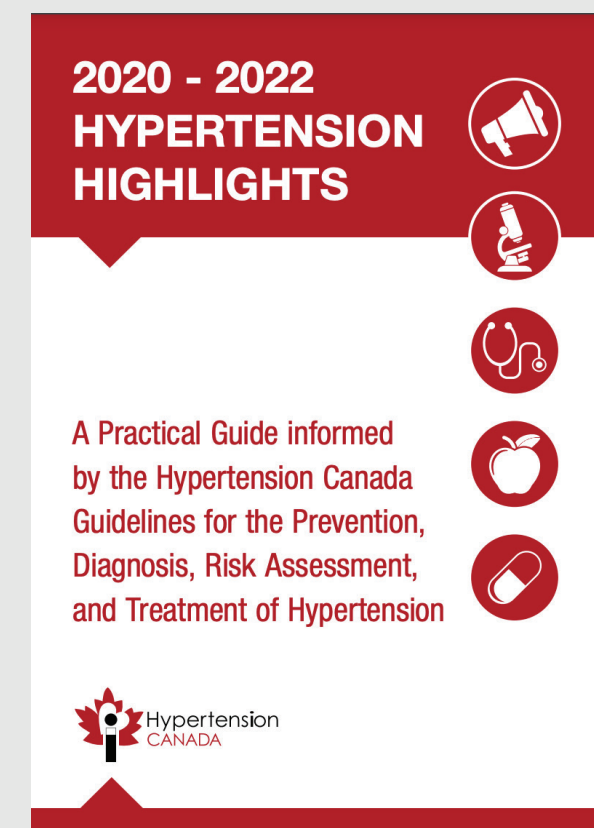


# Mercury Rising! Optimizing Blood Pressure in Diabetes Pearls

## Why does this matter?

- Blood pressure control in adults with diabetes is important to reduce complications of diabetes and cardiovascular (CV) disease.
- Adults with Diabetes have increased risk of CV and microvascular complications.
- The rates of diabetes related complications have declined overtime.
- Adults with diabetes continue to have a residual risk of CV disease that is 1.5-2 fold higher than adults without diabetes, they have a much higher risk of having an amputation and end stage renal disease than adults without diabetes.
- There is a huge burden of illness due to increasing diabetes prevalence.



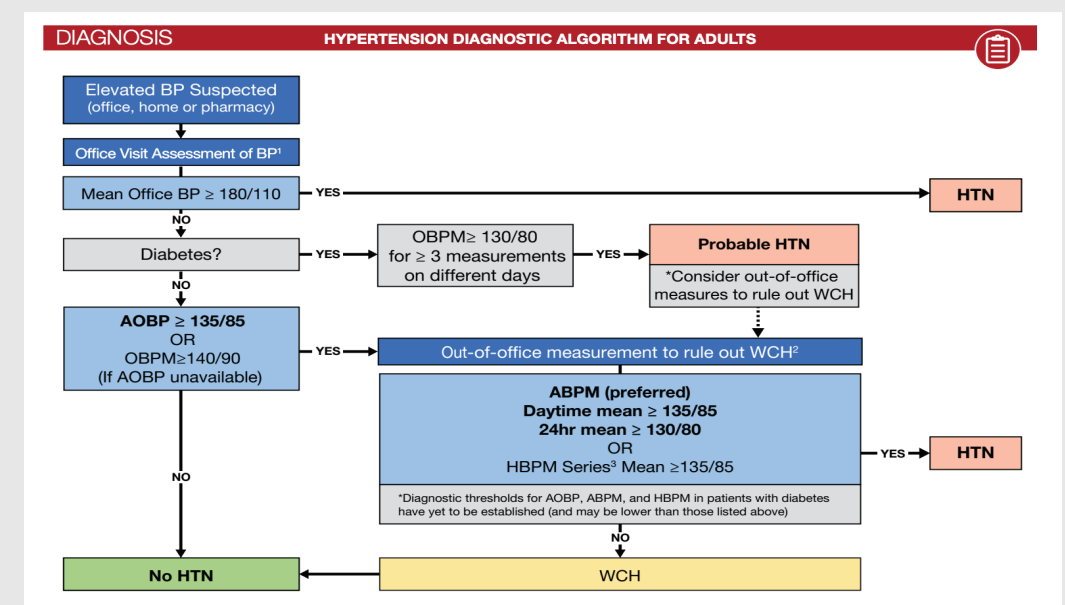
## Hypertension guidelines recommend <130/80 mmHG though individualized [consider potentially lower with high CV risk, higher with frailty, functional limitations, CKD, significant comorbidity]

