Part 2: Recommendations for Hypertension Treatment

2015 **C**anadian **H**ypertension
Education **P**rogram
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The full slide set of the
2015 CHEP Recommendations
is available at
www.hypertension.ca

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- 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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What's new?

- Assess clinic blood pressures using **electronic** (oscillometric) monitors
- The diagnosis of hypertension should be based on **out-of-office** measurements
- The management of hypertension is all about global cardiovascular risk management and vascular protection **including advice and treatment for smoking cessation**
- Treatment of atherosclerotic renal artery stenosis is **primarily medical**

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What's still important?

- Know the BP threshold and treat to target
- Adopting healthy behaviours is integral to the management of hypertension
- The most important step in prescription of antihypertensive therapy is achieving patient "buy-in"

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Treatment Approaches:

- Health Behaviours
- Pharmacological

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Recommendations 2015
Table of contents

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I. Health Behaviour Management

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Recommendations

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Health Behaviour Recommendations to Reduce Blood Pressure

- **Reduce sodium intake towards 2000 mg/day**
- **Healthy diet:** high in fresh fruits, vegetables, low fat dairy products, dietary and soluble fibre, whole grains and protein from plant sources, low in saturated fat, cholesterol and salt in accordance with Canada's Guide to Healthy Eating.
- **Regular physical activity:** accumulation of 30-60 minutes of moderate intensity dynamic exercise 4-7 days per week in addition to daily activities
- **Low risk alcohol consumption:** (≤2 standard drinks/day **and** less than 14/week for men and less than 9/week for women)
- **Attaining and maintaining ideal body weight (BMI 18.5-24.9 kg/m^2)**
- **Waist Circumference: Men** <102 cm **Women**<88 cm
- **Smoke free environment**

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Health Behaviour Recommendations for Hypertension: Dietary

High in:

- Fresh fruits
- Fresh vegetables
- Low fat dairy products
- Dietary and soluble fibre
- Plant protein

Low in:

- Saturated fat and cholesterol
- Sodium

Dietary Sodium

2000mg / day

(Most of the salt in food is 'hidden' and comes from processed food)

Dietary Potassium

Daily dietary intake >80 mmol

~~**Calcium supplementation**~~

No conclusive studies for hypertension

~~**Magnesium supplementation**~~

No conclusive studies for hypertension

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www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php.

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Potential Benefits of a Wide Spread Reduction in Dietary Sodium in Canada

Reduction in average dietary sodium from about 3500 mg to 1700 mg[1,2]

- 1 million fewer hypertensives
- 5 million fewer physicians visits a year for hypertension
- Health care cost savings of $430 to 540 million per year related to fewer office visits, drugs and laboratory costs for hypertension
- Improvement of the hypertension treatment and control rate
- 13% reduction in CVD
- Total health care cost savings of over $1.3 billion/year

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1. Penz ED. *Cdn J Cardiol* 2008
2. Joffres MR. *Cdn J Cardiol* 2007:23(6)

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Recommendations for adequate daily sodium intake

2,000 mg sodium (Na)

= 87 mmol sodium (Na)

= 5 g of salt (NaCl)

~1 teaspoon of table salt

- **80% of average sodium intake is in processed foods**
- **Only 10% is added at the table or in cooking**

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Institute of Medicine, 2003

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Sodium: Meta-analyses

Average Reduction of sodium in mg/day	**Hypertensives** Reduction of BP
1800 mg/day	5.1 / 2.7 mmHg
2300 mg/day	7.2/3.8 mmHg
Average Reduction of sodium in mg/day	**Normotensives** Reduction of BP
1700 mg/day	2.0 / 1.0 mmHg
2300 mg/day	3.6/1.7 mmHg

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The Cochrane Library 2006;3:1-41

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Important messages from past recommendations

- High dietary sodium is estimated to increase blood pressure in the Canadian population to the extent that 1,000,000 Canadians meet the diagnostic criteria for hypertension who would otherwise have 'normal' blood pressure
- Most of the sodium in Canadian diets comes from processed foods and restaurants.
- Pizza, breads, soups and sauces usually have high amounts of sodium
- Patient information on how to achieve a reduced sodium diet can be found at www.hypertension.ca
- Aim to reduce dietary sodium intake to prevent and control hypertension

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Health Behaviour Recommendations for Hypertension: Physical Activity

Should be prescribed to reduce blood pressure

F	Frequency	- Four to seven days per week
I	Intensity	- Moderate
T	Time	- 30-60 minutes
T	Type	Cardiorespiratory Activity - Walking, jogging - Cycling - Non-competitive swimming

Exercise should be prescribed as an adjunctive to pharmacological therapy

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Health Behaviour Recommendations for Hypertension: Weight Loss

Height, weight, and waist circumference (WC) should be measured and body mass index (BMI) calculated for all adults.

Hypertensive and all patients

BMI over 25

- Encourage weight reduction
- Healthy BMI: 18.5-24.9 kg/m^2

Waist Circumference

Men <102 cm **Women** <88 cm

For patients prescribed pharmacological therapy: weight loss has additional antihypertensive effects. Weight loss strategies should employ a multidisciplinary approach and include dietary education, increased physical activity and behaviour modification

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CMAJ 2007;176:1103-6

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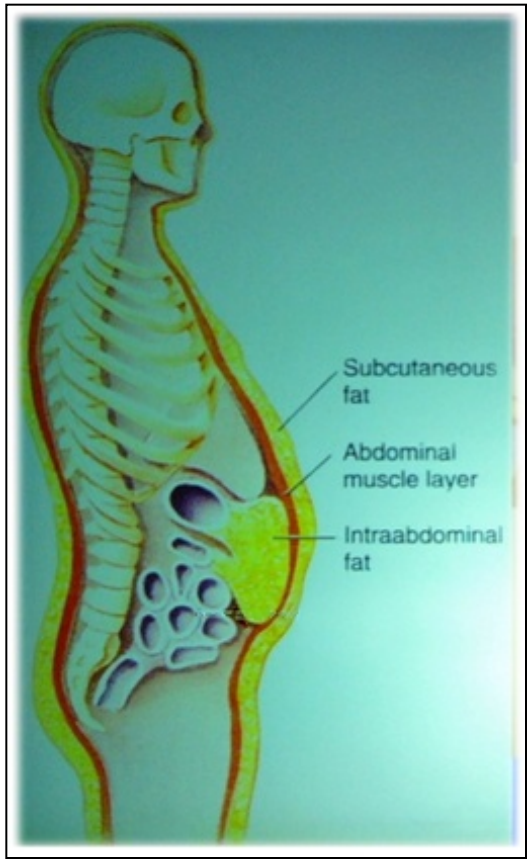
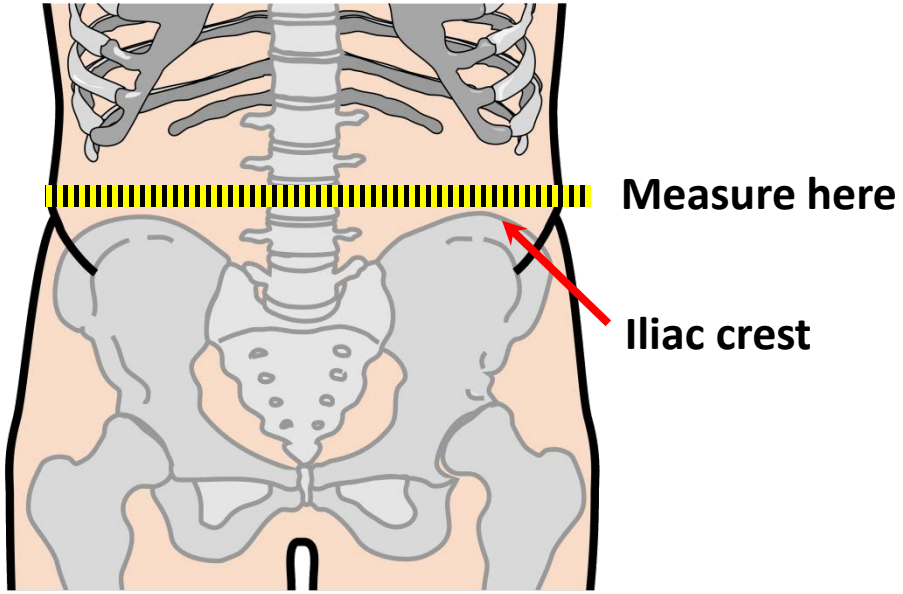
Waist Circumference Measurement





Courtesy J.P. Després 2006

Health Behaviour Recommendations for Hypertension: Alcohol

Low risk alcohol consumption

- 0-2 standard drinks/day
- Men: maximum of 14 standard drinks/week
- Women: maximum of 9 standard drinks/week

A standard drink is about 142 ml or 5 oz of wine (12% alcohol); 341 mL or 12 oz of beer (5% alcohol); 43 mL or 1.5 oz of spirits (40% alcohol).

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Health Behaviour Recommendations for Hypertension: Stress Management

Stress management

Hypertensive patients
in whom stress appears to be an important issue

Behaviour Modification

Individualized cognitive behavioural interventions are more likely to be effective when relaxation techniques are employed.

