



SPORTSCARDIOLOGYBC

HYPERTENSION

WHAT IS HYPERTENSION (HTN)?

Hypertension is a medical condition where the blood vessels have persistently raised pressure. The condition can only be diagnosed by checking your blood pressure.

22%

of adult Canadians are hypertensive

1.13B

people worldwide have hypertension

23%

prevalence of career firefighters having hypertension

WHAT IS BLOOD PRESSURE (BP)?

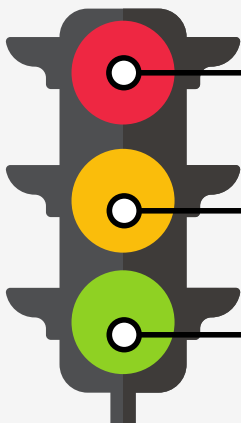
Blood pressure measures the force of blood against the walls of an individual's arteries. It requires two measurements: systolic and diastolic. It is measured in millimeters of mercury (mm Hg).

The **systolic** (top) number measures the pressure force when the heart contracts and pushes out the blood. **Diastolic** (bottom) number measure when the heart relaxes between beats.

Having high blood pressure or hypertension is a major risk factor for heart disease. It is important to have your blood pressure regularly checked by your physician or independently.



REMEMBER YOUR TRAFFIC LIGHTS



High Blood Pressure:

140+ / 90

Elevated Blood Pressure:

121- 139 / 80 - 89

Normal Blood Pressure:

120 / 80

Symptoms of Hypertension



- Early morning headaches
- Nosebleeds
- Irregular heart rhythms
- Vision changes
- Buzzing in the ears
- Fatigue
- Nausea
- Vomiting
- Confusion
- Anxiety
- Chest pain
- Muscle tremors

HOW IS HYPERTENSION A RISK FACTOR FOR HEART DISEASE?

Hypertension is often deemed as the “silent killer” as it does not give warning signs or symptoms. When blood pressure is consistently high, it slowly damages different areas within our body. It affects our kidneys, eyes, brain, and most importantly, our hearts.

HTN accelerates the atherosclerotic process by damaging the walls of the arteries which encourages the formation of plaque. When plaque begins to encroach on the arterial wall, it hardens and prevents blood flow and oxygen to the heart. This increases strain on the heart, making it to work harder, allowing the arterial wall to weaken further from the pressure. If it is left unchecked, approximately 50% of patients with hypertension die from coronary heart disease or congestive heart failure, another 33% die from stroke, and 10-15% die due to renal failure. HTN can also cause persistent chest pain, heart attacks, heart failure, an irregular heartbeat, or sudden cardiac death (SCD). This is a major cause of premature death worldwide.

Reducing blood pressure levels decreases the risk of CVD. In fact, a 5-to-6-mmHg reduction in diastolic blood pressure or a 10-mmHg reduction in systolic blood pressure decreases the risk of cardiovascular disease by as much as 40%.

Hypertension Risk Factors



Unhealthy diet



Physical Inactivity



Smoking



High amounts of alcohol



Unhealthy body composition



High stress levels



Age



Family History



Ethnicity

Gender

ARE THERE DIFFERENT TYPES OF HYPERTENSION?

There are two types of hypertension: primary and secondary hypertension. Primary hypertension is where there is no known cause to high blood pressure, while in contrast, secondary hypertension has a known cause.

Primary hypertension is the most common, equating to around 90% of hypertension cases. The remaining 5-10% are secondary hypertension cases. Secondary hypertension can be caused by another condition or disease such as:

- Kidney disease
- Adrenal disease
- Thyroid problems
- Sleep apnea
- Tightening of the aorta

If left undiagnosed, secondary hypertension can lead to further cardiovascular and renal complications or even resistant hypertension. It is important to routinely check your blood pressure.

TREATING HYPERTENSION

LIFESTYLE MODIFICATIONS

The primary lifestyle modifications to help reduce hypertension include smoking cessation, diet, and exercise, with the overall goals of losing weight, increasing physical activity levels, and decreasing salt intake. Lifestyle modifications also may be appropriate for those who are currently in the normal range because blood pressure tends to increase with age. Therefore, it is prudent to take steps to control blood pressure before it becomes a problem. The benefits of lifestyle modifications are readily apparent when one realizes that even modest reductions in blood pressure translate into significant reductions in the risk of cardiovascular disease.

DIET

A decrease in total caloric intake is important in weight reduction. A loss of excess body fat is associated with decreased blood pressure. A two-pound reduction in body weight is associated with a 1.6 mmHg reduction in systolic blood pressure and a 1.3 mmHg reduction in diastolic blood pressure. Diet is extremely important in treating hypertension. As it is directly linked to the lowering and increasing of blood pressure, diet is the first to be recommended in keeping blood pressure under control.

The Heart & Stroke Foundation provides an in-depth dietary guideline called the *"Dietary Approaches to Stop Hypertension"* or also known as the DASH Diet, to help you monitor your blood pressure.

The DASH Diet is based on two studies that were done: DASH and DASH-Sodium. Both studies looked at ways of reducing blood pressure through changes in diet. It compared 3 eating plans: one similar in nutrients to what most North Americans eat; the same plan but with extra vegetables and fruit; or the DASH diet, which is rich in vegetables, fruit and low-fat dairy foods and lower in saturated fat, total fat, and cholesterol. The results revealed that the diet higher in vegetables and fruit and the DASH diet both reduced blood pressure. However, the DASH diet had the greatest effect on blood pressure as it lowered levels within 2 weeks of starting the plan.

