Frequently Asked Questions

What is Diabetes Mellitus?

Diabetes mellitus is a metabolic disorder characterized by hyperglycemia or high glucose blood sugar, among other signs.

The World Health Organization recognizes three main forms of diabetes: type 1, type 2 and gestational diabetes (or type 3, occurring during pregnancy). Although these share signs and symptoms, they are not a single disease or condition and each has different causes and population distributions.

Type 1 diabetes is generally due to autoimmune destruction of the insulin-producing cells known as pancreatic beta cells and usually occurs in people under the age of 35. With Type 1 diabetes, the body makes little or no insulin. Insulin is a hormone made by the pancreas that allows glucose from the bloodstream to enter the cells. With diabetes, glucose is unable to enter the cells, leaving an excess amount in the bloodstream, creating a state of hyperglycemia or high blood glucose.

Type 2 is characterized by tissue-wide insulin resistance and usually occurs in the elderly. It sometimes progresses to a loss of beta cell function as well.

Type 3 or gestational diabetes is due to a poorly understood interaction between fetal needs and maternal metabolic controls.

Since the first use of insulin in 1921, Types 1 and 2 have been incurable but treatable chronic conditions; gestational diabetes typically resolves with delivery.

What are the main health risks associated with diabetes?

Aside from acute glucose levels abnormalities, the main risks are long-term complications: cardiovascular disease (doubled risk), chronic renal failure (the main cause of dialysis in developed world adults), retinal damage (which can lead to blindness and is the most significant cause of adult blindness in the developed world), nerve damage, damage to blood vessels in the legs and impaired healing.

How do diabetic patients develop chronic wounds?

Elevated blood sugar levels can result in nerve damage, causing a loss of sensation in the feet. Minor skin abrasions and cuts on the feet can occur without pain or without the patient's awareness. Diabetes also damages and blocks blood vessels, particularly small vessels in the feet, resulting in poor circulation and reduced oxygen supply. Without adequate blood supply and oxygenation, the cells that repair wounds and fight infection cannot function. Elevated blood sugar levels impair the body's ability to fight wound infection and as a result minor abrasions and cuts can become chronic, infected wounds. Once infection reaches the bone, amputation of the limb often results.

What is hyperbaric oxygen therapy?
Patients breathe 100% oxygen while in a specially designed and constructed hyperbaric chamber while the atmospheric pressure is increased 2-3 times normal level. This saturates the entire body with oxygen. Each treatment session lasts 90 minutes and the course of treatment is repeated daily for an average of 30 days.

How does it work?
The oxygen concentration of the patient's blood is quadrupled, saturating all their tissues and wounds with oxygen, enabling the cells that repair wounds and fight infection to function.

How effective is the treatment?
In diabetic wounds unresponsive to standard wound treatments, hyperbaric oxygen therapy has a success rate of 75%.

Internationally, hyperbaric oxygen therapy is a well-established and accepted treatment for thirteen medical conditions. The most common of these are: chronic non-healing (diabetic) wounds, decompression sickness in divers, carbon monoxide poisoning, gas gangrene, necrotizing soft tissue infections (flesh-eating disease), osteomyelitis (bone infections) and severe burns.

Are there any risks?
Hyperbaric oxygen therapy is safe when used to treat recognized medical conditions using properly installed, government-approved units operated by qualified medical staff. Some risks include possible temporary damage to the middle or inner ear or sinuses similar to that experienced in airplanes, claustrophobia, and temporary worsening of nearsightedness.

Where can Canadians access this treatment?
Health Canada recognizes hyperbaric oxygen therapy as an effective treatment for diabetic wounds, however, there are only eight hospitals in Canada where this treatment is available on a very limited basis (Vancouver, Edmonton, Hamilton, Toronto, Ottawa, Montreal, Halifax and St. John's).

By contrast, the United States has more than 400 hyperbaric facilities primarily treating chronic wounds (reimbursed by Medicare, Medicaid and HMO's) and in Japan there are more than 600 hyperbaric centres.

Why isn't hyperbaric oxygen therapy more widely available?
The provincial Ministries of Health recognize hyperbaric oxygen therapy as an essential medical treatment for thirteen internationally recognized conditions and pay physicians to *supervise* treatment but do not fund the technical/operational expenses (support staff to operate the chamber, oxygen, chamber maintenance, etc.) associated with delivering the treatment. Hospitals providing hyperbaric oxygen therapy must fund the technical costs from their global budgets. Such funds are limited and as a result, very few diabetic patients are able to access this treatment each year (12-14 patients in Toronto).

The Canadian Health Act prohibits patients from paying for any medically necessary treatment themselves, leaving most diabetic patients no other choice than to undergo amputation when standard wound care fails. Most patients with diabetic wounds have been disabled for considerable time and do not have the health or financial resources to obtain this treatment in other countries.

The Judy Dan Wound Care Centre will treat approximately 120 patients per year.

What is the cost of hyperbaric oxygen therapy?
Hyperbaric oxygen therapy is not an expensive treatment. Other than the initial cost of the chamber, expenses are physician supervision and technical costs.

The Judy Dan Wound Care Centre is a non-profit, registered charity. It is not a private medical clinic and does not charge for treatments. The technical and operational costs are covered by tax-deductible donations.

Patients treated at the Judy Dan Wound Care Centre can donate to the Ontario Wound Care Centre or be funded by an OWC donor. On average, the cost of the full course of 30 treatments is $3,000.