# Part 1: Recommendations for Hypertension Diagnosis, Assessment, and Follow-up

2015 **C**anadian **H**ypertension
**E**ducation **P**rogram
Recommendations

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# 2015 Canadian Hypertension Education Program (CHEP)

- A red flag has been posted where recommendations were updated for 2015.

- Slide kits for health care professional and public education can be downloaded (English and French versions) from www.hypertension.ca

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# CHEP Key Messages for the Management of Hypertension

1. All Canadian adults should have their blood pressure assessed at all appropriate clinical visits. Electronic (oscillometric) measurement methods are preferred to manual measurement.
2. Out-of-office measurement should be performed to confirm the initial diagnosis of hypertension.
3. Optimum management of the hypertensive patient requires assessment and communication of overall cardiovascular risk using an analogy like 'vascular age'.
4. Home BP monitoring is an important tool in self-monitoring and self-management.
5. Health behaviour modification is effective in preventing hypertension, treating hypertension and reducing cardiovascular risk.
6. Combinations of both health behaviour changes and drugs are generally necessary to achieve target blood pressures.
7. Focus on adherence.
8. Treat to target.

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## HYPERTENSION DIAGNOSIS, ASSESSMENT AND FOLLOW-UP

**Table of contents**



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# I. Accurate Measure of Blood Pressure
# Assess blood pressure at all appropriate visits

When should blood pressure be measured?

- Health care professionals should know the blood pressure of all of their patients/clients.
- Blood pressure of all adults should be measured whenever it is appropriate using standardized techniques.
  - To screen for hypertension
  - To assess cardiovascular risk
  - To monitor antihypertensive treatment

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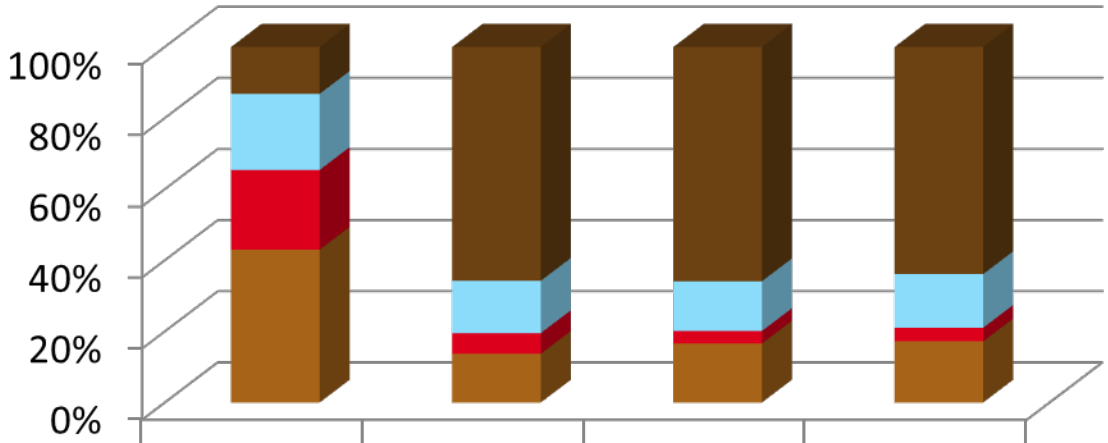
# Hypertension Awareness, Treatment and Control




| | Canada (1986-1992) | Ontario (2006) | Canada (2007-2009) | Canada (2009-2011) |
|---|---|---|---|---|
| Treated and controlled | 13.2% | 65.7% | 65.9% | 63.9% |
| Treated but not controlled | 21.4% | 14.7% | 14.0% | 15.1% |
| Aware but not treated | 22.4% | 5.8% | 3.5% | 3.8% |
| Unaware | 43.0% | 13.7% | 16.6% | 17.2% |

Joffres MR, Hamet P, MacLean DR, L'italien GJ, Fodor G. Distribution of blood pressure and hypertension in Canada and the United States. Am J Hypertens. 2001;14(11):1099-1105.
Leenen FHH, Dumais J, McInnis NH, Turton P, Stratychuk L, Nemeth K, Lum-Kwong MM, Fodor G. Results of the Ontario Survey on the Prevalence and Control of Hypertension. *CMAJ.* 2008;178(11):1441-1449.
Wilkins K, Campbell NRC, Joffres MR, McAlister FA, Nichol M, Quach S, Johansen HL, Tremblay MS. Blood pressure in Canadian adults. *Health Reports*. 2010;21(1):37-46.
Statistics Canada. Blood pressure of Canadian adults, 2009 to 2011. Ottawa, ON: Statistics Canada, 2012. http://www.statcan.gc.ca/pub/82-625-x/2012001/article/11714-eng.pdf.

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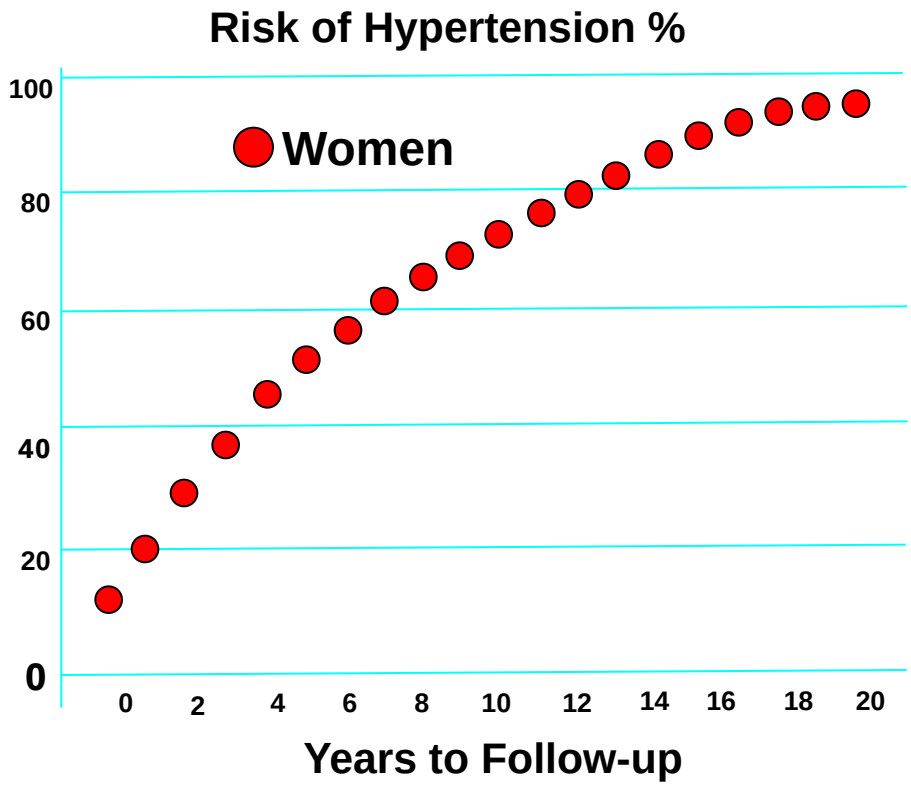
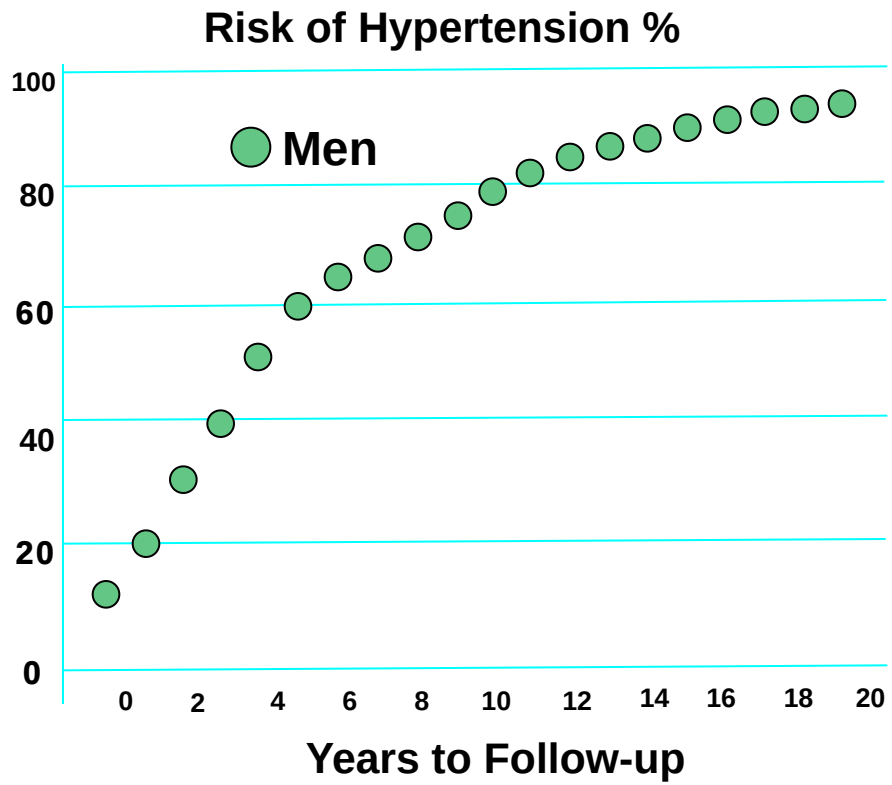
# Lifetime Risk of Hypertension in Normotensive Women and Men Aged 65 Years

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Vasan R. *JAMA* 2002;287:1003-10.

