Reengineered ear cleaning machine, the 'Earigator,' finds an eager market

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From left to right, Brij M. Bansal, vice president of operations, and CEO Joseph L. Priest, both of Nupur Technologies LLC. Credit: Douglas Levere, University at Buffalo.

Removing ear wax may sound humorous, unless you need it done. Then

it can be a personal emergency that can hinder hearing and cause pain. The need is more prevalent among older people.

A company called Nupur Technologies LLC in the University at Buffalo business incubator is building and selling an elegant device that doctors, nurses, audiologists and others can use to dislodge the wax, called cerumen. The machine uses the lavage technique which involves pumping warm water into the ear at variable pressure.

"You can scrape it out, or use suction, but historically lavage has been the preferred technique," said Joseph L. Priest, the company's CEO. "It's not painful or dangerous."

The device, called the Earigator, is an updated version of a machine invented and marketed by the late Irwin Ginsberg, MD, founder of the Buffalo Otolaryngology Group and a clinical professor at the Jacobs School of Medicine and Biomedical Sciences at UB. The machine was reengineered by Rohan Bansal, PhD, a mechanical engineer and chief technology officer at Nupur, who sourced parts in Western New York, did the software programming and made the circuit boards.

"From soup to nuts, he totally redesigned it," Priest said. "We got a lot of cost out of it. We cut the cost by about two-thirds."

The device, which sells with a custom designed stainless steel rolling cart for about $2,100, has several features to make it effective and safe to use.

Warm, pressure-controlled water

First, the water is heated to body temperature before the machine will operate. Blasting cold water into someone's ear can cause serious vertigo, Priest said, and water that is too hot can scald.

Next, the pressure at which the water comes out is variable up to 12 pounds per square inch (psi). Experiments showed that the ear drum can withstand 24 psi, and the inventor cut that in half for safety while maintaining effectiveness.

When dormant for a few minutes, the Earigator powers down to save energy while keeping the water warm. This keeps it available for frequent use in busy offices, Priest said.

The machine is now sold to ear doctors, emergency clinics and hearing aid stores, among others, and Priest hopes to find a welcome market among general practice doctors and pediatricians.

Being accepted into the START-UP NY program has made it possible for the young company to grow, Priest said.

"Coming into a place like this UB incubator allowed us to concentrate on our product and on selling," he said. "I started a previous business, AirSep, and you can't beat the simplification of coming into a place like this. We pay one fee a month and we get everything we need."

In addition, the proximity to the university has helped in finding talent. "Our first employee was a UB mechanical engineering graduate. We're negotiating to do a development with a large company, and we will likely be getting involved with more UB graduates."

Locally-sourced parts

Most of the parts of the device are made in Western New York, said Brij M. Bansal, vice president of operations. The machines are built and shipped from the business incubator.

"We have a contract manufacturer who makes the kettle, we have a

company in Lockport that makes the circuit boards. A local sheet metal company makes some of the insides, and plastic comes from a local supplier," he said.

The machine hit the market in February, and about 200 have been sold in the U.S. and abroad, including Great Britain, Morocco, Saudi Arabia, South Africa, India, China—and soon Columbia.

Busy machines

Stephen R. Sobie, MD, an otolaryngologist, has two of the machines in his Buffalo Medical Group office. "We use them all the time, every day. Half the people who come into our office need to have their ears cleaned," he said.

Ear wax build up is not uncommon, and it tends to be more prevalent in older people, possibly due to drying skin, Sobie said. Cerumen is formed by cerumen glands in the ear canal and is usually shed along with the skin cells which normally migrate outwards. Occasionally the system doesn't work and the cerumen builds up.

"Some people have to have it removed every few months," Sobie said.

Doctors commonly use a big metal syringe to dislodge cerumen. "Most practices still use them," Sobie said. "But using a syringe is not pressure or temperature controlled. And most likely not as effective."

"I'm surprised every ENT practice in the country doesn't have one," he said. "And it could make sense for general practitioners and other practices. I think it could be used in a more widespread manner."

Provided by University at Buffalo