### Why? Reduces:

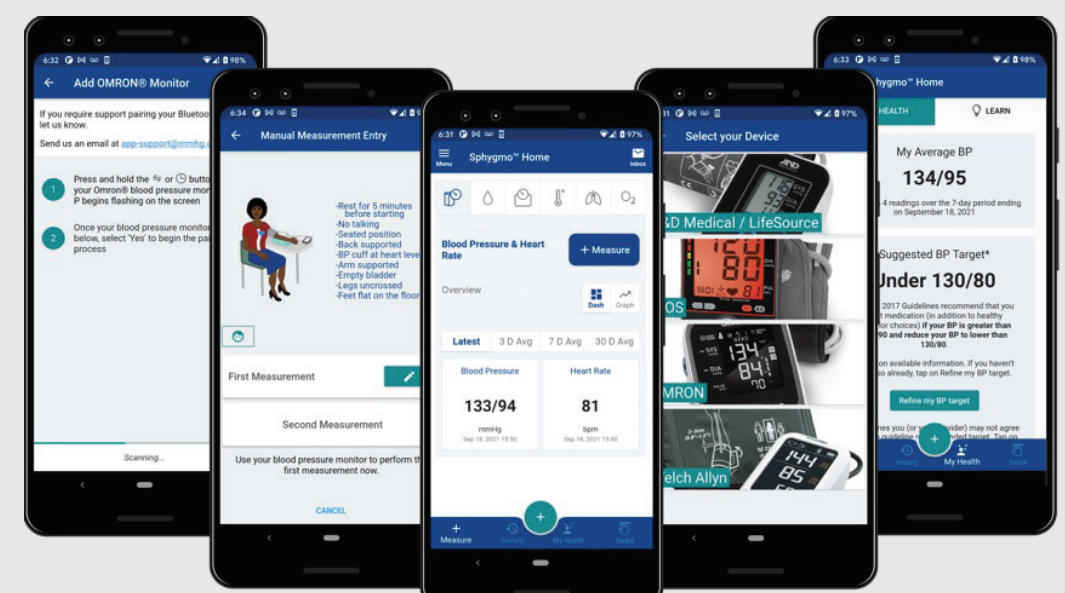
- Stroke [[ACCORD-BP 2010](#)] 41% relative reduction.
- Major cardiac adverse outcomes [[HOT trial 1998](#), [STEP 2021](#)].
- MACE & all cause mortality [[SPRINT 2015](#) – SBP<120, though excluded patients with DM].

### How to measure?

- At home, if possible; with a [structured protocol](#).
- Use a validated device with correct fitting.
- Consider the use of [apps](#) for home monitoring.
- Watch for white coat HTN or white coat effect, (prevalence of 9-30%) and in the absence of orthostasis consider treating: untreated WCH is associated with a higher risk of developing home hypertension, all-cause mortality, and CV events [[meta-analysis & systematic review 2019](#)].
- Hypertension diagnostic threshold > 130/80 mmHG on > 2 visits.



An excerpt from Hypertension Canada's 2020-2022 Hypertension Highlights



Apps available for home monitoring



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## How to treat?

- Early combination therapy is preferred because the marginal benefit of adding a new agent is much higher than the marginal benefit of increasing the dose of an existing one.
- Use of single pill combinations increases adherence
- 1st line: For Diabetes patients is better to start with a combination of ACEi/ARB, most evidence in the context of patients with cardiovascular disease or albuminuria.
- 2nd line Single pill combination (ACE/ARB + Amlodipine) [ACCOMPLISH trial](#) (DM in 60%) Amlodipine reduced primary CV outcome and CV mortality.
- Thiazides and beta blockers are associated with a modest increase in dysglycemia.