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# Reversible Risk Factors for Developing Hypertension

- Obesity
- Poor dietary habits
- High sodium intake
- Sedentary lifestyle
- High alcohol consumption

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# Incidence of Hypertension in Those with High Normal Blood Pressure: TROPHY Study

- 772 subjects, mean age 48.5, mean BMI 30 kg/m$^2$
- Control arm (not receiving treatment for hypertension)
- Average of 3 blood pressures at baseline:
  - SBP 130-139 and DBP < 89 OR
  - SBP < 139 and DBP 85-89
- Primary endpoint was new onset hypertension.

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Julius S. *NEJM* 2006;354:1685-97.

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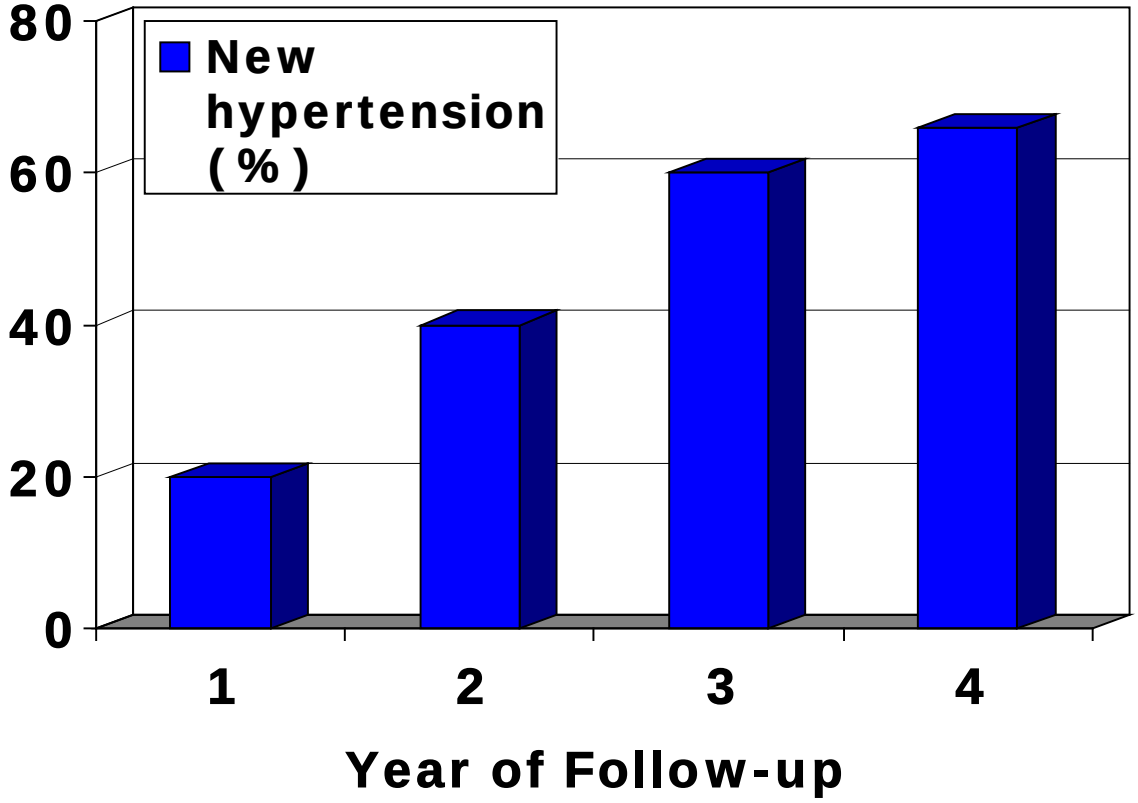
# New-Onset Hypertension in People with High Normal Blood Pressure




Julius S. *NEJM* 2006;354:1685-97.

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# High Risk of Developing Hypertension in Those with High Normal Blood Pressure

- Individuals with high-normal blood pressure are at high risk of progression to overt hypertension.

- Annual follow-up of patients with high normal blood pressure is recommended.

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# I. BP measurement methods

- Office (attended, OBPM)
  - Oscillometric (electronic) – **preferred method**
  - Auscultatory (mercury, aneroid)
- Office Automated (unattended, AOBP)
  - Oscillometric (electronic)
- Ambulatory blood pressure monitoring (ABPM)
- Home blood pressure monitoring (HBPM)

For information on blood pressure measurement devices:

- http://www.dableducational.org/sphygmomanometers.html
- http://www.bhsoc.org/bp-monitors/bp-monitors/

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# New 2015 Recommendation: BP Measurement

**Office BP measurement (OBPM):**

- Measurement using electronic (oscillometric) upper arm devices is preferred to auscultatory devices (Grade C).

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# BP measurement methods

## Office (attended, OBPM)

*Auscultatory (mercury, aneroid)*

*Oscillometric (electronic)*

http://www.dableducational.org/sphygmomanometers.html

http://www.bhsoc.org/bp-monitors/bp-monitors/

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# BP measurement methods

## Office (attended, OBPM)

*Oscillometric (electronic)* *Auscultatory (mercury, aneroid)*

*Preferred*

http://www.dableducational.org/sphygmomanometers.html

http://www.bhsoc.org/bp-monitors/bp-monitors/

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# BP measurement methods

## Office Automated (unattended, AOBP)

*Oscillometric (electronic)*




http://www.dableducational.org/sphygmomanometers.html

http://www.bhsoc.org/bp-monitors/bp-monitors/

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# Automated Office Blood Pressure Measurement (AOBP)

- Automated office blood pressure measurements can be used in the assessment of office blood pressure*.

- When used under proper conditions, automated office SBP of 135 mmHg or higher or DBP values of 85 mmHg or higher should be considered analogous to mean awake ambulatory SBP of 135 mmHg or higher or DBP of 85 mmHg or higher*.

*see notes

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# Use of Standardized Measurement Techniques is Recommended when Assessing Blood Pressure

- When using automated office oscillometric devices such as the BpTRU, the patient should be seated in a quiet room alone.
- With the device set to take measures at 1 minute intervals, an initial measurement is taken by a health professional to verify that the device is registering a measurement.
- The patient is left alone after the first measurement and the device automatically takes subsequent readings.

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# Auscultatory OBPM is inaccurate

- In the real world, the accuracy of auscultatory OBPM can be adversely affected by provider, patient and device factors such as:
  - too rapid deflation of the cuff
  - digit preference with rounding off of readings to 0 or 5
  - also, mercury sphygmomanometers are being phased out and aneroid devices are less likely to remain calibrated

- Consequence: Routine auscultatory OBPMs are 9/6 mm Hg higher than standardized research BPs (primarily using oscillometric devices)

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Myers MG, et al. *Can Fam Physician* 2014;60:127-32.

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# Keys to accurate OBPM

- Use standardized measurement techniques and validated equipment
- Measurement using electronic (oscillometric) upper arm devices is preferred over auscultation
- The first reading should be discarded and the latter two averaged.