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Impact of health behaviour management on blood pressure

Intervention	Systolic BP (mmHg)	Diastolic BP (mmHg)
Diet and weight control	-6.0	-4.8
Reduced salt/sodium intake	- 5.4	- 2.8
Reduced alcohol intake (heavy drinkers)	-3.4	-3.4
DASH diet	-11.4	-5.5
Physical activity	-3.1	-1.8
Relaxation therapies	-5.5	-3.5

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Clinical Guideline: Methods, evidence and recommendations
National Institute for Health and Clinical Excellence (NICE) May 2011

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Health Behaviour Management: Summary

Intervention	Target
Reduce foods with added sodium	→ 2000 mg /day
Weight loss	BMI <25 kg/m^2
Alcohol restriction	≤ 2 drinks/day
Physical activity	30-60 minutes 4-7 days/week
Dietary patterns	DASH diet
Smoking cessation	Smoke free environment
Waist circumference	Men <102 cm Women <88 cm

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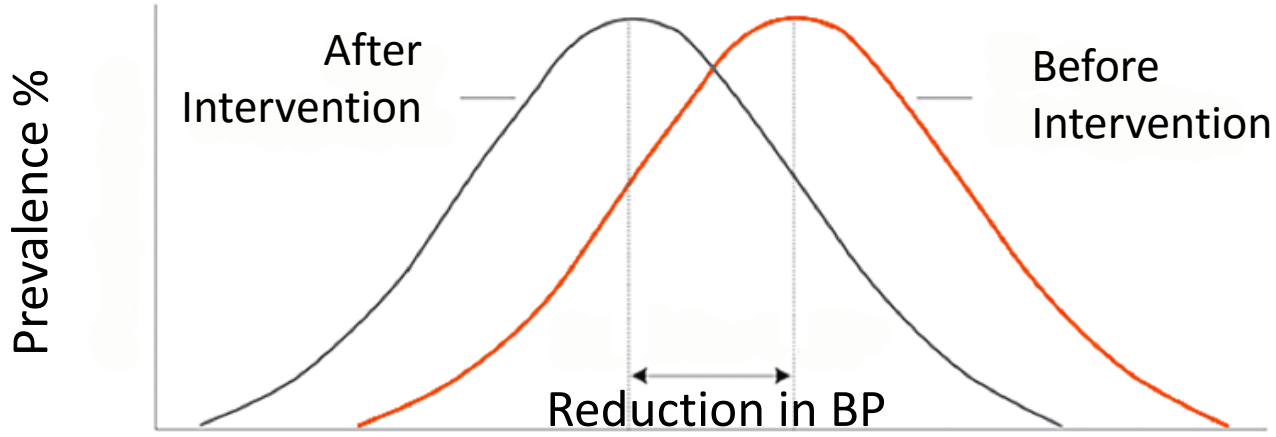
Epidemiologic impact on mortality of blood pressure reduction in the population



Reduction in SBP (mmHg)	% Reduction in Mortality		
	Stroke	**CHD**	**Total**
2	-6	-4	-3
3	-8	-5	-4
5	-14	-9	-7

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Adapted from Whelton, PK et al. *JAMA* 2002;288:1882-1888

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II. Indications for Pharmacotherapy

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II. Indications for Pharmacotherapy

Usual blood pressure threshold values for initiation of pharmacological treatment

Population	SBP ≥	DBP ≥
Diabetes	130	80
High risk (TOD or CV risk factors)	140	90
Low risk (no TOD or CV risk factors)	160	100
Very elderly* (≥80 yrs.)	160	NA

TOD = target organ damage

*This higher treatment target for the very elderly reflects current evidence and heightened concerns of precipitating adverse effects, particularly in frail patients. Decisions regarding initiating and intensifying pharmacotherapy in the very elderly should be based upon an individualized risk-benefit analysis.

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II. Indications for Pharmacotherapy

Recommended Treatment Targets

Treatment consists of health behaviour ± pharmacological management

Population	SBP <	DBP <
Diabetes	130	80
All others < 80 yrs. (including CKD)	140	90
Very elderly (≥ 80 yrs.)	150	NA

In patients with coronary artery disease be cautious when lowering blood pressure if diastolic blood pressures are < 60mmHg

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Additional Considerations
after diagnosis of hypertension (1)

- Patients at very low risk with stage 1 hypertension (140-159/90-99 mmHg)
  - Lifestyle modification can be the sole therapy

- *Many younger hypertensive Canadians with multiple cardiovascular risks are currently not treated with pharmacotherapy. Health care professionals need to be aware of this important care gap.*

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III. Choice of Pharmacotherapy

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III. Choice of Pharmacological Treatment Uncomplicated

Associated risk factors?
or
Target organ damage/complications?
or
Concomitant diseases/conditions?

Treatment in the absence of compelling indications for specific therapies

Individualized Treatment (and compelling indications)

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III. Choice of Pharmacological Treatment

1. Treatment of Systolic/Diastolic hypertension without other compelling indications
2. Treatment of Isolated Systolic hypertension without other compelling indications

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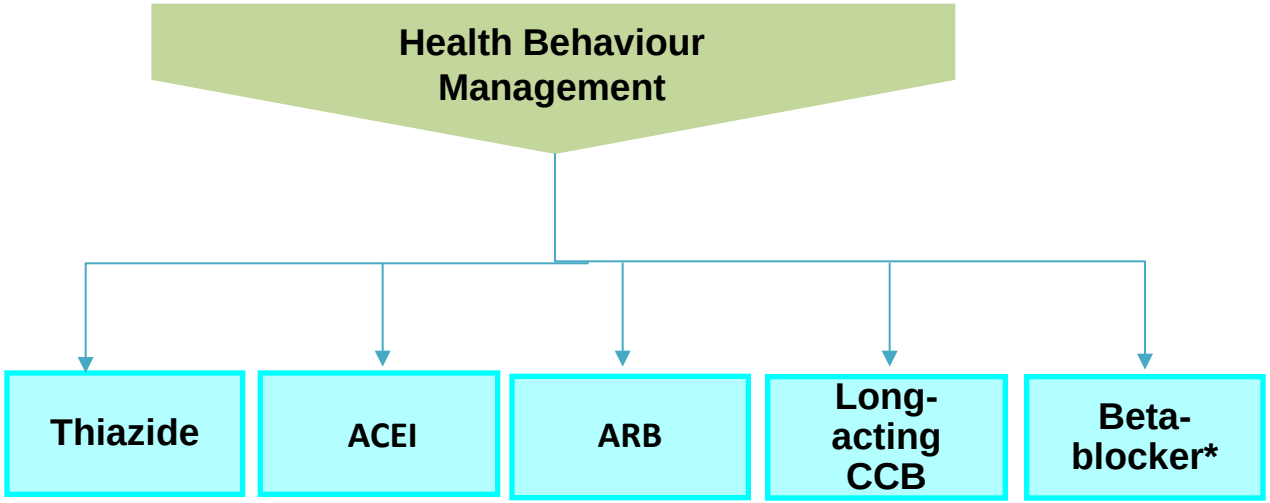
III. Treatment of Adults with Systolic/Diastolic Hypertension without Other Compelling Indications

TARGET <140/90 mmHg

INITIAL TREATMENT AND MONOTHERAPY



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

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

ACEI, ARB and direct renin inhibitors are contraindicated in pregnancy and caution is required in prescribing to women of child bearing potential

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III. Considerations Regarding the Choice of First-Line Therapy

- Use caution in initiating therapy with 2 drugs in whom adverse events are more likely (e.g. frail elderly, those with postural hypotension or who are dehydrated).
- ACE inhibitors, renin inhibitors and ARBs are contraindicated in pregnancy and caution is required in prescribing to women of child bearing potential.
- Beta blockers are not recommended as first line therapy for patients age 60 and over without another compelling indication.
- Diuretic-induced hypokalemia should be avoided through the use of potassium sparing agents if required.
- The use of dual therapy with an ACE inhibitor and an ARB should only be considered in selected and closely monitored people with advanced heart failure or proteinuric nephropathy.
- ACE-inhibitors are not recommended (as monotherapy) for black patients without another compelling indication.

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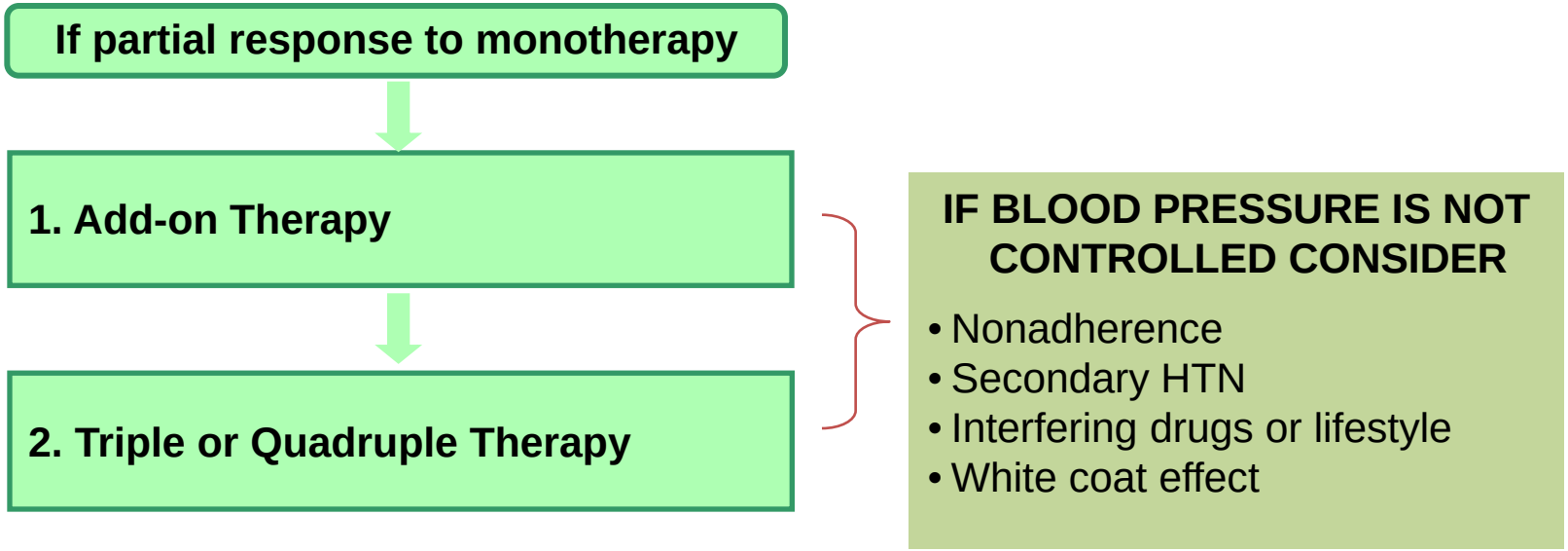
III. Add-on Therapy for Systolic/Diastolic Hypertension without Other Compelling Indications



If blood pressure is still not controlled, or there are adverse effects, other classes of antihypertensive drugs may be combined (such as alpha blockers or centrally acting agents).

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Drug Combinations

When combining drugs, use first-line therapies.

- Two drug combinations of beta blockers, ACE inhibitors and angiotensin receptor blockers have not been proven to have additive hypotensive effects. Therefore these potential two drug combinations should not be used unless there is a compelling (non blood pressure lowering) indication
- Combinations of an ACEI with an ARB do not reduce cardiovascular events more than the ACEI alone and have more adverse effects therefore are not generally recommended

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Drug Combinations cont'd

- Caution should be exercised in combining a non dihydropyridine CCB and a beta blocker to reduce the risk of bradycardia or heart block.
- Monitor serum creatinine and potassium when combining K sparing diuretics (such as aldosterone antagonists), ACE inhibitors and/or angiotensin receptor blockers.
- If a diuretic is not used as first or second line therapy, triple therapy should include a diuretic, when not contraindicated.

