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Hyperbaric chamber may help avoid amputations

By **LEILA SPEISMAN**
Staff Reporter

Three hyperbaric oxygen therapy chambers in the recently opened Judy Dan Wound Care Centre may be able to help people with diabetic wounds avoid amputations, says Dr. Ron Linden.

Linden, medical director and CEO of Ontario Wound Care Inc. and a specialist in hyperbaric medicine for over 17 years, also has a family practice and is a staff physician in the hyperbaric unit of Toronto General Hospital.



Hyperbaric oxygen therapy chamber

High sugar concentrations in those with diabetes, he said, damage the nerves, especially in the legs. Blood vessels in the capillaries of the legs and feet are also damaged.

“Circulation is impaired, and not enough blood or oxygen goes to the feet. Cells that fight infection and allow healing don’t get enough oxygen and so can’t do their job.”

The result, he said, is that those with diabetes, particularly when it is not controlled by medication, diet and exercise, can’t feel when their feet are injured – for example, if they step on a nail. Antibiotics can’t get to the site because of the poor circulation, and the wound festers.

“When the infection reaches the bone, that’s the time for amputation,” Linden said.

Patients who use the hyperbaric chambers spend two hours, five days a week, usually for 30 treatments, breathing 100 per cent oxygen. Linden explained that in the chambers, the atmospheric pressure is twice as high as it is in room air.

“The blood cells absorb oxygen, and the serum [the liquid fluid of the blood], which is also saturated with oxygen, carries it to the wound.”

Martin Necpal, a certified hyperbaric technologist who is hyperbaric safety director at Toronto General Hospital, is constantly in the treatment room and monitors each chamber. There is an intercom, so that the patient and Necpal can communicate with each other.

While one might think this is a rather claustrophobic experience, Linden said that doesn't seem to be much of a problem, although Ativan, an anti-anxiety medication is sometimes given. Patients can listen to music, watch television or a movie, or even have a nap.

Care must be taken to prevent sparks. The patient must wear all-cotton underwear and is given an all-cotton scrub suit and hair covering to wear. All jewelry is banned, as are cellphones, laptops and personal digital devices such as Blackberries and Palm Pilots.

Results of hyperbaric oxygen therapy have been very encouraging, Linden said, with a 75 per cent rate in healing wounds and thus making amputation unnecessary. Studies in other countries where the technique is used, including the United States, Australia, Japan, China, Israel and Russia, show the same results.

Toronto businessman and philanthropist Aubrey Dan donated \$350,000 for the funding of the capital costs of the centre, in memory of his mother, the late Judy Dan, who fought Type 1 diabetes from the age of 18 and had a series of amputations prior to her death.

Operating costs, however, are not covered by the initial donation, or by OHIP. Linden lamented that, although Health Canada considers it an essential medical service for 13 conditions including osteomyelitis, decompression and carbon monoxide poisoning, OHIP won't pay for it because no double-blind studies have been carried out. (It does pay him for supervising the treatment.)

On the other hand, the Canada Health Act forbids the patient to pay for it because of the ban on private health care.

The centre, then, is dependent on private donations. A double blind study is tentatively scheduled, with the help of PATH, the Program for the Assessment of Technology and Health.

The facility can treat 120 patients a year, a small number compared to the 10,000 in Toronto with these wounds.

John Morgan of Pickering has just finished his 18th treatment. Insulin dependent since

last November, he said that a small callus on his foot led to a crack in the skin, and eventually a hole. Two surgeons, he said, had recommended amputation.

“My girlfriend saw an article about the Judy Dan centre in the Toronto Sun, and told me about it. I called the next day, had an assessment and started treatment.”

In addition to a 50 per cent improvement in the wound, “I have more feeling in my feet, and I am more mobile. I pick a good movie, and relax.”

Patients can either come on their own, or be referred by their physician.

For more information on the centre, which is located at at the Branson Division of North York General Hospital, 555 Finch Ave. W., call 416-223-6600.

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