corresponds to the same cardiovascular risk as a BP of 130/80 mm Hg measured at home or with ABPM (daytime average)

TREATMENT (1)

Recommendation	Strength of recommendation	Certainty of the evidence
Healthy lifestyle changes are recommended for **all adults** with hypertension.	Strong	High
Pharmacotherapy initiation for hypertension is recommended for adults with **BP ≥ 140/90 mm Hg** and for adults with **systolic BP 130–139 mm Hg at high cardiovascular disease risk**.	Strong	High
Treatment, including healthy lifestyle changes with or without pharmacotherapy, is recommended for adults with hypertension to achieve a **target systolic BP < 130 mm Hg**, provided the treatment is well tolerated .	Strong	High

Key Point

Though we are defining hypertension as BP ≥130/80 mmHg, this does not mean that everyone with hypertension needs to start medications.

- Treatment of hypertension involves both lifestyle modification and medications
- If BP ≥140/90 mmHg, we do recommend starting medications right away (in addition to lifestyle modification)
- If systolic BP 130-139 mmHg and high cardiovascular disease risk, we do recommend starting medications right away (in addition to lifestyle modification)
- However, if systolic BP 130-139 mmHg and not high cardiovascular disease risk, we recommend focusing on lifestyle modification alone (without antihypertensive medication) with planned reassessment.

Healthy Lifestyle Habits
Decrease sodium intake (WHO: < 2 g per day)
Increase potassium intake (WHO: > 3.5 g per day)
Achieve a healthy weight
Exercise regularly (WHO: 150-300 min per week of moderate-intensity aerobic activity)
Limit alcohol intake
Stop all tobacco products

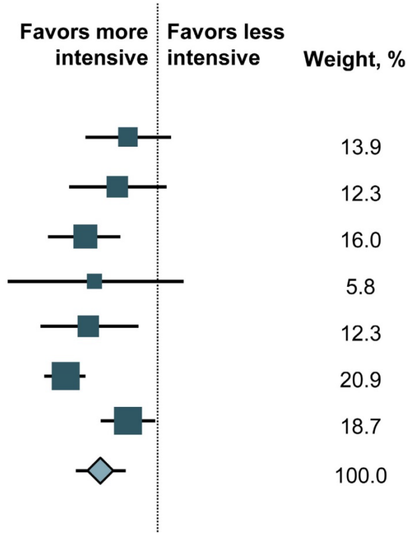
High cardiovascular disease risk conditions

Conditions for when you should initiate BP medications (in addition to lifestyle modification) below systolic BP 140 mmHg (130-139 mmHg).

- Established cardiovascular disease (coronary artery disease, heart failure, cerebrovascular disease, and peripheral artery disease)
- Diabetes mellitus (type 1 or type 2)
- Chronic kidney disease (eGFR < 60 mL/min/1.73 m^2 or albuminuria ≥ 3 mg/mmol)
- 10-year Framingham Risk Score ≥ 20%[62]
- Age ≥ 75 years

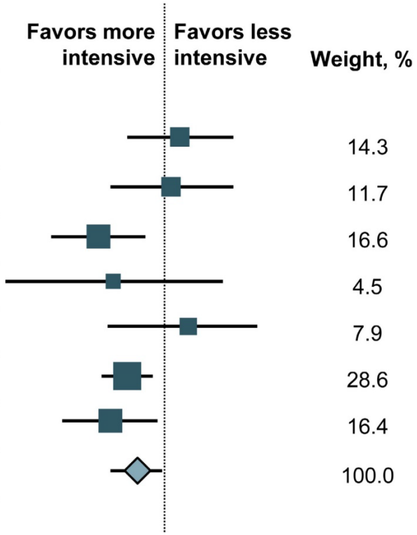
Why recommend a SBP < 130 mmHg target?