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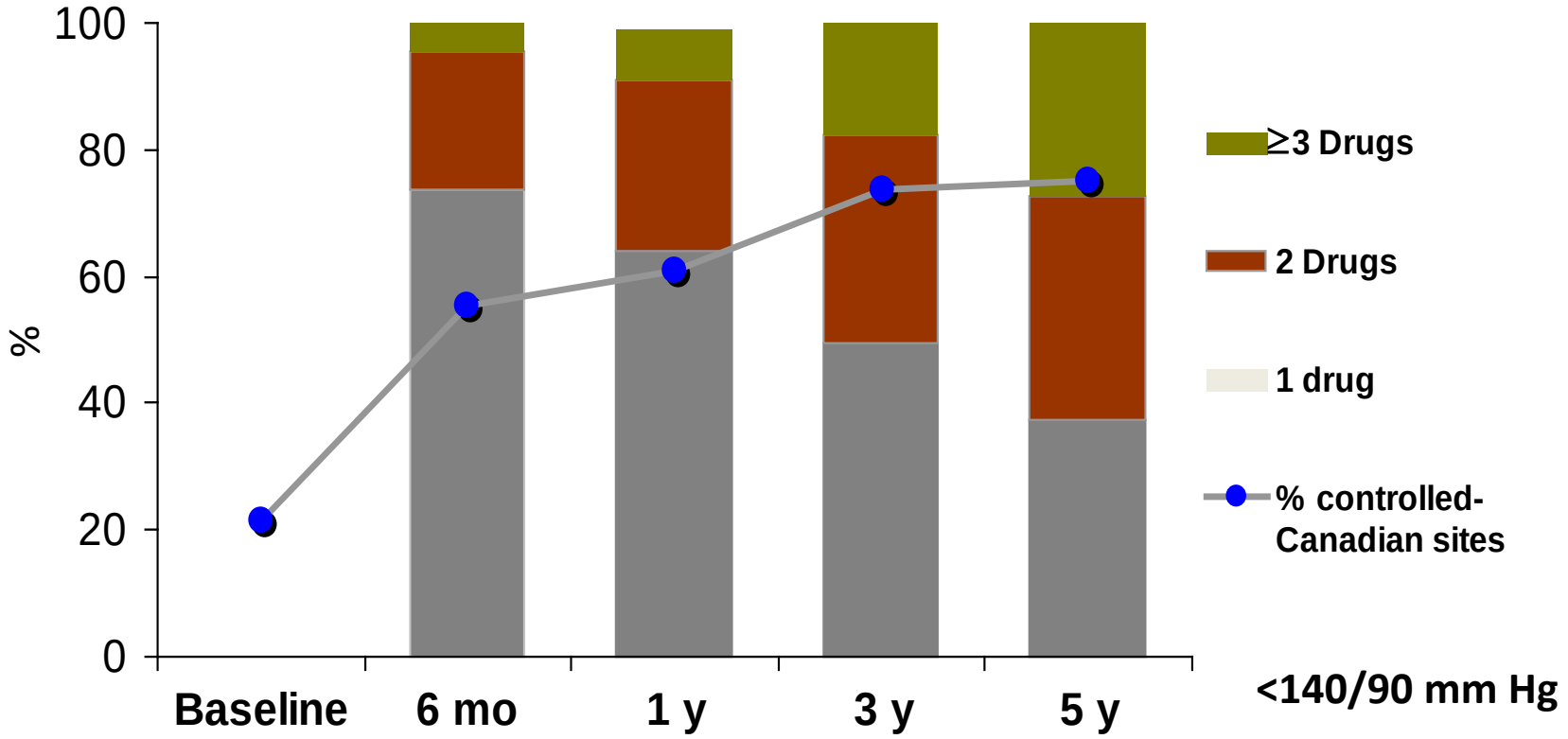
Medication Use and BP Control in ALLHAT



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Cushman et al. *J Clin Hypertens* 2002;4:393-404

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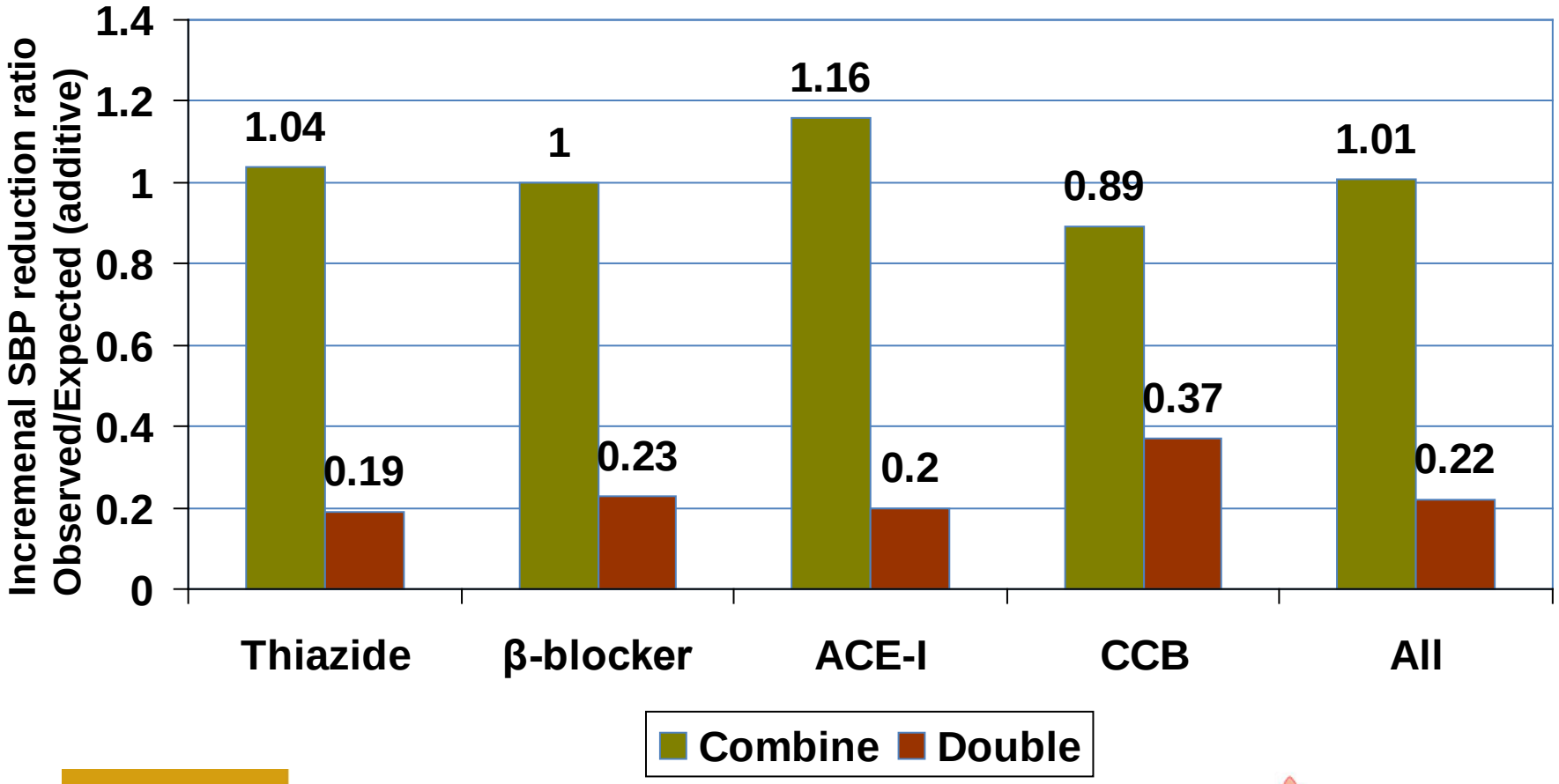
Ratio of Incremental SBP lowering effect at "standard dose"– Combine or Double?



Wald et al. Combination Versus Monotherapy for Blood Pressure Reduction, *The American Journal of Medicine*, Vol 122, No 3, March 2009

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BP lowering effects from antihypertensive drugs

- Dose response curves for efficacy are relatively flat
- 80% of the BP lowering efficacy is achieved at half-standard dose
- Combinations of standard doses have additive blood pressure lowering effects

