Split Fortunes

Split Liver Transplants Boost the Odds for Pediatric Patients

AFTER CANCER
Therapy Improves Quality of Life

ORAL HEALTH
Medically Vulnerable Find Dental Home

PEDIATRIC ANESTHESIOLOGY
Better Drugs, Better Monitoring
Children’s Healthcare of Atlanta, a not-for-profit organization, is committed to enhancing the lives of children through excellence in patient care, research and education. Managing more than half a million patient visits annually at three hospitals and 15 satellite locations, Children’s is one of the largest clinical care providers for children in the country. Children’s offers access to more than 30 pediatric specialties, and has been consistently ranked among the top children’s hospitals by Child magazine and U.S. News & World Report. With generous philanthropic and volunteer support, Children’s has made an impact in the lives of children in Georgia, the United States and throughout the world. Visit www.choa.org or call 404-250-KIDS for more information.

Our vision is to transform pediatric healthcare and be the leading voice for the health of Georgia’s children.
Picking up the Pieces

Dr. Berkelhamer: How do you begin repairing the healthcare infrastructure after a disaster? Where do you start?

Dr. Satcher: Start by assuring that the necessary personnel are in place and that they have the needed supplies and equipment. Also critical is the establishment of a central location or healthcare command post that has communication with other first responders.

Dr. Geller: After a disaster, it is important to assess what remains, then to prioritize what is needed most urgently to provide key emergency care. Next, find a way to supply the missing services until they can be restored to a fully functional state.

Dr. Peck: Repairing the healthcare infrastructure begins at the local level. Consider how the community was impacted, what health system was in place before, what health issues were in existence prior to the disaster and what resources are available.

Health professionals can expect altered standards of care, alternative care sites and issues with supplies. To move forward, you will need to assess the needs, set standards or goals and develop a plan. The most qualified people will be leaders who have lived through disasters before.

Dr. Berkelhamer: When a disaster takes place what is the biggest concern for healthcare providers?

Dr. Satcher: Generally the concern is with having what is needed to function in response and relief. In the case of Hurricane Katrina, many of the providers had to be concerned with their own safety and that of their families, their homes and offices. When healthcare providers know that their families are out of harm’s way, they are often more focused.

Dr. Geller: Healthcare providers need to keep the safety and well-being of their family, friends and colleagues top of mind. It is essential to move quickly so the medical community will be able to provide care for those remaining in the community.

Dr. Peck: Health providers must be concerned for the children in their community. Decisions must be made regarding how to manage existing patients, such as those who are hospitalized, are technology dependent or need immediate or ongoing specialty care.

Dr. Berkelhamer: Normally there is collaboration between research institutions, community physicians and hospitals. How do you continue this collaboration during a disaster?

Dr. Peck: Continued collaboration will likely only occur with advance planning. Certain hospitals and research institutions are already required to be involved in disaster preparedness initiatives. Identify relevant contacts in your community and agree upon a course of action in advance in the event of a disaster. One approach would be to investigate how everyone can work together to determine what information relevant to the disaster needs to be tracked and then to put a plan in place to collect this data so that it can be analyzed later.

Dr. Satcher: It is also important to think about ways in which to share human and financial resources in order to broaden the impact of the healthcare assistance. This is especially important when thinking about collaboration between private, governmental and academic entities.

Dr. Berkelhamer: What forms of communication must remain intact or be set up post-disaster?

Dr. Geller: In some disasters, traditional forms of communication such as land-line telephones remain largely intact. However, other forms of communication such as Internet connections tolerate the disaster more successfully. Emergency planners have invested heavily in disaster-tolerant communications, including satellite-based and wireless communication devices, which utilize frequency bands reserved specifically for this situation. After a major disaster, emergency responders quickly learn what communication methods still are usable.

Dr. Peck: You also would need to know who you would want to reach and in which way would be the best to reach them. Most people know that if a disaster occurs and cell phone use is increased, cell phone towers are typically overwhelmed. Ham radios and walkie-talkies work between people who are near...
They should encourage patients to have a plan, know their medications and dosages and to perhaps have extra medication or prescriptions available in the event of emergency or displacement. This will decrease the number of people who may report to an Emergency department or urgent care center after a disaster.

