



Mechanical Stimulation Device Reduces Pain and Prevents Needle Fear

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In 2006, pediatrician Amy Baxter started a company to help immunize kids without fear or pain from a needle procedure. The bee-shaped prototype device she created, called Buzzy, was aimed at blocking pain both through vibration and through cold application from ice packs placed in the bee's wings.

Baxter temporarily paused her practice to study and develop the technology in 2009. To validate Buzzy's effectiveness, she used funds from a Fast Track Small Business Innovative Research grant (SBIR) from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) to refine her prototype and conduct a clinical study testing the device in infants and children. Baxter found widespread prevalence of needle fear, as well as evidence that mechanical stimulation effectively reduces pain. Today, in the midst of the COVID-19 pandemic, Buzzy helps overcome vaccination hurdles to protect children and adults against the coronavirus.

The research continues to expand in new directions. A colleague revealed he had used Buzzy to relieve his pain after a total knee surgery in order to avoid taking opioid medication. "I realized that I had a device that blocked pain well enough to reduce opioid use," says Baxter. So, in 2016, she left her practice again to focus on the opioid crisis, this time for good, as the CEO of her company, Pain Care Labs.

After prototyping a low back pain device called DuoTherm, the company was

“The device, called the noddle, detects small movements such as finger taps, eye blinks, or tongue clicks, which allows patients to call for a nurse and controls the later developed noddle-chat speech generating device...”

awarded a Fast Track SBIR grant from the National Institute on Drug Abuse through the Helping to End Addiction Long-term® (HEAL) Initiative in 2019. The grant has allowed the company to further develop DuoTherm and test different vibration frequencies to pinpoint the best pain reduction settings. A prototype trial showed the device reduced pain by 57 percent. A full clinical trial

(continued on back)



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Project Details from NIH RePORTER Pain Care Labs

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is planned for 2022.

Baxter says SBIR-funded clinical trials will ultimately help make the device more accessible to patients. Using temperature, pressure, and targeted therapeutic mechanical stimulation patterns, the company's long term goal is to eliminate unnecessary pain.

Last year, Pain Care Labs passed the two million dollar mark in sales, an increase of 64 percent over the preceding year. Buzzy is used in 27 countries and has blocked pain from over 37 million needle procedures. More than 75 prospective randomized controlled trials have independently confirmed that Buzzy reduces pain and anxiety from needle procedures.

"What these grants have funded is a fundamental disruption in how we address pain," says Baxter. "Certainly, if the SBIR program didn't exist, I would still be practicing medicine and there would be no Buzzy. There would be no DuoTherm and there would not be any studies demonstrating exactly how mechanical simulation both blocks pain and alleviates needle fear."