Part II: Treatment of Essential Hypertension

Scope

This guideline focuses on the treatment of essential hypertension (HT) in non-pregnant adults (aged 19 years and older). This guideline is to be used with "Part I: Detection and Diagnosis of Hypertension".

RECOMMENDATION 1: Standard of care

- In the course of normal medical contact, people should have their blood pressure recorded once every two to five years commensurate with age.
- Establish firm diagnosis and rule out underlying causes.
- Identify those requiring immediate management.
- Establish the patient's role in managing their condition, review lifestyle modifications.
- Establish the minimum dose of medication required to achieve the target BP (see table 1).

Table 1: Blood pressure treatment targets* †

<140/90	Desired target – no comorbid conditions
<130/80	Diabetes, renal disease or target organ damage
<125/75	Proteinuria with diabetes or renal disease
<160 systolic	Minimum target for isolated systolic hypertension

* The benefits of initiating antihypertensive therapy when hypertension is first diagnosed after the age of 80 years are still uncertain. Treatment should be continued in previously treated patients after the age of 80 years.

† The risk of a diastolic blood pressure in the range 90 to 105, in the absence of target organ damage or other risk factors, is small and may not outweigh the potential harm and cost of treatment in all patients.

Review patient at monthly intervals until BP is in target range for two consecutive visits. Then review every three-six to months (as long as the patient remains stable).

At each visit:
- Meticulously measure blood pressure
- Reinforce benefits of healthy lifestyle
- Confirm medications are being taken appropriately
- Review the patient's knowledge of their condition and their treatment

At least annually:
- Check creatinine/ estimated glomerular filtration rate (GFR)
- Re-check risk factors
- Re-check comorbidities
- Examine for evidence of target organ damage

Recommendation 2: Patient Self-Management

As a diagnosis is being established, patients should receive adequate explanation and support so that patients understand they have the primary responsibility for the management of their blood pressure. Consequently, suggestions for lifestyle changes should be offered and reviewed at each visit; e.g., smoking cessation, diet and exercise. Patients should be provided with information on available community support including self-management courses.

Recommendation 3: Pharmacologic treatment without comorbid condition

1. If the patient **is less than 60 years old:**
   a) low dose thiazide diuretic or
   b) beta blocker or
   c) ACE inhibitor or ARB
   d) long-acting dihydropyridine calcium channel blockers

Combination therapy if monotherapy is not sufficiently effective.

2. If the patient is **60 years old or more**:
   a) low dose thiazide diuretic or
   b) long acting dihydropyridine calcium channel blocker (e.g. Nifedipine GITS, Amlodipine, Felodipine)
   c) ACE inhibitor or angiotensin II receptor blocker if choice “a” or “b” are ineffective, contraindicated or not tolerated.
   d) beta blockers are not a first line treatment option

Recommendation 4: First line treatment for hypertension and co-morbid conditions[1]

It is important to control co-morbid conditions optimally when managing HT. Pharmacologic treatment must be chosen with even more care in these individuals.

Considerations for Individualizing Antihypertensive Drug Therapy	
Indication	**Drug Therapy**
Compelling Indications Unless Contraindicated	
Diabetes mellitus with proteinuria	ACE I, ARB
Heart failure (systolic)	ACE I or ARB, diuretics
Isolated systolic hypertension (older patients)	Diuretics (preferred), CCB (long-acting DHP)
May have Favorable Effects on Comorbid Conditions	
Myocardial infarction	β-blockers (non-ISA), ACE-I
Angina	β-blockers, CCB, consider ACE-I
Atrial tachycardia and fibrillation	β-blockers, CCB (non-DHP)
Cyclosporine-induced hypertension (caution with the dose of cyclosporine)	CCB
Essential tremor	β-blockers (non-CS)
Heart failure	ACE I, β-Blockers, ARB, diuretic
Hyperthyroidism	β-blockers
Migraine	β-blockers , CCB (non-DHP)
Osteoporosis	Thiazides
Preoperative hypertension	β-blockers
Prostatism (BPH)	β-blockers
Systolic dysfunction	ACE I (diuretics, β-blocker, spironolactone as add on) avoid calcium channel blockers

ACE I indicates angiotensin-converting enzyme inhibitors; BPH, benign prostatic hyperplasia; CCB, calcium channel blockers; DHP, dihydropyridine; ISA, intrinsic sympathomimetic activity; MI, myocardial infarction; CS, cardioselective; and ARB, angiotension II receptor blockers.

RECOMMENDATION 5: Contraindications to antihypertensive medications

Contraindications	
Asthma	β-blockers (non CS)
Depression	β-blockers, central a-agonists, reserpine
2° or 3° heart block	β-blockers, CCB (non-DHP)
Liver disease	Methyldopa

Relative Contraindications	
COPD, Asthma	β-blockers (CS)
Diabetes mellitus (types 1 and 2)	β-blockers, high-dose diuretics
Dyslipidemia	β-blockers (non-ISA), diuretics (high-dose)
Gout	Diuretics
Heart failure	CCB non-DHP
Liver disease	Labetalol
Peripheral vascular disease	β-blockers
Renal insufficiency	Potassium-sparing agents
Renovascular disease	ACE I, ARB

ACE I indicates angiotensin-converting enzyme inhibitors; BPH, benign prostatic hyperplasia; CCB, calcium channel blockers; DHP, dihydropyridine; ISA, intrinsic sympathomimetic activity; MI, myocardial infarction; CS, cardioselective; and ARB, angiotension II receptor blockers.

