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More can hear thanks to bone-amplification technology

EDMONTON — More people who thought they were deaf for life in one or both ears can now hear thanks to evolving audio technology, plastic surgery and lifelike prosthetics available at the Institute for Reconstructive Sciences in Medicine (iRSM).

Located within Misericordia Hospital, the institute's Bone Conduction Amplification Program is helping to restore hearing to individuals who cannot be helped by conventional hearing aids, which compensate for losses in the inner ear, or cochlea, often caused by old age and noise exposure. Patients served by the institute typically have fairly healthy cochleas, but have problems with the outer ear (surface of ear drum and ear canal) and/or the middle ear (the eardrum and the tiny bones behind it).

"With no actual ear canal, for instance, you can't get sound into the inner ear, which may be otherwise healthy," says Bill Hodgetts, director of the Bone Conduction Amplification Program and assistant professor at the U of A's Faculty of Rehabilitation Medicine. "We implant a bone-anchored device that allows sound to vibrate the skull. The sound vibrations deliver signals into the cochlea, or inner ear, so patients can hear."

During surgery, a titanium screw is implanted behind the ear. After a few months of healing, the bone-conduction hearing aid can be clipped onto the screw, instantly restoring hearing. In some cases, an additional clip is implanted so a prosthetic ear can be attached to the skull.

The procedure is fully covered by the province.

The institute — a joint initiative of Alberta Health Services (AHS), Covenant Health (which operates Misericordia Hospital), and the University of Alberta — expects to implant about 75 bone-conduction hearing aids this year, compared to 55 in 2010 and about 30 in 2009.

"While the idea of bone-conduction amplification isn't new, today's technology is improving rapidly. We're doing more of these procedures now because word-of-mouth is spreading through the hearing-impaired community and more physicians are becoming aware of this technology and its potential to restore hearing," says Hodgetts.

Michael Brown of Calgary is among the Albertans who have benefited from the technology. He was born without a right ear.

"When I attached my hearing aid for the first time, I cried tears of joy," says the 41-year-old father of two, who now has a remarkably lifelike prosthetic right ear. "I had always understood the idea of stereo hearing, but until I attached my hearing aid, my world of hearing was only half. This hearing aid has changed my life.

"Between Alberta Health Services and the iRSM, the entire process and my care has been nothing short of stellar. It has been a dream to work with these people."

Currently, iRSM serves more than 500 bone-amplification patients from across Alberta and Western Canada. All of iRSM's patients receive continued care over their lifetime from an interdisciplinary team of professionals.

Founded in 1993, the institute is an internationally recognized clinical and research institute focused on medical reconstructive sciences.

"iRSM is unique in the way that it integrates research, clinical care and innovation. We're not in the business of research for the sake of research," says Myka Osinchuk, iRSM executive director. "We're in the business of research that will accelerate medical innovation and directly solve the needs of our patients."

Alberta Health Services is the provincial health authority responsible for planning and delivering health supports and services for more than 3.7 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.

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The University of Alberta in Edmonton is one of the top 100 teaching and research universities in the world, serving some 37,000 students with more than 15,000 faculty and staff. Founded more than a century ago, the university has an annual budget of more than \$1.4 billion and attracts more than \$498 million in external research funding. It offers close to 400 undergraduate, graduate and professional programs in 18 faculties.