Medical Update | Use of Artificial Lung Saves Toddler With Severe Pulmonary Hypertension

Two-year-old is first in U.S. and the youngest in the world to benefit from artificial lung technology

Physicians at St. Louis Children’s Hospital (SLCH) say Owen Stark, a 2-year-old from Eldon, Missouri, is alive today because of an artificial lung. In June, SLCH became the first hospital in the country to use the Novalung® sLA as an artificial lung, and Owen became the youngest person in the world to receive one.

“Owen came to Children’s Hospital in full heart failure due to idiopathic pulmonary hypertension,” says Charles Huddleston, MD, SLCH director of cardiothoracic surgery. “The high blood pressure in his lungs had caused his heart’s right ventricle to become so dilated that it could not contract. In his critical state, we determined he would need a lung transplant to survive.”

As a bridge to transplant, Owen was first placed on extracorporeal membrane oxygenation (ECMO) to give his heart and lungs time to recover and to respond to medical therapy for his pulmonary hypertension. His physicians knew, however, that ECMO was a relatively short-term remedy for Owen’s condition.

“The complication rate for patients on ECMO for five days or less is relatively low, but after two weeks or more, the risk becomes significantly higher,” says Dr. Huddleston. “Problems that develop generally relate to bleeding, infection and damage to other organs, which results in patients becoming ineligible for transplantation.”

By the time Owen reached 16 days on ECMO, his heart had recovered, but his lungs had not. With no organs available and no other options, SLCH’s transplant team, led by Dr. Huddleston, petitioned the Food and Drug Administration (FDA) to secure “compassionate release use” of the Novalung sLA. The sLA is FDA-approved in the United States to help adults through cardiac surgery for intervals of up to six hours, but it is not approved for use as an artificial lung. Dr. Huddleston recognized that the sLA device might provide Owen the same lung benefits as ECMO but with fewer potential complications.

“The Novalung has a number of advantages over ECMO while serving the same function. ECMO requires a pump to move the blood through oxygenation. The Novalung uses the patient’s own heart to do the respiratory work, which makes the exchange of oxygen and carbon dioxide more efficient,” says Dr. Huddleston. “On ECMO, a patient has to be sedated or use a ventilator, which is not the case with the Novalung. Patients are able to eat, communicate and even get out of bed and walk around. Basically, the artificial lung gives patients more freedom to rehabilitate from a severely debilitated state to one that’s more normal.”

The FDA agreed to the conditional use of the Novalung sLA for Owen as a bridge to transplant, as did the Institutional Review Board that oversees St. Louis Children’s Hospital and Washington University School of Medicine. Once Owen was on the artificial lung for a while, however, his condition began to improve.

“Owen developed little clots inside one of the tubes connecting the Novalung to his heart. Every other day, I needed to change that tube, which required clamping the device so that he was off of it completely for about...”
90 seconds,” explains Dr. Huddleston. “The first four or five times I did this, his blood pressure and oxygen levels dropped significantly. Over time, however, this improved to the point where his blood pressure and oxygen hardly dropped at all. It became apparent that the aggressive treatment he was receiving with pulmonary hypertension medications was helping his lungs to recover appreciably.”

The proof of Owen’s recovery came on his 23rd day on the sLA, when he accidentally kicked off one of the device’s connector stopcocks. Expecting to have to reconnect Owen to the artificial lung, his physicians found that Owen’s lungs were strong enough to function on their own. Instead of the sLA serving as a bridge to transplant, it had served as a bridge to getting him on medical therapy.

“Although pulmonary hypertension is a disease that does not have a cure at this point, it now can be palliated with medications fairly effectively,” says Dr. Huddleston. “In the past we did at least one transplant per year in children with the disease. In contrast, over the past five years we’ve only done one transplant. That improvement is because of the medical management that is now available.”

Despite the advances in medications, Dr. Huddleston says an average of two patients a year die at SLCH because of pulmonary hypertension, and these are cases most likely to benefit from use of the Novalung sLA.

“The first scenario is children like Owen—they haven’t been diagnosed with the disease, it progresses to the point where the heart can’t function, and we can’t get them better,” says Dr. Huddleston. “The second scenario is patients who are listed for lung transplantation but are being well managed with medications until an abrupt change occurs in their health, such as developing pneumonia. In these two situations, the Novalung could stabilize the patients’ health until transplantation or until medications gradually reverse the disease process and they recover as Owen has.”

