

# Silent killer

High blood pressure is the main culprit in six out of ten strokes, half of all heart disease and a fifth of all kidney failures. It's even a common factor in dementia. Yet many Canadians may have this condition and not even know it

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**D**aniel Muruve is pointing to his lunch – not without a certain hint of pride.

First, he pulls out two puny, skinless chicken drumsticks. Then he dangles a bag of unsalted almonds that he nibbles throughout his day. Rotating in the chair in his office, he reaches into a drawer and grabs an apple, then a grapefruit and lastly an orange, plunking each one side-by-side on his desk.

“And then,” he says, yanking out a medium-sized Ziploc bag with some bright green snap peas and fresh carrot slices, “I’ll finish this off.”

Such healthy fare hasn’t always been the case for the trim-looking, 42-year-old Muruve, though it’s been his staple lunch routine now for four years. Previously, he’d have spent his lunchtime wolfing down greasy burgers, fries and other fast food in what little time he had to spare for eating during his workday.

But Muruve has learned to dine and “DASH,” so to speak: DASH standing for “Dietary Approaches to Stop Hypertension.” It’s a diet designed to help Muruve reduce the high salt and fat content in his foods that millions of other Canadians routinely ingest every day. His vascular system is much the better for it.

A few years ago, Muruve was in his late 30s and headed on the fast-food track to high blood pressure – a condition physicians call hypertension. His vascular system – that vast network of arterial pipes coursing life-giving blood through our bodies – was stiffening, narrowing and getting ever closer to clogging. The blood trying to squeeze through those narrowing arteries and veins was creating high pressure in his body’s pipes, putting him at much greater risk of serious illness and, possibly, death.

Of the litany of things that kill humans – automo-

bile collisions, hunger, cancer, AIDS, malaria – the World Health Organization (WHO) states hypertension is the leading risk for death in the world. Canadian authorities, including Blood Pressure Canada, say high blood pressure is a main culprit in six out of 10 strokes, half of all heart disease and a fifth of all kidney failures. It’s even a common factor in dementia. Yet while an estimated 23 per cent of adult Canadians have been diagnosed with hypertension, many more may have this condition and not even realize this ticking time bomb is in their bodies. Only one in seven Canadians with hypertension is getting proper treatment for it. Even at that, the direct cost of drugs, office visits and laboratory testing to manage Canadians with hypertension is a staggering \$2.4 billion a year. Yet hypertension is easily preventable.

Muruve admits that he should have known he was headed for hypertension problems. After all, Muruve – Dr. Muruve, that is – is a nephrologist (kidney specialist) at the Foothills Medical Centre and an Associate Professor of Nephrology at the University of Calgary’s Faculty of Medicine. He has solid expertise on the effects of hypertension, which is often at the root of the kinds of chronic kidney disease he treats and researches.

No wonder health professionals call hypertension “the silent killer.” It even snuck up on Dr. Muruve. “As I was getting older,” relates Dr. Muruve, “my lifestyle and eating habits were pushing me in a direction where by now I would have had it,” if he hadn’t changed his ways. While Dr. Muruve had always exercised consistently, his poor diet negated much of the benefits. “I have a pretty high-stress job – you’re on call all the time, and you eat a lot of crap. You’re in a hurry, you grab a bite here or there, and you never think about what you are eating.” Our fast-food nation makes that easy, he laments. “It’s unhealthy food everywhere you look. Unless you

make a concerted effort to eat healthy, you end up pumping your body full of high-fat, high-salt foods.”

Hitting his 30s, the six-footer’s weight crept towards 200 lb. With the equipment at his disposal, Dr. Muruve regularly checked his own blood pressure and cholesterol and saw he was pushing the limits for his age. He was never at 140-over-90 mmHg (millimetres mercury), the point where he would recommend a patient take anti-hypertension medication (a healthy reading is in the range of from 90 to 129 over 60 to 84). “But I was getting close. I knew the trend – that was my specialty. I knew that if I’m 33, and I’m already close to the upper limit of normal, then clearly, in ten years, I’m going to



Dr. Norman Campbell

## Pressure check

Blood pressure is a measurement of:

- The force placed on the artery walls by the blood as it flows through the body.
- The effort made by your heart to push blood through the body.
- How flexible your arteries are.

