Le Bonheur Children's Hospital
Methodist Healthcare Family

Pediatric Notes

Fall 2012

Le Bonheur awarded $2.9 million grant to fight asthma

Federal innovation grant will help hospital reach into community

Le Bonheur Community Health and Well Being, a division of Le Bonheur Children's Hospital, has received a $2.9 million federal Health Care Innovation Award from the Centers for Medicare and Medicaid Services (CMS) to tackle pediatric asthma in the Memphis community.

The grant will eventually help Le Bonheur serve more than 800 kids in Memphis and Shelby County who suffer from asthma and are at high risk for hospitalizations and ED visits. Pulmonary Medicine Chief Dennis Stokes, MD, MPH, will serve as medical director for the project with Christie Michael, MD, of Allergy-Immunology as medical co-director.

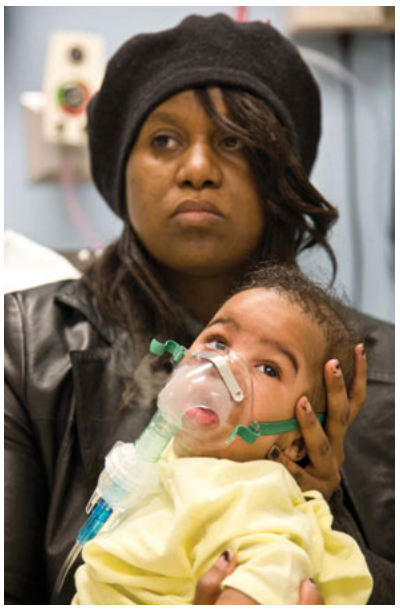
"We see high rates of hospitalization for asthma in Memphis, and we hope this grant will create new partnerships within the community to help us better educate and care for local families," Stokes said. "We really have a triple aim with this project: improve care, reduce costs and improve satisfaction with the care system for our patients."

The award was granted by the U.S. Department of Health and Human Services to Le Bonheur Community Health and Well-Being in partnership with The University of Tennessee Health Science Center.

"The program will help us close the loop in the continuity of care these children receive after they leave Le Bonheur," said Le Bonheur President and CEO Meri Armour. "The community-based program will also allow us to build an asthma registry for high-risk asthma patients, which we can use to study and evaluate our evidence-based treatments and new approaches to care delivery."

In addition to helping kids, the program will create nine new jobs in the community and offer incentives to help Le Bonheur develop health care professionals and peer educators trained in asthma.

Made possible by the Affordable Care Act (ACA), the awards support innovative projects nationwide that are designed to deliver high-quality medical care, enhance the health care workforce and save money. Le Bonheur is the only children's hospital to receive an award in this round of funding.



Le Bonheur will use a new $2.9 million federal grant to fight asthma in the local community.

Cystic Fibrosis Center leads nation in nutritional outcomes

The University of Tennessee Cystic Fibrosis Care and Research Center at Le Bonheur Children's ranked as a top 10 center in three areas, according to national 2010 Cystic Fibrosis Foundation data. Those cystic fibrosis patient areas included:

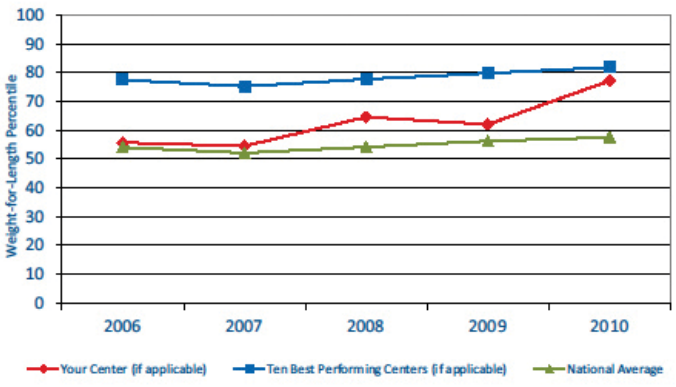
- Children ages 2-19 with a BMI less than the 50th percentile who are supplemented with oral or tube feedings, reflecting an aggressive approach to improving nutritional outcomes.
- pediatric patients with a BMI less than the 50th percentile who are routinely evaluated and counseled by the dietitian (at least every three months).
- non-diabetic patients older than 10 who are screened annually for cystic fibrosis-related diabetes mellitus.

