

# Hypertension Canada Guidelines and Beyond: Why are we concerned?

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## Objectives

- 1. Recognize the most recent prevalence of hypertension in Canada
- 2. Summarize the changes to the Hypertension Canada 2020-2022 Guidelines
- 3. Assess "what's still important" in the management of hypertension
- 4. Discuss special topics in hypertension management

## Hypertension in Canada

- Approximately 23% of Canadian adults have hypertension
- More prescriptions for hypertension than for any other medical disorder
  - 4 million prescriptions every month in Canada
- Cost of hypertension approaches 10% of all health care spending
  - In 2010, hypertension cost the Canadian health care system over 13 billion dollars annually





## Hypertension in Canada

- Prevalence rates have been stable over last decade
- For the first time in 20 years, recent treatment and control rates have decreased to 75% and 60%
- Canadian women have suffered the most in terms of deteriorating hypertension treatment and control



#### Hypertension control















## Blood pressure assessment





#### ABPM predicts CV risk better than OBPM



For every 10-mmHg increase in 24h ABPM SBP, adjusted HR for <u>daytme</u> 1.12 (1.06-1.18) and 1.21 (1.15-1.27) for <u>night-time</u>

For every 5-mmHg increase in 24h ABPM DBP, adjusted HR for <u>daytme</u> 1.02 (0.99-1.07) and 1.09 (1.04-1.13) for <u>night-time</u>

Dolan E, et al. Hypertension 2005;46:156-61

## Out-of-Office Blood Pressure Assessment



### Ambulatory blood pressure monitoring (ABPM)

- A validated oscillometric device which must be worn by the patient for a 24-hour period,
- Measurements taken at 20-to 30-minute intervals 2020

### Home Blood Pressure Monitoring (HBPM)

- Self-monitoring method
- Requires the patient to measure their blood pressure twice in the morning and evening for 7 days

Preferred Method of Out-of-Office Measurement



## Office Blood Pressure Measurement

### Automated Office Blood Pressure (AOBP)

- Performed using an automated devices
- Takes a series of oscillometric measurements
- Patient is left unattended in a private area while 3-6 consecutive readings are taken

#### Preferred Method of In-Office Measurement

### Office Blood Pressure Measurements (OBPM)

- Performed with the provider in the room
- Oscillometric or electronic devices are preferred
- Auscultatory mercury or aneroid – if electronic is not available

Rabi DM, McBrien KA, Sapir-Pichhadze R, et al. Hypertension Canada's 2020 Comprehensive Guidelines for the Prevention, Diagnosis, Risk Assessment, and Treatment of Hypertension in Adults and Children. Canadian Journal of Cardiology. 2020;36(5):596-624. doi:10.1016/j.cjca.2020.02.086









## Four Approaches to Assess Blood Pressure

AOBP	<ul> <li>Displayed mean SBP ≥ 135 mmHg or DBP ≥ 85 mmHg is high</li> </ul>
OBPM	<ul> <li>Mean SBP 130-139 mmHg or mean DBP 85-89 mmHg is high-normal</li> <li>Mean SBP ≥ 140 mm Hg or DBP ≥ 90 mmHg is high</li> </ul>
ABPM	<ul> <li>Mean awake SBP ≥ 135 mmHg or DBP ≥ 85 mmHg or mean</li> <li>24-hour SBP ≥ 130 mmHg or DBP ≥ 80 mmHg are high</li> </ul>
HBPM	<ul> <li>Mean SBP ≥ 135 mmHg or DBP ≥ 85mm Hg are high and associated with an increased overall mortality risk</li> </ul>



## Hypertension Diagnostic Algorithm





## BP Thresholds for Initiation and Targets

Patient Population	BP threshold (mmHg) for initiation of therapy	BP target (mmHg) for treatment
Low risk (no target organ damage or CV risk factors)	SBP ≥ 160 DBP ≥ 100	SBP < 140 DBP < 90
High risk of CVD	SBP ≥ 130	SBP < 120
Diabetes mellitus	SBP ≥ 130 DBP ≥ 80	SBP < 130 DBP < 80
All others	SBP ≥ 140 DBP ≥ 90	SBP < 140 DBP < 90