Dr. Geller: Community physicians may volunteer at a local hospital to assist with patient volume. The duties that they can perform depend on their individual skills. If they report to a hospital at which they do not normally provide care, they can enter the facility under the supervision of that institution’s medical staff.

Dr. Peck: This also could be accomplished with collaboration between practitioners and their corresponding hospital in regards to extending care typically provided in the hospital to an alternative site. Because most hospitals should have disaster plans in place, the details of this type of contingency plan should be worked out in advance. One option would be to provide walk-in emergency first aid at an office or clinic, while another would be to open a satellite hospital ward.

Dr. Berkelhamer: One concern during a disaster is the chance of hospitalized children being separated from family members during care. What steps can be taken to ensure children are not lost during this time?

Dr. Geller: Keeping families in touch during times of a large-scale disaster is limited by the difficulty of identifying individuals who arrive without personal identification. In many communities, the American Red Cross, working with hospitals and emergency responders, coordinates the difficult process of identifying evacuees and patients and maintains a local database with details about the location of these individuals.

Dr. Peck: Children frequently receive more appropriate and more effective care when they are accompanied by a parent or other caregiver. The American Academy of Pediatrics recommends that children should not be separated from their families or caregivers to the maximum extent possible during evacuation, transport, sheltering or the delivery of other services. During a no-notice or mass evacuation, children will likely be gathered in large numbers in a location away from their parents. Putting identification systems such as name tags or bracelets in place along with a record-keeping or tracking system will assist where separation and reunification are needed. Plans must account for their safe transportation and reunification with caregivers. Child-specific supplies, such as clothing, food, water, formula and diapers must be present at evacuation sites.

Dr. Satcher: Assuming that children are appropriately tagged when admitted to a hospital, when possible, we should acquire enough information on location of parents and other family members who can be contacted when needed. Parents should also develop and review disaster plans with their children, making sure that they know what information to provide to emergency personnel and that they are aware of emergency contacts outside of the city and/or state.

Dr. Berkelhamer: Mental illness is very common after a disaster. What signs should clinicians look for when screening patients?

Dr. Satcher: Signs of anxiety and depression should be assessed using the standard screening tools. We also should look for difficulty focusing, changes in appetite and/or sleep patterns, thoughts of suicide or suicidal ideation. Post Traumatic Stress Disorder (PTSD) is often exhibited in victims, first responders and healthcare providers following a disaster.

Dr. Peck: It is important to ask patients what medicines they were taking before the disaster. This will help to identify those who were already being treated for various mental health disorders and/or those who might be at increased risk for developing new or different symptoms. It can be challenging for anyone to determine whether an individual involved in a disaster is exhibiting signs of stress relevant to the disaster or symptoms of an ongoing mental health issue or maltreatment situation. Healthcare providers need to be trained in assessment, surveillance and treatment.

Dr. Geller: Medical records that are maintained electronically should be copied at more than one location to minimize the risk of lost information. Paper records do not lend themselves well to this solution. In either case, patients should be encouraged to carry with them at all times key information about their health conditions and life-sustaining medications, including both name and dose.

Dr. Berkelhamer: What are the benefits of an electronic health record (EHR) during a disaster?

Dr. Geller: If there was a system in place that allowed for systematic access to electronic health records and these records could be made available during or after a disaster, the time needed to review a health history could be minimized and health services could be provided in an efficient manner. In addition, this system could be used to track individual whereabouts and identify trends in symptoms or conditions that occur during and after a disaster.

Dr. Satcher: Electronic health records are more secure and can be more easily stored and transmitted. Records stored electronically with off-site backup in an alternate region of the country are preferred. In this manner, information stored on a server in another region will not likely be impacted by the disaster that damaged records stored in the clinician’s office.

Dr. Berkelhamer: As we improve electronic records is there a place for telepsychiatry services to affected Katrina and Rita survivors.

Dr. Satcher: To be better prepared for the aftermath of a disaster, the individual physician should maintain his own disaster plan, which details the necessary collaborations with other providers. The physician should also be knowledgeable about insurance coverage for both personal and professional property. The Rescue Coordination Centers are currently providing telepsychiatry services to affected Katrina and Rita survivors.

