

## Ventilator Research at ACHRI Helps Arkansas' Sickest Children

Elizabeth and Mike Webster have their hands full with two-year-old Chloe. Her mother says, "Chloe runs the house. She is a trooper; she takes a hit and keeps on going."

You can't tell by looking at Chloe that she was born 10 weeks prematurely and spent her first two months of life in the hospital. As do many babies born prematurely, Chloe developed chronic lung disease, which puts her at greater risk for respiratory infections. Shortly after her first birthday, a viral respiratory infection (commonly known as RSV) sent Chloe to the hospital where she spent three weeks on a ventilator. Within six months, she returned to the hospital with another serious respiratory infection (Pertussis or whooping cough) and spent 8 additional weeks on a ventilator. Chloe's condition was very serious.

"Chloe had respiratory failure, her lungs were failing, and she required our most advanced equipment and personnel to save her life. This was truly a team effort between the doctors, respiratory therapists, nurses, the family and with divine intervention to save her life," said Dr. Mark Heulitt.

In addition to being one of the physicians who cared for Chloe while she was in Arkansas Children's Hospital, Dr. Mark Heulitt is a researcher who has spent years working with ventilator manufacturers to improve the way that ventilators work on infants and children. Dr. Heulitt has served as a consultant to ventilator manufacturers for 17 years.

Along with his laboratory staff of Tracy Thurman and Shirley Holt, RRT, Dr. Heulitt has received international recognition for his evaluation of the physiology of positive pressure mechanical ventilation in infants and children. In his applied respiratory physiology laboratory, which is an animal intensive care unit, he and his team work with industry producing mechanical ventilators to address the special needs of infants and children in their design, especially as it relates to triggering, accuracy and work of breathing. They are constantly working to improve ventilators' capabilities and performance, which results in better treatment for patients like Chloe. Recently, Dr. Heulitt recently received a two-year \$600,000 grant to continue his ventilator research with Maquet, Inc. (USA/Sweden), a medical equipment manufacturing company that has funded Dr. Heulitt's research studies for the last 13 years with over \$2.8 million dollars in funding.

"By conducting this research in Arkansas, we are able to immediately apply the latest technology to children we treat here. We also are able to focus more research dollars in the area of pediatrics," explained Dr. Heulitt.



A major advantage to doing ventilator research at ACHRI is that the latest ventilator data and technologies are available to help patients at Arkansas Children's Hospital like Chloe.

Chloe's mother has great respect for Dr. Heulitt. She says, "The ventilator saved her life. Without it, she would not have survived."



Established in 1989, Arkansas Children's Hospital Research Institute provides an on-site research environment for faculty of the University of Arkansas for Medical Sciences working on the Arkansas Children's Hospital campus. Over 120 pediatric researchers with expertise and experience that span the breadth of medical disciplines comprise ACHRI's roster of investigators who work to fulfill its mission to improve children's health, development, and well-being through high quality research. For more information, visit <http://achri.archildrens.org>.