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Law. *BMJ* 2003

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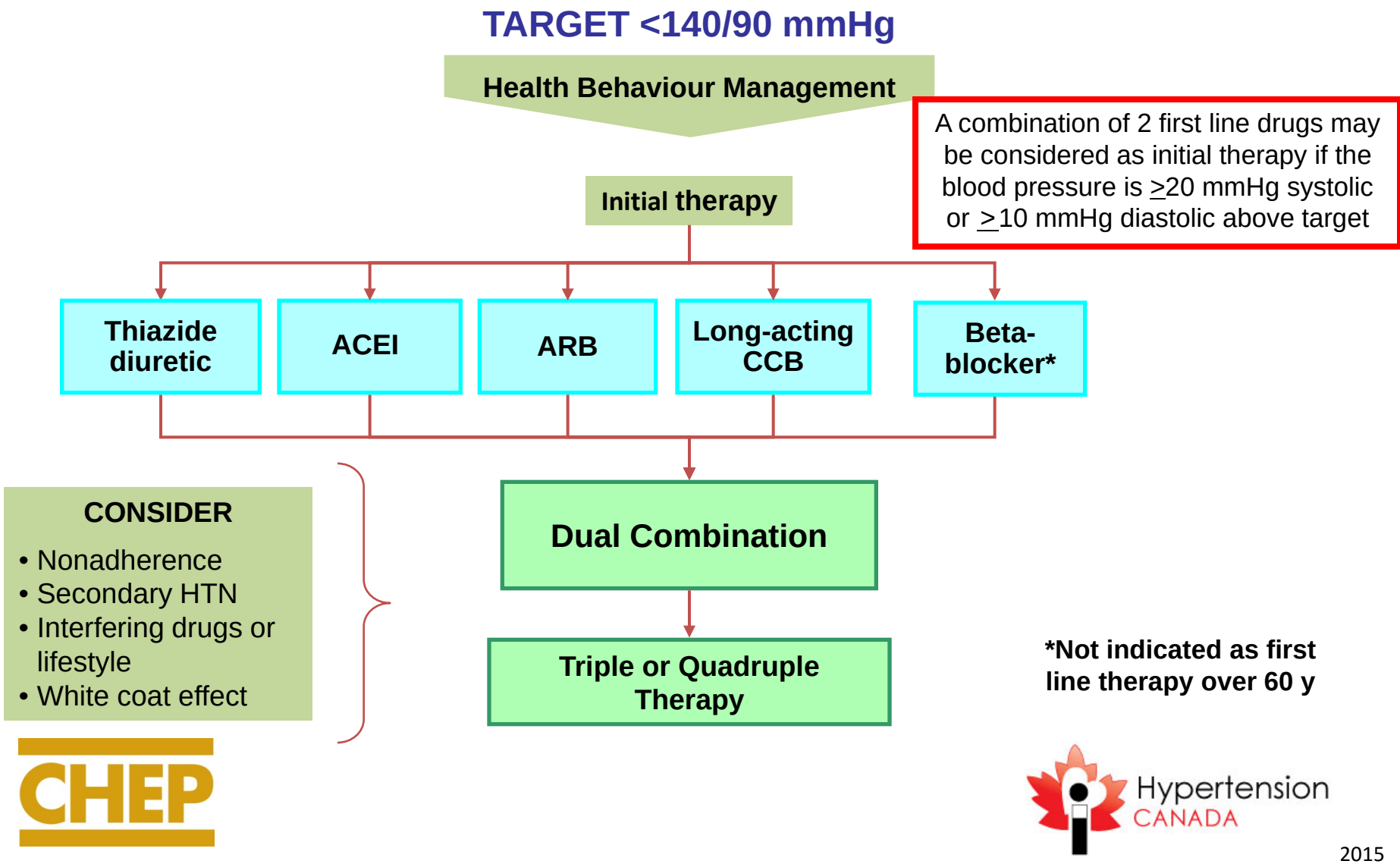
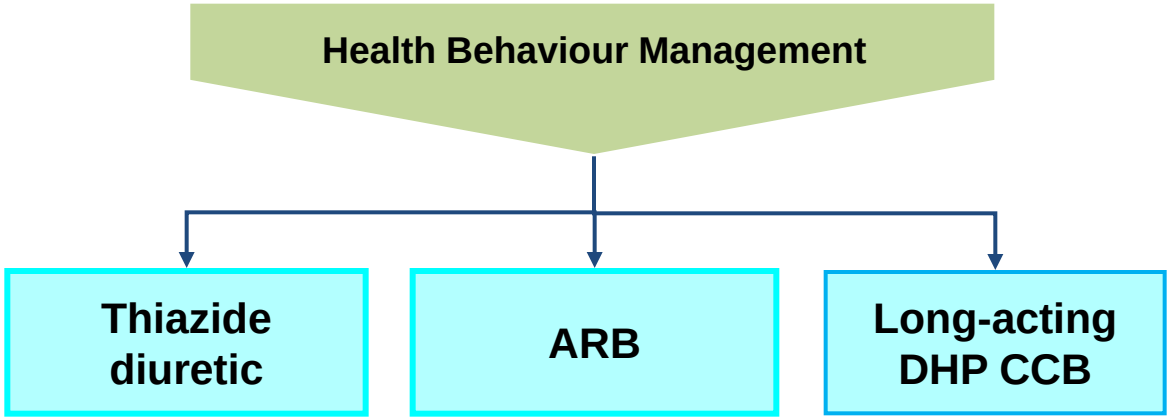
III. Summary: Treatment of Systolic-Diastolic Hypertension without Other Compelling Indications



III. Treatment Algorithm for Isolated Systolic Hypertension without Other Compelling Indications

TARGET <140 mmHg (< 150 mmHg if age ≥ 80 years)

INITIAL TREATMENT AND MONOTHERAPY



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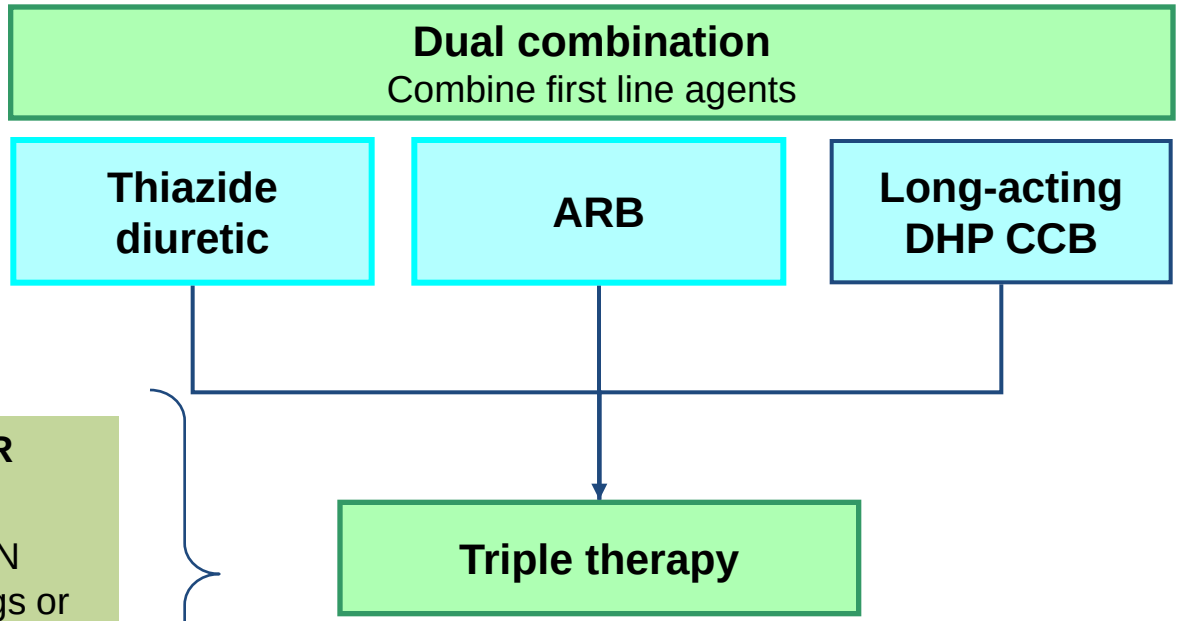
III. Add-on therapy for Isolated Systolic Hypertension without Other Compelling Indications

If partial response to monotherapy



If blood pressure is still not controlled, or there are adverse effects, other classes of antihypertensive drugs may be combined (such as ACE inhibitors, alpha adrenergic blockers, centrally acting agents, or nondihydropyridine calcium channel blocker).

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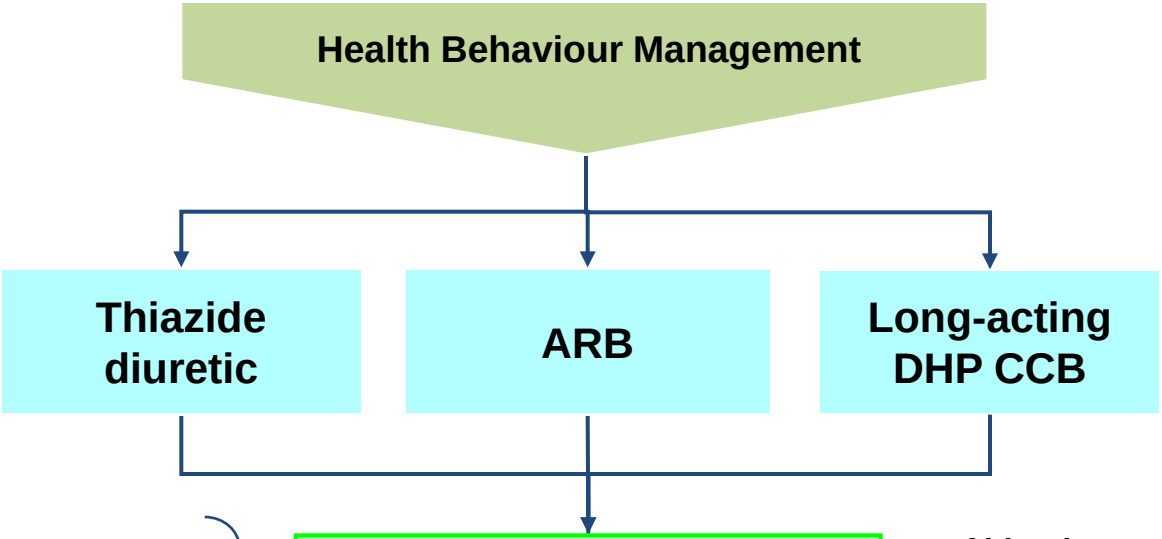
III. Summary: Treatment of Isolated Systolic Hypertension without Other Compelling Indications

TARGET <140 mmHg, < 150 mmHg for age ≥ 80 years



CONSIDER

- Nonadherence
- Secondary HTN
- Interfering drugs or lifestyle
- White coat effect

***If blood pressure is still not controlled, or there are adverse effects, other classes of antihypertensive drugs may be combined (such as ACE inhibitors, alpha blockers, centrally acting agents, or nondihydropyridine calcium channel blocker).**

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Choice of Pharmacological Treatment for Hypertension

Individualized treatment

- Compelling indications:
  - Ischemic Heart Disease
  - Recent ST Segment Elevation-MI or non-ST Segment Elevation-MI
  - Left Ventricular Systolic Dysfunction
  - Cerebrovascular Disease
  - Left Ventricular Hypertrophy
  - Non Diabetic Chronic Kidney Disease
  - Renovascular Disease
  - Smoking
- Diabetes Mellitus
  - With Nephropathy
  - Without Nephropathy
- Global Vascular Protection for Hypertensive Patients
  - Statins if 3 or more additional cardiovascular risks
  - Aspirin once blood pressure is controlled

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IV. Global Vascular Protection for Adults with Hypertension

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IV. Vascular Protection for Hypertensive Patients: Statins

In addition to current Canadian recommendations on management of dyslipidemia, statins are recommended in high-risk hypertensive patients with established atherosclerotic disease or with at least 3 of the following criteria:

- Male
- Age 55 or older
- Smoking
- Total-C/HDL-C ratio of 6 mmol/L or higher
- Family History of Premature CV disease
- LVH
- ECG abnormalities
- Microalbuminuria or Proteinuria

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ASCOT-LLA *Lancet* 2003;361:1149-58

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IV. Vascular Protection for Hypertensive Patients: ASA

Low dose ASA in hypertensive patients ≥50 years

Caution should be exercised if BP is not controlled.