## High-Risk Adult Patients - Intensive Management



- Clinical or subclinical cardiovascular disease; or
- Chronic kidney disease (nondiabetic nephropathy, proteinuria < 1 g/d, eGFR 20-59 mL/min/1.73 m<sup>2</sup>); or
- Estimated 10-year global cardiovascular risk ≥ 15%y; or
- Age  $\geq$  75 years
- Patients with 1 or more clinical indications should consent to intensive management

Rabi DM, McBrien KA, Sapir-Pichhadze R, et al. Hypertension Canada's 2020 Comprehensive Guidelines for the Prevention, Diagnosis, Risk Assessment, and Treatment of Hypertension in Adults and Children. *Canadian Journal of Cardiology*. 2020;36(5):596-624. doi: 10.1016/j.cjca.2020.02.086





Outcome of interest	Rate intensive %	Rate standard %	ARR %	RRR %	NNT for 1 year
Primary	5.2	6.8	1.6	24	185
Mortality	3.3	4.5	1.2	27	260
Mortality in >75	5.54	8.04	2.5	31	126

The New England Journal of Medicine. 2015. 373(22):2103-2116.



## SPRINT Elderly Baseline Characteristics

10-y Framingham cardiovascular disease risk, median (IQR), %	24.2 (16.8-32.8)
Body mass index, mean (SD) <sup>b</sup>	27.8 (4.9)
No. of antihypertensive agents taking at baseline visit, mean (SD)	1.9 (1.0)
Gait speed	
Median (IQR), m/s	0.90 (0.77-1.05)
Speed <0.8 m/s, No. (%)	371 (28.2)
Frailty index, median (IQR) <sup>c</sup>	0.18 (0.13-0.23)
Frailty status, No. (%)	
Fit (frailty index ≤0.10)	159 (12.1)
Less fit (frailty index >0.10 to ≤0.21)	711 (54.0)
Frail (frailty index >0.21)	440 (33.4)
Montreal Cognitive Assessment score, median (IQR) <sup>d</sup>	22.0 (19.0-25.0)



Williamson JD, Supiano MA, Applegate WB, et al, for the SPRINT Study Research Group. Intensive vs standard blood pressure control and cardiovascular disease outcomes in adults aged ≥75 years: a randomized clinical trial. JAMA. doi:10.1001/jama.2016.7050



## Effect of BP lowering in Older versus Younger



Thomopoulos C, et al. J. Hypertension 2015, 33: 195-211



Nondiabetic CKD	Systolic BP Target
Patients meeting SPRINT criteria*	< 120 mmHg <sup>a</sup>
Patients with adult polycystic kidney disease	< 110 mmHg <sup>b</sup>
All other patients with nondiabetic CKD	< 140 mmHg <sup>c</sup>

- \* Patients > 50 years of age, at elevated cardiovascular risk with systolic BP 130-180 mm Hg.
- a. Measurement is on the basis of automated office BP
- b. Measurement is on the basis of HBPM
- c. Measurement is on the basis of office BP. Further reduction in SBP target may be individualized at the discretion of the treating physician considering the patient's specific kidney disease, comorbidities, and age. Moreover, we recommend that potential benefits and adverse events related to lower systolic BP targets be discussed with each patient and therapeutic decisions should be shared

#### Recommendation 3.1.1:

We suggest that adults with high BP and CKD [with or without diabetes] be treated with a target systolic BP of < 120 mmg Hg, when tolerated, using standardized office BP measurement (2B).



