Investigators at Children’s Hospital have found that better knowledge of the underlying cause of a cardiac arrest may increase the chances of helping a patient survive it.

Physicians often assume that sudden arrhythmia — an abnormal heart rhythm that can halt the flow of blood from the heart — is extremely rare among children suffering cardiac arrests. However, in the largest study of cardiac arrests ever conducted, investigators found that 26 percent of children had arrhythmias at some time during their cardiac arrest.

“There are a significant number of cases in which children with pulseless cardiac arrest have shockable arrhythmias, and these children should be addressed with cardiac, not respiratory, interventions,” said study leader Vinay Nadkarni, M.D., Division of Critical Care Medicine.

The researchers looked at data from nearly 37,000 adults and 880 children who had in-hospital pulseless cardiac arrests; the data were collected by the American Heart Association’s (AHA) National Registry of Cardiopulmonary Resuscitation (NRCPR).

The study also shows that children survive in-hospital cardiac arrests more frequently than adults. With appropriate interventions, more than 27 percent of the children and more than 18 percent of the adults who had pulseless cardiac arrests survived to hospital discharge, mostly with good neurological outcomes.

Because these survival rates are much higher than in cardiac arrests occurring outside of hospitals, the results also indicate that cardiopulmonary resuscitation (CPR) may improve outcomes for adults and children. “These findings suggest that CPR may currently succeed more often than physicians commonly believe,” said Dr. Nadkarni.

Laboratory research has taught investigators that the time, intensity and duration of therapies for cardiac arrest are important factors that affect outcome. Several phases of cardiac arrest, including electrical, circulatory and metabolic, have been identified as responsive to interventions specifically targeted to the phase of arrest.

By better understanding ways in which children with in-hospital cardiac arrest may resemble or differ from adults, practitioners may be able to better refine emergency cardiovascular care and develop procedures that improve outcomes for all patients.

The AHA recently issued new guidelines for CPR and emergency cardiovascular care based partly on the results of this study.

The report’s 11 coauthors, from nine hospitals and two research institutions, represented the research committee of the NRCPR Scientific Advisory Board. Funding from the Endowed Chair of Pediatric Critical Care Medicine at Children’s Hospital and the Emergency Cardiovascular Care Committee of the AHA supported the study, which was published in the Jan. 4 issue of the Journal of the American Medical Association.

FDA Approves Rotavirus Vaccine Developed at Children’s Hospital

Children’s Hospital has a distinguished legacy of discovering vaccines and other biological means to improve the lives of children throughout the world. A prime example of its “bench to bedside” research philosophy is the Hospital’s recent effort involving the discovery of a vaccine for rotavirus.

The Food and Drug Administration on Feb. 6 approved an oral vaccine that was developed by investigators at The Children’s Hospital of Philadelphia and The Wistar Institute 20 years ago, and then further developed by Merck & Co. Inc.

The vaccine, called ROTATEQ®, is the only vaccine available in the U.S. to prevent rotavirus gastroenteritis, the single largest infectious disease killer of infants and young children in the world. Among children under five in the U.S., it is estimated that 2.7 million episodes of rotavirus gastroenteritis occur each year, leading to approximately 250,000 emergency room visits and up to 70,000 hospitalizations. In the developing world, more than 600,000 children die each year from the disease. Merck has expressed a commitment to working with the global public health community to make ROTATEQ available to infants and children worldwide.

Paul A. Offit, M.D., chief, Division of Infectious Diseases, H. Fred Clark, D.V.M., of Children’s Hospital, and Stanley Plotkin, M.D., of The Wistar Institute, developed the rotavirus vaccine. After licensing the technology, Merck conducted extensive testing that involved more than 75,000 human subjects before seeking FDA approval.
New Research Employees (January 2006)

We welcome the following new research employees:

Administrative Assistant
Charlena Williams

Assistant Director – Research Finance and Sponsored Projects
Deborah Grupp

Behavioral Health Coordinator
Marilyn Barge

Bioinformatics Specialist
Steven Carroll

Child Life Specialist
Brittani Lettrich

Clinical Research Coordinator
Lisa Gallo

Research Assistants
Halfdan Rydbeck
Nirav Shelat

Research Associates
Aiping Du
Jennifer Farmer

Research Biostatistician
Marcella Devoto

Research Nurses
Marrisa Kuba

Research Technicians
Curtis Ball
Elizabeth Forrest
Encarnacion Hernandez
Lisa Levandoski
Louise Pacewicz
Travis Seymour

Visiting Scientist
Elise Roy

Tech Transfer Appoints Licensing Associate

After five months as a licensing intern, Elaine Lu, Ph.D. has been appointed licensing associate in the Department of Technology Transfer.