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Hansson L, Zanchetti A, Carruthers SG, et al. Effects of intensive blood-pressure lowering and low-dose aspirin in patients with hypertension: principal results of the Hypertension Optimal Treatment (HOT) randomised trial. Lancet 1998; 351: 1755-1762.

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New 2015 Recommendation: *Vascular Protection*

Tobacco use status of all patients should be updated on a regular basis and health care providers should clearly advise patients to quit smoking.

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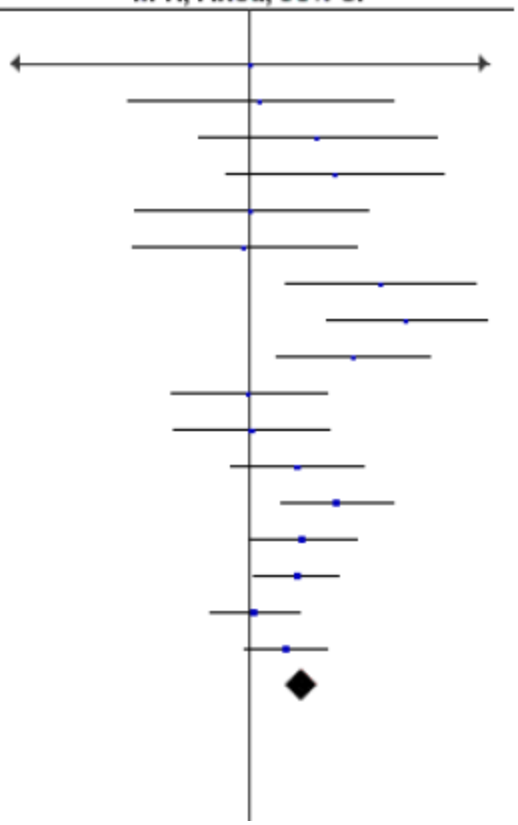
Effect of advice on smoking cessation rates

Study or Subgroup	Treatment Events	Treatment Total	Control Events	Control Total	Weight	Risk Ratio M-H, Fixed, 95% CI
1.1.1 Minimal intervention						
Slama 1990	1	104	1	106	0.2%	1.02 [0.06, 16.08]
Porter 1972	5	101	4	90	0.9%	1.11 [0.31, 4.02]
Demers 1990	10	292	4	227	0.9%	1.94 [0.62, 6.12]
Nebot 1989	11	208	5	216	1.0%	2.28 [0.81, 6.46]
Stewart 1982	11	504	4	187	1.2%	1.02 [0.33, 3.16]
Page 1986	8	114	5	68	1.3%	0.95 [0.33, 2.80]
Slama 1995	42	2199	5	929	1.4%	3.55 [1.41, 8.94]
Russell 1979	34	1031	8	1107	1.6%	4.56 [2.12, 9.81]
Haug 1994	31	154	8	109	1.9%	2.74 [1.31, 5.73]
McDowell 1985	12	85	11	78	2.3%	1.00 [0.47, 2.14]
Betson 1997	14	443	13	422	2.7%	1.03 [0.49, 2.16]
Janz 1987	26	144	12	106	2.8%	1.59 [0.84, 3.01]
Wilson 1990	43	577	17	532	3.6%	2.33 [1.35, 4.04]
Vetter 1990	34	237	20	234	4.1%	1.68 [1.00, 2.83]
Higashi 1995	53	468	35	489	7.0%	1.58 [1.05, 2.38]
Russell 1983	43	740	35	637	7.7%	1.06 [0.69, 1.63]
Jamrozik 1984	77	512	29	274	7.7%	1.42 [0.95, 2.12]
Subtotal (95% CI)		**7913**		**5811**	**48.5%**	**1.66 [1.42, 1.94]**
Total events	455		216			

Heterogeneity: $Chi^2 = 23.33$, df = 16 (P = 0.11); $I^2 = 31\%$

Test for overall effect: Z = 6.33 (P < 0.00001)



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Cochrane Database Syst Rev. 2013 May 31;5:CD000165.
doi: 10.1002/14651858.CD000165.pub4

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New 2015 Recommendation: *Vascular Protection*

Advice in combination with pharmacotherapy (e.g., varenicline, bupropion, nicotine replacement therapy) should be offered to all smokers with a goal of smoking cessation.

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Cochrane network meta-analysis 2014
Kate Cahill et al

- Nicotine replacement therapy, antidepressant bupropion, and nicotine receptor partial agonist varenicline (Champix)
- Impact on long term abstinence- 6 months or longer
- Synthesis of 12 Cochrane reviews
  - 267 studies
  - Over 10,000 participants

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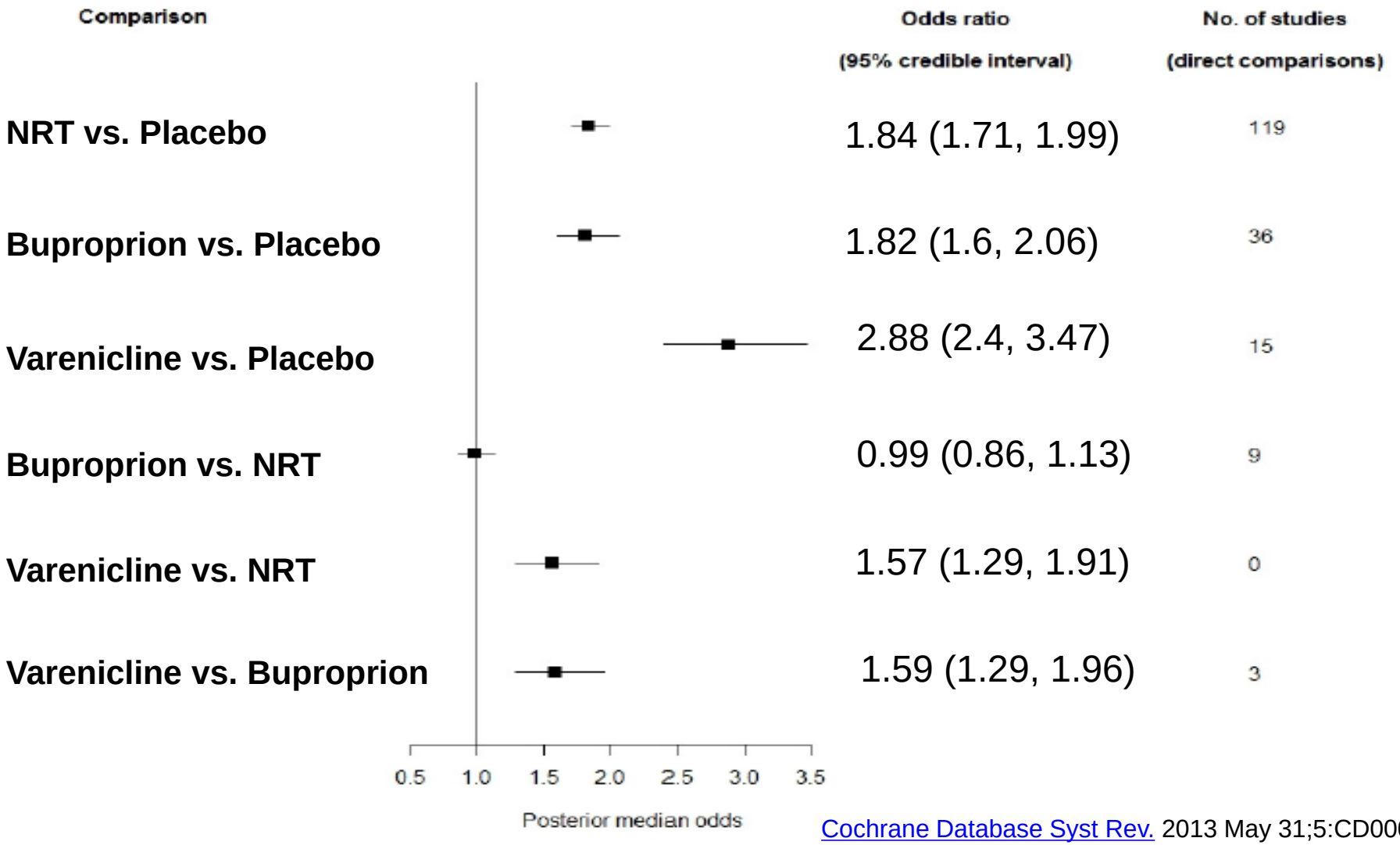
Network meta-analysis of smoking cessation pharmacotherapies studies



Cochrane Database Syst Rev. 2013 May 31;5:CD000165.
doi: 10.1002/14651858.CD000165.pub4

V. Goals of Therapy

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V. Goals of Therapy

Blood pressure target values for treatment of hypertension

Condition	Target
	SBP and DBP mmHg
Isolated systolic hypertension **Age ≥ 80 years**	<140 < 150
Systolic/Diastolic Hypertension • Systolic BP • Diastolic BP	 <140 <90
Diabetes • Systolic • Diastolic	 <130 <80

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Follow-up of blood pressure above targets

- Patients with blood pressure above target are recommended to be followed at least every 2nd month
- Follow-up visits are used to increase the intensity of health behaviour modification and drug therapy, monitor the response to therapy and assess adherence

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VI. Treatment of Hypertension in Patients with Ischemic Heart Disease

Stable angina → 1. Beta-blocker
2. Long-acting CCB

ACEI are recommended for most patients with established CAD*

ARBs are not inferior to ACEI in IHD

- Caution should be exercised when combining a non DHP-CCB and a beta-blocker
- If abnormal systolic left ventricular function: avoid non DHP-CCB (Verapamil or Diltiazem)
- Dual therapy with an ACEI and an ARB are not recommended in the absence of refractory heart failure
- The combination of an ACEi and CCB is preferred

