Canadian Council of Cardiovascular Nurses

Conseil canadien des infirmières(iers) en nursing cardiovasculaire

Hypertension Update 2017: Did you know?

- All adult Canadians should have their B/P accurately assessed at all appropriate clinic visits. **Electronic Automatic** (ABP) measurements are **preferred.**
- ↑ B/P remains the leading cause of **preventable death and disability** worldwide. Complications of ↑ B/P (e.g., stroke and heart disease) are thought to cause 9.4 million deaths worldwide, yearly. Lifetime risk for ↑ B/P with↑ age is > 90%.
- An estimated 7.5 million Canadians have ↑ B/P and over 5 million Canadians with ↑ B/P are on pharmacotherapy. An estimated 2 million Canadians have ↑ B/P caused by excess dietary sodium. Aboriginal Canadians and those Canadians of low socioeconomic status, South Asian or black ethnicity are at greater risk for ↑ B/P.
- Over 91% of hypertensive patients have additional cardiovascular (CV) risks that require screening, assessment and management (e.g.,↑blood sugar or ↑lipid levels, obesity, abdominal obesity, smoking, sedentary lifestyle). Vascular protection by global risk factor management is paramount. Successful management of risks ↓ CV events by up to 60%. In diabetic patients, 75% of CV disease is due to ↑ B/P. Death and disability can be ↓ in diabetics by up to 50% when B/P is controlled to target levels (< 130/80).
- Blood pressure (B/P):

Optimal	Normal	High Normal
< 120 and < 80	< 130 and < 85	130 - 139 or 85 - 89

- Hypertension is B/P > 135/85 (ABP); 140/90 (includes chronic kidney disease), (150/90 age 80 or older) or > **130/80** in individuals with **diabetes**. Attaining BP targets in HTN management is vital to prevent CV complications. Most hypertensive patients should attain ≤ 140/90. In high-risk patients, a systolic ≤ 120 should be considered. In persons with **Diabetes < 130/80 is recommended.**
- Target B/P (at home) with approved device and proper technique, should consistently be less than 135/85 (130/80) if diabetic. If B/P above target, reassess a minimum of every two months. Home B/P monitoring is an important tool in self-management.
- **Lifestyle modifications** remain the **cornerstone** of hypertension management and must be **advocated** as follows:
  - Maintaining a diet low in salt (adequate adult intake 1500mg per day – **upper daily limit 2000 mg**), cholesterol and saturated fats, and high in fresh fruits and vegetables while using low fat dairy products - "DASH" (**D**ietary **A**pproaches to **S**top **H**ypertension) diet. Avoid processed and restaurant foods that contain high amounts of sodium per serving.
  - 30 to 60 minutes of accumulated moderate intensity dynamic exercise (e.g., walking, swimming, cycling) 4 - 7 days per week.
  - Weight reduction in those who are overweight; Maintenance of normal blood sugar levels.
  - Alcohol reduction in those who drink more than two standard drinks per day.
  - A smoke free environment and tobacco cessation to reduce CV and cancer risks.

Most individuals require **two or more** drugs, **in addition to lifestyle therapies,** to achieve B/P targets. The average reduction in B/P lowering with lifestyle changes or a single B/P medication is 10/5. Combining medications (e.g., diuretic with ACE) can be expected. In **diabetics** with↑ B/P, **3 or more** B/P lowering medications are often required.

- **Focus on adherence**. Non-adherence to lifestyle and/or pharmacotherapy is a major cause of poor B/P control contributing to overall ↑ CV risk. Help patients "buy in" and adhere to therapy (e.g., use of single pill combinations). Encourage patients to seek information or join support groups:

www.myBPsite.ca or www.heartandstroke.ca/BP or www.sodium101.ca; or www.hypertensiontalk.com/

Note: Conditions, drugs or substances can induce or aggravate hypertension & include:

- Steroids, NSAIDS, oral contraceptives, decongestants, sleep apnea, & stimulants including illicit drugs.

Excess dietary sodium is a significant cause of hypertension. See www.lowersodium.ca; www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf; www.nurseone.ca/Default.aspx?portlet=StaticHtmlViewerPortlet&plang=1&ptnme=Halt%20the%20Salt

- Educate about lower sodium choices. Use motivational interviewing to promote healthy behaviour change. **Both** behaviour change & drug adherence are generally required.

Be a CCCN Hypertension Champion!

Download current patient and professional resources from http://guidelines.hypertension.ca/

Sign up for new and regularly updated professional resources at www.htnupdate.ca

Advocate for healthy public policies to prevent hypertension.

Sources: Hypertension Canada's Guidelines (Canadian Hypertension Education Program) (CHEP), 2017; Updated National and International Hypertension Guidelines (2017); Promoting Physical Activity, CNA, 2011. HTN in Canada (2015) Fact Sheet; The Case for Sodium Reduction in Canada (2016) www.hypertensiontalk.com/

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Considerations in the Individualization of Pharmacological Therapy*

