Management Strategies for Patients/Clients

WHAT IS BLOOD PRESSURE, AND WHAT SHOULD BE DONE IF YOURS IS TOO HIGH?

Blood pressure is the pressure that your heart creates while pumping blood through your body. The device used to measure blood pressure is known as a "sphygmomanometer". Your doctor or pharmacist can help you choose and show you how to use one that is suitable for you.

Blood pressure values are expressed in millimeters of mercury (mmHg). There are two components to a blood pressure reading: systolic and diastolic. The first figure indicates systolic pressure, the pressure created with the heart contracts (systole). The second figure indicates diastolic pressure, the pressure when the heart is at rest (diastole).

WHAT IS HYPERTENSION?

Blood pressure that is too high is referred to as hypertension. According to the Canadian Hypertension Society and the World Health Organization (WHO), "normal" blood pressure values are approximately 120/80 mmHg. Blood pressure changes throughout the day depending on what you are involved in. Generally, it will be lower at rest and increase when you are active.

If your values exceed 140/80 mmHg, you should consider lifestyle changes to reduce and maintain your blood pressure. This is an extremely important measure for partially countering other risk factors (age, sex and family history), that cannot be modified.

If your values exceed 160/90 mmHg, drug treatment should be initiated systematically and the measures aimed at improving your lifestyle should be continued. Your doctor will determine the target blood pressure values that you should aim to achieve, taking into account other risk factors you may have.

In most cases when high blood pressure (hypertension) is treated, the target values are 140/90 mmHg or less. In some cases, such as with people who have diabetes, the target values are set even lower.

According to Health Canada, hypertension is a disease affecting 20% to 25% of Canadians.

There are a number of risk factors for hypertension including: heredity, sex, age, and race. A person who has immediate family members with hypertension is at greater risk for developing the disease. Men are at higher risk that women.

The incidence of hypertension is also higher among some ethnic groups, African-Americans, First Nations People and Asians, for example.

There are also important risk factors for hypertension, including a sedentary lifestyle, being overweight, stress and smoking.

WHAT ARE THE POTENTIAL COMPLICATIONS OF HYPERTENSION?

Generally, hypertension does not cause any symptoms, but it can have serious effects on cardiovascular health. The body does not tolerate high blood pressure well and as the years go by hypertension can lead to many serious vascular problems, such as a heart attack, stroke and kidney failure.

WHAT DRUGS ARE USED TO TREAT HYPERTENSION?

The objective of treating hypertension is to reduce and/or maintain blood pressure at an optimal level. If lifestyle changes alone are not enough to lower blood pressure, drugs will be prescribed. To prevent the consequences of hypertension, these medications need to be taken regularly and often on a permanent basis. Every drug treatment should be accompanied by agreed-upon lifestyle changes. You have a greater chance of achieving your personal goals if drug treatment is supported by a healthy lifestyle.

Here is a summary of the drugs most frequently used to treat hypertension:

- **Diuretics** increase water and salt removal by the kidneys.
- **Beta-blockers** work by blocking beta-adrenergic receptors that play a role in increasing the heart rate. Beta-blockers decrease the heart rate and decrease the amount of blood the heart pumps and thus reduce the workload on the heart.
- **Calcium channel blockers** work by keeping blood vessels open. They block the movement of calcium into the muscle cells that decrease the size of the blood vessels.
- **Angiotensin-converting enzyme inhibitors** (ACE inhibitors) block a specific enzyme that is needed by the body to produce angiotensin, a chemical that makes blood vessels tighten. Without angiotensin, the blood vessel relaxes and enlarges, reducing the resistance to blood flow and blood pressure.
- **Angiotensin II receptor blockers** (ARBs) do not prevent the formation of angiotensin, but rather block its effect. Angiotensin normally raises blood pressure and heart rate.

Make the DASH to Healthy Blood Pressure!

Can diet affect blood pressure?

What you eat (or don't eat) can have a substantial impact on your blood pressure. The right diet can both decrease your chances of getting high blood pressure and lower your blood pressure if it's too high. Since high blood pressure is associated with a higher risk of cardiovascular disease (such as heart attack or stroke), it's worth making some small changes to your diet in order to reduce your blood pressure. These changes are important regardless of whether or not you are on antihypertensive medication.

What is the DASH diet?

The diet recommended to reduce blood pressure is called the DASH diet (which stands for **D**ietary **A**pproaches to **S**top **H**ypertension). It involves eating lots of fruit and vegetables (4-5 servings of each per day) and reducing the amount of cholesterol and total fat eaten (particularly saturated fat, which usually comes from meat). In a clinical study, patients who ate in accordance with the DASH diet were able to decrease their blood pressure considerably, starting within 2 weeks. This was true for patients with and without hypertension, for men and women and for patients of different ethnic groups.