During her internship, Dr. Lu assembled a marketing brochure containing a dozen Children’s Hospital technologies related to diagnostic tools or disease biomarkers. The marketing material has generated significant commercial interest.

At the same time, Dr. Lu actively marketed some of the medical devices and tissue-engineering technologies, and has been communicating with several leading companies in the industry.

Dr. Lu earned a doctorate degree in molecular genetics from Cornell Medical College and Memorial Sloan-Kettering Cancer Center, and was trained as a postdoctoral fellow in neurodegenerative diseases at Harvard Medical School and Brigham & Women’s Hospital. Before joining Children’s Hospital, she was a licensing assistant at the Corporate Sponsored Research & Licensing Office at Massachusetts General Hospital.
NIH Delays Electronic Grant Submission to February 2007

The National Institutes of Health is in the process of transitioning its grant fellowship applications from paper to electronic submission. Over the next 18 months NIH will continue to introduce electronic submission for particular types of awards.

NIH originally anticipated that R01 applications would become electronic for the Oct. 1 deadline. However, the agency recently adjusted the timeline for electronic application submission to provide an additional four months (one submission round) before the transition of the NIH traditional research grant (R01) mechanism and all subsequent mechanisms. NIH will begin accepting electronic submissions for RO1 applications in February 2007.

The new timeline will benefit both NIH and the applicant community by providing additional time to address business process and internal infrastructure changes needed to support this large endeavor.

The Hospital will continue to prepare for the transition and submit other grant mechanisms electronically as NIH directs.

Visit the NIH timeline at http://era.nih.gov/ElectronicReceipt/files/Electronic_receipt_timeline_Ext.pdf to see the agency’s planned transition dates for electronic submission. Updates on the status of the transition to electronic submission and the new form set are posted on the NIH eRA Electronic Submission of Grant Applications Web site at http://era.nih.gov/ElectronicReceipt/.

Hospital Revises FMLA Policy

The Department of Human Resources has been working with managers and the legal department over the last year to revise the Hospital’s Family Medical Leave Act (FMLA) policy.

The Benefits Department will hold four training sessions for all managers to review and explain the changes. The sessions are scheduled for Feb. 21 (3535 Market St., 9th Floor, 10 a.m. to noon); Feb. 23 (Abramson 123 A-C, 8:30 to 10:30 a.m. and 2 to 4 p.m.); Feb. 27 (Wood Club B, 8:30-10:30 a.m., and 3535 Market St., 16th Floor, 1 to 3 p.m.); and March 2 (Abramson 2 to 4 p.m.).

Training for timekeepers and employees will follow manager training; details on these training sessions is forthcoming.

Questions about the revised policy should be directed to Dawn Ellery, benefits manager, at ext. 6-6560 or ellery@email.chop.edu.

Faculty Honors

The following Children’s Hospital faculty members were recently elected to the Society for Pediatric Research: Cherie Foster, M.D., Division of Neonatology; James Guevara, M.D., Division of General Pediatrics; Jonathan Spergel, M.D., Ph.D., Division of Allergy and Immunology; Jake Kushner, M.D., Division of Endocrinology; and Joseph Zorc, M.D., Division of Emergency Medicine.

The primary aim of the Society for Pediatric Research centers on encouraging young investigators conducting pediatric research. The society provides a forum for researchers to exchange innovative ideas and present their work.

NIH Launches Program Aimed at New Investigator Independence

The National Institutes of Health recently announced a new award program that provides mentored and independent research support for promising postdoctoral scientists.

The NIH Pathway to Independence Award Program stems from the agency's goal of encouraging independent inquiry by new investigators, and responds to a National Academy of Sciences 2005 report that called for new ways to mentor and support early career scientific investigators from their postdoctoral studies to running their own research programs.