Blood pressure (BP) is recorded using two numbers. When your blood pressure reading is written down, it looks like a fraction – for example: 120/80 is read as “one hundred and twenty over eighty.” The top number is called the systolic blood pressure (the highest pressure in the artery when the heart is pumping, pushing blood out into the body). The bottom reading is called the diastolic blood pressure (the pressure in the arteries when the heart relaxes between beats, and fills with blood).

Blood pressure readings change throughout the day. Your blood pressure is affected by many different things such as: activity, anxiety, caffeine, nicotine, eating and medications. For example, blood pressure tends to go up when you are in pain, active, anxious or excited and down when you are resting. For blood pressure readings you should be rested for at least five minutes in a quiet comfortable place.

A normal blood pressure is less than 130/85. High blood pressure is when your blood pressure is usually 140/90 or higher when comfortable and at rest.



be abnormal. Because I know that as you get older, you have a propensity to develop hypertension and hyperlipidemia (high cholesterol).”

One day in June 2003, after a weekend of celebrating before his brother’s wedding, Dr. Muruve stepped on a scale. It tipped over the 200 lb. mark. “I thought, ‘How did I let this happen?’ I mean, I’m supposed to be a guy that’s supposed to know what to do with your health. That’s when I decided: No more junk!”

Declarations like the one made by Dr. Muruve are music to the ears of Dr. Norman Campbell. A professor of medicine at the University of Calgary, Dr. Campbell conducts hypertension research through the Calgary Health Region’s Libin Cardiovascular Institute. He is also president of Blood Pressure Canada, a national non-profit organization promoting high blood pressure awareness among Canadians, holds the Canadian Institutes of Health Research (CIHR) Canadian Chair for Hypertension Prevention and Control, and also chairs the Canadian Hypertension Education Program. His mission in life is to make more noise in Canada about this silent killer and what individuals can do to, first, prevent it and, if need be, properly treat it with medication.

## Region’s blood pressure clinics ‘go where the people are’

**I**t was September of 2005, and Dr. Charlotte Jones and Diana Mitchell were setting up mini-blood pressure clinics at pharmacies throughout Airdrie as part of a pilot program.

A diminutive woman in her early 70s approached Mitchell and asked to have her blood pressure checked. “She sits down, and has her blood pressure done, and her systolic pressure is about 178,” says Dr. Jones. Although the woman had no clue there was anything wrong, her blood pressure was dangerously high: Anything above 140/90 mmHg is in the hypertensive range, and a lifestyle change and/or medication may be needed. An appointment was made for the woman to see her physician the next day.

Following her visit to the doctor, the woman returned to the clinic and volunteered to become one of 34 Volunteer Peer Health Educators under the Airdrie Cardiovascular Health Awareness and Management Program, also known as A-CHAMP. The volunteers were trained to take the blood pressure of fellow senior citizens in Airdrie during free testing sessions at the town’s six pharmacies.

During the next three months, a total of 406 seniors – about 40 per cent of the seniors living in Airdrie – were tested under the pilot project. Of those, 148 (36.5 per cent) were found to have elevated blood pressure.

“This gives you an indication of the depth of the problem of high blood pressure, especially among seniors,” says Mitchell.

The Airdrie program, based on a model in Ontario, was designed to test the feasibility of conducting blood pressure tests on Albertans through volunteer-run clinics at pharmacies.

Unlike the Ontario initiative, however, volunteers running the A-CHAMP program were asked to make doctors’ appointments as soon as possible for any seniors testing with a systolic blood pressure between 160 to 179 and a diastolic of between 100 and 109. People with diabetes, who are at increased risk for health issues from high blood pressure, had appointments made for them immediately if they recorded levels from 140 to 159 systolic and 90 to 99 diastolic.

“This is a big, different step,” says Dr. Jones in reference to the appointments, “because most people, if found to have high blood pressure, are told, ‘Go see your doctor!’ Well, you know how busy people are. They forget about it. But if we call for them, and give them a little appointment card, they are less likely to forget it.”

In addition to identifying seniors with hypertension, A-CHAMP also helped to increase awareness about high blood pressure among Airdrie’s physicians and pharmacists participating in the program. They were familiarized with new hypertension guidelines stemming from work facilitated by Dr. Norman Campbell, a professor of medicine at the University of Calgary and national president of Blood Pressure Canada, a non-profit organization promoting high blood pressure awareness among Canadians.

