

December 8, 2014

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Local surgical team implants world's smallest pacemaker

Alberta-first procedure offers shorter recovery time, lower risk of infection

CALGARY – In an Alberta first, a medical team at Foothills Medical Centre (FMC) is now implanting the world's smallest pacemaker, which offers shorter recovery times and a lower risk of infection for patients with heart rhythm disorders.

About an inch long, the device is a fraction of the size of traditional pacemakers and doesn't have external cords or an external power source. Calgary is one 55 centres worldwide, including three in Canada, participating in an international study evaluating these devices.

"This miniature pacemaker can be easily implanted via a minimally invasive procedure. Once implanted, patients are barely aware it's there," says Dr. Derek Exner, a heart rhythm specialist and researcher with Alberta Health Services (AHS) and the Libin Cardiovascular Institute of Alberta at the University of Calgary's Cumming School of Medicine.

"Heart arrhythmias or rhythm disorders are extremely common and reducing the size of pacemakers can have a tremendous benefit to a patient's quality of life."

Dr. Exner and his team have installed eight of these devices in patients at Foothills Medical Centre since September. Unlike traditional pacemakers – which are visible under the skin near the collarbone with electrodes or leads connected to the heart through veins – the electrodes and battery are all contained within the new, smaller device.

"Providing the world's smallest pacemaker to patients right here in Alberta shows once again that we are a Canadian leader in health research and innovation," says Stephen Mandel, Minister of Health. "I am very proud of the advancements we make in health care – advancements that improve the health and quality of life of Albertans. I commend the team at the Foothills Medical Centre for their research and their commitment to improving patient care."

Pacemakers provide heartbeats and regularize heart rhythm. More than 200,000 Canadians are living with pacemakers, which can extend a patient's life and also improve the quality of life.

"Patients have a faster recovery with this new device – one week compared to four – and there is less chance of infection or device problems since it is a single, integrated unit," Dr. Exner says.

"When the study is complete in two to three years, we expect these new devices will become more widely available and used commonly in patients needing pacemakers."

The device, which is shaped like the tip of a pen, is inserted through a small incision in the groin and guided by X-rays into the right lower heart chamber. The entire procedure takes less than an hour and the device is expected to last up to 10 years.

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Victor Bohonos Orist was the first patient in Calgary and the second in Canada to receive one of the miniature pacemakers. The 87-year-old man says he was able to return to his normal level of activity the day after the procedure.

“The first thing I asked was when I could start playing golf again. They told me as soon as I could schedule a tee time,” says Orist.

“The device is so small, I forget it’s even there.”

Dr. Todd Anderson, Director of the Libin Cardiovascular Institute and a University of Calgary researcher, says smaller devices and minimally invasive procedures are improving patient outcomes and changing the way patients with heart rhythm conditions receive care.

“Libin’s cardiologists and cardiac surgeons have a reputation for performing the most innovative and forward-thinking procedures. This new mini-pacemaker is one more example of that,” Dr. Anderson says.

“For patients, this translates into better health and better quality of life.”

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About Alberta Health Services

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.

About the University of Calgary

The University of Calgary is a leading Canadian university located in the nation’s most enterprising city. The university has a clear strategic direction to become one of Canada’s top five research universities by 2016, where research and innovative teaching go hand in hand, and where we fully engage the communities we both serve and lead. This strategy is called Eyes High, inspired by the university’s Gaelic motto, which translates as ‘I will lift up my eyes.’ For more information, visit ucalgary.ca. Stay up to date with University of Calgary news headlines on Twitter @UCalgary and in our media centre at ucalgary.ca/news/media.

About the Libin Cardiovascular Institute of Alberta

The Libin Cardiovascular Institute of Alberta co-ordinates cardiovascular science research, education and patient care as an entity of both Alberta Health Services (Calgary) and the University of Calgary. It provides education and training of health-care professionals and offers world-class treatment using new technologies and access to cardiac services. There are more than 150 basic research, clinicians, and clinical research members who serve two million people in southern Alberta, Saskatchewan, and eastern British Columbia. The institute is committed to developing outstanding cardiovascular health promotion and disease prevention programs by translating innovative research into novel health-care solutions. For more information, visit LibinInstitute.org and @LibinInstitute on Twitter.

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