KDIGO 2021 Clinical Practice Guideline for the Management of Blood Pressure in Chronic Kidney Disease

## How do you get to Resistant Hypertension?







\* Longer-acting (thiazide-like) diuretics are preferred over shorter-acting (thiazide) diuretics

<sup>+</sup> BBs are not indicated as first line therapy for age 60 and above

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

\*\*Recommended SPC choices are those in which an ACE-I is combined with a CCB, an ARB with a CCB, or an ACE-I or ARB with a diuretic

### **Single Pill Combination-based Treatment**

- Fewer side-effects
  - Law, M R et al. BMJ 2003;326:1427
- Improved adherence (and decreased medical resource utilization)
  - Taylor AA, Shoheiber O. Congest Heart Fail 2003; 9:324-32.
- Better BP control rates
  - Feldman RD, et al. Hypertension 2009; 53;646-53.
- Reduced hypertension-related CV complication rates
  - Corrao G, et al. Hypertension 2011; 58:566-72.
- Reduced CV events in low/intermediate risk <u>hypertensive</u> patients
  - Lonn EM et al. N Engl J Med 2016 Apr 2; 58:566-72.





"Average patient": Without a compelling indication for any specific treatment algorithm

Step 1: The RAS inhibitor

## "Average patient": Without compelling indication

Step 2: Synergy and side-effects



## Step 3: More synergy and side-effects





# **Resistant Hypertension**

## Resistant Hypertension

- Resistant hypertension High BP despite use of ≥ 3 BP-lowering drugs at optimal doses
  - Patients are at high risk of adverse cardiovascular outcomes
- Patients with resistant hypertension should be referred to providers vith expertise in diagnosis and management of hypertension

### • Therapy

• A combination of ACE inhibitor/ARB, CCB, and a diuretic are used to ensure that different mechanisms for increases in BP are blocked



## Therapeutic Strategies in Resistant Hypertension



- Improve adherence
- When possible, eliminate drugs and substances that cause higher blood pressure
- Add pharmacotherapy
- Evidence of significant blood pressure-lowering exists for:
  - Spironolactone, eplerenone, amiloride, a- and b-adrenergic antagonists, Clonidine
- Evaluate and refer if secondary hypertension suspected
- Primary aldosteronism
- Renovascular hypertension
- Pheochromocytoma and paraganglioma
- Other causes of secondary hypertension









# Step 5 and Beyond

Is your patient taking the first 4 medications?



## Strategies to Improve Patient Adherence

- Tailoring pill-taking to fit patient's daily habits
- Simplifying medication regimens to once-daily dosing
- Replacing multiple pill antihypertensive combinations with single-pill combinations
- Using unit-of-use packaging (of several medications to be taken together)
- Using a multidisciplinary team approach to improve adherence to an antihypertensive prescription
- Assist your patient in getting more involved in their treatment by:
  - Encouraging greater patient responsibility/autonomy in monitoring their blood pressure and adjusting their prescriptions
  - Educating patients and their families about their disease and treatment regimens
- Improve your management in the office and beyond by:
  - In patients with hypertension who are not at target, adherence to all health behaviour recommendations (including use of prescription medications) should be reviewed before adjustment in therapy is considered
  - Encouraging adherence with therapy using out-of-office contact (either phone or mail), particularly during the first 3 months of therapy
  - Coordinating with pharmacists and work-site health caregivers to improve monitoring of adherence with pharmacological and health behaviour modification prescriptions
  - Using electronic medication compliance aids

# Step 6: MORE DIURETIC



## Follow-Up Recommendations

No hypertension or target organ damage	<ul> <li>BP at yearly intervals</li> </ul>
Hypertensive patients modifying health behaviours	<ul> <li>BP at 3- to 6-month</li> <li>BP every 1 or 2 months for patients with higher BP</li> </ul>
Patients on antihypertensives	<ul> <li>BP monthly or every 2 months, until readings on 2 consecutive visits are below their target</li> <li>Shorter interval in symptomatic, severe HT, intolerance to medications, or target organ damage</li> <li>BP at 3- to 6-month intervals once target BP is reached</li> </ul>
ABPM or HBPM	<ul> <li>Follow-up with demonstrated white coat effect</li> </ul>