Owen was released from SLCH on September 9. Although he will continue to return to SLCH for follow-up evaluations for many months to come, Owen has benefited from two of St. Louis Children’s Hospital’s greatest strengths: access to advanced technology and knowledgeable physicians with expertise in treating seriously ill children.
Feliciano “Pele” Yu, Jr., MD, has joined St. Louis Children’s Hospital (SLCH) as chief medical information officer and medical director of the Washington University Pediatric Computing Facility. He also was appointed an assistant professor of pediatrics at Washington University School of Medicine and maintains a clinical practice with the department of pediatrics’ division of hospitalist medicine.

“Clinical informatics plays a critical role in achieving the hospital’s mission of providing safe, effective patient care,” says F. Sessions Cole, MD, Park J. White professor and SLCH chief medical officer. “We are confident Pele’s background in health informatics and health services research will help us continue enhancing clinical excellence at St. Louis Children’s Hospital.”

Prior to joining SLCH, Dr. Yu served as chief medical informaticist at the Children’s Hospital of Alabama in Birmingham. His training includes completion of a National Research Service Award postdoctoral fellowship in health services research at the University of Alabama-Birmingham (UAB) Center for Outcomes and Effectiveness Research and Education. He also holds masters of science degrees in both health informatics and public health from UAB.

“The common theme across all of my work is helping clinicians make better decisions, provide quality care and improve care delivery processes through the use of health information and communications technology,” says Dr. Yu.

Dr. Yu’s previous experience also includes practicing primary care pediatrics in South Carolina and pediatric urgent care medicine at the Children’s Hospital of Alabama in Birmingham. He received his medical degree from the University of the East RMMC School of Medicine (Philippines), and he completed his pediatric residency training at the Children’s Hospital of Wisconsin (Medical College of Wisconsin, Milwaukee).
In July, chief neurosurgeon T. S. Park, MD, performed his 2000th selective dorsal rhizotomy (SDR) procedure for improving mobility in children with cerebral palsy (CP).

Candidates for SDR have spasticity, or increased muscle tension caused by their CP. During the procedure, Dr. Park, St. Louis Children’s Hospital neurosurgeon-in-chief and chief of the division of pediatric neurology at Washington University School of Medicine, identifies and cuts nerve roots within the spine that cause the spasticity, resulting in smoother, freer movements.

“The procedure gives patients the opportunity to do more activities,” says Dr. Park, who refined the SDR technique by reducing the amount of spine removed during the operation.

“One of the problems with the old procedure was they had to remove a lot of bones from the spine, which led to spine and back problems,” says Dr. Park. “My technique only requires removing the bone from one vertebra, and as a result we prevent spine problems.”

At the time, many within the medical community were not convinced. The procedure was considered “experimental,” as data did not yet exist to support its safety and efficacy.

“We went through a lot, published a lot of papers,” says Dr. Park. “And over time, parents became very active supporters.”

More poignant than 24 years of research documenting the success of the surgery are the first-hand accounts from parents who say the procedure helped their child transition from a wheelchair to a walker, or that Dr. Park is responsible for their child’s first steps.

In the 24 years since Dr. Park began performing SDR, no patient has experienced any serious complications. Children with cerebral palsy have traveled to St. Louis from nearly every state in the U.S., and 42 countries around the world.

“I’m more gratified than ever,” says Dr. Park. “There are 2,000 children that we helped. Sometimes parents call to say their child is 30 years old and leading a normal life. It’s wonderful.”

**Sophie’s Story**

Sophie Nugent’s lifelong dream has always been to be a dancer, according to her mom, Debbie. But for Sophie, a 5-year-old from West Sussex, England, learning to dance seemed an impossible task. Sophie has cerebral palsy.

Sophie has used both a wheelchair and a walking frame to assist her as needed, but as her body continued to deteriorate under the disease, her parents believed she would eventually need a full-time wheelchair to support her weight.

There is no cure for cerebral palsy and, until just a few months ago, the Nugents didn’t realize any options existed for a child like Sophie. She has spasticity – muscle stiffness – caused by the disease.

Then they saw a news story about a child from the UK who had traveled to St. Louis Children’s Hospital for a unique procedure to reduce spasticity and improve the child’s ability to move – to walk.

“Seeing that little girl on the news get it done, that was the drive for us,” says Debbie. “And watching Sophie miss out – seeing all her friends run off and leave her behind – we knew we had to go for it.”