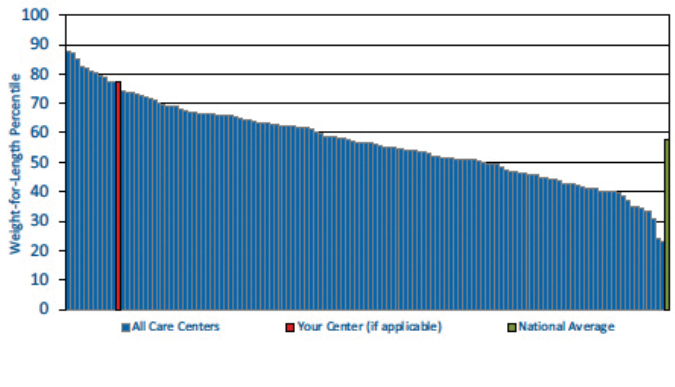
"We know that better nutritional outcomes and early recognition of complications like diabetes can lead to better lung function and longer lives for these patients," said Dennis Stokes, MD, MPH, chief of Pulmonology at Le Bonheur Children's Hospital and Cystic Fibrosis Center director. "We are working to make sure these children stay well nourished under our care and have had great support from the outstanding team of nutritionists at Le Bonheur."

The state of Tennessee implemented newborn screening for cystic fibrosis in 2008, and the CF care team works to ensure babies with CF maintain their weight from the time of diagnosis in infancy. Since implementation of newborn screening, nutritional outcomes for CF infants followed at Le Bonheur have been consistently among the top CF centers in the country.

Results for 2011 will be available from the Cystic Fibrosis Foundation in late 2012.

Median weight-for-length percentile for patients younger than 24 months 2006 - 2010





Children at The University of Tennessee Cystic Fibrosis Care and Research Center at Le Bonheur have some of the best nutritional outcomes in the country. The center has increasingly improved those outcomes in the past several years.

The pediatric affiliate of The University of Tennessee Health Science Center/College of Medicine

Health Science Center

Le Bonheur neurosurgeon leads concussion study, clinic

What does a concussion look like and when can an athlete go back to the game? The answer varies from clinician to clinician. Paul Klimo, MD, MPH, a neurosurgeon with Le Bonheur Children's and Semmes-Murphey Neurologic & Spine Institute, is working to learn more about pediatric brain injuries and educate coaches and local health care providers on the best way to care for these kids.

"We don't know the long-term effects on a developing brain that's experienced two or three concussions," said Klimo. "It's a form of traumatic brain injury."

The lasting harm associated with repeated concussions is gaining national attention, especially as it relates to high school athletes. More than three dozen states have passed legislation that sets stricter rules on when a student exhibiting concussion symptoms can return to play. The state of Tennessee is expected take up the issue in 2013. Klimo and Le Bonheur Trauma Director Trey Eubanks, MD, are currently working with other medical professionals in the state to craft this legislation.

Despite the publicity around this topic, Klimo says the research lags far behind. Second Impact Syndrome, though rare, has now been documented in teen athletes who experience rapid deterioration after a second impact or concussion.

Scientists also have discovered cumulative brain trauma, or Chronic Traumatic Encephalopathy (CTE), in NFL players after their deaths. CTE leads to erratic behavior, speech problems, Parkinson-type symptoms, gait difficulties and eventually dementia years after the concussion(s).

To learn more, Klimo, Semmes-Murphey and The University of Memphis faculty are performing impact and balancing testing on high school and college athletes at the beginning and the end of the season, as well as post injury. Subjects for the study include Memphis' Central High School football team and athletes from The University of Memphis' football, women's soccer, volleyball and basketball teams. The study has been funded by a $25,000 FedEx Institute Corporate Engagement grant.

Because of so many risks and unknowns, Klimo says it is important to be vigilant, especially with children and teens whose brains are developing. Coaches and trainers should recognize when a child has concussed and make sure he or she is appropriately evaluated, Klimo says.

The signs and symptoms of a concussion are evolving. While concussions were once diagnosed with a brief loss of consciousness, scientists now cite more symptoms to watch for -- including difficulty in school and loss of sleep.

