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Quadriplegic man breathes easier with new pacing device

In an Alberta first, surgical implant provides daytime freedom from ventilator

CALGARY – In the first procedure of its kind performed in Alberta, an Airdrie-area quadriplegic man has had a pacing device implanted in his diaphragm, which lets him breathe during the day without the help of a ventilator.

Since his surgery last October, Charles Nixdorff, a resident at Carewest's Dr. Vernon Fanning Centre in Calgary, has even progressed to a point where he is able to breathe for short periods entirely unassisted.

"I like to avoid the ventilator as much as possible," Nixdorff says. "It's much more natural to be on the pacer. This is definitely an improvement."

Called the NeuRx Diaphragm Pacing System, the unit provides an electrical impulse to stimulate the diaphragm just as a cardiac pacemaker provides an impulse to stimulate the heart muscle. The diaphragm pacer is controlled by an external device, which can regulate the frequency of breaths, their depth and their duration.

Dr. Chester Ho, head of Physical Medicine & Rehabilitation at Foothills Medical Centre, spearheaded the pacer insertion, which included financial support from Alberta Health Services (AHS), through the Neuromodulation Program in the Department of Clinical Neurosciences.

"This is something of a test case and we'll be watching closely to see how Mr. Nixdorff progresses," says Dr. Ho, also an associate professor at the University of Calgary's Cumming School of Medicine. "Our hope is that he continues to increase the amount of time during the day he is on the pacing device."

Pacing devices reduce the risk of infection and irritation to airways, as well as enhance safety and mobility, since patients aren't attached to any tubing. Patients in an institutional setting remain on the ventilator at night as a safety precaution.

Dr. Karen Rimmer, an AHS respirologist who provides cares to Nixdorff and other patients on ventilators, says there are relatively few suitable candidates for the pacing device.

"It all depends on the type of injury they've had," Dr. Rimmer says. "The phrenic nerve, which powers the diaphragm, must still be intact in order for this therapy to work."

There is currently one other Alberta patient, in Edmonton, who is being considered for the procedure.

Although this form of therapy has been used in the U.S. and some European countries, it's still relatively new to Canada with only a handful of centres having performed the procedure.

The pacing device is implanted via laparoscopic surgery and is connected externally to a

handheld control system. Calgary surgeon Dr. Sean McFadden performed the surgery on Nixdorff.

Although it takes time for a patient's phrenic nerve and diaphragm to regain conditioning, some patients do extremely well and are eventually able to breathe unassisted.

"The device has improved Charles' quality of life in that it has given him more confidence," says Beverley Forbes, Carewest Client Service Manager at the Fanning Centre. "When you're relying on a machine to breathe, you realize how dependent you are. But the pacing device offers some independence from that – we're thrilled to be a part of it."

Gwen Dunn, who with respiratory therapists Elaina Zebroff and Lorne Howie work closely with Nixdorff, says the improvements brought about by the pacing device have been significant.

"Charles is more comfortable on the pacer and I think he has come out of himself a little bit more. He has a better sense of humour now," says Dunn, a member of the Chronic Ventilator Program in AHS' Calgary Zone. "For respiratory therapists like me, to help give someone back his breathing is really up there professionally."

Prior to his injury, which occurred when he fell down the stairs and struck his head while trying to move a chair, Nixdorff had a mixed farming operation near Airdrie, which is now overseen by his brother.

Alberta Health Services is the provincial health authority responsible for planning and delivering health supports and services for more than four million adults and children living in Alberta. Its mission is to provide a patient-focused, quality health system that is accessible and sustainable for all Albertans.

As Calgary's largest public care provider of its kind and one of the largest in Canada, Carewest operates 13 locations aimed at helping people live more independent lives. Our spectrum of care is available to adults of all ages and includes long-term care, rehabilitation and recovery services, and community programs and services.

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B-roll of Nixdorff being switched from the ventilator to the pacing device is at:

URL: <ftp://208.118.126.84>
Folder: DIAPHRAGM PACING
Username: media
Password: share