The Nugents brought Sophie to St. Louis Children’s Hospital in early July, where Sophie became Dr. Park’s 2,000th patient to receive selective dorsal rhizotomy.

“We follow Dr. Park on his Facebook page, so we knew the 2,000th surgery was coming up,” says Debbie. “We were wondering if it would be us because we knew we’d be here that week.”

Just three days after her surgery, Sophie’s parents already noticed an improvement in her mobility. “Her feet are nice and loose,” said Debbie. “Before, she couldn’t wiggle her toes. Now she can.”

Dr. Park expects that Sophie will not need any assistance with walking indoors, or for short distances outdoors. “For long-distance, outdoor walking, she will need some assistance – one cane or two canes.”

But plans for a wheelchair are history. Nine days after her surgery, Sophie was already walking.

“She amazed us today walking three flat steps unaided, which she has never done before,” said Debbie, shortly after the surgery. “SDR has completely been the right decision.”
Connecting Around the World

Dr. Park and his team are connecting with families around the world through social media and news outlets. In recent months, international news stories have profiled SDR patients and shared stories of hope to families of children with cerebral palsy. In fact, 2,000th SDR patient Sophie Nugent's family learned about the unique procedure through a news story on the BBC in the U.K. that profiled a child receiving surgery for SDR. “Seeing that little girl on the news get it done, that was the drive for us,” says Debbie, Sophie's mother.

Dr. Park’s team also has a Facebook page with more than 1,100 members who share stories and information.

“Now more than ever, parents are actively researching the SDR procedure and connecting with other families,” says Dr. Park. “We are seeing more international patients who have learned about us through the Internet and news stories.”

Developmental Disabilities Center Established at Washington University

Improving the lives of infants and children with developmental disabilities will be the focus of Washington University’s new Intellectual and Developmental Disabilities Research Center (WUIDDRC).

The center, established with a five-year, nearly $6 million grant from the National Institutes of Health (NIH), will focus on research to prevent and treat developmental disabilities in children. Emphasis will be placed on clinical and translational research as well as on reaching out to families and the community with resources and services.

“Developmental disabilities are very challenging for families,” says Terrie E. Inder, MD, PhD, director of the WUIDDRC and professor of pediatrics, of radiology and of neurology and a newborn medicine physician at St. Louis Children’s Hospital. “Our long-term goal is to provide better care to children in our area through research, advocacy and better clinical services.”

Many families with children who have developmental disabilities receive services from the state in which they live; however, those services have been limited due to budget constraints, Inder says. The WUIDDRC will work closely with the State of Missouri, and a member of the center will assist state committees with recent research findings to guide future directions of services.

In addition, the WUIDDRC has reached out to community partners such as the Missouri Foundation for Health; Ranken-Jordan – A Specialty Pediatric Hospital; the Thompson Center for Autism and Neurodevelopmental Disorders at the University of Missouri; the Institute for Human Development in Kansas City, Missouri; and several other programs in Missouri to engage them in the center’s services and develop more active collaborations. This will enhance communication of research needs to the WUIDDRC from these state providers and of research findings from the center to patients and families.

The establishment of the WUIDDRC is a tribute to exceptional leadership, passion and dedication of Terrie Inder to this important area of pediatric disability,” says Alan L. Schwartz, PhD, MD, the Harriet B. Spoehrer Professor and head of the department of pediatrics. “Her optimistic vision for the future catalyzed by creative research is bright. We are proud to have her here and leading this effort.”

The center’s research focus will be on cerebral connectivity, genetics and environmental influences. Its sections are administrative, animal models, human clinical, imaging and biostatistics and informatics.

The WUIDDRC received additional startup funding from the McDonnell Centers for System Neuroscience and Cellular and Molecular Neurobiology and from the School of Medicine.

Dr. Inder also plans to collaborate with other IDDRCs in the midwest to share knowledge and resources.

“Collaboration will give us greater knowledge of opportunities for helping families and will move the science forward faster,” she says.

More than 60 investigators from 12 university departments will be involved in the center’s research. Serving as associate directors are John Constantino, MD, the Blanche F. Ittleson Professor of Psychiatry and professor of pediatrics; David Holtzman, MD, the Andrew B. and Gretchen P. Jones Professor and head of neurology and professor of developmental biology; Jeffrey D. Milbrandt, MD, PhD, professor and head of the department of genetics and professor of medicine; of neurol ogy and of pathology; Jeffrey J. Neil, MD, PhD, the Allen P. and Josephine B. Green Professor of Neurology and professor of radiology, of pediatrics and of neurobiology; and Schwartz.