Reducing risk, without reducing enjoyment

Changing your diet doesn't have to mean cutting out all the foods you enjoy. It just means making choices to ensure your diet is balanced and healthy. Think of it as an opportunity to explore new culinary options and to learn more about nutrition. New recipe books, cooking magazines, and health-oriented restaurants can be good sources of information and inspiration.

How the DASH diet translates to everyday eating.

The following chart has been designed to help you better understand the DASH diet. Foods are broken down into different groups with guidelines on how much to eat every day. Note that serving sizes may be smaller than you think. Use this chart as a reference when planning meals, both at home and when eating out.

The lower numbers are intended for smaller and/or less active individuals. The larger numbers are for more active individuals who do not desire weight loss.

Food Group	What are some examples of foods in this food group?	What does this food group provide that's important?	How many servings should I have per day?	How much is one serving?
Grains and Grain Products	o Bread products (e.g., whole wheat bread, English muffin, pita, bagel) o Cereal (e.g., grits, oatmeal) o Rice, pasta, couscous	o Major source of energy o Major source of fibre	7 - 8	o 1 slice of bread o ½ cup dry cereal o ½ cup cooked rice, pasta or cereal
Vegetables	o Artichoke, beans, beetroot, broccoli, carrot, celery, cucumber, kale, leek, onion, pea, potato, spinach, squash, tomato, turnip, etc. (Also vegetable juice)	o Potassium o Magnesium o Fibre	4 - 5	o I cup raw, leafy vegetable (e.g., spinach) o ½ cup cooked vegetable o ¾ cup vegetable juice
Fruits	o Apple, apricot, banana, date, grape, grapefruit, mango, melon, peach, pear, pineapple, prune, orange, raisin, strawberry, tangerine (Also, fruit juice and dried, frozen or canned fruit)	o Potassium o Magnesium o Fibre	4 - 5	o 1 medium-sized piece of fruit o ¾ cup fruit juice o ¼ cup dried fruit o ½ cup fresh, frozen or canned fruit
Low-fat or Non-fat Dairy Foods	o Skim or 1% milk, low-fat buttermilk, non-fat or low-fat yogurt, part-skim mozzarella cheese, no-fat cheese	o Major source of calcium o Protein	2 - 3	o 1 cup milk o 3/4 cup yogurt o 45 grams of cheese (1 1/2 oz)
Meat, Poultry and Fish	o Lean meat from which visible fat has been trimmed away o Meat, fish or poultry that has been broiled, roasted or boiled instead of fried o Skinless chicken	o Rich source of protein o Rich source of magnesium	2 or less	o 3 oz cooked meat, poultry or fish
Nuts, Seeds and Legumes	o Almond, walnut, peanut, hazelnut, peanut butter o Sunflower seed o Kidney bean, chick pea, lentil, etc.	Rich source of: o Energy o Magnesium o Potassium o Protein o Fibre	4 - 5 per week	o 1/3 cup nuts o 2 tbsp seeds o ½ cup cooked legumes

Where can I get more information?

For more information on lifestyle changes that can help lower your blood pressure, consult the following websites:

- Health Canada (www.hc-sc.gc.ca)
- Heart and Stroke Foundation of Canada (www.heartandstroke.ca)

Home (Self) Measurement of Blood Pressure

1) Home / self blood pressure readings may be used in the diagnosis of hypertension.

2) Consider the use of home / self blood pressure monitoring on a regular basis for patients with hypertension, particularly those with:
   a. Diabetes mellitus
   b. Chronic kidney disease
   c. Suspected non-adherence
   d. Demonstrated white coat effect (office induced BP elevation)
   e. Uncomplicated hypertension
   f. Hypertension and diabetes
   g. Masked hypertension

3) When white coat effect is suggested by home / self monitoring, its presence should be confirmed with 24-hour ambulatory blood pressure monitoring before making treatment decisions.

4) Advise patients to purchase and use only home / self blood pressure monitoring devices that are appropriate for the individual and have met the most recent standards of (i) the Association for the Advancement of Medical Instrumentation, (ii) the International Protocol for validation of automated blood pressure measuring devices. Encourage patients to use devices with data recording capabilities or automatic data transmission to increase the reliability of reported home/self blood pressure values (see the following page for examples).

5) Home systolic and diastolic blood pressure values above 135/ or /85 mmHg respectively should be considered elevated and associated with an increased overall mortality risk analogous to clinic readings greater than 140/ or/90 mmHg.

