DEVICE HELPS WITH SUDDEN INFANT DEATH SYNDROME DETECTION

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University of Texas at Arlington researchers have obtained a patent for a device aimed at saving babies’ lives through improved and rapid detection of breathing problems including Sudden Infant Death Syndrome.

Electrical Engineering professor J.-C. Chiao, doctoral candidate Hung Cao and Heather Beardsley, a research engineer at TMAC, or the Texas Manufacturing Assistance Center, have developed a sensitive wireless sensor system that can detect carbon dioxide exhaled by babies as they sleep. But more importantly, the sensors know when infants are not expelling carbon dioxide quickly enough to allow intervention.

“This has the chance to save lives,” said Chiao, who also holds the Janet and Mike Greene and Jenkins Garrett professorships in the UT Arlington College of Engineering. “Our system is more accurate than current systems. Our system should reduce false alarms that desensitize parents or caregivers.”

TxMRC or the Texas Medical Research Collaborative, recently awarded the SIDS technology a $100,000 grant to develop a model, test the model, design a commercially viable carbon dioxide-based monitoring system and manufacture a prototype of the sensor system.

TxMRC is a consortium of UT Arlington, UT Dallas, UNT Health Science Center, Texas Instruments and Texas Health Research & Education Institute. The consortium funds collaborative medical technology projects to solve critical health care issues in the marketplace. TMAC is administering the projects on behalf of the consortium. UT Arlington is partnering with UNT Health Science Center on the SIDS technology project.

SIDS typically occurs in infants under a year old while the child is sleeping. Cases are classified as SIDS when there is no other explainable cause of death.

The new sensors can be attached to a baby’s crib or car seat. The sensors are less cumbersome than current technology that requires breathing apparatus being placed around the baby’s nose.

“Our sensors let you know if the baby is breathing normally without the wires and breathing tubes,” Chiao said.

Cao said he was inspired to develop the new sensor after his son’s birth in 2006.

“I was watching him through the glass in the hospital nursery and sleep so soundly,” Cao said. “I couldn’t tell if everything was OK so I thought, ‘How can I be sure he’s fine?’ ”

Cao was working with Dr. Chiao at the time on a project developing gas sensors for monitoring missiles. His work involved building sensors that could detect whether a missile had leaked gas during storage.

“I thought why couldn’t that same type of system be used for detecting carbon dioxide which people breathe out,” Cao said. “The sensors could be mounted around the baby to let people know whether he’s breathing normally.”

Beardsley said the team is working to reduce the cost of the device to speed its move to the marketplace.

“That’s the key to commercialization,” Beardsley said. “People are willing to pay $100 for the device but not several thousand dollars.”

She said the wireless sensor system would be better than what exists now in the marketplace.

“Now, there are audio, video and motion detection systems to monitor infants, but it is still difficult to determine whether baby is breathing,” Beardsley said. “Those current systems aren’t being endorsed by the American Academy of Pediatrics anymore. The CO₂ system could be better. It represents a significant risk reduction in the health care industry.”

The newly patented SIDS sensor system is representative of the work under way at The University of Texas at Arlington, a comprehensive research institution of nearly 33,500 students in the heart of North Texas. Visit www.uta.edu to learn more information.

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