The Intellectual and Developmental Disabilities Research Centers were established in 1963 as centers of excellence for research in mental retardation and developmental disabilities. Fourteen national centers are funded by the Eunice Kennedy Shriver National Institute for Child Health and Human Development.

Update October 22 – 23

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Upcoming Events | Fall Clinical Pediatric Update October 22 – 23

Join colleagues October 22 and 23 at The Chateau on the Lake in Branson, Missouri to learn more about current clinical approaches to problems common in pediatric practice. St. Louis Children's Hospital will present “Clinical Pediatric Update for the Primary Care Provider” featuring recent recommendations and guidelines for the management of food allergies, child abuse, behavioral problems, birth marks, newborn surgical emergencies, immunizations and more.

Continuing medical education (CME) credits are available for this event. For more information, visit StLouisChildrens.org/Med_Ed or call Children's Direct at 800.678.4357.
Case Study | Complex, and Potentially Deadly

The following case study was used by James P. Keating, MD, MSc, medical director, St. Louis Children’s Hospital Diagnostic Center, and his co-editor, Andrew J. White, MD, division director of pediatric rheumatology/immunology, as part of the “Patient of the Week” (POW) series. Many of the POW case studies cover uncommon illnesses, or common illnesses with unusual symptoms that can be overlooked. If you would like to be added to the POW e-mail distribution list, send an e-mail message to jkeating@wustl.edu or white_a@wustl.edu.

WUSM 4: Chris Markham
PL2: Stephanie Grissom
GI: Robert Rothbaum
PL3: Kyle Schulz
H/O: Gayle Murray/Lisa Madden

A 21-year-old female with ileocecal Crohn’s disease (stable for two years) with CC: fever, malaise and anorexia. T intermittently elevated for three weeks.

HPI: With progression of the symptoms in the CC: she had T 104F and was admitted to a county hospital.

Medications: Azathioprine 100 mg/day.

PE: Jaundice. Liver 4 cm BRM and spleen at LCM.

Lab: WBC 1.8m, N 76%, Hgb 6.5, Plts 79,000, Bilirubin 6.0, AST 384, ALT 131, alkaline phosphatase 1015 (<125), Alb 1.9, Mono spot positive.

Hospital course: Her azathioprine was discontinued. Her symptoms persisted and the alk ptase steadily increased. She was transfused eight times due to low hemoglobins. TPN was instituted. Endoscopy (X2) showed blood in the lumen of the transverse colon, but no focal bleeding point was found. Needle biopsy of a cervical lymph node was nondiagnostic (reactive hyperplasia or lymphoproliferative process.)

EBV PCR was positive. Negative: RPR, Viral hepatitis panel, HIV, CMV, malarial antibody, toxoplasmosis, influenza, and bacterial cultures of throat, blood, feces, urine. At one point, she developed SOB and hypoxemia with small pleural effusions and was placed in the ICU. CT of neck showed multiple nodes, hepatosplenomegaly and pleural effusions compatible with noncardiogenic pulmonary edema.

Other studies after transfer to SLCH and suspicion that she may have hemophagocytic lymphohistiocytosis (HLH):

Ferritin (10-120): Day 1 – 1,101 (This initial value was elevated but not in the range usually seen in HLH.)
Day 4 – 1,460
Day 5 – 3,500
Day 6 – 11,300

Immunoglobulins: IgG 2240 mg/dl (700-1200) [Immunoglobulins are usually in the normal range in HLH; elevations in this range are found in Crohn’s disease.]

Cytokines: IL-2 r was 30,061 (45-1105) [This reflects the marked increase in cytokines characteristic of the pathophysiology of HLH.]

Diagnosis: Hemophagocytic lymphohistiocytosis (HLH).

Plan: Version of HLH 2004 protocol (Survival of >50 percent has been reported compared to earlier, much worse outcomes.)

Dexamethasone
Etoposide
Cyclosporine
VP-16

Comment: This is a condition with marked increase in cytokine and histiocyte activity. The specific cause is not clear, but it has been associated with EBV infection and immunosuppression, two factors present in this young woman. It also occurs in a familial form and has been reported in association with Kawasaki S., Hermansky Pudlak S, Chediak-Higashi S. There is a published case report of HLH of a patient with Crohn’s disease and EBV infection.