Source	No. of events/total No. More Intensive	Less Intensive	Hazard ratio (95% CI)	Weight, %
Randomization to an SBP <130 mm Hg vs ≥130 mm Hg				
ACCORD, 2010	208/2362	237/2371	0.88 (0.73-1.06)	13.9
SPS3, 2013	160/1501	188/1519	0.84 (0.68-1.04)	12.3
SPRINT, 2015/2021	264/4678	354/4683	0.73 (0.62-0.85)	16.0
RESPECT, 2019	46/633	59/630	0.76 (0.52-1.12)	5.8
STEP, 2021	147/4243	196/4268	0.74 (0.60-0.92)	12.3
CRHCP, 2023	808/17407	1127/16588	0.67 (0.61-0.73)	20.9
ESPRIT, 2024	547/5624	623/5631	0.88 (0.78-0.99)	18.7
Overall Heterogeneity: I^2 = 64.5%, P = .01			0.78 (0.70-0.87)	100.0



CV Events

Source	No. of events/total No. More Intensive	Less Intensive	Hazard ratio (95% CI)	Weight, %
Randomization to an SBP <130 mm Hg vs ≥130 mm Hg				
ACCORD, 2010	150/2362	144/2371	1.07 (0.85-1.35)	14.3
SPS3, 2013	106/1501	101/1519	1.03 (0.79-1.35)	11.7
SPRINT, 2015/2021	163/4678	215/4683	0.75 (0.61-0.92)	16.6
RESPECT, 2019	30/633	37/630	0.80 (0.49-1.29)	4.5
STEP, 2021	67/4243	64/4268	1.11 (0.78-1.56)	7.9
CRHCP, 2023	691/17407	776/16588	0.85 (0.76-0.95)	28.6
ESPRIT, 2024	160/5624	203/5631	0.79 (0.64-0.97)	16.4
Overall Heterogeneity: I^2 = 37.6%, P = .14			0.89 (0.79-0.99)	100.0



Mortality (all causes)

Whelton, Hypertension 2024

Why recommend a SBP < 130 mmHg target?

Potential harms of more intensive BP lowering are quite low.

Trial outcomes and adverse events	Randomization to an SBP <130 vs ≥130 mm Hg		
	No. of trials	No./total No.	Hazard ratio (95% CI)
Individual cardiovascular outcomes			
Stroke	7	1219/36 448 vs 1620/35 690	0.74 (0.66–0.84)
Coronary heart disease	7	638/36 448 vs 756/35 690	0.83 (0.75–0.92)
Heart failure	5	258/34 314 vs 358/33 541	0.69 (0.55–0.87)
Cardiovascular mortality	6	414/35 815 vs 561/35 060	0.73 (0.61–0.86)
Adverse events			NNH (95% CI)
Hypotension	6	642/35 815 vs 359/35 060	508 (309–1425)
Syncope	7	279/36 448 vs 188/35 690	1701 (991–5999)
Injurious falls	4	460/29 210 vs 419/28 421	2941 (1479–258 938)
Electrolyte abnormality	5	277/30 704 vs 233/29 903	3222 (1150–4013)
Acute kidney injury or acute renal failure	5	276/17 540 vs 193/17 583	1657 (693–4235)

Whelton, Hypertension 2024

TREATMENT (2)

Recommendation	Strength of recommendation	Certainty of the evidence
For adults with hypertension requiring pharmacotherapy, **low-dose combination therapy (ideally as a single-pill combination) is recommended as initial treatment**, which includes drugs from 2 of the following 3 complementary classes of medications: ACEIs or ARBs, thiazide or thiazide-like diuretics, and long-acting dihydropyridine CCBs.	Strong	Moderate
If BP remains above target despite 2-drug combination therapy, 3-drug combination therapy consisting of an ACEI or ARB, a thiazide or thiazide-like diuretic, and a long-acting dihydropyridine CCB is recommended.	Strong	Moderate

