

Fighting Hospital-Acquired Infections

A major concern of any hospital is the exposure of its patients to nosocomial, or hospital-acquired, infections. Among the bacteria causing these infections is MRSA (methicillin-resistant *Staphylococcus aureus*), which is resistant to some commonly used antibiotics. MRSA infections often appear near wounds and invasive devices; therefore, patients in surgical, burn, and intensive care units are susceptible to nosocomial infections. For these patients, who may already be immunocompromised, acquiring an antibiotic-resistant infection can be life threatening.

In the hospital setting, MRSA can be transmitted by the contaminated hands of hospital workers or by airborne shedding of the bacteria from persons with MRSA. Many healthy people carry staph without an infection, and about 1% of people carry MRSA without an infection. Quickly detecting MRSA in patients, their visitors, and hospital workers is crucial. Once MRSA is identified, hospital staff can use antibiotics to treat persons with MRSA and can establish barriers between MRSA carriers and patients before the opportunity for infection or transfer occurs.

Typically to test for MRSA infections, hospital staff will swab the inside of a person's nose and forward it for laboratory testing. The results of the test are known within 24 to 48 hours. Dr. José Romero, MD, Chief of Pediatric Infectious Diseases and Director of Clinical Trials Research, is the Site Principal Investigator for a pediatric clinical trial to determine whether a new MRSA test and diagnostic equipment that provides results more rapidly works as well or better than the usual method. Since the study sponsor is seeking FDA approval for use in children, it has included ACH one of the five hospital sites for the trial. ACH is the only pediatric hospital participating in the trial.

Dr. Romero notes that MRSA has been recognized as a significant pathogen since the 1960s. He adds, "The death of four children in rural Minnesota and North Dakota as a result of community acquired MRSA in 1999 brought this organism to national attention as a pediatric pathogen. A recent report has documented that the detection of MRSA in the respiratory tract of patients with cystic fibrosis (CF) is associated with worse survival. Additionally, studies in adults have documented that pre-surgical screening for MRSA can be useful in prevention post-operative wound infections. The development and validation in the pediatric population of assays that can quickly and sensitively detect MRSA in children may open the way for studies designed to explore their impact on the prevention of postoperative wound infections and better define the epidemiology of MRSA colonization and disease in children with CF."

At ACH, Dr. Romero and Research Coordinators Jennifer McCluskey, RN, Kathy Thessing, RN, and Patricia Moix, RN, have tested over 300 participants from ages 2 to 17. Ms. McCluskey explains that they recruit participants from the ER, and the PCRU various clinics (including the Rheumatology and Cystic Fibrosis Clinics). She says that most families they approach about the study are receptive to participate. For the study, they swab the inside of a subject's nostrils with two different swabs. The swabs are tested by the ACH Microbiology Laboratory and by a third-



"I like being able to help other kids," says Gary who participated in the clinical trial.

party laboratory contracted by the study sponsor. The study sponsor is comparing the results to validate the accuracy and the performance of their method and diagnostic equipment.

Initially, the study sponsor asked ACH to test 300 subjects, projecting a return of 30 positive MRSA results. ACH met this commitment to the study in 3 months. Impressed with the performance of the ACH team, the study sponsor has asked them to provide an additional 150 study samples. Dr. Romero is also discussing conducting other investigator-initiated clinical trials for the study sponsor in the future.

ACHRI researchers have been involved in pediatric clinical trials for over 20 years. In the past year, over 35 ACHRI researchers have conducted work in over 60 clinical trials at ACH. If you are interested in conducting clinical trials at ACHRI, please contact Janet Stormont, ACHRI Clinical Trials Administrator, at 364-2760.



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>.