In May 2006, Dr. Jones, Mitchell and their volunteers conducted follow-up checks of those initially tested. They were pleased to see that, of the 105 who returned for follow up, systolic blood pressure had decreased by an average of 16.9 mmHg. Moreover, 56.2 per cent had reached the Canadian target for blood pressure control, including the woman who approached Mitchell in the mall that day in September. She was now a much healthier 120/70, recalls Mitchell. “And she was very thankful.”

Although A-CHAMP results were more anecdotal than evidentiary, a similar high-level, randomized control study recently conducted in Edmonton shows similar improvements in participants.

The success of the A-CHAMP program has led to two more population-based blood pressure (and

The increasing incidence of hypertension in Canada is nothing less than alarming, he says. "If you're walking down a Canadian street and you see a woman over 60, you flip a coin and that will pretty much tell you the chance of her being on an anti-hypertension drug. That's a pretty frightening statistic." Yes, drugs will help protect that woman from high blood pressure and the related risk of stroke and heart failure. "But do you really want to be medicating that many people?" wonders Dr. Campbell. "I would suggest that's a failure of the public health system in preventing hypertension."

In 1999, volunteer health professionals, led by Dr. Campbell, launched the Canadian Hypertension Education Program (CHEP). The non-profit program, consisting of about 100 physicians, nurses, dietitians and other health professionals, many based in the Calgary Health Region, work together to produce annually updated, evidence-based recommendations for health care professionals on the proper way to manage and treat hypertensive patients. CHEP is important because even physicians have trouble staying abreast of the research and new treatments related to hypertension. And there are plenty of people to treat. In the first four years of CHEP's existence, Dr.

Campbell notes, an additional 1.3 million Canadians were diagnosed with hypertension and 1.26 million had to start drug treatments. "That's a huge chunk of the population."

On the positive side, all those new diagnoses and the resulting treatments did help reduce the number of annual deaths from heart attack and stroke. Still, 90 per cent of Canadians will develop high blood pressure in their senior years unless they quickly adopt healthier lifestyles, the way Dr. Muruve did. He cut out all processed foods, started eating fruits and vegetables, lean meats and lots of omega-3 from fish, nuts and flax, while also beginning to watch his caloric intake and his portions. Now a trim 190 lb., he says his diet has made him mentally sharper and far more energetic. Gone are the regular naps he used to take to get through the day. On the odd occasion when his busy schedule forced him off his healthy diet and he had to grab a processed food meal, the experience left him physically sick with heartburn and headaches. "So, now, you'll never see me buy anything processed. I'll never buy anything canned, I'll never buy fast food," says Dr. Muruve, who also rides his bike to work each day, a 20 kilometre round trip. The transition was hard,

he admits. It took every ounce of self-discipline. "For the first few weeks I had major cravings for chocolate, junk food and burgers – all the kind of food that I used to eat. But after a few weeks that just goes away."

If it's difficult for a young physician expertly intimate with the health risks associated with hypertension to alter his lifestyle, then think of the daunting task ahead for Dr. Campbell and his colleagues at CHEP and Blood Pressure Canada to convince the obese, the long-time junk-food junkies, heavy drinkers and committed couch potatoes to change their lifestyles to proactively battle the hypertension that may be slowly killing them, and adding significant burdens to the health system. It is, admits Dr. Campbell, "a tough nut to crack." Nevertheless, he remains deeply committed to promoting awareness about high blood pressure, and Canadians should already be noticing that a lot more messages about hypertension are in the public domain – on the news, in newspapers, in public health messages and other mediums. For instance, Blood Pressure Canada and CHEP recently distributed 100,000 pamphlets containing the 2007 public recommendations about hypertension.

cardiovascular risk) screening programs: the Indo and Central Asian-CHAMP (ICA-CHAMP) and Urban-CHAMP (U-CHAMP). ICA-CHAMP is a blood-pressure testing program that gathers information about the Indo-Asian population of Calgary by taking blood pressure and cholesterol readings at temples and mosques in people 45 years of age and over. "This is a group that is probably at twice the risk for cardiovascular diseases as the equivalent Caucasian population," says Dr. Jones. The training of volunteers began in April, and the program is expected to run until this fall. U-CHAMP is also starting up in the fall and is a similar blood pressure and cardiovascular risk assessment and management program in partnership with a large group of family physicians (150) and Calgary Co-op and Safeway pharmacies in northwest Calgary.