Potential benefits of combination therapy

- 70% of patients need more than one class of drug
- Additional 4 mm Hg reduction vs. two separate agents
- 32% more patients with controlled hypertension
- Lower risk of side effects
- Better adherence and persistence of treatment
- Lower risk of hospitalization, cardiovascular events, and mortality
- Economic benefits
- No increase in the risk of discontinuation compared to separate agents or monotherapy

TREATMENT (3)

Recommendation	Strength of recommendation	Certainty of the evidence
If BP remains above target despite 3-drug combination therapy consisting of an ACEI or ARB; a thiazide or thiazide-like diuretic; and a long-acting dihydropyridine CCB at their maximally tolerated doses, the addition of **spironolactone** is suggested.	Conditional	Moderate

Particularities

- **Not intended for** the treatment of people who are pregnant, planning to become pregnant, or breastfeeding, or children.
- All people with hypertension must now be treated
  - A large proportion of the "new hypertensions" should only be treated by a non-pharmacological approach
- Identical treatment target for all patients
  - The level of BP and the presence of CV risk factors determines the threshold for initiation of pharmacotherapy
- Individualization of treatment remains important
  - Considered goals of care, frailty, risk of falling, and orthostatic hypotension
  - Aim for as low BP as possible if the target cannot be achieved
  - Possibility of aiming for a systolic BP < 120 mm Hg in people at very high cardiovascular risk

