

## CHILDREN HELP TEST INNOVATIVE DEVICE

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**MILLWOOD** — When the international aid organization Project Hope needed to test a new medical device to diagnose pneumonia in children overseas, they found willing volunteers close to home.

Project Hope, based at Carter Hall in Millwood, is teaming with Fairfax-based Guardit to develop a simple-to-use electronic sensor that counts a child's breaths to diagnose pneumonia, the No. 1 killer of children under 5 in the developing world.

The researchers brought their device, called INSPIRE, to Winchester Pediatric Clinic this week to test it on young volunteers.

"All I have to do is ask them if they'd like to help out children in Africa," said Jennifer Sanford, director of clinical research for Valley Health. "And they're eager to do it."

Yes, yes, yes, one little boy exclaimed, jumping up and down, she said.

Valley Health participates in numerous studies, said Sanford, most of them lengthy research projects for pharmaceutical or medical device companies.

This small, noninvasive test of 50 children, sick and well, will give the INSPIRE team the data it needs to apply for grant money, making it possible for the device to be tested in larger domestic and international studies, Sanford said.

"It seemed like a great project for a great cause," she said.

Pneumonia is a serious problem in developing countries, said Judith Moore, senior technical adviser for Women's and Children's Health for Project Hope. She was at Winchester Medical Center on Thursday for the initial testing.

Every year, 150 million children contract pneumonia, an inflammation of the lungs characterized by fast, difficult breathing. In 2011, 1.3 million children died from the condition, more than AIDS, measles and malaria combined.

Vaccines may be the best solution, but they are expensive and don't cover every strain, Moore said.



*Nurse Sanders Damron holds an INSPIRE device on the chest of Annabelle Grady, 4, as she rests her head on sister 6-year-old Colby Grady's lap. (Photo by Scott Mason/The Winchester Star)*



*From left are: Guardit CEO Michael Script, the inventor of INSPIRE; Judith Moore, Project Hope's senior adviser of Women and Children's Health; and Kristi Otto, Guardit president and chief marketing officer.*

The disease is preventable and treatable, but making an accurate diagnosis can be difficult.

First, the health care worker must determine the age of the child, and then count the number of breaths taken in a minute by looking at him or her.

Some health care workers in developing countries can't read, or count more than a handful of numbers. They may use counting beads to try to keep track of the number of breaths. The one-minute timer they are given makes a loud ticking sound that can throw the counting off. In a busy health clinic, it's easy to lose concentration in the time required to count.

"I tried to do it, and it's actually quite hard," said Mike Script, CEO of Guardit, who developed the sensor.

It took several years to perfect the INSPIRE device as the team worked out how best to adhere it to a child's abdomen and how to sanitize it after each use. It also had to count breaths accurately, be simple to use and be inexpensive to produce.

"When you lead with your heart you want to make sure every development is rock solid and you want to make sure the science is right," Script said.

The INSPIRE, which looks like a sturdy sports watch and works much like a pedometer, depicts the choices pictorially rather than in words. So a health care worker wouldn't have to be able to read *infant under 6 months of age*, but could simply push to choose the picture of an infant.

After the sensor determines the breath count, it will flash a picture — maybe a smiley or frowning face (testing will determine the most understandable visual) — to indicate whether the child has pneumonia.

"We're trying to reduce the number of decision points the health care worker has to make," Moore said.

The Guardit/Project Hope partnership is a new type of business enterprise for both organizations. After the patents are obtained, Guardit will sell the sensor in developed countries while Project Hope will have the rights to sell in developing countries. Each device will cost about \$15 to \$20.

Such a partnership between private enterprise and a nonprofit organization could be the first in limitless opportunities to create such lifesaving tools and bring them to the world market, Script said.

"The ripple effect in the world will be enormous," he said.

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