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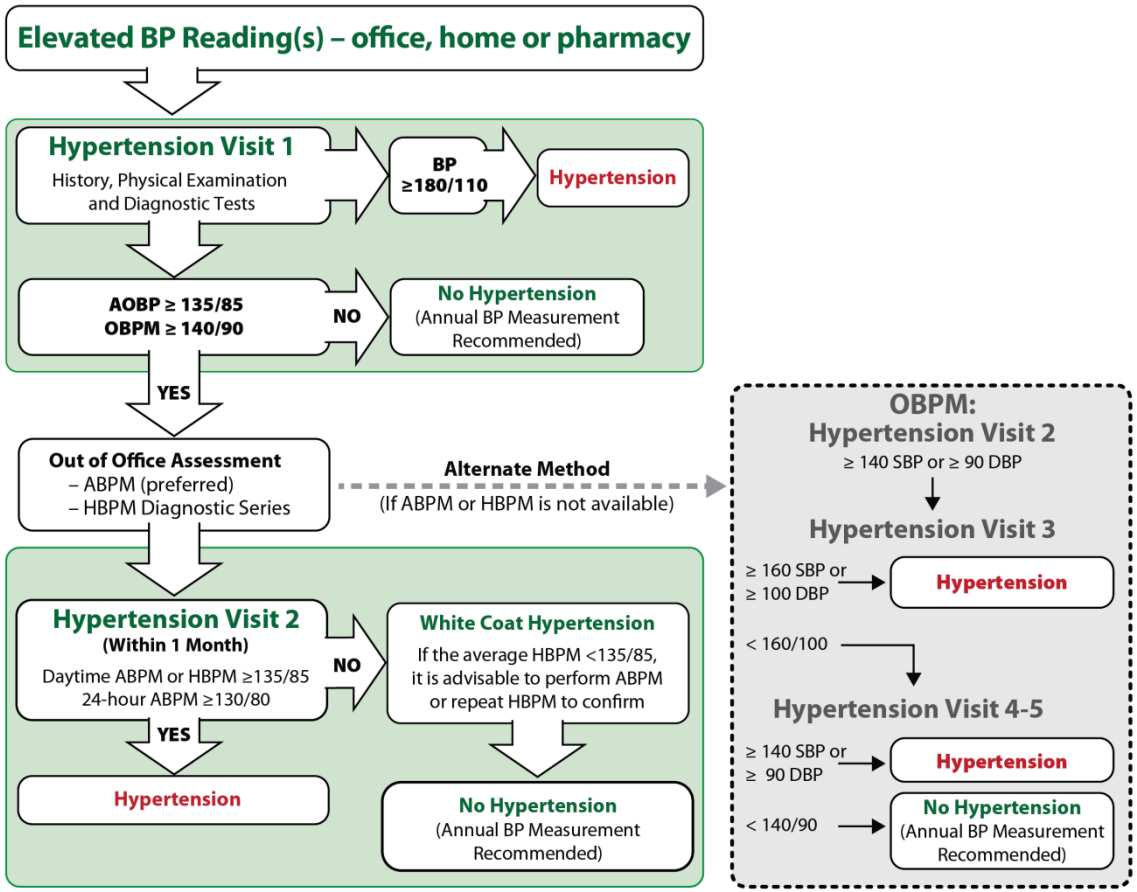
# II. Criteria for the diagnosis of hypertension and recommendations for follow-up: overview




Measurement using electronic (oscillometric) upper arm devices is preferred over auscultation

**ABPM:** Ambulatory Blood Pressure Measurement
**AOBP:** Automated Office Blood Pressure
**HBPM:** Home Blood Pressure measurement
**OBPM:** Office Blood Pressure measurement

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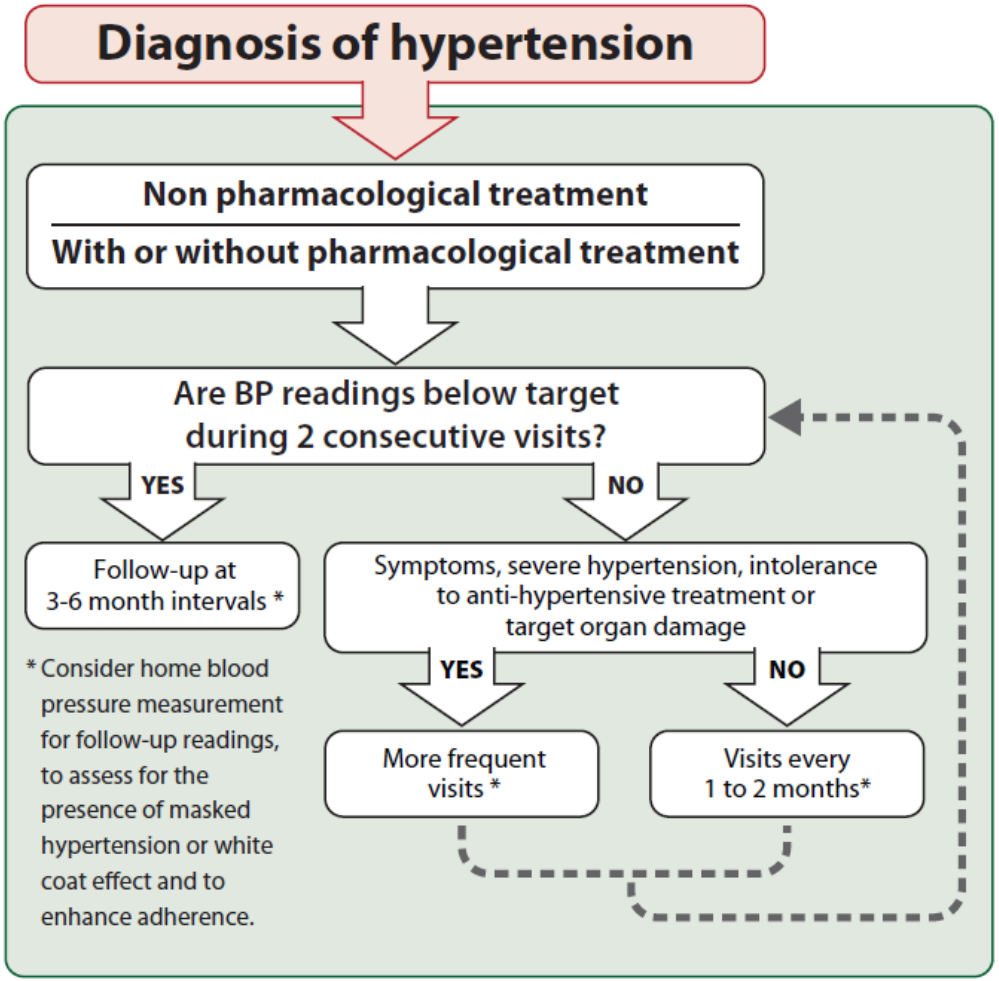
# II. Criteria for the Diagnosis of Hypertension and Recommendations for Follow-up

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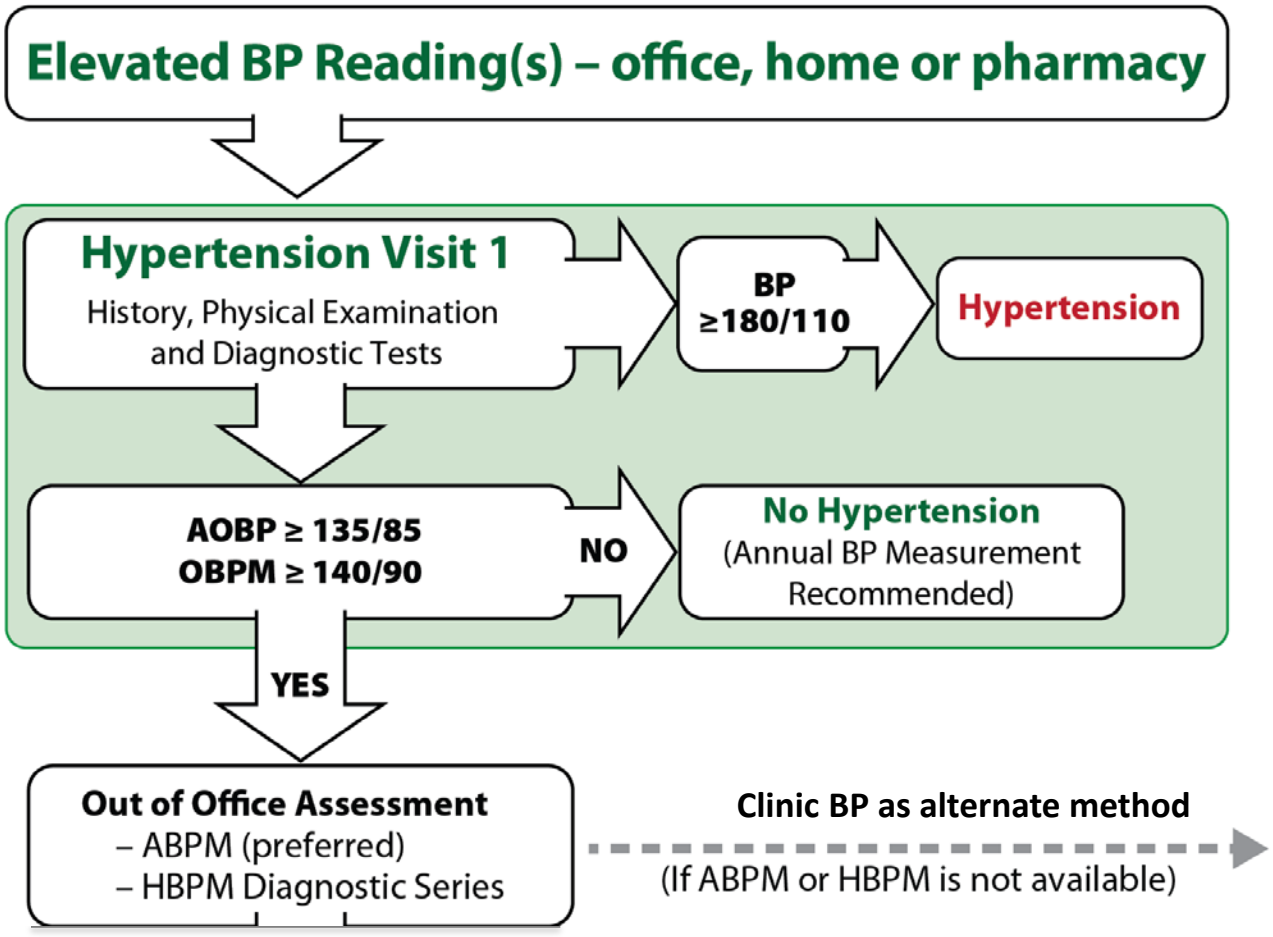
# Out of office assessment is the preferred means of diagnosing hypertension