Dr. Peck: Also, there are many template “protocols” and other resources available online. Looking up such resources and printing them out for future use would be useful, especially if online access is not available during the disaster.
Young Athletes

Winning at All Costs

Athletes young and old strive to be the best and often look for an “edge” over the competition. But today’s younger athletes are turning increasingly to performance-enhancing substances to build muscle and add strength. Also known as ergogenic aids, performance-enhancing substances are the subject of increasing attention because of professional athletes’ admitted or alleged use. In general, a performance-enhancing substance is any agent taken in abnormal quantity or administered by an abnormal route of entry into the body to enhance performance. Typical performance-enhancers include anabolic steroids, creatine, human growth hormones and dietary supplements.

Nationally, a recent survey of youth has used anabolic steroids hoping to build muscle, add strength, increase power or improve performance. Prolonged use can cause acne, hair loss and/or growth, stunted growth, reduced testicle size, breast growth in men and masculinization in women.

David L. Marshall, M.D., Medical Director of the Children’s Healthcare of Atlanta Sports Medicine program, explained that problems associated with increased muscle mass and strength often bring young substance abusers to the Children’s Sports Medicine program. “Performance-enhancing substances make the muscles stronger and larger. However, there is no way to strengthen the joints or their stabilizers, like the tendons and ligaments. Increased muscle mass around the joints amplifies stress and torque during sudden stop-start movements, which may lead to joint injury,” said Dr. Marshall.

Anesthetizing children of all ages and conditions presents unique challenges because improvements in equipment, medications and techniques have made procedures on children more tolerable, safe and—in some cases—possible for the first time. Many procedures that were considered too risky decades ago now are becoming more common, especially in premature infants and critically ill or unstable patients.

But high-risk cases are not the only beneficiaries of anesthesiology advances. Many routine procedures have become easier to perform and are less taxing on patients, often enabling them to return home the same day. This is easier on the child and family and more cost-effective.

Better Anesthesiology

Studies indicated that today, anesthesia mortality rates are about one death per 200,000 to 300,000 anesthetics administered, compared with two deaths per 10,000 anesthetics in the early 1980s. One of the most important advancements in paediatric anesthesiology is the increased safety of inhalation agents, especially the introduction and adoption of sevoflurane. Though effective, halothane can result in negative intrathoracic and chronotropic effects. Sevoflurane does not irritate the airway and, through chemical modification, is less soluble in blood than halothane, and therefore represents a more efficient, safer and patient-friendly alternative for pediatric inhalation induction.

Anesthesiology advances have improved children’s post-operative pain control. To this end, Children’s Healthcare of Atlanta uses standards for quantifying pain as part of our continuing effort to provide safe and effective post-op pain control.

A Well-Trained Team: Our Most Valuable Resource

Board-certified anesthesiologists, many of whom are subspecialty trained in pediatric anesthesiology, take the lead in patient care, from preoperative evaluation through post-op monitoring and management. Other team members include:

- Pediatric anesthesiologists — physicians and/or certified registered nurse anesthetists
- Pediatric nurse practitioners
- A dedicated staff of nurses and technicians in our Post Anesthesia Care Unit

Because Children’s specializes in the treatment of pediatric patients, our facilities, equipment and, perhaps most importantly, the training and experience of our doctors and staff are all geared toward providing safe and effective care to meet the challenges of the pediatric setting.

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Why Oral Health is a Critical Part of Medical Care

Recently, a child with velo-cardio-facial syndrome came into the Children’s Healthcare of Atlanta Emergency department with a slightly swollen cheek. Children with this syndrome have a cluster of heart, developmental, palate and speech problems and may have an impaired immune system. This child had undergone a multiple heart-valve replacement.

In the Children’s Emergency department, the facial swelling progressed, and the child needed an immediate intubation to open his airway. He spent 10 days in the Children’s Pediatric Intensive Care Unit and underwent two procedures in the operating room to extract infected or decayed teeth. Ultimately, he recovered and has had a good outcome.

For medically vulnerable children, oral health can be a matter of life or death. If a cavity progresses to a tooth abscess, the infection can spread in the mouth or jaw, causing swelling of heart, developmental, palate and speech problems. For medically vulnerable children, oral health can be a matter of life or death. If a cavity progresses to a tooth abscess, the infection can spread in the mouth or jaw, causing swelling.