### THRESHOLDS AND TARGETS

**Populations and Stratification**  
Hypertension Canada stratifies patients by cardiovascular risk and, based on that risk, there are different thresholds and targets for treatment.

**Hypertension Canada High-Risk Patient\***

**Diabetes Mellitus**

**Moderate-to-High Risk** (multiple cardiovascular risk factors & 10-year global risk 10-14%)

**Low Risk** (no TOD or cardiovascular risk factors & 10-year global risk < 10%)

**\*Hypertension Canada High-Risk Patient**  
Individuals ≥50y AND with SBP 130-180 mmHg AND with one or more of the following CV risk factors should be considered for intensive BP management:

- ✓ Clinical or sub-clinical cardiovascular disease
- OR
- ✓ Chronic kidney disease (non-diabetic nephropathy, proteinuria <1g/d, \*estimated glomerular filtration rate 20-59 mL/min/1.73m<sup>2</sup>)
- OR
- ✓ Estimated 10-year global cardiovascular risk ≥15%
- OR
- ✓ Age ≥75 years
- # Four variable Modification of Diet in Renal Disease (MDRD) equation
- ± Framingham Risk Score

**Thresholds and Targets**  
In patients with documented hypertension, attaining blood pressure targets is vital to prevent cardiovascular and cerebrovascular complications.

Blood pressure thresholds for initiation of antihypertensive therapy and treatment targets in adults:

Patient population	BP threshold for initiation of antihypertensive therapy		BP treatment target	
	SBP mmHg	DBP mmHg	SBP mmHg	DBP mmHg
Hypertension Canada High-Risk Patient**	≥ 130	N/A	< 120	N/A
Diabetes mellitus**	≥ 130	≥ 80	< 130	< 80
Moderate-to-High Risk (TOD or CV risk factors)**	≥ 140	≥ 90	< 140	< 90
Low Risk (No TOD or CV risk factors)**	≥ 160	≥ 100	< 140	< 90

\*\*BP treatment threshold and target based on AOBP measurements  
\*\*BP treatment thresholds and targets based on C/OPM

### THERAPY

#### I. TREATMENT

##### Health Behaviour Recommendations

Objective	Recommendation	Application
<b>Being More Physically Active</b>	An accumulation of 30-60 minutes of dynamic exercise of moderate intensity (such as walking, cycling, swimming) 4-7 days per week in addition to the routine activities of daily living. Higher intensities of exercise are no more effective at BP lowering. For non-hypertensive or hypertensive individuals with SBP/DBP of 140-159/90-99 mmHg, the use of resistance or weight training exercise (such as free weight lifting, fixed weight lifting, or hand grip exercise) does not adversely influence BP.	Prescribe to both normotensive and hypertensive individuals for prevention and management of hypertension, respectively.
<b>Weight Reduction</b>	A healthy BMI (18.5 - 24.9 kg/m <sup>2</sup> ) and waist circumference (<102 cm for men and <88 cm for women) is recommended for non-hypertensive individuals to prevent hypertension and for hypertensive patients to reduce BP.	Encourage multidisciplinary approach to weight loss, including dietary education, increased physical activity, and behaviour modification.
<b>Moderation in Alcohol Intake</b>	To prevent hypertension, abstain, as there is no safe limit for alcohol consumption. Patients with hypertension should abstain from, or limit alcohol consumption to <2 drinks per day to lower blood pressure.	Prescribe to normotensive and hypertensive individuals for prevention and management of hypertension, respectively.
<b>Eating Healthier</b>	DASH-like diet: • High in fresh fruits, vegetables, dietary fibre, non-animal protein (e.g., soy) and low-fat dairy products. Low in saturated fat and cholesterol. • To decrease BP in hypertensive patients, consider increasing dietary potassium.	Prescribe to both normotensive and hypertensive individuals for the prevention and management of hypertension, respectively.
<b>Relaxation Therapies</b>	Individualized cognitive behaviour interventions are more likely to be effective when relaxation techniques are employed.	Prescribe for selected patients in whom stress plays a role in elevating BP.
<b>Smoking Cessation</b>	Advise smokers to quit and offer them specific pharmacotherapy to help them quit. Abstention from smoking. A smoke-free environment.	Global cardiovascular risk reduction strategy.