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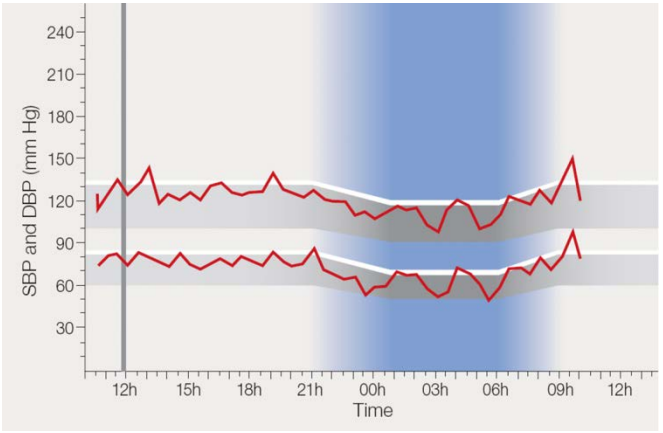
# Out of office BP measurement methods: Ambulatory (ABPM)




http://www.dableducational.org/sphygmomanometers.html
http://www.bhsoc.org/bp-monitors/bp-monitors/

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# Out of office BP measurement methods: Home (HBPM)

http://www.dableducational.org/sphygmomanometers.html

http://www.bhsoc.org/bp-monitors/bp-monitors/

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# Out-of-office BP Measurements

- 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.
- Identifies white coat hypertension (as well as diagnosing masked hypertension)

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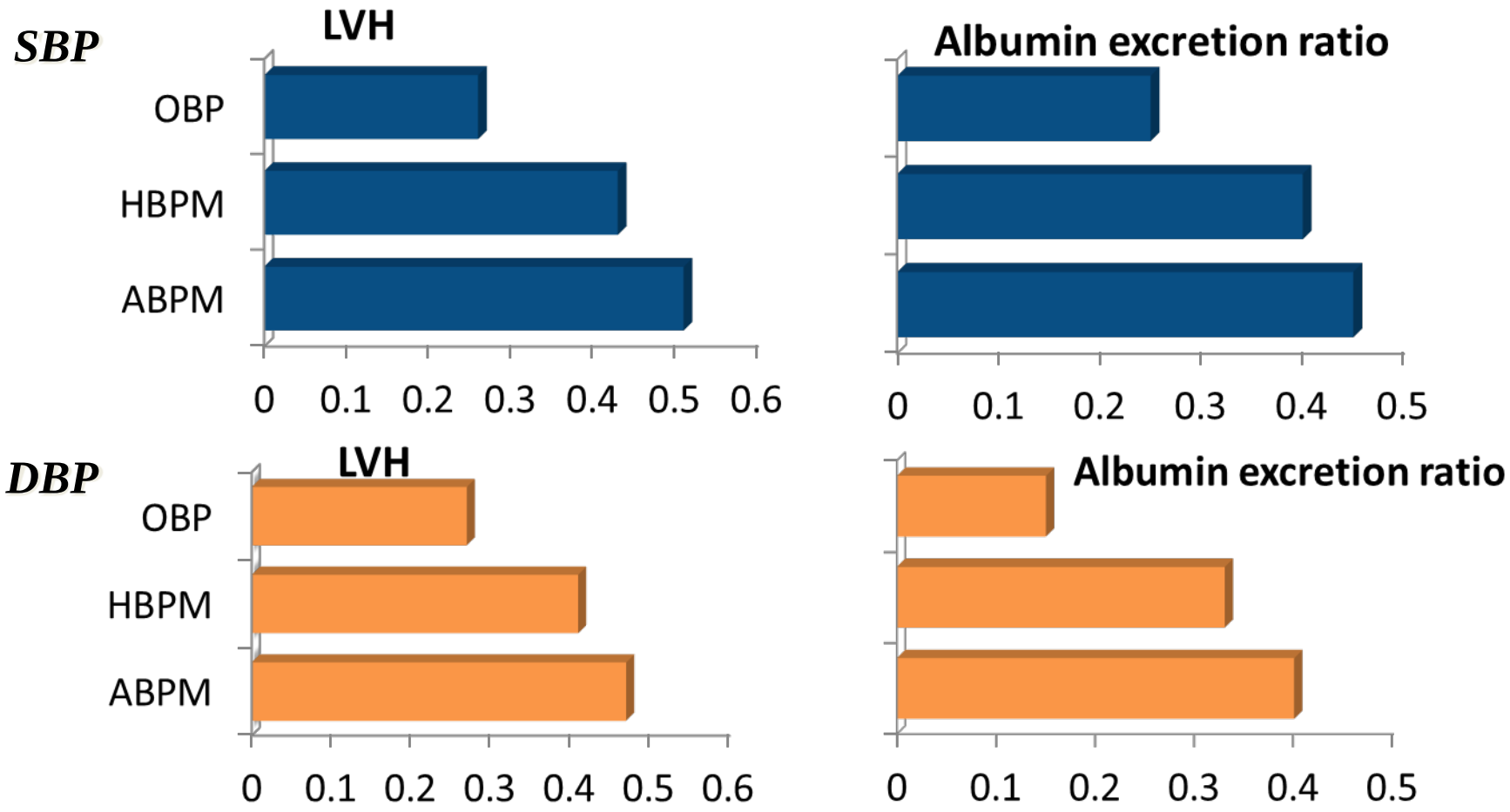
# Out-of-office BP measurements are more highly correlated with BP-related risk




Mule et al. *J Cardiovasc Risk* 2002;9:123-9.

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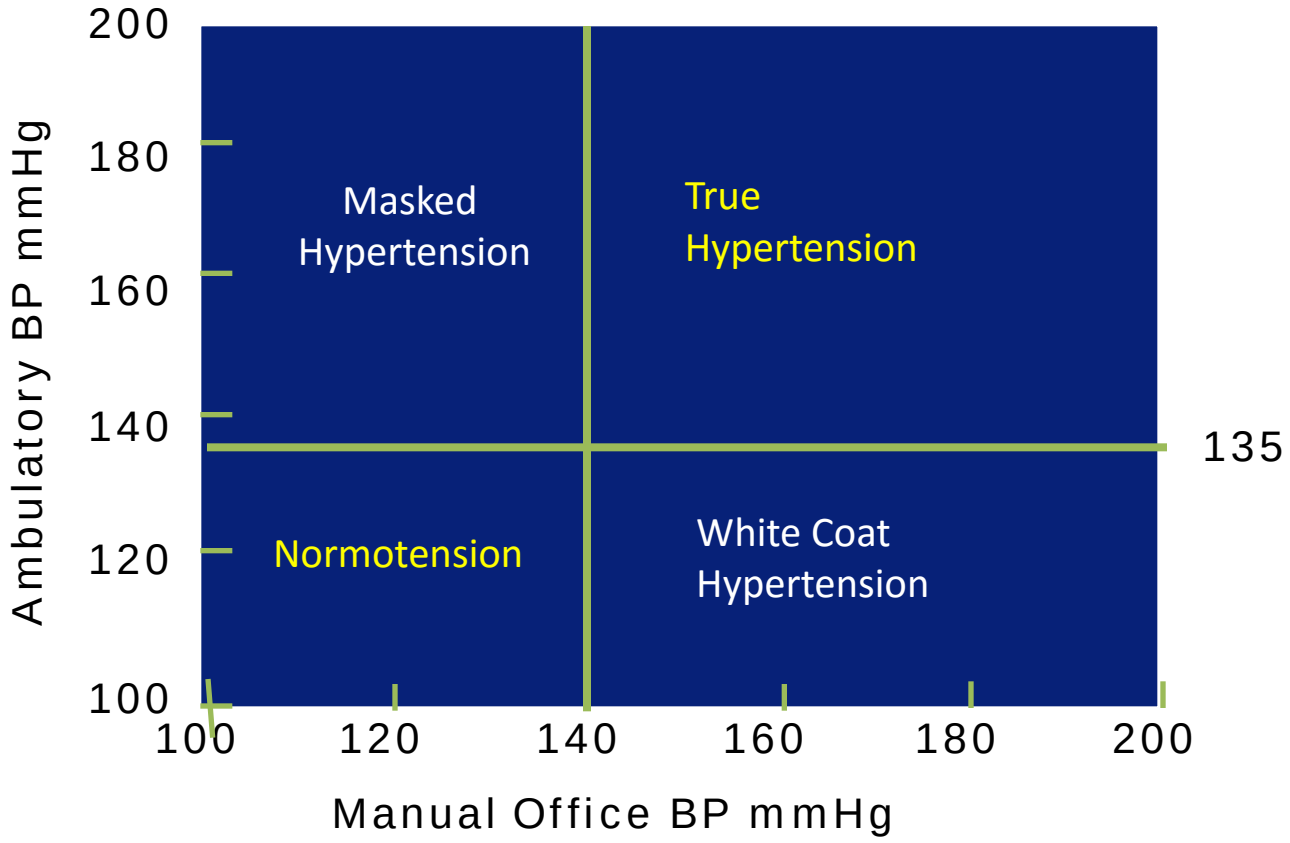
# Only relying on office pressures misses out on white coat and masked hypertension