Cavities develop more rapidly in children than in adults and they often progress at a faster rate. The risks are much greater for medically vulnerable children and for them, early referral is even more critical. Consider the plight of the child with a cleft lip or palate, a common birth defect, affecting one in 700 babies. They do not swallow as efficiently as healthy children, which causes sugar levels to remain higher for longer periods of time in the mouth. They often must chew food differently than healthy children. Asking a child with a cleft lip or palate to sit still for dental treatment may not be realistic. Sedation or general anesthesia may be necessary. The anesthesia and sedation necessary for pediatric dental treatment prior to transplant.

The cost of a complete dental rehabilitation under general anesthesia exceeds what it would cost for us to clean the same child’s teeth in the office every day for a year.

Medical advances have brought life-saving treatments to children with cancer, heart defects and organ failure. While the oncologists, cardiologists and surgeons receive much-deserved acclaim, pediatric dentists are rarely acknowledged as critical to the survival of these children. Yet behind the scenes, they oversee the oral health that protects these children who are at high risk for developing tooth infections that can spread rapidly.

For example, chemotherapy agents impair the immune system and cause dehydration or dry mouth, allowing rampant growth of bacteria and dental caries in the mouth. Sometimes children being treated for cancer will develop a fever “of unknown origin” that ends up being related to a tooth infection. Unchecked, those infections can spread and colonize a central line or port. No one wants to save a child from cancer only to lose them to a secondary infection of tooth decay.

Other children also are at risk. The dental team at the Children’s Center for Craniofacial Disorders sees all pediatric blood and marrow transplant patients before they undergo their procedures. These children cannot have dental work done for one year after their transplants because of their impaired immune system. Post-operative dental infections would be life-threatening, so blood and marrow transplant patients receive time-sensitive, aggressive dental treatment prior to transplant.

Seeking a Dental Home

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For medically vulnerable children, oral health can be a matter of life or death. If a cavity progresses to a tooth abscess, the infection can spread in the mouth or jaw, causing swelling of the area around the airway or even a brain abscess. Poor oral health also may interfere with the successful medical treatment of children with serious medical conditions.

Conversely, good oral health prevention and early diagnosis of dental issues will improve most medical treatment outcomes for chronically ill children. Unfortunately, finding comprehensive dental care for children with serious medical conditions can be difficult. Rarely is there such thing as a “simple” dental procedure for children with cancer, heart disease or clefts of the lip or palate. If local anesthesia is not enough to manage the pain and anxiety, additional sedation or general anesthesia may be necessary. The anesthesia and sedation can quickly get complicated.

Pediatric dentists may lack the facilities to offer sedation or general anesthesia to high-risk patients safely. And, they often do not treat these challenging cases because it is difficult for pediatric dentists to obtain the resources and training they need to care for these children.

One of the challenges of being able to spend enough time with the patient is that payors typically reimburse dental care for medically-vulnerable children at the same rate as healthy children, although a single tooth extraction in an all in one can take as long as three hours.

Pediatricians play a critical role in guiding parents to dental care that will match the needs of the patient. The Children’s Healthcare of Atlanta Center for Craniofacial Disorders is one of the few centers in the country where children with medical issues can have a complete “dental home.” Pediatricians team with dentists, orthodontists, surgeons, speech pathologists and others to address the needs of these children. Children’s also has well-qualified pediatric anesthesia teams to aid in the medical management of these high-risk dental patients.

Avoiding Decay

How common are the complications of poor oral health? Some reports indicate that major dental problems in children are five times more common than asthma, which is one of the most common pediatric ailments. About 45 percent of children suffer from tooth decay by the time they are in kindergarten. Cavities develop more rapidly in children than in adults and they progress at a faster rate.

The risks are much greater for medically vulnerable children and for them, early referral is even more critical. Consider the plight of the child with a cleft lip or palate, a common birth defect, affecting one in 700 babies. They do not swallow as efficiently as healthy children, which causes sugar levels to remain higher for longer periods of time in the mouth. They often must breathe through their mouths, which can lead to dry mouth—and higher acid concentrations. Multiple surgeries and scar tissue can also make regular dental hygiene difficult.