"Part of the principle of these programs is you have to go where the people are," says Dr. Jones, Leader of Calgary's Rotary Flames Centre for Excellence in Hypertension, which is part of the Libin Cardiovascular Institute). "That's why this venue for Indo-Asians, the mosques, is really great. Because that's where many people congregate." In the future, if these initial pilot programs prove valuable, then blood pressure testing could come to a church, pharmacy, temple, grocery store, mall or other gathering place near you.

– Anthony A. Davis



Dr. Charlotte Jones (left) and Diana Mitchell are heading up an initiative to create a number of community-based blood pressure testing programs.

## Gauging your blood pressure

If your systolic blood pressure is:	If your diastolic blood pressure is:	Status/ How often to check:
Less than 130	Less than 85	<b>Normal:</b> Recheck within two years
130 – 139	85 – 89	<b>High Normal</b> Recheck within one year
140 – 159	90 – 99	<b>Hypertension</b> Recheck within two months
160 – 179	100 – 109	<b>Stage 2 hypertension</b> See doctor within one month
180 or higher	110 or more	<b>Stage 3 hypertension</b> See doctor as soon as possible and within a week

Your risk increases as your blood pressure increases. Discuss the actions you should take with a health-care professional if you are assessing your own blood pressure. Lower levels of hypertension can be dangerous in some people and may require more rapid attention.

## Reducing the pressure

Here are the leading factors that can cause high blood pressure, and some tips for reducing your risk of stroke, heart attack or serious illness.

**Diet:** A poor diet is likely the most important cause of hypertension. Choose the following more often: Vegetables, fruit, low-fat dairy products, foods low in saturated and trans fat and salt, whole grains and lean meats, fish and poultry. Limit fast foods, canned foods or foods that are bought prepared.

**Activity:** Be physically active for 30 to 60 minutes on most days of the week. Try walking, biking, swimming, cross-country skiing or any other physical activity that you enjoy. Remember that even a little bit of physical activity is better than no activity at all.

**Obesity:** If you are overweight, losing about 10 lb. (5 kg) will lower your blood pressure, and reducing your weight to within a healthy range will lower your blood pressure even more.

**Excessive alcohol consumption:** Drinking more than two standard drinks of alcohol a day increases blood pressure. If you drink alcohol, limit the amount to two drinks a day or less. A regular-sized bottle or can of beer, 1.5 ounces of hard liquor, or a regular-sized glass of wine are all equal to a single alcoholic drink.

**Stress:** In some people, repeated exposure to stress may raise blood pressure levels or contribute to unhealthy lifestyle choices.

**Smoking:** Smoking causes strokes, heart attacks and cancer in people with high blood pressure. Stopping smoking markedly decreases the risk. Living and working in a smoke-free environment is also important.

Source: Calgary Health Region



The firefighters of Calgary Fire Department Station No. 26, Midnapore, from left: Capt. Patrick Duffin, P/F/F Bruce Southworth, Lt. Terry McBride, F/F Barrett Esligar, S/F Graham Shaw, F/F Mark Phillips.



## COMMUNITY SERVICE: Firefighters put heat on hypertension

In 1994, Calgary became the first city in Canada to begin conducting blood pressure checks at fire stations. Thirteen years later, the firefighters at the city's 33 stations have conducted about 57,023 blood pressure measurements – readings that have helped numerous Calgarians bring their high blood pressure under control.

With hypertension the No.1 killer of humanity, according to the World Health Organization, knowing if your blood pressure is above normal is the launch point for doing something about it, whether that means starting a drug treatment or, better yet, changing your lifestyle. Every one of Calgary's fire stations is open for blood pressure checks from 1 p.m. to 9 p.m., except when personnel are out responding to an emergency. No appointment is necessary. For more information, please call 268-8783.

Sheilah Daniels-Smith, spokesperson for the Fire Department, says the program was initiated as a public service. In fact, many of the fire department's emergencies have nothing to do with fires. "A lot of our calls are becoming more medically related than fire-related. So it's just part of the job now," explains Daniels-Smith, noting that about

28 per cent of calls now are responses to heart attacks and strokes, both conditions closely related to hypertension.