From Pickering et al. *Hypertension* 2002;40:795-796

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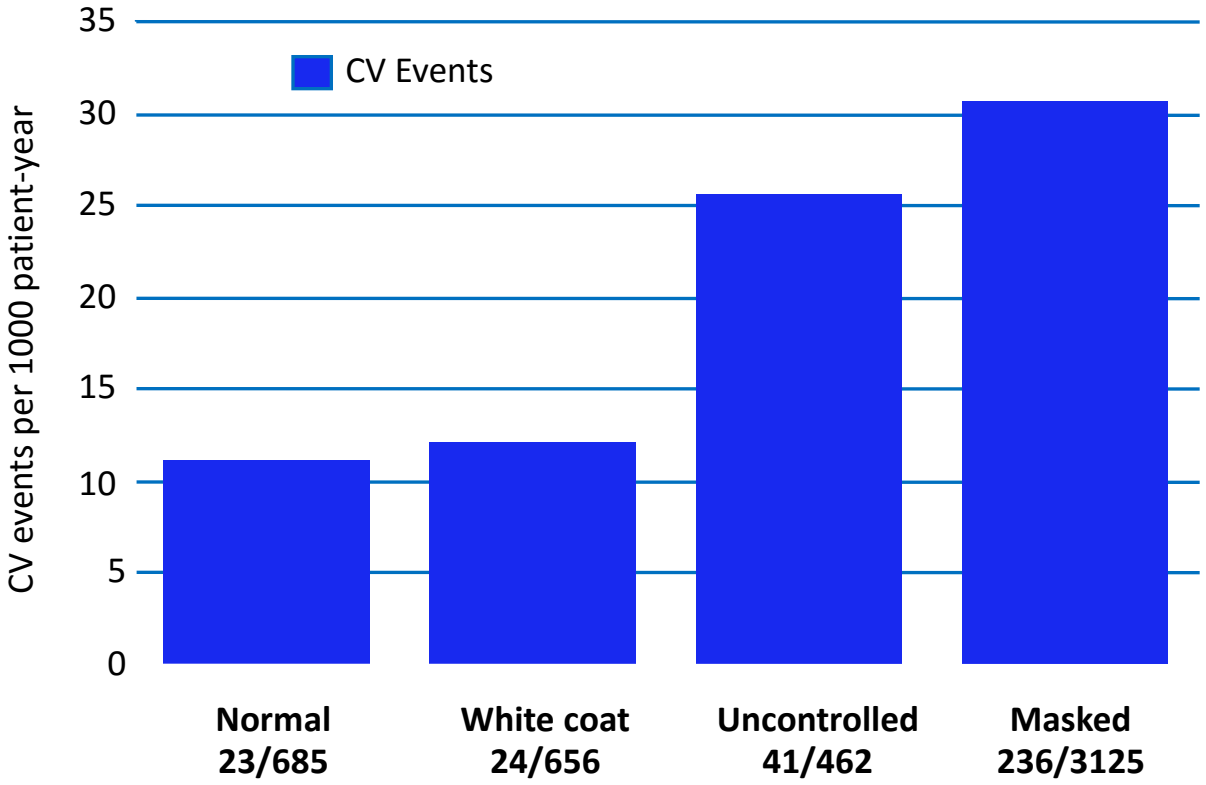
# The prognosis of *white coat* and *masked* hypertension




Okhubo et al. *J. Am. Coll. Cardiol.* 2005;46;508-515

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# White coat hypertension: risk factors

- women
- older adults
- non-smokers
- subjects recently diagnosed with hypertension with a limited number of routine OBPM
- subjects with mild hypertension
- pregnant women
- subjects ***without*** evidence of target organ damage

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*Franklin SS, et al. Hypertension 2013;62:982-7*
*Lovibond K, et al. Lancet 2011;378:1219-30*

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# Masked hypertension: risk factors

- high normal clinic BPs
- older adults
- males
- higher BMI
- smoker
- excess alcohol consumption
- diabetes
- peripheral arterial disease
- orthostatic hypotension
- LVH

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*Hanninen MR et al, J Hypertens. 2011;29:1880-88*
*Barochiner J et al. Am J Hypertens. 2013;28:872-78*
*Andalib A et al. Intern M ed J. 2012;42:260-66*

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# Summary of evidence

- Out-of-office is needed to identify white coat hypertension (and to rule out masked hypertension)
- ABPM has better predictive ability than OBPM
- HBPM has better predictive ability than OBPM

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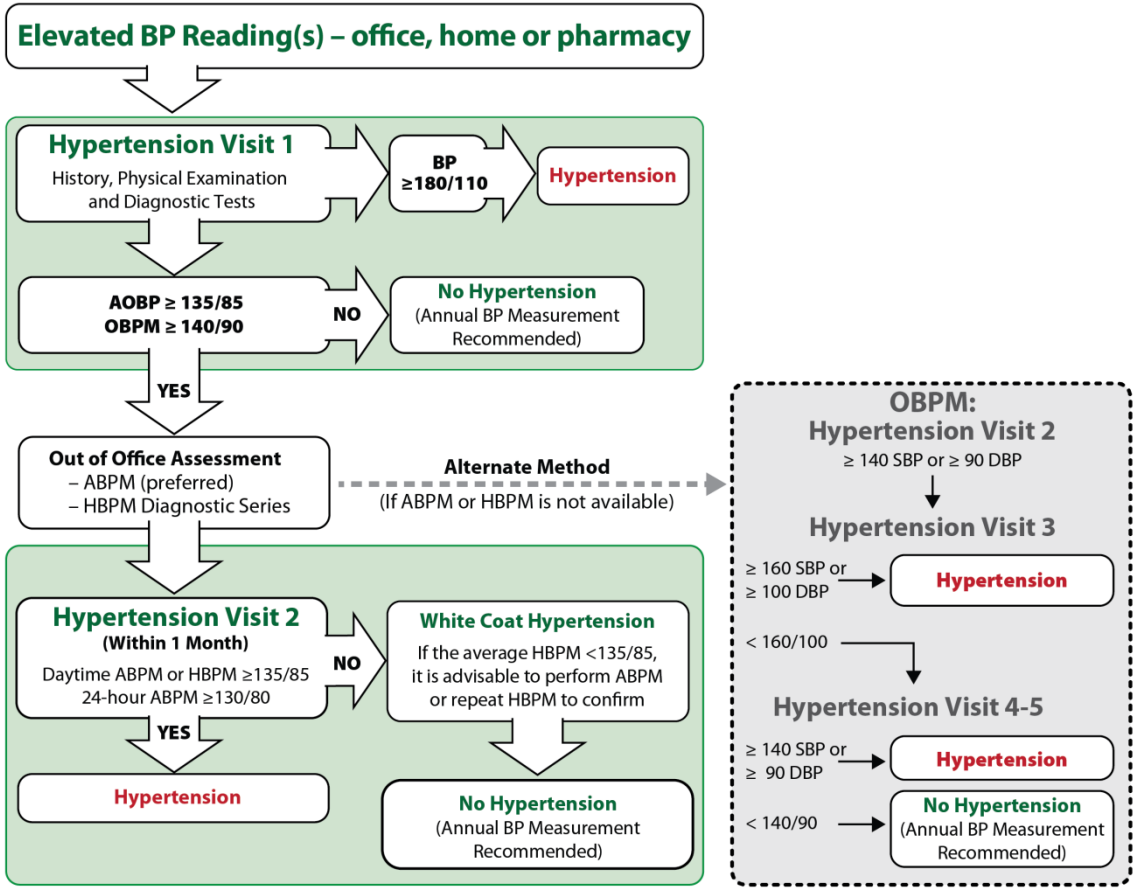
# Criteria for the diagnosis of hypertension and recommendations for follow-up: summary




Measurement using electronic (oscillometric) upper arm devices is preferred over auscultation

**ABPM:** Ambulatory Blood Pressure Measurement
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**OBPM:** Office Blood Pressure measurement