Check with your Benefits Provider if you are eligible in seeing a Registered Dietitian to guide you in creating meal plans to manage your blood pressure. Visit Dietitians of Canada (www.dietitians.ca) to find a dietitian near you.

DASH Eating Plan



- Vegetables: 4-5 servings
 - 250ml (1 cup) raw leafy veggies
 - 125ml (1/2 cup) cooked veggies
- Fruit: 4-5 servings
 - 1 medium piece of fruit
 - 63ml (1/4) dried fruit
 - 125ml (1/2 cup) fresh, frozen or canned fruit
- Grains (mainly whole grains): 7-8 servings
 - 1 slice bread
 - 250ml (1 cup) ready to eat cereal
 - 125 ml (1/2 cup) cooked rice, pasta or cereal
- Low Fat or No-Fat Dairy foods: 2-3 servings
 - 250ml (1 cup) milk
 - 250 ml (1 cup) yogurt
 - 50g (1 1/2oz) cheese
- Lean meats, poultry and fish: 2 servings or less
 - 3 ounces cooked lean meats, skinless poultry, or fish
- Nuts, seeds and dry beans: 4-5 servings per week
 - 1/3 cup (1.5oz) nuts
 - 30 ml (2 tbsp) peanut butter
 - 1/2 cup cooked dry beans or peas
- Fats and oils: 2-3 servings
 - 5ml (1tsp) soft margarine
 - 15ml (1 tbsp) low-fat mayonnaise
 - 30ml (2 tbsp) light salad dressing
 - 5ml (1 tsp) vegetable oil

For more details about the DASH Diet visit:
<https://www.heartandstroke.ca/get-healthy/healthy-eating/dash-diet>

SODIUM CONTROL

A reduction in salt intake is also beneficial for individuals with elevated blood pressure. Sodium restriction is associated with a decrease in blood pressure in most people. Salt restriction can be achieved by avoidance of salty foods (i.e., potato chips, olives, etc.), by not using additional salt while cooking or seasoning foods, and by avoiding processed foods. Other recommended dietary changes include a decrease in alcohol and caffeine consumption, and an increase in fruits, vegetables, and fish in the diet.

INCREASE EXERCISE

A lack of exercise plus poor diet increases the individual's risk of hypertension. Inactive individuals are twice as likely to have cardiovascular disease than of ones who are physically active.

There are a number of benefits of increasing physical activity such as:

- boosting strength
- lowering injury rates
- improving glucose tolerance
- losing weight
- strengthening the heart muscle
- enhancing the blood's ability to dissolve clots
- stabilizing the electrical activity of the heart.

BEING SMOKE FREE

Cigarette smoking is one of the single most important interventions that can be undertaken to decrease the risk of hypertension and even premature death due to cardiovascular disease. Many research studies have found smoking increases the risk for sudden cardiac death, aortic aneurysm, peripheral vascular disease, and stroke. Even from smoking one pack of cigarettes per day doubles the risk of cardiovascular disease compared to not smoking. Smoking more than one pack triples the risk.

The nicotine in cigarette smoke raises an individual's blood pressure as well as their heart rate. The continuous inhalation of smoke narrows the arteries and hardens their walls resulting to the blood to clot easily.

By reducing or even completely eliminating smoking lowers the risk of the first heart attack by **65%**.





ABC'S IN LOWERING BLOOD PRESSURE

A Lose extra body weight

Monitoring what you eat, how much, when, and why significantly helps to see where you can start making changes. Keeping a food diary helps to track your progress and breaking old habits.

B Be physically active everyday

Regular physical activity has proved countless to lower cholesterol levels, maintain a healthy body weight, and manage stress. Try different activities and find the ones you enjoy. Start slowly and build up to at least 150min/week of aerobic activity per week.

C Eat a diet rich in vegetables and fruit

A diet that consists of vegetables, fruit, whole grains, plant proteins, low-fat milk products, and lean meats is an effective way to lower high blood pressure. Many practitioners recommend the "*Dietary Approaches to Stop Hypertension*" also known as the DASH diet, to help manage blood pressure.

D Limit alcohol use

Excessive drinking of alcohol can raise your blood pressure. Not only does it harm the liver, but also the brain and heart.

E Being smoke free

Any amount and any form of tobacco can damage your heart and blood vessels. It also increases the risk of heart disease and stroke. If you are smoking, try to quit. Work together with your family, friends, or healthcare provider to help you in your journey.

F Manage Stress

Any type of stress will raise your blood pressure. Numerous resources, such as the Heart & Stroke Foundation offer a series of methods to help reduce stress that may be impacting your daily life.

HYPERTENSION STUDIES AT SCBC

Interested in participating
in studies related to
hypertension?

SportsCardiologyBC currently has studies that are open for recruitment! If you would like to learn more about the studies and see if you are eligible, please contact one of our study coordinators at scbc.research@vch.ca.



MAGNESIUM STUDY

A study on researching how magnesium affects on arrhythmia and performance

Study Coordinator: Rebecca Mate
Email: rebecca.mate@vch.ca
Phone: 604-822-9494



HRE STUDY

A study researching on whether high blood pressure during exercise is associated with a higher occurrence of arrhythmias

Study Coordinator: Samantha Pyke
Email: samantha.pyke@vch.ca
Phone: 604-822-6961