	Initial Therapy	*Second-line Therapy*	*Notes and/or Cautions*
HYPERTENSION WITHOUT OTHER COMPELLING INDICATIONS FOR A SPECIFIC AGENT			
Diastolic+/- Systolic Hypertension (Target B/P < 140/90 mmHg) attained in most patients In high risk pts. Systolic ≤ 120 should be considered eg. clinical or subclinical CV disease/chronic kidney disease	Monotherapy or single pill combination (SPC) recommended. Choices include Thiazide, thiazide-like diuretics (longer acting preferred), beta blockers, ACE-inhibitors, ARBs, or long-acting CCB. Consider initiating therapy with a combination of and ACE/ARB with CCB; ACE/ARB with diuretic. Consider ASA and statins in selected patients).	Combinations of first-line drugs.	Not recommended for monotherapy: alpha blockers, beta-blockers in those ≥ 60 years of age, ACE inhibitors in Black people. Hypokalemia should be avoided in those who are prescribed diuretics. ACE inhibitors, ARB's and direct renin inhibitors are potential teratogens and caution is required if prescribing to women of child-bearing potential. Combination of an ACE-inhibitor with an ARB is not recommended.
Isolated systolic hypertension without other compelling indications (target B/P for age < 80 is 140/90 mmHg); for age ≥80 (target systolic is <150/90 mm Hg)	Thiazide, thiazide-like diuretics, ARBs or long-acting dihydropyridine calcium channel blockers (CCB).	Combinations of first-line drugs.	Same as diastolic hypertension with or without systolic hypertension.
DIABETES MELLITUS		**TARGET BLOOD PRESSURE < 130/80 mmHg**	
Diabetes mellitus with micro albuminuria[1], cardiovascular disease, renal disease or additional CV risk factors	ACE inhibitors or ARBs.	Addition of dihydropyridine CCB is preferred over thiazide, thiazide-like diuretic	A loop diuretic should be considered in hypertensive CKD patients with extracellular fluid volume overload.
Diabetes mellitus not included in the above category	ACE inhibitors, ARBs, dihydropyridine CCBs or thiazide/thiazide like diuretics.	Combination of first-line drugs. If combination with ACE-inhibitor is being considered a dihydropyridine CCB is preferable to thiazide diuretic.	Normal urine microalbumin to creatinine ratio [ACR] < 2.0 mg/mmol
CARDIOVASCULAR DISEASE		**TARGET BLOOD PRESSURE <140/90 mmHg**	
Coronary artery disease	ACE inhibitors or ARBs, beta blockers or CCB's for patients with stable angina.	When combination therapy is being used for high risk patients, an ACE inhibitor/ dihydropyridine CCB is preferred.	Avoid short-acting nifedipine. Combination of an ACE-inhibitor with an ARB is specifically not recommended. Exercise caution when lowering B/P to target, if **diastolic is ≤ 60** mmHg.
Recent myocardial infarction	Beta-blockers and ACE inhibitors (ARBs if ACE inhibitor intolerant)	Long-acting CCBs if beta blocker contraindicated or not effective.	Non-dihydropyridine CCB's should not be used with concomitant heart failure.
Heart failure	ACE inhibitors (ARBs if ACE inhibitor-intolerant) and beta-blockers. Aldosterone antagonists (mineral corticoid receptor antagonists) may be added for patients with a recent cardiovascular hospitalization, acute MI, elevated BNP or NT-proBNP level or NYHA class II to IV symptoms.	ARB in addition to ACE inhibitor. Hydralazine/isosorbide dinitrate combination if ACE inhibitor and ARB contraindicated or not tolerated. Thiazide, thiazide-like or loop diuretics are recommended as additive therapy. Dihydropyridine CCB	Titrate doses of ACE inhibitor and ARB to those used in clinical trials. Carefully monitor potassium and renal function if combining an ACE and ARB and/or aldosterone antagonist.
Left ventricular hypertrophy	ACE inhibitor, ARB, long acting CCB or thiazide, thiazide-like diuretics.	Combination of additional agents	Hydralazine and minoxidil can increase left ventricular hypertrophy and should not be used.
Past stroke or TIA	ACE inhibitor and a thiazide, thiazide-like diuretic combination	Combination of additional agents	Treatment of hypertension should not be routinely undertaken in acute stroke unless extreme B/P elevation. Combination of an ACE-inhibitor with an ARB is not recommended.
NON-DIABETIC CHRONIC KIDNEY DISEASE		**TARGET BLOOD PRESSURE <140/90 mmHg**	
Non-diabetic chronic kidney disease with proteinuria[2]	ACE inhibitors (ARBs if ACE inhibitor-intolerant) if there is proteinuria. Diuretics as additive therapy	Combinations of additional agents	Carefully monitor renal function and potassium for those on an ACE inhibitor or ARB. Combinations of an ACE-inhibitor and ARB are not recommended in patients without proteinuria.
Renovascular disease	Does not affect initial treatment recommendations.	Combinations of additional agents	Caution with ACE or ARB if bilateral renal artery stenosis or unilateral disease with solitary kidney. Renal artery angioplasty & stenting could be considered if renal artery stenosis and complicated uncontrolled HTN
OTHER CONDITIONS		**TARGET BLOOD PRESSURE < 140/90 mmHg**	
Peripheral arterial disease	Does not affect initial treatment recommendations	Combinations of additional agents	Avoid beta-blockers with severe disease.
Dyslipidemia	Does not affect initial treatment recommendations	Combinations of additional agents	
Overall vascular protection	Statin therapy for pts with 3 or more CV risks or atherosclerotic disease. Low dose ASA in hypertensive pts > 50 yrs. Advise on smoking cessation (pharmacotherapy)		Caution should be exercised with the ASA if B/P is not controlled

*With permission of Hypertension Canada's Guidelines formerly Canadian Hypertension Education Program (CHEP), 2017.

[1]Albuminuria is defined as persistent albumin to creatinine ratio [ACR] >2.0 mg/mmol. [2] Proteinuria is defined as urinary protein >500 mg/24hr or albumin to creatinine ratio [ACR] >30 mg/mmol. **BP** Blood Pressure, **ACE** Angiotensin-converting enzyme, **ARB** Angiotensin receptor blocker, **ASA** Acetylsalicylic acid, **CCB** Calcium channel blocker, **NYHA** New York Heart Association, **SPC** Single Pill combination. **T IA** Transient ischemic attack, **CKD** Chronic kidney disease.

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