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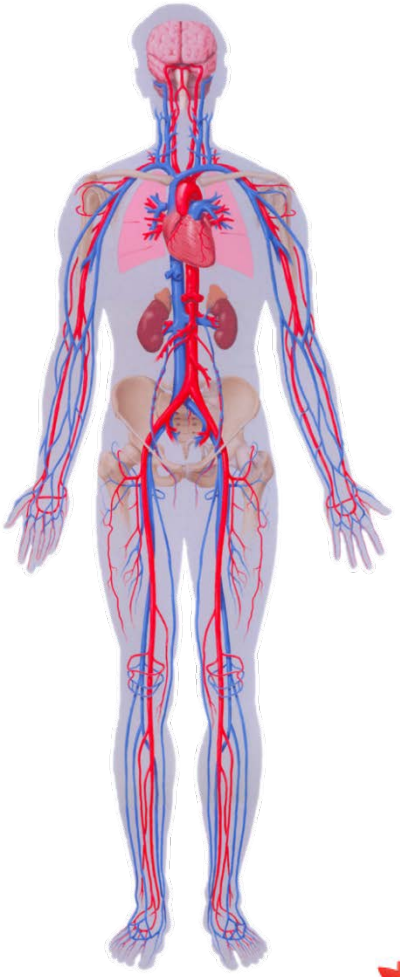
# III. Assessment of the Overall Cardiovascular Risk

## Search for target organ damage

- **Cerebrovascular disease**
  - transient ischemic attack
  - ischemic or hemorrhagic stroke
  - vascular dementia
- **Hypertensive retinopathy**
- **Left ventricular dysfunction**
- **Left ventricular hypertrophy**
- **Coronary artery disease**
  - myocardial infarction
  - angina pectoris
  - congestive heart failure
- **Chronic kidney disease**
  - hypertensive nephropathy (GFR < 60 ml/min/1.73 m2)
  - albuminuria
- **Peripheral artery disease**
  - intermittent claudication
  - ankle brachial index < 0.9



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# III. Assessment of the Overall Cardiovascular Risk

- Search for exogenous potentially modifiable factors that can induce/aggravate hypertension
  - Prescription Drugs:
    - NSAIDs, including coxibs
    - Corticosteroids and anabolic steroids
    - Oral contraceptive and sex hormones
    - Vasoconstricting/sympathomimetic decongestants
    - Calcineurin inhibitors (cyclosporin, tacrolimus)
    - Erythropoietin and analogues
    - Antidepressants: Monoamine oxidase inhibitors (MAOIs), SNRIs, SSRIs
    - Midodrine
  - Other:
    - Licorice root
    - Stimulants including cocaine
    - Salt
    - Excessive alcohol use

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# III. Assessment of the Overall Cardiovascular Risk

- Over 80% of hypertensive Canadians have other cardiovascular risks

- Assess and manage hypertensive patients for dyslipidemia, dysglycemia (e.g. impaired fasting glucose, diabetes) abdominal obesity, unhealthy eating and physical inactivity

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# III. Assessment of the Overall Cardiovascular Risk

**Treat Hypertension in the Context of Overall Cardiovascular Risk**

1. Overall cardiovascular risk should be assessed. In hypertensive patients consider using calculations that include cerebrovascular events.
2. In the absence of Canadian data to determine the accuracy of risk calculations, avoid using absolute levels of risk to support treatment decisions at specific risk thresholds.
3. Discuss global risk using analogies that describe comparative risk such as “Cardiovascular Age”, “Vascular Age” or “Heart Age” to inform patients of their risk status and to improve the effectiveness of risk factor modification.

***Simply counting risk factors may underestimate risk***

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# III. Assessment of the Overall Cardiovascular Risk

## Examples of key cardiovascular risk factors for atherosclerosis

***Prior history of clinically overt atherosclerotic disease*** *indicates a very high risk for a recurrent atherosclerotic event (e.g. Peripheral arterial disease, previous stroke or transient ischemic attack)*

**Non-Modifiable**

- Age ≥55 years
- Male
- Family history of premature cardiovascular disease (age <55 in men and <65 in women)

**Modifiable**

- Sedentary lifestyle
- Poor dietary habits
- Abdominal obesity
- Dysglycemia
- Smoking
- Dyslipidemia
- Stress
- Nonadherence

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# Methods of Risk Assessment

- Clinical impression
- Risk factor counting
- Risk calculation or equation tools

- Framingham hard coronary heart disease (CHD) http://www.framinghamheartstudy.org/risk/hrdcoronary.html
- SCORE Canada – Systematic Cerebrovascular and Coronary Risk Evaluation www.score-canada.ca
- Cardiovascular Age™ www.myhealthcheckup.com
- Others: see notes

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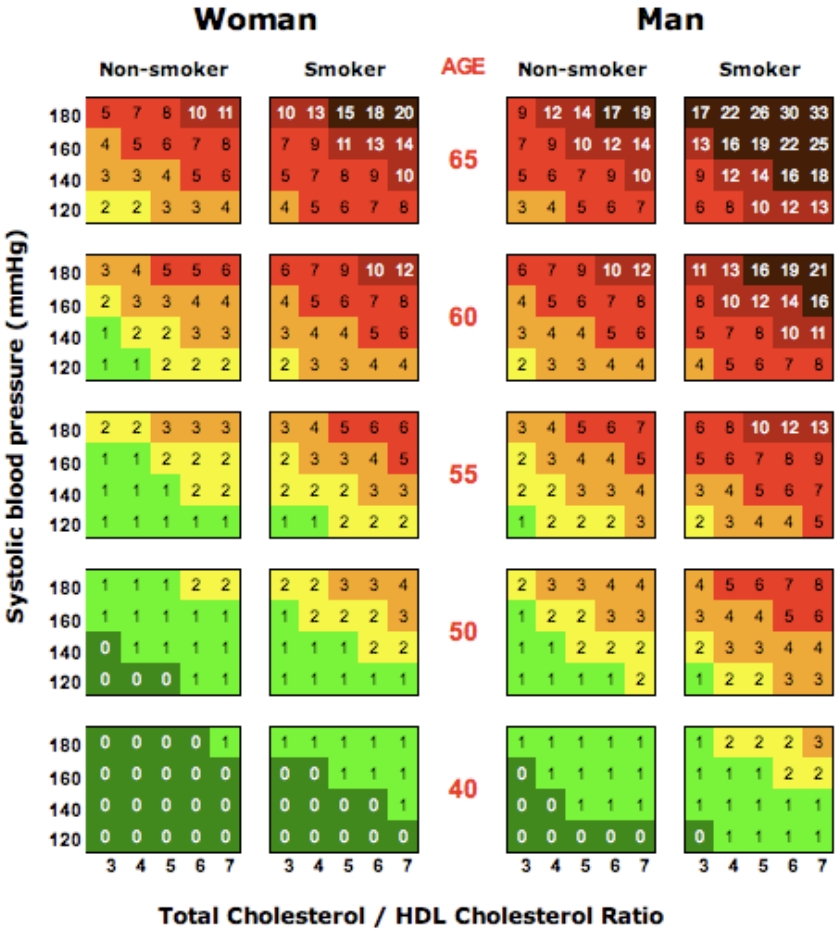
# SCORE 10-Year Fatal Cardiovascular Risk Evaluation in Canada