Semmes-Murphey is creating a multi-disciplinary concussion clinic designed to follow high school and college athletes who develop concussion symptoms. The clinic will be staffed by neurosurgeons, neurologists, neuropsychologists, physical therapists and radiologists. The staff will also organize educational seminars for coaches, trainers and others involved in athletes' care.

"I approach the question of when to allow the child to return to play in a conservative way. When in doubt, keep the child out of the game and get them evaluated by an appropriately trained medical professional. In my opinion, the child or athlete must be virtually symptom free before they return to play, and the return should be gradual," Klimo said. "If I was a parent of child who had suffered multiple concussions, I would strongly encourage them to pick a non-contact sport. I haven't heard of concussion occurring in golf or tennis."

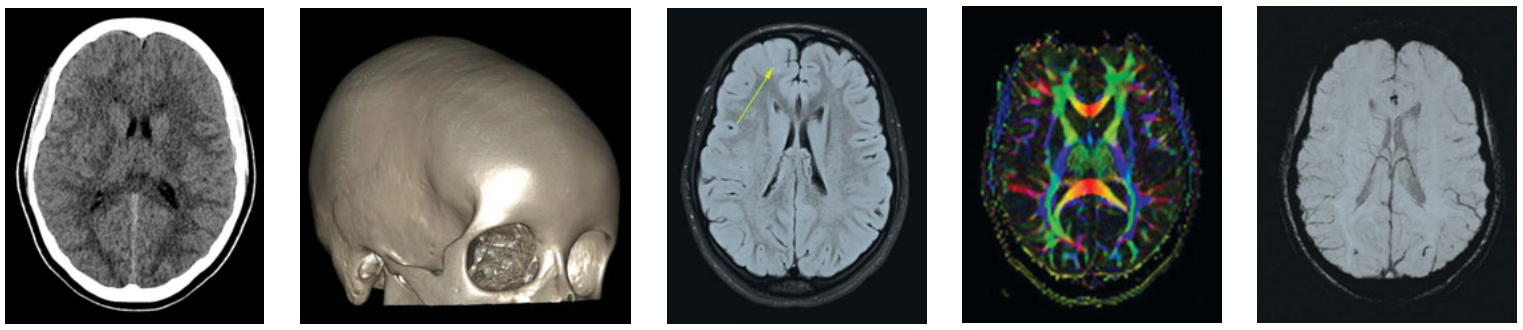


Image case study: head trauma – *16-year-old with a history of trauma to the head, with a normal CT scan of the brain (1). A three-dimensional reconstruction of the skull showed no fracture (2). Despite the normal CT, the patient had continued headaches and an MRI was performed. FLAIR imaging showed evidence of a contusion in the right frontal lobe (3) with mild associated edema in the juxtacortical white matter (4). Susceptibility weighted imaging (5), which is an advanced MRI technique highly sensitive to microscopic quantities of blood products, confirming no evidence of any hemorrhage associated with the parenchymal contusion.*

Catheterization lab procedure lowers risk for heart patient

Cardiologists re-route hepatic blood flow to left pulmonary artery in special technique

Shyam Sathanandam, MD

Interventional cardiologists in Le Bonheur's catheterization lab used a new technique this summer to re-route hepatic blood flow to the left pulmonary artery of an 18-year-old girl with a complex congenital heart condition – a complex single ventricle, status post bilateral cavo-pulmonary anastamoses with a Kawashima (because of interrupted IVC) with completion Fontan using an extra-hepatic conduit.

"She had developed extensive micro arteriovenous malformations (AVM) of the left lung. The AVMs formed secondary to lack of hepatic blood flow to the affected lung and would only resolve if the hepatic blood was re-routed to the left lung. The blood from the hepatic conduit streamed preferentially to the right lung at present," said Shyam Sathanandam, MD. "Her oxygen saturations were as low as 54 percent, so we knew surgical conduit revision to re-route hepatic blood to the left lung carried great risk."

