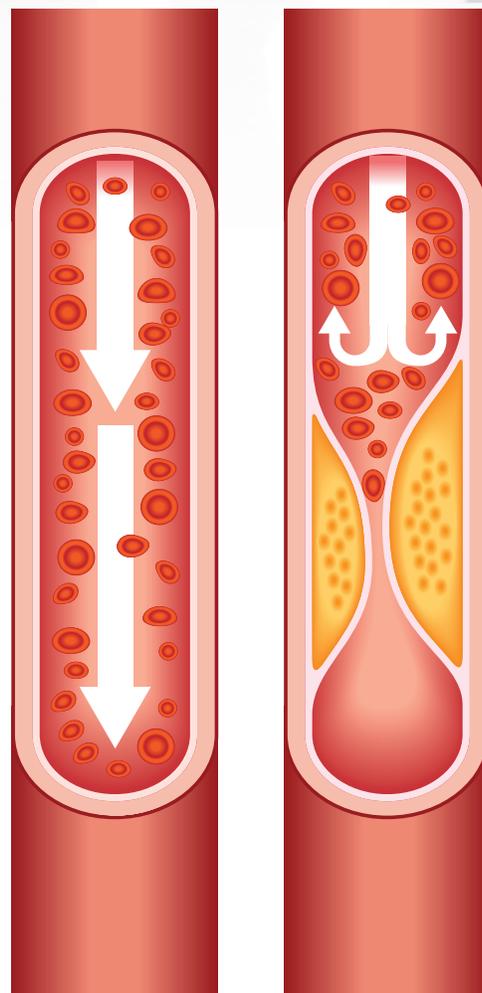


Peripheral Arterial Disease: A Hidden Danger

By Robyn Evans, BSc, MD, CCFP, IHWCC and Giuseppe Papia, MD, MSc, FRCS(C)

Peripheral arterial (or artery) disease (PAD) is a condition that affects hundreds of thousands of Canadians. PAD can have significant negative implications for the individuals with the condition and their families, on health systems and on society as a whole. Unfortunately, PAD is under-recognized by health-care providers (HCPs) and as a result is often left untreated or treated only when it is at an advanced stage. Early intervention, which is more common in many other developed countries, has produced positive outcomes and cost-effective care.

In Canada, the health of affected individuals could be improved if HCPs—including those working in the area of wound prevention and care—were more aware of PAD and its impact. This article provides a quick overview of the condition along with recommendations for improving awareness, diagnosis and treatment.



A healthy artery (left) compared with an artery blocked by plaque (right) as seen in people with peripheral arterial disease (PAD)



Peripheral arterial disease (PAD) is most often caused by atherosclerosis, where plaque builds up on artery walls, causing the blood flow to limb extremities to slow or stop. This reduced blood flow can lead to ischemia and/or gangrene and eventually to amputation of the limb in some patients. The reduced blood flow may also result in the development of wounds or interfere with wound healing because perfusion to the area has been compromised.

PAD Risk Factors

Risk factors for PAD are the same as those for coronary artery disease and include:

- smoking
- age
- hypertension
- obesity
- diabetes mellitus
- chronic renal failure
- high cholesterol
- being male
- family history

PAD Signs and Symptoms

In the slight majority of cases, patients with PAD will exhibit symptoms including:

- a reproducible discomfort in a specific muscle

- group of the buttock or leg that is induced by exercise and relieved by rest (claudication)
- leg/foot pain that disturbs sleep and is improved when the leg is put in a dependent position (night pain)
- constant leg/foot pain regardless of position or activity (rest pain)
- slow- or non-healing sores or wounds on toes, feet or legs
- colour changes in foot skin (e.g., paleness, blueness)
- lower temperature in one leg compared with the other
- poor nail and hair growth on toes and legs
- difficult-to-palpate pulses in the leg or foot

Although many patients may exhibit some of these symptoms, 40% of those affected are asymptomatic.¹ The absence of symptoms, combined with a general lack of awareness on the

Facts about PAD

- Approximately 800,000 Canadians are affected by PAD.²
- PAD is a leading cause of limb amputation.
- Canadian health-care professionals and public remain largely unaware of the disease, its causes and treatment.

The Cost of NOT Treating PAD

\$5,955

The annual cost of PAD treatment,³ with the majority of cost associated with hospitalization.⁴

\$70,000

The approximate cost of an amputation, which can result in a lowered quality of life or death.⁵

part of HCPs of the condition, contributes to late diagnosis, poorer outcomes, patient morbidity and results in higher treatment costs.

PAD Detection

To reinforce the mystery that is PAD, the disease is detected in only 50% of cases even when the HCP has an awareness about the condition.⁶ This poor detection rate can be attributable to a lack of necessary equipment, time constraints on the practitioner, insufficient training and skills and lack of awareness of the patient to advocate for assessment.⁷

Public Awareness of PAD

Awareness of PAD on the part of the general public is also very low, as would be expected. A survey by Lovell et al. indicated only 36% of those surveyed were familiar with PAD,² which is lower than half the rate of any other cardiovascular disease.

Solutions to the Problem of PAD

Reducing the impact of PAD on Canadians can be accomplished on two fronts: by improving public and HCP awareness and by improving PAD care.

An awareness campaign by the Canadian Association of Wound Care (see *sidebar p. 20) is in place to improve public

consciousness of the condition. As more health-care professionals learn about PAD and educate their patients the word will spread. The CAWC materials are a good place to start.

Care will be improved through:

1. Improved screening

Improved screening includes taking a comprehensive vascular history, blood pressure measurements and ankle-brachial pressure index (ABI) readings in persons deemed at risk, regardless of evident symptoms, particularly those who smoke, those who have diabetes and those with existing wounds.⁸ Note that ABIs in persons with diabetes are not always useful due to vessel calcification. These patients should be referred to a vascular lab for more in-depth evaluation to look at waveforms, toe pressures and in some cases transcutaneous oxygen.¹ Normal ABI is over 0.9. An ABI less than 0.9 is associated with a five-year mortality rate of 25%.