SCORE Canada : Systematic Cerebrovascular and cOronary Risk Evaluation

**Find the cell nearest to the person's risk factors values :**

**Age**

**Sex**

**Smoking Status**

**Systolic Blood Pressure**

**Total-Chol. / HDL-C. Ratio**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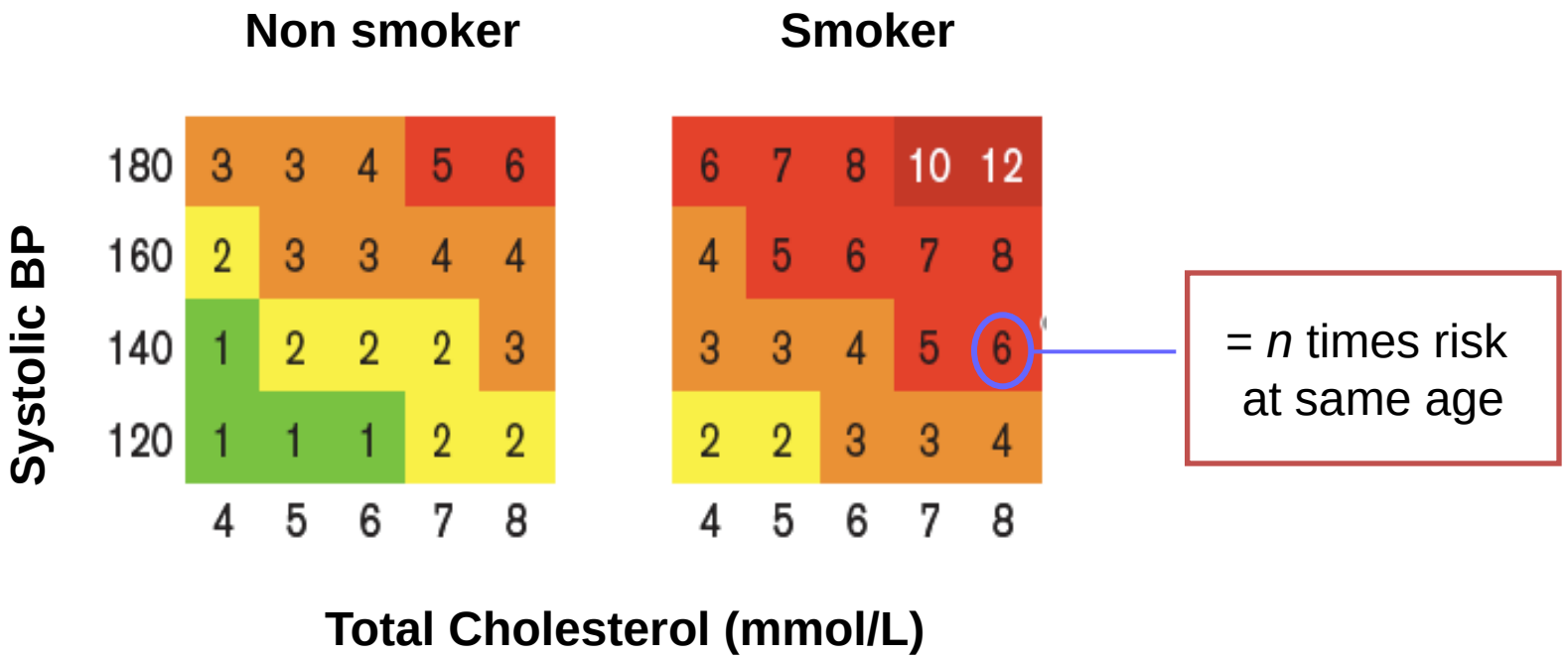
# SCORE Canada: Relative Risk Evaluation (for use in those less than 40 years old)

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# Factors to Take Into Account When Using SCORE Canada to Estimate Risk of Fatal CVD

- Approaching next age category
- Pre-clinical evidence of atherosclerosis (imaging test)
- Strong family history of premature CVD: multiply risk by 1.7 in men and 2.0 in women
- Obesity: BMI > 30 kg/m$^2$; Waist circumference > 102 cm (men) and > 88 cm (women)
- Sedentary lifestyle
- Diabetes: multiply risk by 3 for men and by 5 for women
- Raised serum triglyceride level
- Raised level of c-reactive protein, fibrinogen, homocysteine, apolipoprotein B or lp(a)

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# IV. Routine Laboratory Tests

**Preliminary Investigations of patients with hypertension**

1. Urinalysis
2. Blood chemistry (potassium, sodium and creatinine)
3. Fasting glucose and/or glycated hemoglobin (A1c)
4. Fasting total cholesterol and high density lipoprotein cholesterol (HDL), low density lipoprotein cholesterol (LDL), triglycerides
5. Standard 12-leads ECG

Currently there is insufficient evidence to recommend routine testing of microalbuminuria in people with hypertension who do not have diabetes

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# IV. Routine Laboratory Tests

**Follow-up investigations of patients with hypertension**

- During the maintenance phase of hypertension management, tests (including electrolytes, creatinine, glucose, and fasting lipids) should be repeated with a frequency reflecting the clinical situation.
- Diabetes develops in 1-3%/year of those with drug treated hypertension. The risk is higher in those treated with a diuretic or beta blocker, in the obese, sedentary, with higher fasting glucose and who have unhealthy eating patterns. Assess for diabetes more frequently in these patients.

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# IV. Optional Laboratory Tests

**Investigation in specific patient subgroups**

- For those with diabetes or chronic kidney disease: assess urinary albumin excretion, since therapeutic recommendations differ if proteinuria is present.
- For those suspected of having an endocrine cause for the high blood pressure, or renovascular hypertension, see following slides.
- Other secondary forms of hypertension require specific testing.

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# Abnormal Urinary Albumin levels

| **Setting** | Urinary albumin / creatinine level (mg/mmol) |
|---|---|
| Chronic kidney Disease | >30 |
| Diabetes | ≥2 |

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# V. Assessment for Renovascular Hypertension

Patients presenting with two or more of the following clinical clues listed below suggesting renovascular hypertension should be investigated.

I. Sudden onset or worsening of hypertension and age >55 or <30 years
II. The presence of an abdominal bruit
III. Hypertension resistant to 3 or more drugs
IV. A rise in creatinine of 30% or more associated with use of an angiotensin converting enzyme inhibitor or angiotensin II receptor blocker
V. Other atherosclerotic vascular disease, particularly in patients who smoke or have dyslipidemia
VI. Recurrent pulmonary edema associated with hypertensive surges

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# V. Assessment for Renovascular Hypertension

The following tests are recommended, when available, to screen for renal vascular disease:

- captopril-enhanced radioisotope renal scan*
- doppler sonography
- magnetic resonance angiography
- CT-angiography (for those with normal renal function)

*** captopril-enhanced radioisotope renal scan is not recommended for those with glomerular filtration rates <60 mL/min)**

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# VI. Screening for Hyperaldosteronism

Should be considered for patients with the following characteristics:

- Spontaneous hypokalemia (<3.5 mmol/L).
- Profound diuretic-induced hypokalemia (<3.0 mmol/L).
- Hypertension refractory to treatment with 3 or more drugs.
- Incidental adrenal adenomas.

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# VI. Screening for Hyperaldosteronism

**Screening for hyperaldosteronism should include plasma aldosterone and renin activity (or renin concentration)**

- measured in morning samples.
- taken from patients in a sitting position after resting at least 15 minutes.

- Aldosterone antagonists, ARBs, beta-blockers and clonidine should be discontinued prior to testing.
- A positive screening test should lead to referral or further testing.

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# VI. Renin, Aldosterone and Ratio Conversion factors

| A. To estimate: | B. From: | Multiply (B) by: |
|---|---|---|
| Plasma Renin Concentration (ng/L) | Plasma Renin Activity (ng/mL/hr) | 0.192 |
| Plasma Renin Activity (ng/L/sec) | Plasma Renin Activity (ng/mL/hr) | 0.278 |
| Aldosterone concentration (pmol/L) | Aldosterone concentration (ng/dL) | 28 |

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# VI. Screening for Pheochromocytoma

- **Should be considered for patients with the following characteristics:**
  - Paroxysmal and/or severe sustained hypertension refractory to usual antihypertensive therapy;
  - Hypertension and symptoms suggestive of catecholamine excess (two or more of headaches, palpitations, sweating, etc);
  - Hypertension triggered by beta-blockers, monoamine oxidase inhibitors, micturition, or changes in abdominal pressure;
  - Incidentally discovered adrenal mass;
  - Multiple endocrine neoplasia (MEN) 2A or 2B; von Recklinghausen's neurofibromatosis, or von Hippel-Lindau disease.

# VI. Screening for Pheochromocytoma

- Screening for pheochromocytoma should include a 24 hour urine for metanephrines and creatinine.
- Assessment of urinary VMA is **inadequate**.
- A normal plasma metanephrine level can be used to exclude pheochromocytoma in low risk patients but the test is performed by few laboratories.

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# VII. Home Measurement of Blood Pressure

## Home BP measurement should be encouraged to increase patient involvement in care

- Which patients?
  - Uncomplicated hypertension
  - Suspected non adherence
  - Office-induced blood pressure elevation (white coat effect)
  - Masked hypertension

**Average BP ≥ 135/85 mm Hg should be considered elevated**

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# Advantages of Home Blood Pressure Measurement

- More rapid confirmation of the diagnosis of hypertension
- Improved ability to predict cardiovascular prognosis
- Improved blood pressure control
- Can be used to assess patients for white coat hypertension and masked hypertension
- Improved adherence to drug therapy

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# VII. Suggested Protocol for Home Measurement of Blood Pressure for the diagnosis of hypertension

- Home blood pressure values should be based on:
  - Two measures separated by one minute,
  - Morning and evening,
  - For an initial 7-day period.
- First day home BP values should not be considered.
- The following six days blood pressure readings should be averaged.
- Average BP equal to or over 135/85 mmHg should be considered elevated (for those patients whose clinic BP target is less than 140/90 mmHg).