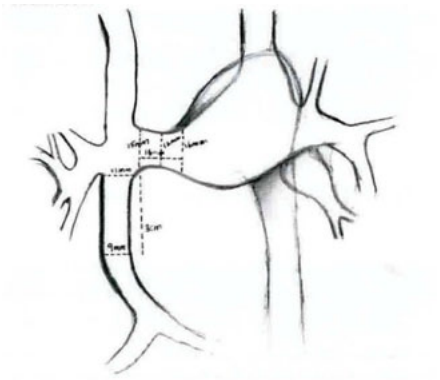
The girl is a longtime patient of Le Bonheur Cardiothoracic Surgeon Chris Knott-Craig, MD, who conferred with Sathanandam about re-routing blood flow in the catheterization lab. Sathanandam planned the procedure for months, meticulously preparing for all scenarios he might find in surgery.

In the cath lab, Sathanandam and fellow cardiologist Rush Waller, MD, initially stented the central pulmonary artery and dilated it to a large diameter.

After the stent was placed, the team pulled a wire through the stent struts from the left superior vena cava and snared it from a catheter introduced through the left hepatic vein. A wire rail was created. Incremental balloon sizes were used to dilate through the struts of the stent. Next, a Viabahn endoprosthesis was placed through the strut of this stent, followed by a larger diameter endoprosthesis telescoped into the first one proximally and the extra-hepatic conduit distally.

This allowed hepatic venous blood from the liver to stream to the left superior vena cava and then through the first stent in the central pulmonary artery to both lungs. This ingenious technique allowed hepatic blood to enter the right and left pulmonary arteries without needing to perform a complex operation.

One week later, the patient's oxygen saturation was up to 74 percent, and Sathanandam expects it to keep improving as the pulmonary AVMs resolve with time.



Le Bonheur interventional cardiologists planned for months before using the cath lab to reroute blood flow on an 18-year-old patient.

Mass spectrometry allows for rapid bacterial ID

Technology gives physicians chance to treat faster, with more certainty

New mass spectrometry technology is helping Le Bonheur Children's physicians analyze microbiology samples quickly – identifying specific bacteria present in a sample within minutes.

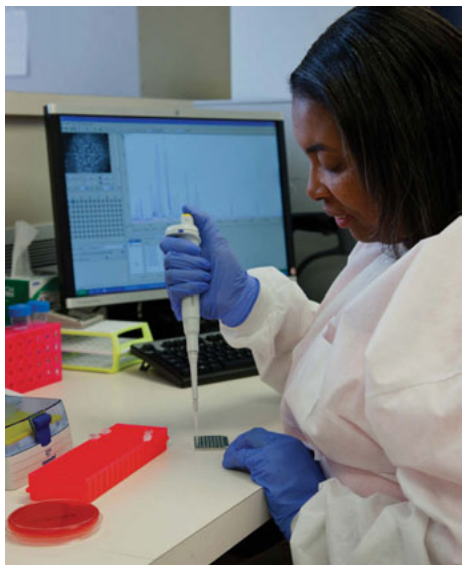
Le Bonheur is one of a handful of children's hospitals using the technology to analyze samples.

"We can cut hours out of our analysis with mass spectrometry," said Royce Joyner, MD, medical director of Laboratories at Le Bonheur. The alternative method for bacterial identification is Gram stain technique, which can only determine broad groupings of microorganisms.

Because false positive results can be ruled out more quickly with mass spectrometry, families can be saved the stress of a possible septicemia, says Le Bonheur Infectious Disease Lab Manager Tekita McKinney. True positives can be confirmed in minutes, speeding up the treatment process.

"This equipment has the potential to help improve patient care, by substantially decreasing the time it takes to identify bacteria in clinical specimens. This, in turn, will enable clinicians to more rapidly decide which antibiotics (if any) are best suited for their patients," said Le Bonheur Infectious Disease Specialist Steve Buckingham, MD. "We are excited about implementing this cutting-edge technology, which is only the latest step in our ongoing effort to optimize patient care."

Mass spectrometry works by using laser beam to disrupt and ionize proteins in the bacteria – a process called matrix-assisted laser desorption/ionization. Proteins are then measured for mass and charge – the ratio of which determines a culture's peaks or spectra. The mass spectrometer's library of peak signatures identifies the type of bacteria in the sample.



Mass spectrometry technology at Le Bonheur can identify specific bacteria in minutes, enabling clinicians to more quickly decide on options for antibiotics.

Mass spectrometry has, for a long time, been used in chemistry and toxicology and is a common tool in forensics. The technique is relatively new to the field of microbiology and will have a positive impact on health care, says Joyner.