6) Ensure that patients who measure their blood pressure at home / self have adequate training and, if necessary, repeat training in measuring their blood pressure. Observe patients to determine that they measure blood pressure correctly and provide adequate information about interpreting these readings.

7) The accuracy of all individual patients' validated blood pressure measurement devices must be regularly checked against a device of known calibration.

8) Home / self blood pressure values for assessing white coat hypertension or sustained hypertension should be based on:
   - duplicate measures
   - morning and evening
   - an initial seven-day period

First day home / self blood pressure values should not be considered.

Your Home Blood Pressure Meter

There are two types of blood pressure meters: those that inflate automatically (such as the Lifesource® meter) and those that you inflate yourself (such as the Omron® meter).

Both types of meter have the following components:

1. Arm cuff.

2. Display unit.

The manual-inflation meters also have:

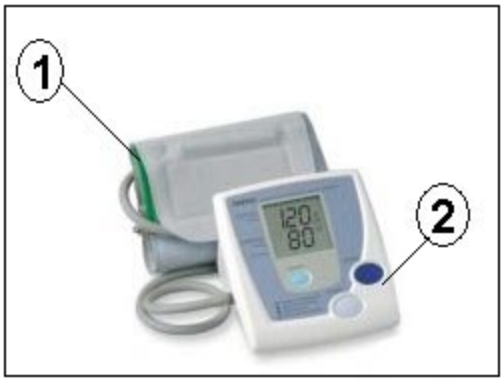
3. Air inflation bulb with an air release button.

All components are linked by tubing.

Take a moment to determine which kind of blood pressure meter you have and to become familiar with its components.

Manual inflation meter

Automatic inflation meter



It may be adequate to bring the device to an office visit every 6 months to compare to the office sphygnomanometer.

How to Get Ready

Before taking your blood pressure:

1 Avoid eating, drinking coffee, exercising, and smoking for at least 30 minutes before the reading.

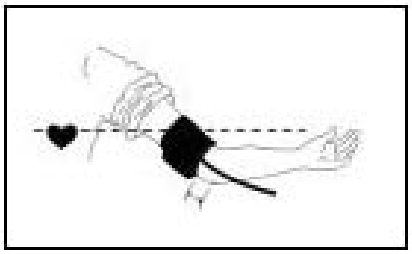
2 Empty your bladder.

3 Sit in a comfortable chair or at a table with your arm at heart level (use a pillow to raise the height of your arm if necessary).

Taking Your Blood Pressure

1 Insert your left arm or right into the cuff as shown, with the tubing coming from the lower edge and running down the middle of the inside of your arm. The lower edge of the cuff should be about ½ of an inch above your elbow.

2 Adjust the cuff so it sits snugly and evenly around your arm and close the sewn hook fabric strap. You should be able to fit a finger between the cuff and your arm.



3 Turn the meter on. If you are using the Omron® meter, you will know it is ready when the Ready to Measure symbol (a heart symbol - ♥) appears next to a zero (0).

4 If you are using automatic inflation meter, like the Lifesource®, set the pressure switch to a number that is at least 30 mmHg higher than your expected systolic pressure, and then press the START button. (Note that if you wish to stop inflation at any time, you can press the START button). If you are using a manual inflation meter, inflate the cuff by rapidly squeezing the inflation bulb until the meter shows a value of about 40 mmHg higher than your expected systolic pressure. If you do not know your systolic blood pressure, inflate the cuff to 160-180 mmHg.

5 For both types of meters, when the cuff is no longer being inflated, it will begin to deflate automatically.

6 When the measurement is complete, the systolic and diastolic pressure reading and pulse rate will be displayed on the monitor. (For the Omron® meter, you will know that these measures are final when the heart symbol appears.) Blood pressure is measured in mmHg and pulse rate (or heart rate) in beats per minute.

7 Record your blood pressure and heart rate, then turn off the meter. The Lifesource® meter will turn off automatically after a few moments.

Client Checklist for Hypertension

✓	**What to expect at each office visit with your family physician:**
	Check blood pressure
	Measure weight
	Measure waist circumference
	Review medications
	Discuss tobacco use
	Discuss alcohol use
	Review nutrition (i.e. low sodium)
	Discuss activity
	Discuss stress management
✓	**Tests & Measurements that should be done or discussed on a yearly basis, or as recommended by your health care team:**
	Electrolytes
	Urinalysis
	Fasting Lipids
	Fasting Glucose
	ElectroCardioGram (ECG)
	Vaccinations Annual influenza vaccine
	Referral for further education