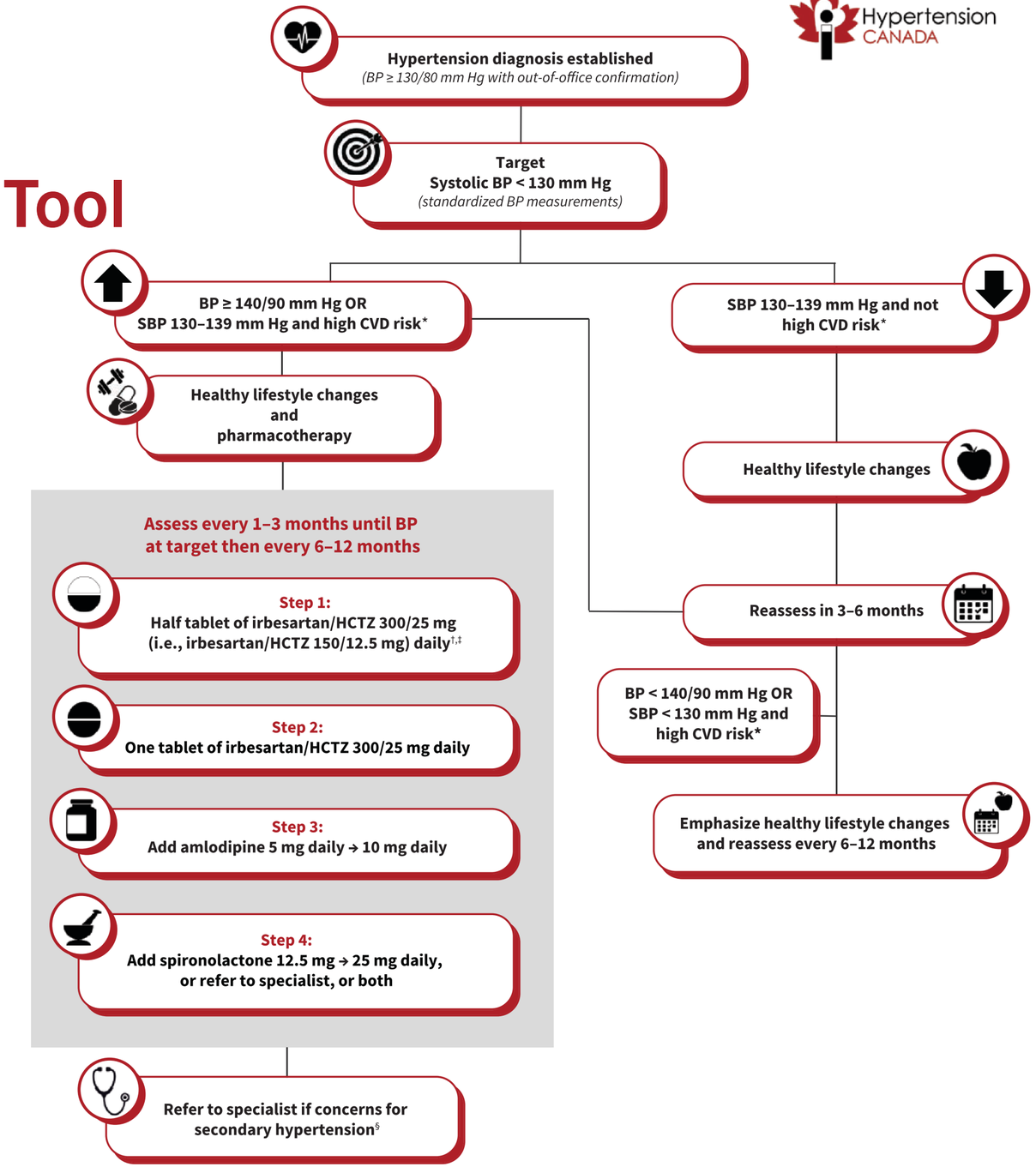
Particularities

- Thiazide diuretics (HCTZ) and thiazide-type diuretics (chlorthalidone or indapamide) are again considered equivalent from the point of view of anti-hypertensive effect and cardiovascular protection
  - Based on the results of a large randomized-controlled study (Ishani, NEJM 2024)
  - However, the Committee believes that agents with a longer duration of action should be given priority as far as possible

- Beta-blockers are no longer recommended in the absence of a specific indication

- Absence of diastolic BP target
  - Benefits of reducing diastolic BP when systolic BP is < 130 mm Hg is uncertain (isolated diastolic hypertension)

Implementation Tool



Acceptable alternatives

Table 3: Available single-pill antihypertensive medication combinations in Canada and associated costs

Single-pill combinations	Cost for 30 days of combination pills, $Can*	Cost for 30 days of the individual drug equivalents, $Can*
ARB + thiazide or thiazide-like diuretic		
Irbesartan–hydrochlorothiazide	6.55	7.31
Telmisartan–hydrochlorothiazide	6.29	6.95
Olmesartan–hydrochlorothiazide	8.12	8.76
Candesartan–hydrochlorothiazide	7.33	7.25
ACEI + thiazide or thiazide-like diuretic		
Lisinopril–hydrochlorothiazide	7.51	6.31
Perindopril–indapamide	8.58	12.04
ARB + long-acting dihydropyridine CCB		
Telmisartan–amlodipine	16.42	12.47

Note: ACEI = angiotensin-converting enzyme inhibitor, ARB = angiotensin II receptor blocker, CCB = calcium channel blocker.
*Drug costs obtained from https://www.ramq.gouv.qc.ca/fr, https://www.formulary.health.gov.on.ca/formulary/, and https://pharmacareformularysearch.gov.bc.ca/ (accessed 2025 Feb. 5).

Advantages of a standardized treatment algorithm?