As of 2001, 15 of the city's fire stations also started taking cholesterol readings – a 10 minute process that doesn't require any fasting and involves a virtually painless finger poke to pipette a small amount of blood and test it in a small device. As of March of this year, 6,281 cholesterol readings had been taken. Checking your blood pressure at a fire station can be far quicker than having your family doctor check it or going to a walk-in clinic. In fact, many Calgary doctors treating hypertensive patients will have their blood pressure monitored daily at fire stations for five or six days at a time. The public, states Daniels-Smith, "loves the program. They absolutely love it." While most users are typically older, approaching their 60s or older, younger people head to the fire stations from time to time. "We're finding they are very interested because people are now more health-conscious and more apt to find out about what's normal, what's not, especially with cholesterol."



**The DASH diet helped Dr. Dan Muruve lower his blood pressure. For more information, visit [www.heartandstroke.ca](http://www.heartandstroke.ca) (search DASH diet)**

Dr. Campbell says diet is one of the main contributors to hypertension. If he had his way, he says, he'd like to see carrot sticks for sale at gas stations and convenience stores rather than potato chips. He'd also like to see Canadians become more active. "We know that if we could change the diet and lifestyle of Canadians slightly, it would make a big difference." For example, exercising just 30 to 60 minutes a day (and involving the legs) is the equivalent in a lowering of blood pressure to taking an anti-hypertensive drug, says Dr. Campbell. If you go from a Doritos and burger-filled diet to a DASH diet, that's even slightly more effective than taking an anti-hypertension drug.

But Dr. Campbell isn't relying on public awareness messages alone. The Sodium Strategic Planning Committee (SSPC) Campbell leads is also working behind the scenes by targeting one of the main culprits contributing to high blood pressure – salt.

Although humans need salt to live and be healthy, too much of it is a key factor in high blood pressure. Excess salt makes us consume more liquid,

and though our kidneys can purge that liquid in the short run, over time our bodies begin to accept the excess as normal. Eventually, our blood vessels become bloated with a flood of surplus fluid pumping through them, increasing our blood pressure beyond healthy norms.

Studies show that Canadians consume twice the amount of sodium as is healthy. Eighty per cent of the salt we consume comes from the food processors who have added it to packaged and canned foods, not from our own saltshakers. "Food processors know we have an acquired taste for salt," shrugs Dr. Campbell. And, as salt (which also acts as a preservative) is a cheap ingredient, it is easy to satisfy our unhealthy cravings. Those salts, because they increase thirst, also promote the sale of other products, such as soft drinks. "When you go to a bar, why do you think they put out things like free peanuts or pretzels to eat?" asks Dr. Campbell. "Because the salt increases your thirst and encourages you to drink more beer."

Dr. Campbell's group is working with Canadian food processors to reduce the amount of salt they are adding to their products in much the same way that many food processors have dumped trans-fats, a cholesterol-building food ingredient. Dr. Campbell and his committee have been meeting with politicians, government officials and food industry officials in an attempt to sway them to adopt voluntary reductions in salt additives to our food. "What we thought was, the high amount of sodium that is being added to food by processors was something that we could probably tackle and accomplish more easily in that we know who's doing it – they are usually identifiable." Other countries, such as Britain, have done this and found success. "So a fairly small group of dedicated people could have a substantive impact (on hypertension) this way. That's why we picked on sodium."

Dr. Campbell would like to see Canada follow a U.K. model where government, industry and public health officials came to an agreement where the food industry made voluntary reductions in salt additives and cooperated in consumer education programs to inform consumers about the dangers of hypertension. "There's a lot of reluctance on the part of western governments to legislate the food sector, and, of course, the food industry feels the same way," notes Dr. Campbell. However, he adds, "the threat of legislation is always there" if it's needed for the sake of Canadian health.

*Anthony A. Davis is a Calgary writer.*

## FYI

**Do you want to check your blood pressure?**

**If you do, you can make an appointment with your doctor, or visit a Calgary Fire Department station between 1 p.m. and 9 p.m. any day of the week (no appointment necessary. For more information, please call 268-8783.)**

**For more information about hypertension and how to prevent it, visit:**  
[www.calgaryhealthregion.ca](http://www.calgaryhealthregion.ca)  
(search: blood pressure)  
[www.heartandstroke.ca/bp](http://www.heartandstroke.ca/bp)  
[www.hypertension.ca](http://www.hypertension.ca)



**Human Atlas: You can watch an animated video on high blood pressure or one of more than 250 other medical topics by visiting the Human Atlas at [www.calgaryhealthregion.ca](http://www.calgaryhealthregion.ca)**