The Pathway to Independence Award program is a combination of K and R research awards and acts as a fast-track program for senior postdocs in training. The program is not restricted to U.S. nationals.

NIH will award 150 – 200 awards during each of the first six years of the new program, which is slated to begin in the fall. During this time, the NIH will provide almost $400 million to support the program. All NIH Institutes and Centers are participating in the award program.

The initial 1- to 2-year mentored phase will allow investigators to complete their supervised research work, publish results and search for an independent faculty position. During the two years of the mentored phase, awardees should apply for independent positions at the assistant professorship level. Awards require 75 percent or more effort and awardees will not be eligible to apply for another K award during this period.

The second, independent phase — years 3 through 5 — will provide up to $249,000 (including indirect costs) to allow awardees to establish their own research program and successfully apply for an NIH Investigator-initiated (R01) grant.

The initial application receipt date is April 7, 2006, and standard cycle dates will follow.

Current treatments for HIV are designed to block HIV replication and prevent or control opportunistic infections, but they are not the final answer for the more than 1 million people in the United States who are living with the disease. Some patients do not respond to current therapies, cannot tolerate the treatment regimens or become resistant to treatment. New treatment approaches are therefore needed.

The National Institute of Mental Health (NIMH) recently awarded Children’s Hospital a $6.7 million program project grant aimed at finding new treatments for HIV. The program project encompasses both laboratory investigation and clinical trials in adult patients in order to explore a novel approach to HIV treatment.

During more than 10 years of investigation, Steven D. Douglas, M.D., former interim chief, Section of Immunology and associate chair of the Department of Pediatrics, has shown that a neurotransmitter known as substance P raises HIV levels in immune cell cultures. A compound from a class of agents called neurokinin-1 receptor (NK-1R) antagonists binds to the substance P receptor, inhibits HIV from entering its hiding place in immune cells, and blocks HIV replication. The new program project grant will allow researchers to explore the potential of NK-1R antagonists in a variety of ways.

Dr. Douglas will lead the four-part program, which is designed to fight HIV by blocking the virus from immune cells; improve innate immune function; and reduce symptoms of depression associated with the disease. Investigators from Children’s Hospital, the University of Pennsylvania, and the Tulane National Primate Research Center will collaborate on the Integrated Preclinical/Clinical program grant.

In addition, the grant includes Seracare Bioservices Inc., a private-sector collaborator, to test candidate NK-1R drugs in conjunction with existing HIV drugs to evaluate the antiviral activity against HIV-infected cells.

“Including a private sector partner is a way to strengthen the goal of moving our scientific studies closer to clinical application,” said Dr. Douglas. Dr. Douglas and Wen-Zhe Ho, M.D., Division of Allergy and Immunology, will conduct projects on the underlying mechanisms of the anti-HIV activity of NK-1R antagonists; in particular, how they affect HIV-infected immune cells and how they might protect the brain.

“We know that substance P plays an important role in both the immune system and the central nervous system,” said Dr. Douglas, “and we are testing the hypothesis that interfering with substance P receptors may reduce neurological injury from HIV infection.”

In the program’s third project, Tulane investigators will test the safety of NK-1R in models infected with simian immunodeficiency virus, which is analogous to HIV. This project is designed to serve as the platform for clinical trials, which will involve testing an NK-1R antagonist called aprepitant and manufactured under the trade name Emend. Investigators at the University of Pennsylvania Medical School will do a clinical safety trial of Emend in adults with HIV infection.

**Bioinformatics Alliance Announces Spring Internship Program**

The Greater Philadelphia Bioinformatics Alliance (GPBA), of which Children’s Hospital is a founding member, recently announced its Spring 2006 internship program in bioinformatics.

The GPBA Internship Program is designed to provide opportunities for advanced undergraduate and graduate students to take part in real-world bioinformatics projects in academic and industrial environments of GPBA member and partner laboratories. Children’s Hospital laboratories have hosted 14 GPBA internships.

Preference is given to students currently residing within a few hours of Philadelphia. Internships are partially supported by the GPBA and partially by the host laboratory that the intern selects.

Prospective interns and laboratories interested in hosting interns should reply by Feb. 22 for the internships, which will begin in May 2006.


Contact Peter White, Ph.D., at whitep@email.chop.edu with questions.