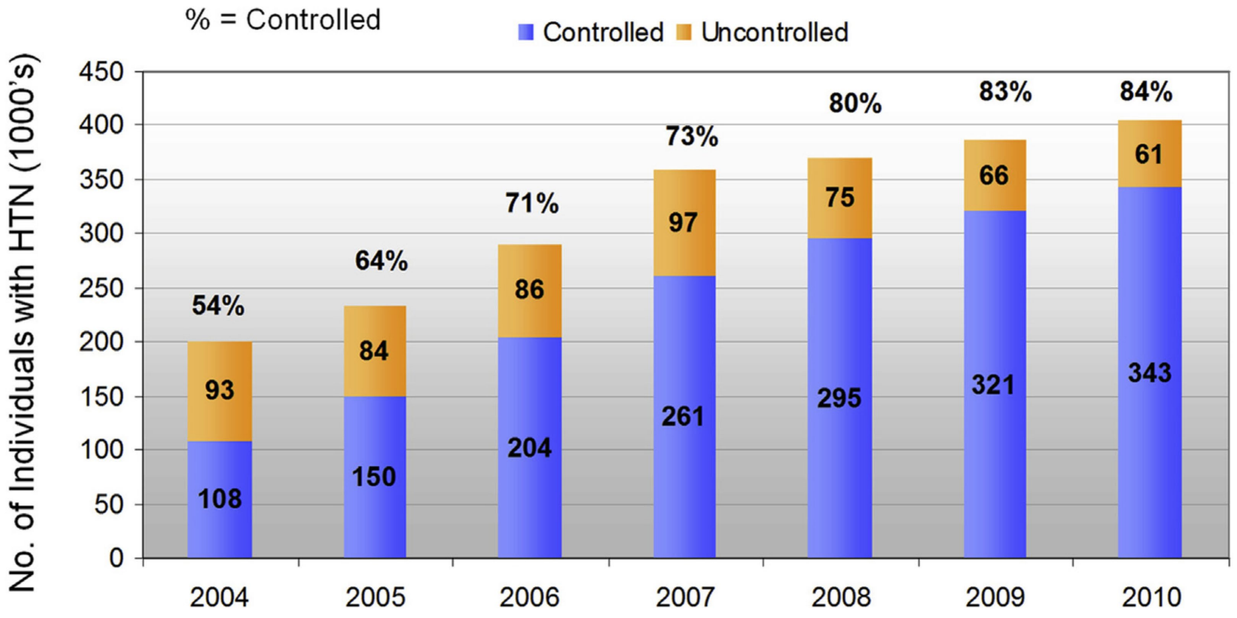
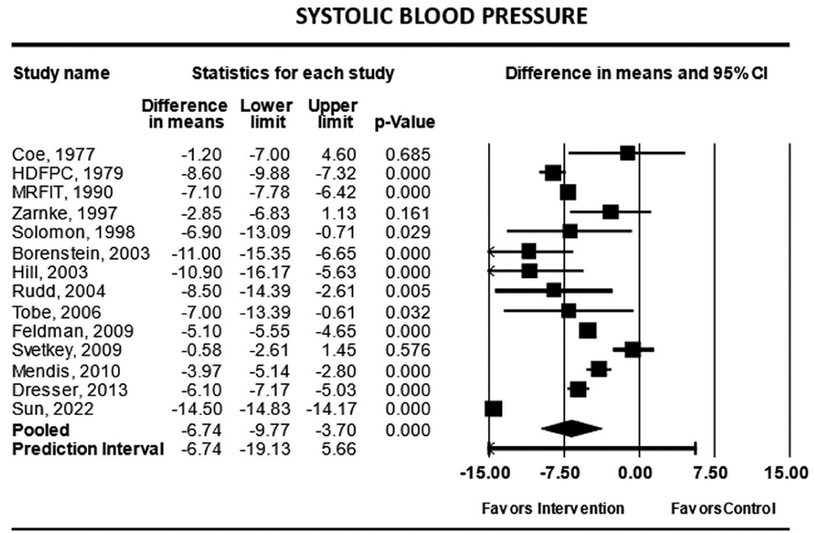
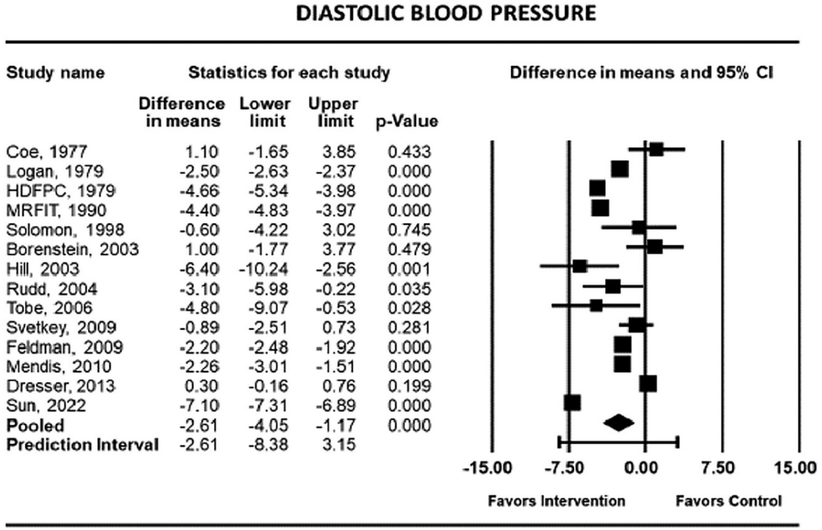