An excerpt from Hypertension Canada's 2020-2022 Hypertension Highlights

In addition to lifestyle modifications which include exercise, diet, smoking cessation, physical activity, consider providing information on the DASH Diet.



[Heart & Stroke resource](#)



[National Heart, Lung, and Blood Institute resource](#)

## Home Blood Pressure Log

**What type of blood pressure monitor should I buy?**

The blood pressure monitor you purchase should be proven accurate, and the monitor's cuff must properly fit your upper arm. Your health care professional can recommend a monitor and measure your arm to select the right cuff size. You should bring your monitor to your health care professional annually to have it checked for accuracy.

To help you in your purchasing decisions, Hypertension Canada provides a list of recommended monitors which have been proven accurate in research studies at [hypertension.ca](#). Many of these recommended devices will carry the symbols shown to the right on their packaging.

**What is my target blood pressure?**

Ideally, blood pressure should be below 120/80 mmHg to maintain good health and reduce the risk of stroke, heart disease and other conditions. However, the target depends on factors like age, health conditions, and whether the reading is being taken at home or your health care professional's office. If you have diabetes, kidney disease or other health conditions, speak to your health care professional about your readings and the treatment that is right for you. Remember, only your health care professional can tell you exactly what your target blood pressure should be.

Systolic	Diastolic	Action
Below 120	Below 80	Maintain or adopt healthy behaviours.
120-139	80-89	Maintain or adopt healthy behaviours.
140-159	90-99	Adopt healthy behaviours. If goal isn't reached in a month, talk to your health care professional about taking medication(s).
160 and higher	100 and higher	Adopt healthy behaviours. Talk to your health care professional about taking medication(s).

These blood pressure targets are for adults under the age of 80. Ranges may be lower for children and teenagers. Talk to your child's health care professional if you think your child has high blood pressure. Ranges may be higher for people over the age of 80.

**When should I take my measurements?**

- Before taking your blood pressure medication
- At least two hours after a meal
- After emptying bladder and bowel
- One hour after drinking coffee or smoking
- Thirty minutes after exercise
- Always after resting five minutes, without talking

**Measuring blood pressure the right way:**

- Comfortable, distraction-free environment
- Without talking or moving
- In the sitting position with back supported
- Legs uncrossed with feet flat on the floor
- Arm bare with lower edge of cuff 3cm above elbow
- Arm supported with middle of cuff at heart level

A structured protocol to measure at home

Not yet in guidelines but SGLT2i & GLP1-RA have some antihypertensive effects in addition to the known benefits of:

- Both: Weight loss, reduction in all-cause mortality, CV mortality, and MACE.
- SGLT2i: reduces progression of proteinuric CKD, and hospitalization due to CHF.
- GLP1-RA: reduces non-fatal stroke.

Watch the recording



[qrco.de/mercuryrising](https://qrco.de/mercuryrising)



The Edmonton Southside Primary Care Network and the Physician Learning Program

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## QI Application of Learning and Action Plan

- Gather patient data on your target population, including looking at EMR panel reports, HQCA Reports and CPCSSN – Canadian Primary Care Sentinel Surveillance Network.
- Decide on a goal for your clinic:
  - Patients living with diabetes will have an accurate BP measured at least annually.
  - Patients with greater than target BP will receive timely and appropriate follow up.
  - Work towards a goal of at least 50% of patients living with DM are within target BP.
- Consider what actions to take within your practice that will meet your goal. Some options include:
  - Set EMR notifications/alerts for annual BP.
  - Review process for measuring BP in the clinic, consider staff audit, education and regular calibration of BP equipment.
  - Integrate Lifestyle Questionnaire that can guide patient counseling and utilize the MDT for further patient education and support.
  - Develop a clinic process for patients who participate in home BP monitoring.
- Contact your Quality Improvement Facilitator to start working toward your clinic goal.



Consider using [MyL3Plan](#) to support your goals. Created by the Office of Lifelong Learning, MyL3Plan is a free, online tool that promotes self-reflection to identify areas to advance your practice with an emphasis on developing a concrete plan for implementing practice changes.