***Those at low risk with well controlled risk factors may not benefit from ACEI therapy**

~~Short-acting nifedipine~~

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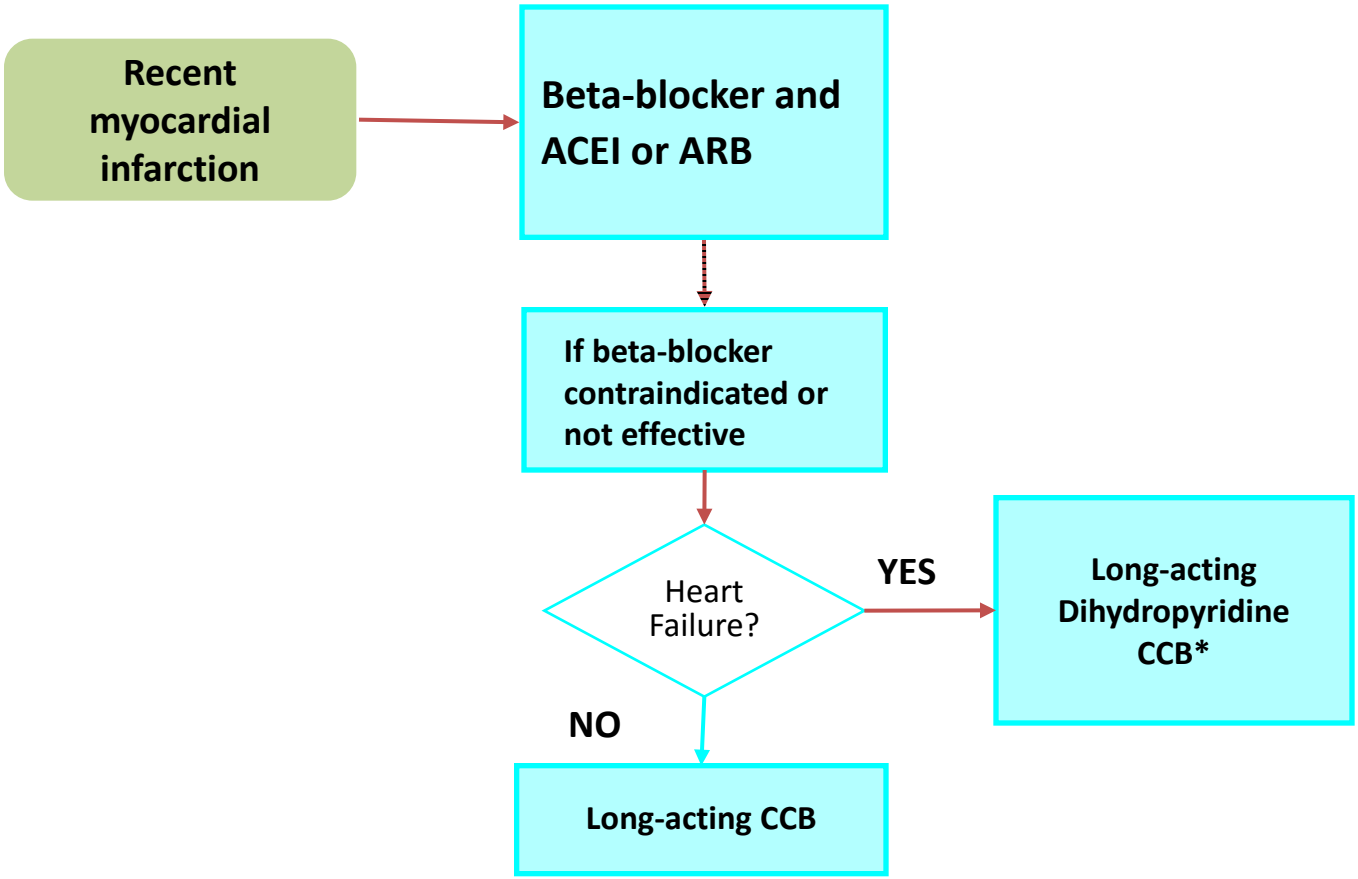
VI. Treatment of Hypertension in Patients *with* Recent ST Segment Elevation-MI or non-ST Segment Elevation-MI



*Avoid non dihydropyridine CCBs (diltiazem, verapamil)

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VII. Treatment of Hypertension with Left Ventricular Systolic Dysfunction

Systolic cardiac dysfunction

- **ACEI and Beta blocker**
- **if ACEI intolerant: ARB**

Titrate doses of ACEI or ARB to those used in clinical trials

If additional therapy is needed:

- Diuretic (Thiazide for hypertension; Loop for volume control)
- **for CHF class II-IV or post MI and selected patients with LV dysfunction (see notes): Aldosterone Antagonist**

If ACEI and ARB are contraindicated: Hydralazine and Isosorbide dinitrate in combination

If additional antihypertensive therapy is needed:

- ACEI / ARB Combination
- Long-acting DHP-CCB (Amlodipine)

~~Non dihydropyridine CCB~~

Beta-blockers used in clinical trials were bisoprolol, carvedilol and metoprolol.

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VIII. Treatment of Hypertension in Association With Stroke

Acute Stroke: Onset to 72 Hours

Acute ischemic Stroke →

Treat extreme BP elevation (systolic > 220 mmHg, diastolic > 120 mmHg) by 15-25% over the first 24 hour with gradual reduction after.

- **If eligible for thrombolytic therapy treat very high BP (>185/110 mmHg)**

Avoid excessive lowering of BP which can exacerbate ischemia

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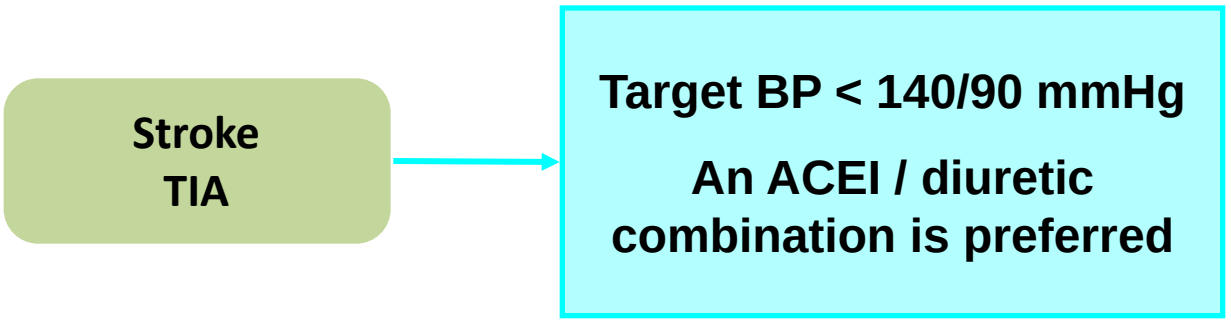
VIII. Treatment of Hypertension in Association With Stroke

Acute Stroke: Onset to 72 Hours

Strongly consider blood pressure reduction in all patients after the acute phase of stroke or TIA.



Combinations of an ACEI with an ARB are not recommended

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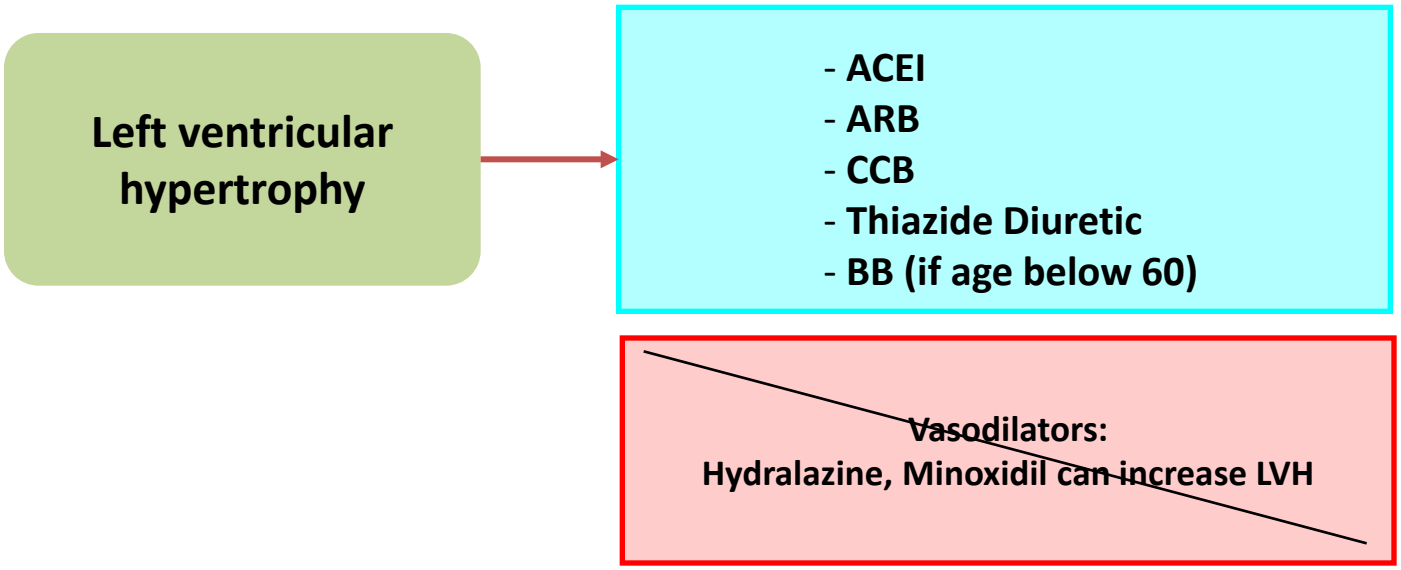
IX. Treatment of Hypertension in Patients with Left Ventricular Hypertrophy

Hypertensive patients with left ventricular hypertrophy should be treated with antihypertensive therapy to lower the rate of subsequent cardiovascular events



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X. Treatment of Hypertension in Patients with Non Diabetic Chronic Kidney Disease

Target BP: < 140/90 mmHg

Chronic kidney disease and proteinuria *

→ **ACEI or ARB (if ACEI intolerant)**

Additive therapy: Thiazide diuretic.
Alternate: If volume overload: loop diuretic

Combination with other agents

*** albumin:creatinine ratio [ACR] > 30 mg/mmol** or **urinary protein > 500 mg/24hr**

~~ACEI/ARB: Bilateral renal artery stenosis~~

Monitor serum potassium and creatinine carefully in patients with CKD prescribed an ACEI or ARB

Combinations of a ACEI and a ARB are specifically not recommended in the absence of proteinuria

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New 2015 Recommendation: *Renovascular*

Patients with hypertension attributable to atherosclerotic renal artery stenosis (RAS) should be primarily medically managed because renal angioplasty and stenting offers no benefit over optimal medical therapy alone.