2. Engagement and education of clinicians

Education of clinicians goes beyond simple awareness. It is important that HCPs participate in professional education activities focused on when and how to screen for PAD. As well, the CAWC is developing education on PAD for primary care providers. Please visit cawc.net for more information as details become available.

In addition to their own education, clinicians need to promote policies that support the assessment of high-risk individuals and create a directory of resources available to help treat patients.

3. Implementation of team-based care

As effective recognition and treatment of PAD often require a combination of treatments, a team-based approach will result in better outcomes for patients and more cost-effective care for health systems. A PAD treatment team might include: cardiology, vascular and endovascular surgery, vascular imaging and intervention, endocrinology/diabetes specialists, family physicians, podiatric medicine, nursing, nutrition, physical therapy, wound care specialists and orthopedics. Integrated communication and timely interactions within this group are crucial in preventing amputation.

4. Improved access to endovascular treatment

Advancements have been made in peripheral vascular surgery to revascularize at-risk areas of the lower extremity. Patients may require open bypass procedures, although endovascular surgery is often possible to physically open plaque blockages and restore blood flow to areas that bypass surgery cannot reach. Unfortunately, many Canadians lack timely access to endovascular specialists, resulting in complications that can lead to amputation. In addition to revascularization, attention to the management of infection, neuropathy, foot deformity and cardiovascular risk, where necessary, are key to high limb salvage rates and fewer amputations. Data show that access (or lack of access) to this type of care is a factor that affects variation in amputation rates across regions.⁹

PAD: A three-pronged approach to care

1

Lifestyle change

- encourage smoking cessation
- promote exercise
- support weight loss

2

Medication

- lower cholesterol
- control platelets (blood clotting)
- lower blood glucose

3

Revascularization procedures

- directly restore blood flow



Diabetes and PAD

- Diabetes is a major risk factor for PAD.¹⁰
- About half of patients with a diabetic foot wound also have PAD.
- Those with diabetes are 20 times more likely to undergo limb amputation.⁸
- The 5-year survival rate post amputation is lower than that of several types of cancer.
- Amputations can often be prevented by appropriate screening, effective nail and foot care, footwear, timely recognition and treatment of PAD.

Though PAD continues to grow as a Canadian health concern, there is nevertheless cause for hope. Awareness at all political and administrative levels is the first step toward achieving co-ordinated, integrated care. If all HCPs with an awareness of PAD take action to spread the word, deliver best practice and actively support policy changes, Canadians will see positive changes and limbs will be saved. 🙌



To improve awareness of PAD for both the public and for HCPs, the Canadian Association of Wound Care launched a campaign called “Just Leg Pain? Think Again!” in October 2014. The campaign received media exposure and has been sustained through free online educational materials. The materials are available in English and French, with separate resources for HCPs and the general public. Please go to <http://cawc.net/en/index.php/public/peripheral-arterial-disease/> to read more about the campaign and to download the materials.

Robyn Evans is the Director of the Wound Healing Clinic, Women's College Hospital.

Giuseppe Papia is an Assistant Professor in the Division of Vascular Surgery and Critical Care Medicine, Sunnybrook Health Sciences Centre.

References

1. Alahdab F, Wang AT, Elraiyah TA, et al. A systematic review for the screening for peripheral arterial disease in asymptomatic patients. *J Vasc Surg.* 2015;61(3):42 S-53 S.
2. Lovell M, Harris K, Forbes T, et al. Peripheral arterial disease: Lack of awareness in Canada. *Can J Cardiol.* 2009;25(1):39–45.
3. Margolis J, Barron JJ, Grochulski WD. Health care resources and costs for treating peripheral artery disease in a managed care population: Results from analysis of administrative claims data. *J Manag Care Pharm.* 2005;11(9):727–734.
4. Migliaccio-Walle K, Caro JJ, Ishak KJ, O'Brien JA. Costs and medical care consequences associated with diagnosis of peripheral arterial disease. *Pharmacoeconomics.* 2005;23(7):733–742.
5. Health Quality Ontario. Hyperbaric oxygen therapy for non-healing ulcers in diabetes mellitus: An evidence-based analysis. *Ont Health Technol Assess Ser.* 2005;5(11):1–28.
6. Canadian Association of Wound Care. Peripheral Arterial Disease; 2015. Available from: cawc.net/en/index.php/public/peripheral-arterial-disease/.
7. Haigh KJ, Bingley J, Golledge J, Walker PJ. Barriers to screening and diagnosis of peripheral arterial disease by general practitioners. *Vasc Med.* 2013;18(6):325–330.
8. Kuhnke JL, Botros M, Elliott J, Rodd-Nielsen E, Orsted H, Sibbald RG. The case for diabetic foot screening. *Diabet Foot Can.* 2013;1(2):8–14.
9. Booth G, Polsky J, Gozdyra P, et al. Regional Measures of Diabetes Burden in Ontario. Toronto, Canada: Institute for Clinical Evaluative Sciences (ICES); 2012. Available from: www.ices.on.ca/Publications/Atlases-and-Reports/2012/Regional-Measures-of-Diabetes-Burden-in-Ontario.
10. Brownrigg JRW, Schaper NC, Hinchliffe RJ. Diagnosis and assessment of peripheral arterial disease in the diabetic foot. *Diabet Med.* 2015;32(6):738–747.

Learn More

To learn more about PAD, attend the one-day PAD workshop presented by the Canadian Association of Wound Care. Visit cawc.net for dates and locations.