The end result: Children with clefts of the lip or palate have higher acid concentrations. Multiple surgeries and scar tissue can also make regular dental hygiene difficult. The end result: Children with clefts of the lip or palate have higher acid concentrations. Multiple surgeries and scar tissue can also make regular dental hygiene difficult. The end result: Children with clefts of the lip or palate have higher acid concentrations. Multiple surgeries and scar tissue can also make regular dental hygiene difficult. The end result: Children with clefts of the lip or palate have higher acid concentrations. Multiple surgeries and scar tissue can also make regular dental hygiene difficult. The end result: Children with clefts of the lip or palate have higher acid concentrations. Multiple surgeries and scar tissue can also make regular dental hygiene difficult. The end result: Children with clefts of the lip or palate have higher acid concentrations. Multiple surgeries and scar tissue can also make regular dental hygiene difficult. The end result: Children with clefts of the lip or palate have higher acid concentrations. Multiple surgeries and scar tissue can also make regular dental hygiene difficult.

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Cardiac patients with poor oral health are at risk for infective endocarditis—an infection that spreads to their fragile hearts. In addition, all local anesthetics have cardiac effects that must be considered. Stress and pain management are also very important when cardiac function is not optimal.

By providing a dental home for medically vulnerable children, teams can respond to these life-threatening events and promote good oral health to prevent infection. In turn, families can count on pediatricians to follow up with them and make sure they are maintaining their commitment to ongoing dental care because it is a critical part of good medical care.
What Pediatricians Must Know About Neuroleptics

Asking the Right Questions

Many pediatricians will be asked about neuroleptic drugs—also known as second-generation antipsychotics—or to monitor a child who is taking them. Although a serious responsibility, monitoring patients who take neuroleptic drugs is possible when you understand what is required and can help patients and their families weigh the risks and benefits.

As a psychiatrist, I wish that all children and families had access to full-service psychiatry, including individual therapy, family therapy and behavior-management training for parents. But that is not always a reality. As a result, families often ask pediatricians about bipolar disorder, ragefulness, belligerence and the medicines used to treat them, including Risperdal®, Geodon® (Ziprasidone), Seroquel® (Quetiapine), Zyprerxa® (Olanzapine) and Clozaril® (Clozapine). While these medications are indicated and approved for adults, they are often prescribed for children who are school age, and some are prescribed for children as young as 3.

When children have a psychiatric disorder, we all know prescribing a pill is not enough. These complex disorders require multifaceted solutions and we cannot let families leave our offices thinking that medication alone is the answer. However, prescribing and monitoring medication can be a very important aspect of treating psychological disorders. As the child’s pediatrician, this monitoring may fall to you and usually begins by making sure that your patient is taking the correct dosage.

Next, you will want to discuss side effects with the family. I talk about “M&M” effects, which stand for motor and metabolic. The motor effects that should be noted and reported are muscle rigidity, dystonia and tardive dyskinesia—a neurological syndrome characterized by repetitive, involuntary movement, although this side effect is far less common than with first-generation antipsychotics. The metabolic risks are weight gain, elevated cholesterol and Type 2 diabetes.

Monitoring protocols call for baseline measurements of abdominal girth, blood pressure, fasting blood glucose, fasting morning sugar, fasting morning fat and fasting lipid profile. Your patients may never have had these tests because the monitoring protocol is relatively new. However, these are very important to your patients’ health.

Listening: The Key to Effective Monitoring

If the child being treated is a teen, parents and pediatricians can expect some resistance. I believe that if adolescents can understand the risks and benefits of their medications, they are more likely to cooperate. But if medicines are forced upon them because of misbehavior, they are going to rebel. Taking medications is a big affront to the ego. To adolescents, it means that they are “different.” If medicines are forced upon them because of misbehavior, they are going to rebel. Taking medications is a big affront to the ego. To adolescents, it means that they are “different.” If medicines are forced upon them because of misbehavior, they are going to rebel.

It is our responsibility as pediatric physicians to listen to children’s concerns. If they have a compelling argument for going off medication, we may want to consider it. We always want to minimize lifetime exposure to these medicines and with bipolar disorder in particular, there may be times when we can curtail medication. With certain disorders such as schizophrenia, however, lifetime medication is probably needed. Even then, we can listen and learn why the patient desires a change. If a certain side effect is troublesome, we can try another medication. If a teen is upset about weight gain, perhaps we can reach a compromise. For example, the teen could agree to take his medication if the parents agree to buy him a gym membership and take him to work out. If a teen is ready to give up medication, we can decide together when and if they should stop cold turkey or withdraw gradually.

