

# Peripheral Artery Disease in Minnesota

## What is peripheral artery disease?

- **Peripheral Artery Disease (P.A.D.)** is a condition which affects blood flow to arteries outside of the heart and brain. P.A.D. is most frequently caused by **atherosclerosis**, a narrowing of the arteries due to the accumulation of fatty deposits or plaque from high cholesterol levels.
- **P.A.D.** usually affects the legs, and is often called poor circulation. **Severe P.A.D.** in the lower limbs can lead to muscle discomfort when walking, or mostly seriously, amputation.
- The presence of **P.A.D.** means that individuals have **atherosclerosis** in the arteries leading to the heart and brain, increasing their risk of **heart attack** or **stroke**. This risk of heart attack and stroke is present whether or not leg symptoms exist.

## What are the signs and symptoms of P.A.D.?

An individual with P.A.D. may experience only one, or several, of these warning signs:

- **Muscle discomfort when walking, called claudication.** Cramps, tiredness or pain in your legs, thighs or buttocks that always happens when you walk but that goes away within 10 minutes of rest.
- **Pain in the legs, feet, or toes.** Pain that persists when at rest or lying down and that may disturb your sleep.
- **Slow-healing wounds on the feet or toes.** Skin wounds or ulcers on your feet or toes that are slow to heal (or that do not heal for 8 to 12 weeks).
- **At least half of people with P.A.D do not have recognizable symptoms.** As many as 1/3 of people with P.A.D. have a range of leg pain symptoms that are caused by multiple conditions. And, less than one in five people with P.A.D. feel

easily recognized symptoms of their legs or feet. It is important to discuss any leg, foot, or toe pain with your health care provider as only they can make an accurate diagnosis.

## What do I do if I think I have P.A.D.?

P.A.D. can rob you of your independence and mobility by making walking difficult or, worse, by increasing your risk of heart attack, stroke, amputation, or even death. Prevention, detection, and treatment can keep you active and healthy so that you can continue to spend time with your family and friends and participate in the activities you enjoy.

## What are the risk factors for P.A.D. that cannot be changed?

**Age:** People over the age of 50 are at increased risk. Your risk of having P.A.D. increases with age but even young people can have P.A.D. if they smoke, have diabetes, or a strong family history of artery disease.

**Race/Ethnicity:** P.A.D. occurs approximately twice as often in African-Americans than in whites.

### Personal History of Heart Disease or Stroke:

Having had a heart attack or stroke is associated with an increased risk of P.A.D.

## What are the major modifiable risk factors for P.A.D.?<sup>1</sup>

**Diabetes:** The risk of P.A.D. is two-to-four times higher among people with diabetes. Diabetes increases the risk of developing P.A.D. at an earlier age, with more complex leg artery blockages. The risk of amputation is highest in individuals with diabetes. People with diabetes can lower their risk of heart disease by controlling their blood pressure and cholesterol levels. Approximately 6.7% of adults in Minnesota have diabetes; one-third are unaware they have the disease (2010 data).



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**Cigarette Smoke:** Smoking is the most potent risk factor for the development of P.A.D., and increases the risk of developing leg symptoms, amputation, of having treatment by angioplasty or surgery fail, and of heart attack and stroke. Tobacco use doubles to triples the risk of dying from coronary heart disease. Quitting smoking is associated with stable to improved leg symptoms and a lower rate of amputation.<sup>2</sup> In 2010, 14.9% of Minnesota adults were current cigarette smokers.

**High Blood Cholesterol:** Increasing levels of total or LDL (bad) cholesterol increase your risk of P.A.D., similar to heart disease and stroke. Approximately 34% of adults in Minnesota report they have high cholesterol (2009 data).

**High Blood Pressure:** High blood pressure, also known as hypertension, is a major risk factor for P.A.D., heart disease and stroke.<sup>3</sup> About 70% of people who have P.A.D. have high blood pressure. Controlling hypertension (through increased physical activity, improved diet and nutrition, quitting smoking, and medications) is associated with a significant reduction in the risk of heart attack and stroke in individuals with P.A.D. Approximately 22% of adults in Minnesota report they have high blood pressure (2009 data).

**Overweight and Obesity:** Heart disease risk is known to increase with increased weight. The direct impact of weight on P.A.D. is assumed to be similar. In Minnesota, 60% of adults are overweight, including 24% who are obese (2010 data).<sup>4</sup>

## Are there disparities in P.A.D. rates in Minnesota?<sup>5</sup>

- The incidence of lower limb amputation due to severe P.A.D. is highest in rural counties north from the Twin Cities to the Canadian border.
- Counties with a high incidence of amputation are also more likely to have higher death rates due to coronary heart disease and stroke.
- Twice as many men experience a lower limb amputation as women.

## How common is P.A.D.?<sup>5</sup>

- The number of lower limb amputations associated with severe P.A.D. in Minnesotans decreased from 1,151 in 2005 to 1,035 in 2009.
- Age-adjusted incidence of lower limb amputation was 20.0 per 100,000 per year, more than half the stroke death rate in the same period.
- Approximately 42% of P.A.D.-related amputations took place above the ankle or the knee, thereby removing the entire foot, or part of the leg.
- More than 70% of amputations were in individuals also diagnosed with diabetes.

## What is the economic cost of P.A.D.?<sup>5</sup>

- Minnesotans hospitalized for P.A.D.-related lower limb amputation from 2005 to 2009 incurred median charges of \$32,733 per hospitalization.
- Median charges for hospitalizations due to P.A.D.-related lower limb amputation were approximately the same as for coronary heart disease.
- In 2009, total charges for hospitalizations of Minnesotans that had P.A.D.-related lower limb amputation totaled \$52.1 million.
- Total charges for all hospitalizations due to lower P.A.D.-related lower limb amputation were approximately 14% of total charges for stroke hospitalizations.

<sup>1</sup> Minnesota Behavioral Risk Factor Surveillance System Survey.

<sup>2</sup> Hirsch AT, et al. ACC/AHA 2005 Practice guidelines for the management of patients with peripheral arterial disease (lower extremity, renal, mesenteric, and abdominal aortic). *Circulation* 2006;113:e463-e654.

<sup>3</sup> Roger VL, et al. Heart Disease and Stroke Statistics – 2011 Update. A report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation*. 2011; 123:e18-e209.

<sup>4</sup> Based on Body Mass Index (BMI), defined as weight in kilograms divided by height in meters squared. BMI > 25 = Overweight, BMI > 30 = Obese.

<sup>5</sup> Minnesota Hospital Uniform Billing (UB) Claims Data, Health Economics Program, Minnesota Department of Health and Minnesota Hospital Association.