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CORAL: Cooper et al, Stenting & Medical Rx for Atherosclerotic RAS

947 Patients:

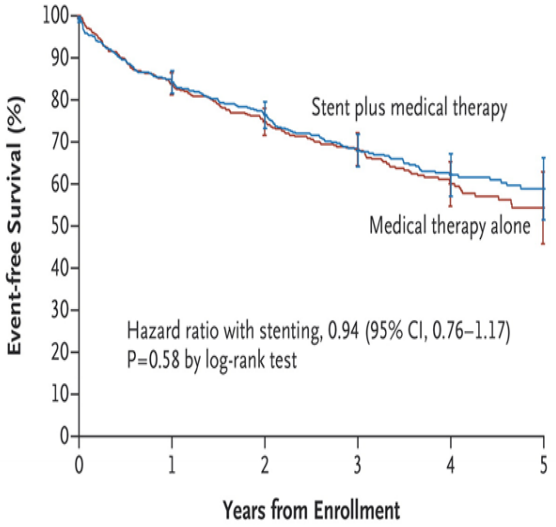
-HT with SBP≥155 while on ≥2 drugs; **OR**
-CKD: GFR <60 mL/min/1.73 m^2 **AND**
-RAS ≥80% or ≥60% with SBP gradient ≥20 mmHg

Intervention (1:1):

-Palmaz Genesis stent (Cordis)

Concurrent Medical Rx:

-antiplatelet;
-Anti-HT to <140/90 (DM: 130/80) with candesartan, HCT, amlodipine;
-lipid Rx (atorvastatin); glucose



No. at Risk						
Medical therapy alone	472	371	314	214	115	40
Stent plus medical therapy	459	362	318	224	131	59

Primary Outcome:

-Composite: Death (CV/renal), stroke, MI, stroke, HF_{hosp}, prog renal insuff, perm RRT

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NEJM 2014; 370; 13-22.

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New 2015 Recommendation: *Renovascular*

Renal artery angioplasty and stenting for atherosclerotic hemodynamically significant renal artery stenosis **should be considered** for patients with uncontrolled hypertension resistant to maximally tolerated pharmacotherapy, progressive renal function loss, and acute pulmonary edema.

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Why RCTs might not define best care for some RVHT/RAS patients: low inclusion thresholds

RCT	Inclusion Criteria			Enrolled Subjects		
	BP	**#AHT**	**% stenosis**	**SBP**	**#AHT**	**% stenosis**
CORAL	S≥155	≥2 drugs	≥60/80%	150	2.1 drugs	67%
ASTRAL			≥70%	149-152	2.8 drugs	75%
STAR	"Controlled BP"		≥50%	160-163	2.8-2.9	70-90%
DRASTIC	D≥95	≥2 drugs	≥50%	179-180	2.0	72-76%
SNRASCG	D≥95	≥2 drugs	≥50%	182-190		
EMMA	D≥95	Yes	≥60/75%	158-165	1.33 DDD	<75%

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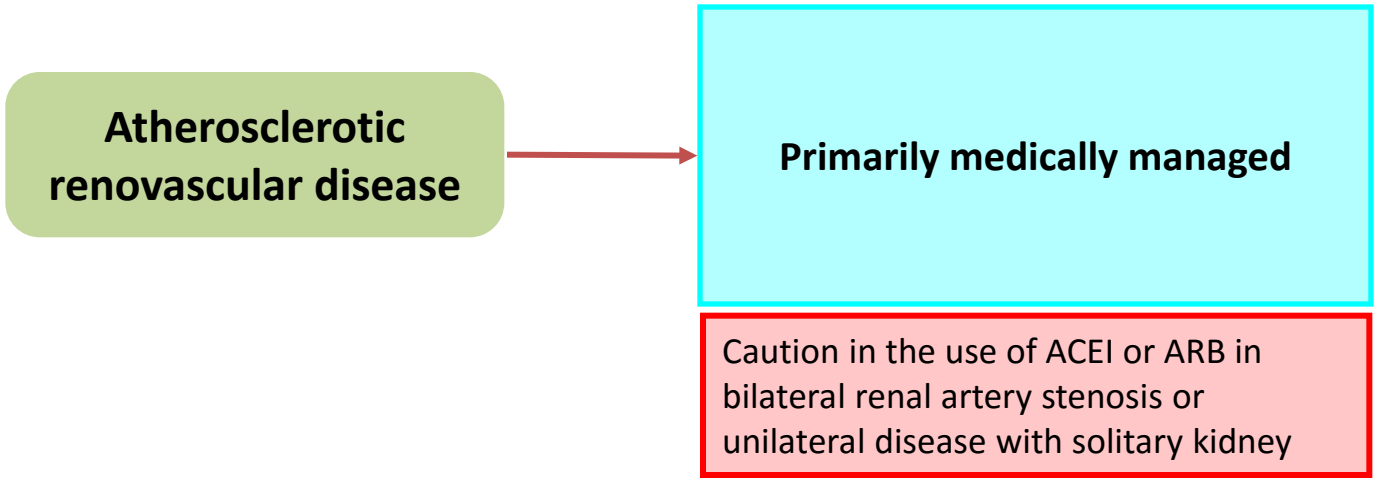
XI. Treatment of Hypertension in Patients with Atherosclerotic Renovascular Disease



Patients with hypertension attributable to atherosclerotic renal artery stenosis (RAS) should be primarily medically managed because renal angioplasty and stenting offers no benefit over optimal medical therapy alone (Grade B).

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XII. Treatment of Hypertension in Association with Diabetes Mellitus

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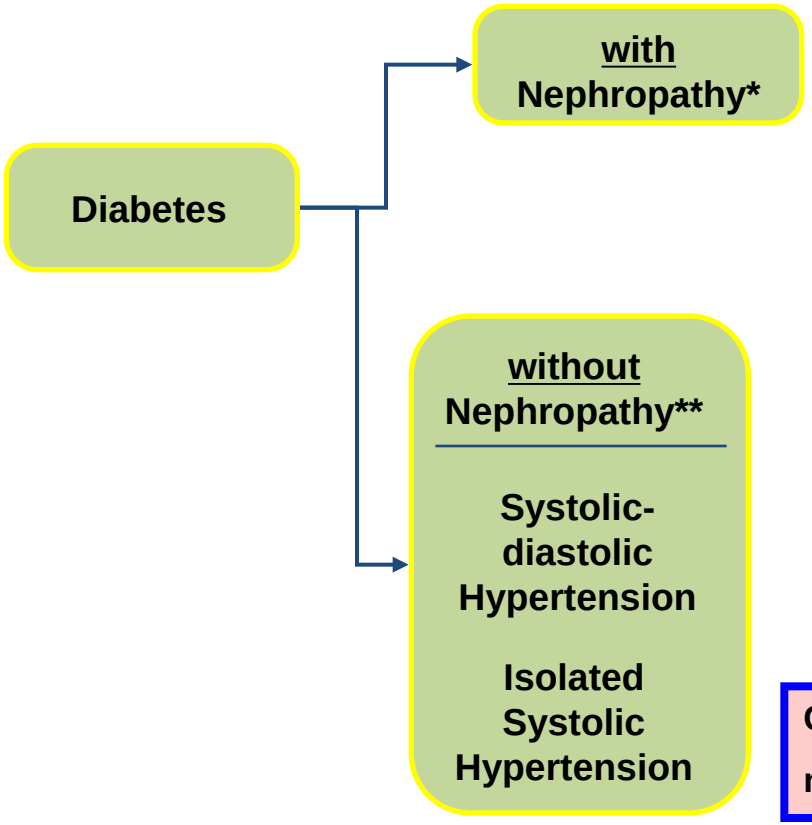
XII. Treatment of Hypertension in association with Diabetes Mellitus

Threshold equal or over 130/80 mmHg and Target below 130/80 mmHg



Urinary albumin to creatinine ratio ≥ 2.0 mg/mmol in men or ≥ 2.8mg/mmol in women

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

Combinations of an ACEI with an ARB are specifically not recommended in the absence of proteinuria

*** based on at least 2 of 3 measurements**

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Rabi DM, et al.*CMAJ*. 2013;185(11):963-967.

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XII. Treatment of Hypertension in association with Diabetic Nephropathy

THRESHOLD equal or over 130/80 mmHg and TARGET below 130/80 mmHg

DIABETES with Nephropathy

→ **ACE Inhibitor or ARB**

→ **Addition of one or more of** Long-acting CCB or Thiazide diuretic

IF ACEI and ARB are contraindicated or not tolerated, SUBSTITUTE
- **Long-acting CCB or**
- **Thiazide diuretic**

3 - 4 drugs combination may be needed

If Creatinine over 150 µmol/L or creatinine clearance below 30 ml/min (0.5 ml/sec), a loop diuretic should be substituted for a thiazide diuretic if control of volume is desired

Monitor serum potassium and creatinine carefully in patients with CKD prescribed an ACEI or ARB

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2015 Canadian Hypertension Education Program (CHEP)

Important messages from past recommendations

- Patients with diabetes are at high cardiovascular risk
- Most patients with diabetes have hypertension
- Treatment of hypertension in patients with diabetes reduces total mortality, myocardial infarction, stroke, retinopathy and progressive renal failure rates.
- Treating hypertension in patients with diabetes reduces death and disability and reduces health care system costs
- In diabetes, TARGET <130 systolic and <80 mmHg diastolic
- If a patient has both diabetes and CKD, TARGET <130 systolic and <80 mmHg diastolic
- The use of the combination of ACE inhibitor with an ARB should only be considered in selected and closely monitored people with advanced heart failure or proteinuric nephropathy.