Figure 1. Kaiser Permanente Southern California hypertension control rates. HTN, hypertension.





Advantages of a standardized treatment algorithm?

- "Bulk" purchasing and cost reduction
- Standardizes care
- Facilitates education initiatives

Patient (Public) Hypertension Guidelines

Step 2

Public Guideline

- Created for and by patients
- Focuses on topics that are important to patients, where they can take action
- Aims to help them make decisions that are beneficial to their health and to be actively involved in their care

Patient (Public) Hypertension Guidelines

Step 2

How can I maintain a healthy blood pressure?

Eat a healthy diet: Eat plenty of vegetables and fruits, low-fat milk products, whole grains, lean meats, fish, legumes (dried beans) and nuts.

Limit salt intake: A general rule of thumb: buy products that are labelled with ≤5% daily value of sodium.

Maintain a healthy lifestyle: Try to achieve a healthy weight, be active.

Manage your stress levels: Find effective ways to cope with stress, don't hesitate to get some help.

Limit your alcohol consumption: 2 drinks per day or less is best.

Refrain from smoking: It's hard to quit smoking, seek help if needed.

Take your blood pressure medication(s) if prescribed: Pills are a way to help your body fight high blood pressure.

What can I do to control my blood pressure?

Do I have high blood pressure?
If your numbers are above 130/80 mmHg at home, you have high blood pressure.

Should I measure my blood pressure at home?
It's always helpful to know what your numbers are at home. Sometimes, blood pressures at home are different than the ones measured in clinic.

Know your numbers

I'm going to my clinic today, can I help?
Make sure they measure your blood pressure correctly. Ask questions about your numbers and where they should be.

Do I need to take pills?
Healthy habits are sometimes not enough to get your numbers low enough, and your body may need help from pills. Lots of people need more than one kind of pill.

How low should my blood pressure be?
Most people should have their top number below 130 mmHg but ask your doctor or nurse if this is different for you.

Should I start treatment?
Yes, if you have high blood pressure, but it may only mean lifestyle changes and not necessarily starting pills right away.

Should I be concerned?
The higher your numbers are, the greater the risk and the more concerned you should be.

Comprehensive Guideline: Coming Soon

- Topics vary from year to year, depending on the priority given to them
- "Living" guidelines hosted on the Hypertension Canada website and an app
- Recommendations based on data reviews by independent groups, in collaboration with Hypertension Australia

Key Messages

- This is only the first step of the new guideline process
- Importance of optimal BP measurements is key
- New hypertension diagnosis threshold: 130/80 mm Hg for all
- Treat everyone, but some only with non-pharmaological measures
- If BP > 140/90 mm Hg or SBP 130-139 mmHg and high CV risk, start pharmacotherapy without waiting for the effects of non-pharma measures
- Low-dose combination therapy as first line treatment
- Spironolactone as 4th line agent

Thanks

- Primary Care Guidelines Committee Members
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- Patient Guidelines Committee Members
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