Short Scripts

Awards honor longtime Le Bonheur, UT physicians

Russell Chesney, MD

Two new awards honor the careers of Russell Chesney, MD, and Pat Wall, MD, who recently retired from their posts at The University of Tennessee Health Science Center. Chesney retired last year as the chair of the Department of Pediatrics. Wall retired as the chancellor of UTHSC in 2009.

"Russell W. Chesney Excellence in Pediatrics Award" will be awarded annually to the top graduating resident. Pediatrics resident Melissa Damico received the first Chesney award. She is now on staff at Memphis Children's Clinic, a primary care pediatric office.

"The Hershel "Pat" Wall, MD, Outstanding Student in Pediatrics Award" recognizes the top medical student rotating through the Pediatric clerkship. Sarah Matthews, an MS4, received this award. She is now a pediatric intern at Le Bonheur.

Hershel"Pat" Wall, MD

H1N1 pandemic response featured in journal

Jay Pershad, MD

Le Bonheur's work to handle a surge in its Emergency Department during the 2009 H1N1 pandemic was featured in a recent *Pediatric Emergency Care* journal article. Le Bonheur was the first pediatric facility in the county to implement a nurse-driven, triage-out protocol for children with H1N1 infection by using a climate-controlled tent in the ED parking lot.

"Use of a Tent for Screening during the 2009 H1N1 Pandemic. Impact on Quality and Cost of Emergency Care." Pediatr Emerg Care. 2012; 28 (3): 229-235" was published by Le Bonheur Emergency Medicine physician Jay Pershad, MD, and T. Waters. In the article, Pershad examined the tent's impact on quality metrics and cost of emergency care from an institutional perspective.

Asthma, bronchiolitis studies featured at AAP

Le Bonheur Emergency Medicine physicians will feature two studies at the upcoming American Academy of Pediatrics National Conference and Exhibition.

The first, "An Emergency Department Quality Improvement Study to Improve Timeliness of Steroid Administration for Acute Asthma Exacerbation," features work by Jonathan Jacobs, MD; Stefanie Plunk, RN; Jennifer Rudine, RPh; and Jay Pershad, MD. The team is working to decrease time to administer steroids for patients with acute asthma and assess its impact on Emergency Department length of stay and admission rate. The preliminary results of this ongoing QI initiative showed that with focused education and nurse-driven protocols, median time from patient arrival to receiving steroids was decreased by 77 minutes (from 142 to 65 minutes).

The second, "7% Hypertonic Saline in Acute Bronchiolitis: A Randomized, Controlled, Double-Blind Trial," examined the effectiveness of inhaled 7% hypertonic saline in 101 patients with moderate the severe bronchiolitis in a pediatric Emergency Department. Jonathan Jacobs, MD, and Jay Pershad, MD, found that in moderate to severe acute bronchiolitis, 7% hypertonic saline with epinephrine did not confer any statistically significant clinical benefit, when compared to normal saline with epinephrine inhalation. The study was conducted in collaboration with Dennis Stokes, MD, from the division of Pulmonary Medicine.

Sanford named "Healthcare Hero"

Pediatric Neurosurgeon Robert "Alex" Sanford, MD, earned the 2012 Lifetime Achievement Award for the Memphis Business Journal's Healthcare Heroes. Sanford helped found the joint pediatric brain tumor program at Le Bonheur Children's and St. Jude Children's Research Hospital – and is considered a pioneer in his field.

Beaty wins national orthopaedic award

James Beaty, MD

Pediatric Orthopaedic Surgeon James Beaty, MD, recently received the 2012 Distinguished Achievement Award from the Pediatric Orthopaedic Society of North America (POSNA). Beaty, who is the award's 25th recipient, received the award at POSNA's annual meeting in Denver. Winners are awarded based on their leadership and achievements in the field of pediatric orthopaedics. Beaty is a pediatric orthopaedic surgeon at Le Bonheur Children's Hospital and Campbell's Clinic.

Heart team publishes articles

Le Bonheur's Heart Institute has published several articles in peer-reviewed journals in the past few months.