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XII. Treatment of Systolic-Diastolic Hypertension without Diabetic Nephropathy

Threshold equal or over 130/80 mmHg and TARGET below 130/80 mmHg

Diabetes without Nephropathy

→

1. ACE Inhibitor or ARB or

2. Dihydropyridine CCB or Thiazide diuretic

→

Combination of first line agents

↓

Addition of one or more of:
Cardioselective BB or
Long-acting CCB

DHP: dihydropyridine

IF ACE Inhibitor and ARB and DHP-CCB and Thiazide are contraindicated or not tolerated,
SUBSTITUTE
- **Cardioselective BB* or**
- **Long-acting NON DHP-CCB**

Combinations of an ACE Inhibitor with an ARB are specifically not recommended in the absence of proteinuria

*** Cardioselective BB: Acebutolol, Atenolol, Bisoprolol , Metoprolol**

More than 3 drugs may be needed to reach target values for diabetic patients

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ACCORD Study: Results and rationale for lack of impact on BP recommendations

- Overall BP study was neutral with no benefit of systolic target < 120 mmHg vs < 140 mmHg for primary outcome, yet:
- Power issue: Annual rate of primary outcome 1.87% in the intensive arm versus 2.09% in the standard arm vs 4%/year event rate projected during sample size calculations
- Significant interaction between BP and glycaemia control studies such that those in usual care glycaemia group (A1c 7%+) had a significant improvement in primary outcome with lower BP target
- Secondary outcome for stroke reduction showed a benefit for lower BP target (41% RRR)
- Therefore no clear evidence supporting a change in BP targets for people with diabetes at this point

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ACCORD study *NEJM* 2010

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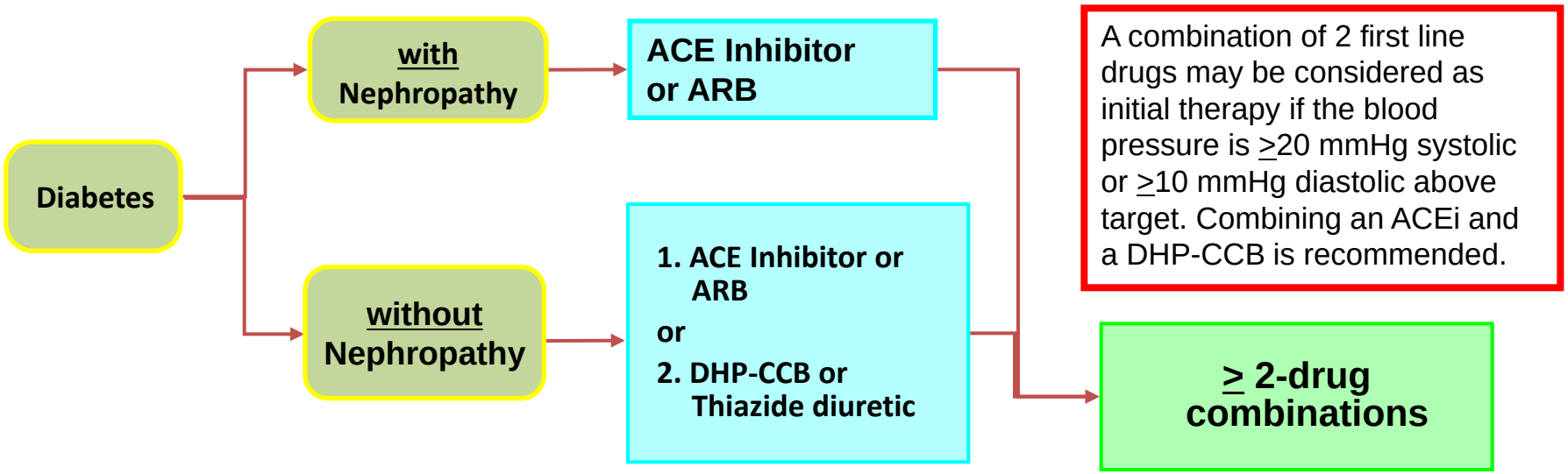
XII. Treatment of Hypertension in association with Diabetes Mellitus: Summary

Threshold equal or over 130/80 mmHg and TARGET below 130/80 mmHg



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XIII. Adherence

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XIII. Adherence to antihypertensive management can be improved by a multi-pronged approach

- Assess adherence to pharmacological and health behaviour therapies at every visit
- Teach patients to take their pills on a regular schedule associated with a routine daily activity e.g. brushing teeth.
- Simplify medication regimens using long-acting once-daily dosing
- Utilize single pill combination
- Utilize unit-of-use packaging e.g. blister packaging

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XIII. Adherence to antihypertensive management can be improved by a multi-pronged approach

- Encourage greater patient responsibility/autonomy in regular monitoring of their blood pressure
- Educate patients and patients' families about their disease/treatment regimens verbally and in writing
- Use an interdisciplinary care approach coordinating with work-site health care givers and pharmacists if available
- Encouraging adherence to therapy by healthcare practitioner-based telephone contact, particularly, over the first three months of therapy

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Hypertension Patient Resources Online

- www.hypertension.ca - Download current resources for the prevention and control of hypertension
- www.hypertension.ca - Have your patients sign up to access the latest hypertension resources
- www.c-changeprogram.ca -To learn more about the harmonized recommendations for CVD prevention and treatment
- www.heartandstroke.ca/BP -To monitor home blood pressure and encourage self management of lifestyle
- http://www.hypertension.qc.ca/ - Société Québécoise d'hypertension artérielle

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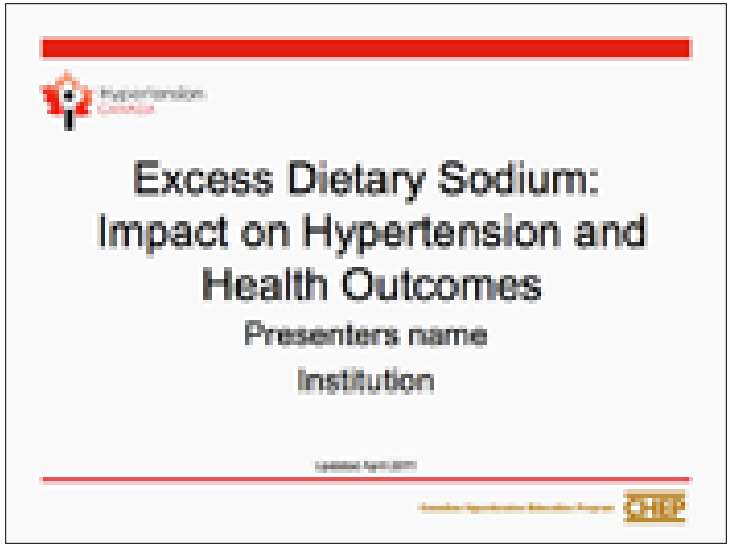
Sodium Slide Kit

- Tool used to educate the public and patients on dietary sodium.



Download at www.hypertension.ca

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Brief Hypertension Action Tool

Can by used by a healthcare provider to better inform and engage a hypertensive patient to ultimately become more active in their care.

Involves 3 Action Tools:

Action Tool # 1 – Explains High BP

Action Tool # 2 – Self-management of lifestyle

Action Tool # 3 – Proper home measurement & information about medication

Download at www.hypertension.ca

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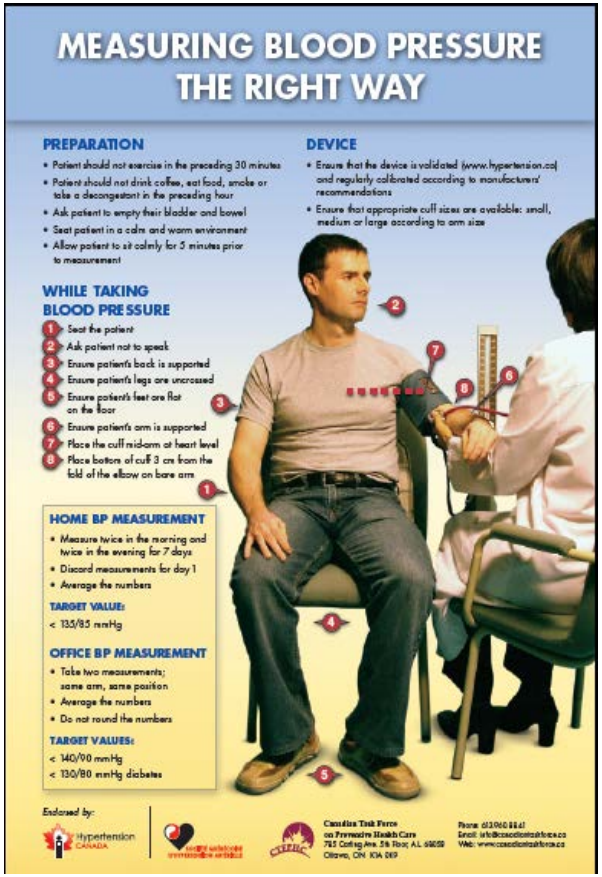
Measuring Blood Pressure The Right Way – Poster

- Posters and pocket cards can be ordered from our website.
- Brief highlights:
  1. Preparing to taking your blood pressure
  2. Using endorsed BP devices.



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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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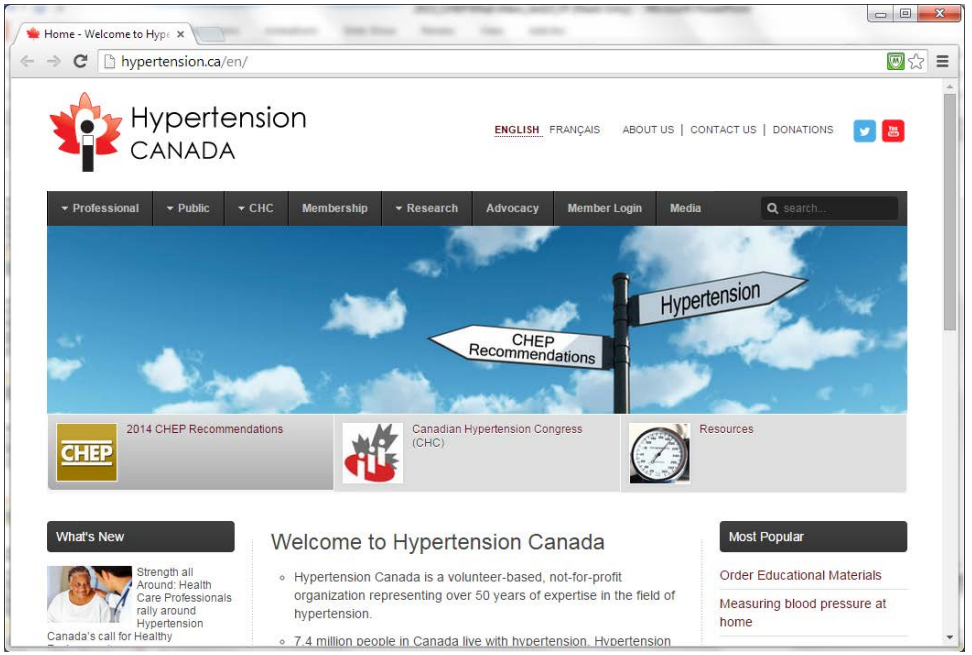
hypertension.ca



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