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# Recommended Electronic Blood Pressure Monitors for Home Blood Pressure Measurement

- Monitors that have been validated as accurate and available in Canada are listed at www.hypertension.ca in the 'device endorsements' section

- The boxes containing the device are also GENERALLY marked with

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# VII. Home Measurement of BP: Patient Education

- Assist patients select a model with the correct size of cuff
- Measure and record the patients mid arm circumference so they can match it to cuff size.
- Recommend devices listed at www.hypertension.ca or marked with this symbol 
- Ask patients to carefully follow the instructions with device and to record only those blood pressures where they have followed recommended procedure
- Advise patients that average readings equal to or over 135/85 mmHg are high
- In patients with diabetes lower therapeutic targets and diagnostic criteria are likely required

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# Resources for Home Monitoring

- www.hypertension.ca
- Information to assist you in training patients to measure blood pressure at home
  - Brief action tool for Health Care professionals under resources in the Education tools for health care professionals section
- Information for patients on how to purchase a device for home measurement and how to measure blood pressure at home
  - Learn how to measure your blood pressure at home and home measurement of blood pressure under resources in the education tools for health care professionals section).
- A training DVD on home measurement of blood pressure is available for download at www.hypertension.ca

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# Advice for hypertensive patients: When to contact a health care professional based on home blood pressure readings

| Systolic BP (mmHg) | Diastolic BP reading | |
|---|---|---|
| Less than 130 | Less than 85 | Usual follow-up |
| 130-179* | 85-109* | Check reading again using the correct technique. If the readings remain high, discuss with your healthcare provider at your next regularly scheduled appointment |
| 180 – 199* | 110-119 | Check reading again using the correct technique. If the readings remain high, schedule an appointment with your doctor to discuss your treatment plan. |
| More than 200* | More than 120 | Check reading again using the correct technique. If the readings remain high, schedule an urgent appointment with your doctor to discuss your treatment plan. |

***Patients with diabetes, chronic kidney disease or who are at high risk of cardiovascular events require individualized advice.**

**(Resource available at www.hypertension.ca in the 3 Minute Hypertension Action Tool or www.heartandstroke.ca/BP)**

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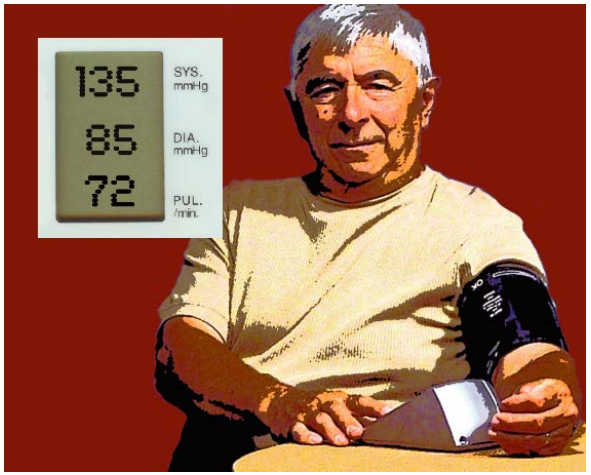
# Home Measurement: Doing it Right

EQUIPMENT

- Validated device
- Look for the logo or go to www.hypertenion.ca

for a list of validated devices available in Canada

- Ensure the cuff size is appropriate

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# Home Measurement: Doing it Right

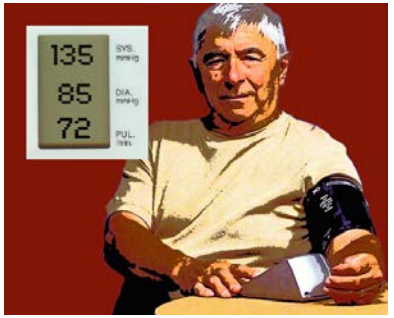
## Preparation

**DO**

- Read and carefully follow the instructions provided with the device
- Relax in a comfortable chair with back support for 5 minutes
- Sit quietly without talking or distractions (e.g. TV)

**DON'T**

- Measure if stressed, cold, in pain or if your bowel or bladder are uncomfortable
- Measure within 1 hour of heavy physical activity
- Measure within 30 minutes of smoking or drinking coffee

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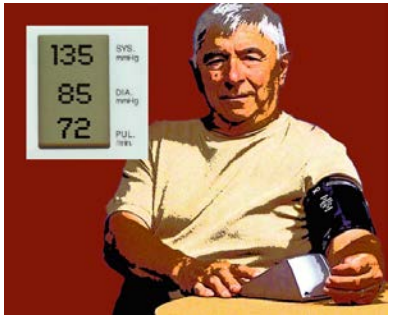
# Home Measurement: Doing it Right

## Preparation

## DO

- Put the cuff on a bare arm
- Support the arm on a table so it is at heart level
- Record two readings in the morning and evening daily for 7 days (discarding the first day readings) to help diagnose hypertension
- Review your blood pressure log with your health care provider

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# VII. Home Measurement of BP: Confirm Contradictory Home Measurement Readings

If office BP measurement is elevated and home BP is normal *or vice versa*

→

Repeat home monitoring or perform 24-hour ambulatory blood pressure monitoring

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# VIII. Ambulatory BP Monitoring

Beyond the diagnosis of hypertension, ABPM measurement may also be considered for selected patients for the management of HTN

**Which patients?**

- **Untreated**
  - Mild (Grade 1) to moderate (Grade 2) clinic BP elevation and without target organ damage.
- **Treated patients**
  - Blood pressure that is not below target values despite receiving appropriate antihypertensive therapy.
  - Symptoms suggestive of hypotension.
  - Fluctuating office blood pressure readings.

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# VIII. Ambulatory BP Monitoring

## How to?

- **Use validated devices**
- **How to interpret?**
  - Mean daytime ambulatory blood pressure ≥135/85 mmHg is considered elevated.
  - Mean 24 h ambulatory blood pressure ≥130/80 mmHg is considered elevated.

**A drop in nocturnal BP of <10% is associated with increased risk of CV events**

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# Mean Office, Home, Ambulatory Blood Pressures: Equivalence Numbers

**An office blood pressure of 140/90 mmHg is comparable to:**

| Description | Blood Pressure mmHg |
|---|---|
| Home BP | 135 / 85 |
| Daytime Ambulatory BP | 135 / 85 |
| 24-hour Ambulatory BP | 130 / 80 |
| Automated office BP | 135 / 85 |

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# IX. The Role of Echocardiography

- Echocardiography is useful for:
  - Assessment of left ventricular dysfunction and the presence of left ventricular hypertrophy
- Echocardiography is not useful for routine evaluation of hypertensive patients

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# CHEP Key Messages for the Management of Hypertension

1. All Canadian adults should have their blood pressure assessed at all appropriate clinical visits. Electronic (oscillometric) measurement methods are preferred to manual measurement.
2. Out-of-office measurement should be performed to confirm the initial diagnosis of hypertension.
3. Optimum management of the hypertensive patient requires assessment and communication of overall cardiovascular risk using an analogy like 'vascular age'.
4. Home BP monitoring is an important tool in self-monitoring and self-management.
5. Health behaviour modification is effective in preventing hypertension, treating hypertension and reducing cardiovascular risk.
6. Combinations of both health behaviour changes and drugs are generally necessary to achieve target blood pressures.
7. Focus on adherence.
8. Treat to target.

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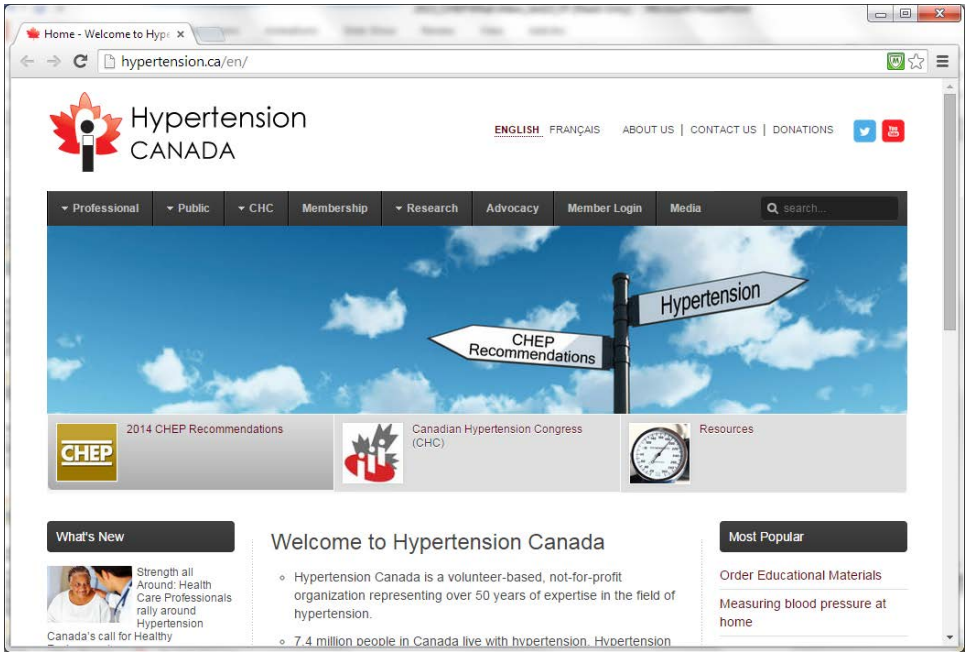
# hypertension.ca

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  - Sign up for free monthly news updates, featured research and educational resources
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