The hemophagocytic pathology, which can be found in bone marrow, lymph nodes or elsewhere, is often not seen on first sampling of tissue (as in the lymph node biopsy). Now that there is an intervention of value, early diagnosis has become important.

Case Study Comments

From Gregory Storch, MD, SLCH director of infectious diseases:
I would like to make a couple of comments from the ID standpoint about this case. First, the positive mono spot test is provocative. EBV is well known to be associated with HLH. However, the mono spot by itself is not diagnostic of EBV; particularly in light of her immunoglobulin abnormalities. This would be a good case to measure the EBV viral load. Usually we do that test on whole blood, in light of the fact that EBV is ordinarily highly cell-associated. However, in this case it might have been helpful to measure the EBV load in the plasma. The presence of EBV DNA in the plasma is generally taken as evidence of a very actively replicating infection. If she had plasma viremia, it would have made sense to treat her with acyclovir. While acyclovir has been shown not to be clinically effective in routine cases of infectious mononucleosis, it does have activity against EBV and does exert an anti-viral effect, which might be of benefit in a case like this in which active viral replication may be occurring.

The second point is that we have seen a number of cases of HLH associated with severe monocytic ehrlichiosis. In fact there can be quite a bit of overlap in the clinical manifestations of ehrlichiosis and those of HLH, but in the cases I am thinking of, we have seen hemophagocytosis in bone marrow aspirates, convincing us that the patient had HLH as a complication of ehrlichiosis.

An interesting paper published in the Journal of Infectious Diseases several years ago showed that in the related disease human anaplasmosis (AKA human granulocytic ehrlichiosis), some degree of “macrophage activation” resulting in elevation of the serum ferritin, was seen in most cases, and the height of the ferritin elevation seemed to be a reflection of the severity of the disease process. Parvovirus B19 is the other infection that we have seen at SLCH associated with HLH.

continued on next page
Katie Plax, MD, adolescent medicine physician and assistant professor of pediatrics at Washington University School of Medicine (WUSM), and neurologists Garrett Burris, MD, David J. Callahan, MD, and James Rohrbaugh, MD, of Child Neurology Associates were named to the St. Louis Magazine’s "Best Doctors" list for the metropolitan area. The August issue of Doctor's Digest inadvertently omitted their names. We regret the error.

From Shalini Shenoy, MD, medical director, SLCH stem cell transplant program
The HLH protocol is an international protocol developed by the Histiocytosis Society and incorporates agents active against the pathology that is HLH. The backbone of therapy is with steroids, cyclosporine and VP16, and intrathecal therapy if the CNS is affected. The following link has more details: http://onlinelibrary.wiley.com/doi/10.1002/pbc.21039/abstract

The protocol is designed to induce remission from the inflammatory symptoms of the disease. Allogenic stem cell transplantation is considered curative for the spectrum of HLH disorders—HLH, Chediak-Higashi, X-linked lymphoproliferative disorders, Griselli syndrome, etc. as it serves to correct immune system defects. A genetic defect in the perforin and related pathways of NK cell function is detected in approximately 60 percent of cases.

Acquired hemophagocytic lymphohistiocytosis can manifest after infections that overwhelm the immune system (typically EBV)—even in these situations, depending on the severity of the presentation and the predisposition to recurrence, transplantation may be indicated (it is generally thought that the infection brings the immune disregulation to light).

New Physicians at SLCH
Megan A. Brockel, MD
Instructor in Anesthesiology, WUSM
Specialty: Pediatric Anesthesiology
Education/Training:
• Pediatric anesthesiology fellowship, St. Louis Children's Hospital
• Anesthesiology residency, Barnes-Jewish Hospital
• Medical degree, Creighton University School of Medicine, Omaha, NE

Arpita Kalla Vyas, MD
Instructor in Pediatrics, WUSM
Specialty: Pediatric Endocrinology
Education/Training:
• Pediatric endocrinology fellowship, St. Louis Children’s Hospital
• Pediatric residency, Rainbow Babies and Children’s Hospital, Cleveland
• Medical degree, University of Sheffield Faculty of Medicine, Sheffield, England

Ted A. Green, MD
Instructor in Clinical Pediatrics, WUSM
Specialty: Pediatrics (Eureka Pediatrics, PC.)
Education/Training:
• Pediatric residency, SSM Cardinal Glennon Children’s Medical Center
• Medical degree, Saint Louis University School of Medicine