- Goldberg SP, Knott-Craig CJ, Joshi VM, Figueroa MI, Ballweg JA, Chin TK. Apical left ventriculotomy is safe in infants and young children requiring cardiac surgery. *World J Pediatric Congenit Heart Surg* 2012;3(3) (in press)
- Knott-Craig CJ, Goldberg SP. Strategies to prevent complications from resternotomy [letter]. *Ann Thorac Surg* 2012 (in press)
- Philip RR, Boston US, Ballweg JA, Goldberg SP, Knott-Craig CJ. Iatrogenic pseudoaneurysm of the innominate artery in a neonate. *J Card Surg* 2012;27(2):242-44
- Knott-Craig CJ, Goldberg SP, Ballweg JA, Boston US. Surgical decision making in neonatal Ebstein's anomaly: an algorithmic approach based on 48 consecutive neonates. *World J Pediatric Congenit Heart Surg* 2012;3(1)16-20
- Arevalo AR, Boston US, Goldberg SP, Becker JA, Knott-Craig CJ. Starnes' procedure in a neonate with pulmonary atresia and intact ventricular septum. *Ann Thorac Surg* 2012;93:1703-4
- Figueroa MI, Sepanski R, Goldberg SP, Shah S. Improving teamwork, confidence, and collaboration among a pediatric cardiovascular intensive care unit multidisciplinary team using simulation-based team training. *Ped Cardiol* 2012 (submitted)
- Yohannan TM, Goldberg SP, Stamps JK, Mathis CA, Anthony Jr. CL, Knott-Craig CJ. Cardiac myxolipoma in a child: diagnosis and surgical management. *Cong Heart Dis* 2012; May 22 (Epub)
- Ballweg JA, Goldberg SP, Boston US, Joshi VM, Knott-Craig CJ. Technical modification to improve valve stability after aortic root replacement. *SA Heart* 2012 (submitted)

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Trauma volumes increase 34%

Trauma volumes have increased significantly in the past year, due to the ACS Level 1 trauma center accreditation.

Le Bonheur Children's is caring for an increasing number of pediatric trauma victims, due to the hospital's recent Level 1 trauma center accreditation, designated by the American College of Surgeons (ACS) last October.

Trauma patient volume increased 34 percent in 2011, and more pediatric trauma victims are coming from surrounding states.

"The ACS designation is bringing in trauma patients from outside the usual radius," said Trey Eubanks, MD, medical director of Trauma Services. Patient volumes from Arkansas and Mississippi increased by 37 and 18 percent, respectively, in 2011.

The majority of pediatric trauma victims seen at Le Bonheur are 3 years old or younger, and falls are the most common cause of traumatic injury. Motor vehicle accidents and burns are also leading causes of injury.

Le Bonheur is one of a handful of ACS pediatric Level 1 trauma centers in the United States. The closest pediatric Level 1 centers are in Lexington, Ky., and Little Rock, Ark.

Le Bonheur earns *U.S. News & World Report* rankings

Five areas earn national honor

Le Bonheur Children's Hospital has been named again to *U.S. News & World Report*'s Best Children's Hospitals list. The 2012-13 listing ranked Le Bonheur in five areas: neurology/neurosurgery, orthopedics, pulmonology, nephrology and cardiology/heart surgery.

"I am pleased that Le Bonheur is included once again in the Best Children's Hospitals listing," said Pediatrician-in-Chief Jon McCullers, MD. "Our clinical staff and research programs are dedicated to providing excellent care and developing innovative new treatments for kids, so it is gratifying for us to be recognized for this service to our region."

Le Bonheur was named to the list for the first time in 2011 and ranked in four areas. Pulmonology is the hospital's newest area to make the list.

This year, U.S. News surveyed 178 pediatric centers to obtain hard data such as availability of key resources and ability to prevent complications and infections. The hospital survey made up 75 percent of the rankings. Accounting for the remaining 25 percent, a separate reputational survey asked 1,500 pediatric specialists – 150 in each specialty –where they would send the sickest children in their specialty.

"Le Bonheur Children's Hospital deserves high praise for its accomplishments," said Health Rankings Editor Avery Comarow. "Le Bonheur has a reservoir of dedication and expertise that helps the sickest kids. Our goal at *U.S. News* is to identify and call attention to pediatric centers like this one."

The full rankings and methodology are available at www.usnews.com/childrenshospitals. The rankings will also be published in the *U.S. News* Best Hospitals 2013 guidebook, released in August.

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Please submit comments or story ideas by calling (901) 287-6030.

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