# Care Delivery and Health Promotion



## Key Messages

- 1. Use of e-health interventions may be used as a means to improve the management of hypertension, reduce the risk of cardiovascular disease, and improve health and well-being
- 2. Health behaviour change plays an important role in hypertension prevention and BP-lowering in people diagnosed with hypertension
- 3. Health behaviour change is strongly recommended as a first-line intervention to lower BP in people with hypertension
- 4. Optimization of lipid levels with the use of statins in higher-risk patients is recommended
- 5. The use of acetylsalicylic acid (ASA) for primary prevention of cardiovascular disease is no longer recommended in people with hypertension

## Hypertension

## Vascular Protection

- Statin therapy hypertensive patients with ≥ 3 CV risk factors or established ASCVD
- Tobacco use Assess status regularly and advise patients to quit
  - Advice with combination pharmacotherapy (e.g. varenicline, bupropion or nicotine replacement therapy) should be offered
- Low dose ASA The use in the primary prevention of cardiovascular disease has been removed 2020
  - Little overall effectiveness and a significant risk of major bleeding



## Health Behaviours

Physical Exercise	<ul> <li>30-60 minutes of moderate-intensity dynamic exercise (eg, walking, jogging, cycling, or swimming) 4-7 days per week</li> <li>Higher intensities of exercise are not effective</li> <li>Use of resistance or weight training exercise (such as free-weight lifting, fixed-weight lifting, or handgrip exercise) does not adversely influence BP</li> </ul>
Weight Reduction	<ul> <li>Assess height, weight and waist circumference and calculate BMI</li> <li>Maintenance of a healthy weight is recommended</li> <li>All hypertensive patients should be advised to lose weight</li> </ul>
Alcohol 2020	In healthy adults, abstaining from alcohol or reducing alcohol intake to 2 drinks per day or less is recommended to prevent hypertension

## Health Behaviours Con't



Diet	High in fruit, vegetables, low-fat dairy products, whole grain foods rich in dietary fibre and protein from plant sources that is reduced in saturated fat and cholesterol (DASH)
Sodium	↓ intake to 2000 mg/day
Calcium and magnesium	Not recommended
Potassium	If not at risk of hyperkalemia, $\Lambda$ to reduce BP
Stress management	<ul> <li>In those whom stress might be contributing to high BP, stress management should be considered as an intervention</li> <li>Individualized cognitive-behavioural interventions are more likely to be effective when relaxation techniques are used</li> </ul>



## Clustering of risk as patients age

- Age is a significant independent predictor of HTN, AF, and OSA
- As patient's age, the coprevalence of these conditions magnifies stroke risk
- Therapeutic complexity must be managed carefully





## Age and Stroke Risk

Atrial Fibrillation prevalence by Age



Heeringa J. European Heart Journal, Volume 27, Issue 8, April 2006, Pages 949–953,

Padwal et al. Canadian Journal of Cardiology. Volume 32, Issue 5, May 2016, Pages 687-694





- Careful HTN management can delay the onset of AF
- Treatment of OSA can improve BP and delay onset of AF
- Careful HTN management can decrease the risk of bleeding in patients receiving anticoagulant therapy
- Consider the use of HTN SPC based Rx





## Pandemic Hypertension Strategies

- Train patients in home BP monitoring for diagnosis and drug titration
- Use single pill combinations to limit number of clinic and pharmacy visits
- Consider starting with half tabs and allow patient to self-titrate to full tabs if BP remains above target BP after 2 weeks of therapy
- Consider "co-therapies" that do not require monitoring
  - Use more CCB based combinations that do not influence renal function/lytes
  - Switch "hypoglycemic" drugs like sulfonylureas to "euglycemic" drugs like SGLT2 inhibitors
  - Switch patients on warfarin to a NOAC



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#### For patients:

Free access to the latest information and resources



### hypertension.ca