Mark C. Murawski, MD
Instructor in Clinical Pediatrics, WUSM
Specialty: Pediatrics (Suburban Pediatrics, Inc.)
Education/Training:
• Pediatric residency, SSM Cardinal Glennon Children’s Medical Center
• Medical degree, Saint Louis University School of Medicine

Douglas S. Nozaki, MD
Instructor in Clinical Pediatrics, WUSM
Specialty: Pediatrics (Eureka Pediatrics, PC.)
Education/Training:
• Pediatric residency, SSM Cardinal Glennon Children’s Medical Center
• Medical degree, Saint Louis University School of Medicine

Albert S. Woo, MD, has been named chief of pediatric plastic surgery and director of the Cleft Palate Craniofacial Institute at St. Louis Children’s Hospital. 

"Albert’s leadership has been instrumental in the development of the plastic surgery program at St. Louis Children’s Hospital," said Susan Mackinnon, MD, Shoenberg Professor and chief, division of plastic and reconstructive surgery at Washington University School of Medicine. “His skills regarding complex craniofacial reconstruction are recognized by colleagues across the medical center, and he is a nationally recognized authority on complex craniofacial problems.”

Dr. Woo’s clinical interests lie in craniofacial surgery, cleft lip, facial reconstruction and cosmetic procedures. He is an assistant professor of surgery in the division of plastic and reconstructive surgery at Washington University School of Medicine.

Dr. Woo earned a medical degree from Brown Medical School in 1999, where he also completed residencies in general surgery (2002) and plastic surgery (2005). After completing a fellowship in craniofacial surgery at the University of Washington School of Medicine in 2006, Dr. Woo joined the faculty at the School of Medicine and St. Louis Children’s Hospital.

“Albert is an outstanding surgeon with a commitment to caring for kids,” said Dr. Mackinnon. “This is a well-deserved appointment.”

“Best Doctors in St. Louis” List
Katie Plax, MD, adolescent medicine physician and assistant professor of pediatrics at Washington University School of Medicine (WUSM), and neurologists Garrett Burris, MD, David J. Callahan, MD, and James Rohrbaugh, MD, of Child Neurology Associates were named to the St. Louis Magazine’s “Best Doctors” list for the metropolitan area. The August issue of Doctor’s Digest inadvertently omitted their names. We regret the error.
St. Louis Children’s Hospital (SLCH) now offers its Safety Stop services to parents living in St. Charles County through a partnership with Progress West HealthCare Center in O’Fallon, Missouri. Safety Stop’s child safety experts are available by appointment for one-on-one consultations regarding safety in three important areas:

**Car seats**—Parents bring their child, vehicle and car seat to Safety Stop to have a certified child passenger safety technician inspect the seat, check it for a correct fit to the child and demonstrate how to install it properly.

**Helmets**—Kids may bring their own helmet to Safety Stop and have a trained helmet safety expert check it for proper fit and show children and parents how to adjust the helmet themselves.

**Home safety**—A trained safety expert reviews potential injury risks and specific ways to make the home a safer environment for children. The service is particularly suited for expectant or new parents, and all participants receive a free home safety starter kit.

In addition, as part of the free Safety Stop appointment, a limited selection of helmets, car seats and home safety equipment is available for purchase at discounted prices.

“Since Safety Stop is by appointment, parents really have the advantage of an expert’s undivided attention,” says Carolyn Schainker, SLCH manager of community education and events. “Our overall goal is to help parents protect their children by eliminating some childhood injury risks.”

Appointments also are available at SLCH Safety Stops located at One Children’s Place and at The Magic House – St. Louis Children’s Museum in Kirkwood, Missouri. Parents may make a Safety Stop appointment by visiting StLouisChildrens.org, selecting the “Health Resources” tab followed by the “Community Education” option; or by calling 314.454.KIDS (5437) or 800.678.KIDS (5437).

Safety Stop patient referral pads now are available for pediatric offices. Health care providers may use the referral sheets to check appropriate services and encourage families to schedule their Safety Stop appointments by calling the contact numbers listed.

“Families don’t need referrals in order to make appointments at Safety Stop. However, we believe health care providers filling out referral sheets for their families will encourage them to take action,” says Carolyn Schainker, SLCH manager of community education and events. “And new parents visiting pediatric practices should be referred before their infants’ arrival.”

To request referral pads for your office, call Children’s Direct at 800.678.HELP (4357).