Resources

Resource information is available at: http://www.healthservices.gov.bc.ca/cdm/patients/index.html. To assist in achieving the highest standard of care physicians should consider using

- A registry of their hypertensive patients
- Automated recall system
- Flowcharts and checklists

Rationale

Hypertension remains a major public health issue in Canada. Although the diagnosis and treatment of HT appears simple, this disease remains poorly managed (e.g.) only 50 % of Canadians are aware of their diagnosis and only 16 % have adequate BP control[2].

Heart disease and stroke are the second and third leading causes of death in BC accounting for1/3 of all deaths.[3] Hypertension is a significant and controllable risk factor for heart disease, stroke, heart failure, renal disease and recurrent cardiovascular events.[4] Hypertension is also the most common indication in Canada for visits by adults to doctors.[5]

The benefits of lowering blood pressure, in certain settings with certain drugs have been well documented. Reductions in mortality,[6] cardiovascular events,[7],[8] left ventricular hypertrophy,[9] stroke and myocardial infarction,[10] stroke recurrence,[11] Alzheimer's dementia,[12] renal complications,[13] deterioration of renal function,[14] renal failure,[15] and incidence of diabetes[8] have all been associated with successful treatment of hypertension.

Management of hypertension may create illness and serious medical complications such as hypotensive syncope (resulting in falls), renal failure and even death. An effective individualized plan for diagnosis and management of hypertension requires that benefits are considered along with potential harms and costs.

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Sponsors:

This guideline was developed by the Guidelines and Protocols Advisory Committee. It was approved by the British Columbia Medical Association and adopted by the Medical Services Commission.

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The principles of the Guidelines and Protocols Advisory Committee are:

- to encourage appropriate responses to common medical situations
- to recommend actions that are sufficient and efficient, neither excessive nor deficient
- to permit exceptions when justified by clinical circumstances.

BRITISH COLUMBIA MEDICAL ASSOCIATION

BRITISH COLUMBIA Ministry of Health

HYPERTENSION PATIENT CARE CHECKLIST and FLOW SHEET

Based on the Guideline *Hypertension.* Web site: http://www.health.gov.bc.ca/protoguides/index.html

NAME OF PATIENT

GENDER ☐ M ☐ F

BIRTHDATE

COMORBID CONDITIONS

☐ Cardiovascular ☐ Kidney

☐ Other: _____

PHN

DATE OF DIAGNOSIS

Guidelines BP target:

140/90 Hypertension 130/80 Diabetes 125/75 Kidney disease

REMINDERS

- Explain the conseqences of hypertension
- Review medications & adverse effects
- Quit Now by Phone toll free BC: 1 877 455-2233
- Refer to guideline & patient resource sheet
- Set goals with patient:
  - weight loss & exercise - Avoid excessive alcohol - Smoking cessation plan - Salt intake & diet

			DATE (YY/MM/DD)					
		INITIAL REVIEW (BASELINE)						
EVERY 3-6 MONTHS — BP & SELF MANAGEMENT	Blood Pressure ➡							
	Smoking: ❑ Y ❑ N packs/day:							
	Activity level (at least 30 mins, 5 days/wk)							
	Salt intake							
	Alcohol consumption							
	Weight (target):							
MEDICATIONS/EFFECTS	Diuretic (first choice):							
	Beta blocker							
	ACE/ARB							
	Combination							
	ASA (81 mg) > 10% CHD risk < 70 yrs							
	Other:							
ANNUALLY OR AS APPROPRIATE — TESTS	Height/Weight Calculated BMI (< 27)							
	Fasting glucose							
	Microalbumin (ACR) Every 2nd yr if BP < 160; Annually if > 160 systolic							
	Lipid ratio TC/HDL							
	LDL-C							
	Triglycerides							
	eGFR							

RISK

Ten-year coronary heart disease risk from risk chart (see over):

High risk: ≥ 20%, target TC/HDL 4
Moderate risk: < 20%, target TC/HDL 5

CLINICAL EVALUATION

Consider end-organ damage – Eyes; Heart/Circulation; Kidneys:

VISIT 1	VISIT 2
VISIT 3	VISIT 4

10-year Coronary Artery Disease Risk (Framingham)

♀ FEMALE			AGE 50-54	AGE 55-59	AGE 60-64
Smoking	BP	TC/HDL			
🚭	<140	4	2	4	4
		5	3	5	5
		6	4	6	6
	140-159	4	3	5	5
		5	4	6	6
		6	5	8	8
	≥160	4	4	6	6
		5	5	8	8
		6	6	11	11
🚬	<140	4	6	11	11
		5	8	14	14
		6	11	17	17
	140-159	4	8	14	14
		5	11	17	17
		6	14	22	22
	≥160	4	11	17	17
		5	14	22	22
		6	17	27	27

♂ MALE			AGE 50-54	AGE 55-59	AGE 60-64
Smoking	BP	TC/HDL			
🚭	<140	4	6	10	12
		5	8	12	16
		6	10	16	20
	140-159	4	8	12	16
		5	10	16	20
		6	12	20	25
	≥160	4	16	16	20
		5	20	20	25
		6	25	25	>30
🚬	<140	4	12	20	20
		5	16	25	25
		6	20	>30	>30
	140-159	4	16	25	25
		5	20	>30	>30
		6	25	>30	>30
	≥160	4	20	>30	>30
		5	25	>30	>30
		6	> 30	> 30	> 30

TC/HDL: Total cholesterol (TC)/High density lipoprotein cholesterol (HDL-C) Systolic BP: Treated systolic blood pressure

Based on Genest J et al Recommendations for the management of dyslipidemia and the prevention of cardiovascular disease: summary of the 2003 update. CMAJ 2003: 169:921-24