The family may ask you how long psychiatric treatment is needed. But how do you know when that is? Generally, it is when the child is succeeding in school, doing chores at home and when the family can enjoy dinners, weekends and vacations together.

Until that time comes, however, you may be monitoring—or even directing—treatment. If that is the case, prepare with continuing education. Know and follow the monitoring protocols. Coordinate with a mental health provider and make sure the child’s chart reflects any suicidality, agitation, sleep problems or anything else that suggests instability.

Bibliotherapy

Part of any child’s psychiatric treatment involves helping the family—particularly the parents—learn how to manage the behavior. There are a few texts that I believe are must-reads for parents:

1. “SOS: Help for Parents.” Lynn Clark, Ph.D. This book is most useful with younger children. There is also a video and a Web site for additional support.
2. “SOS: Help for Emotions.” Lynn Clark, Ph.D. This book is especially helpful for parents who are helping a child deal with anxiety.
4. “Think Good—Feel Good: A Cognitive Behaviour Workbook.” Paul Stallard. This is a workbook and Web site to help younger patients understand how thoughts and emotions are related.

Adolph Casal, M.D., is Practice Director of Psychiatry at Children’s Healthcare of Atlanta. He is also the Service Director for Child and Adolescent Services at Peachtree Hospital and Assistant Clinical Professor in the Department of Child and Adolescent Psychiatry at Emory University School of Medicine.

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Components to Measure

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*Baseline measurement is taken before the medication is started. Physicians must measure each component on a routine basis. For example, the baseline measurement is measured before the patient commences medication and then again at the end of the first year.
Zack Link is an active and sometimes naughty 7-year-old, according to his father, Jim. And the Link family could not be happier. » Just two months ago, Zack was not feeling up to much mischief. He was recovering from a six-hour surgery to remove a tumor from the right parietal lobe of his brain that had been causing seizures since he was 5 years old. Today, Zack’s parents are optimistic not only that their son’s seizures have ended forever, but also that the tumor responsible for them is gone—completely—thanks to intra-operative MRI (iMRI), a technology that enables surgeons to obtain near-real-time brain imaging during neurologic procedures.
Zack became the first Children’s Healthcare of Atlanta patient to benefit from iMRI technology last November. In May 2007, Neurologist Joanne S. Janas, M.D., discovered a growing tumor, which at first had appeared to be cortical dysplasia—a malformation of the cerebral cortex. Also during this time, Children’s was installing its iMRI system—making it the first in the Southeast and only the third in the world. Roger Hudgins, M.D., Chief Medical Officer of Neurosciences at Children’s, recommended that the Links wait for the new technology before having Zack undergo surgery to remove the tumor.

“We knew we had to do something because the tumor was getting bigger but it was growing slowly so we were able to take our time,” said Dr. Hudgins. “The Link family elected to wait for the iMRI because it would allow them to know that the tumor had been removed completely.”

Their patience paid off.

The Benefits of iMRI

According to Dr. Hudgins, the ability to remove a tumor completely and with certainty is the key advantage of iMRI over preoperative MRI images, which have traditionally guided neurosurgeons when resecting tumors.

With preoperative MRI, data are programmed into a neuronavigational device just prior to surgery; the device then guides the surgeon in removing the tumor. But when the surgeon opens the skull and dura mater, an inevitable shifting occurs that can slightly change the location of the tumor. Thus, images taken before the surgery are not always a reliable guide to the tumor’s location. Intra-operative imaging, on the other hand, can provide updated information to maintain accurate navigation during surgery.

Another key benefit of iMRI is that it can distinguish between lesions and healthy brain tissue, a distinction that can be difficult to the naked eye. By enabling the surgeon to identify and locate any residual tumor, iMRI can help ensure complete removal of the tumor.

This is particularly important when operating on children. Dr. Hudgins noted. Unlike adults, most brain tumors in children are benign. “Removing the entire tumor can solve the problem, but if you leave one percent of the tumor, that one percent could grow back,” he said. As with any surgery, the goal for iMRI—including Zack’s—show residual tumor, which the surgeon removes before closing the wound.

“Before iMRI, if there was a question as to whether the entire tumor had been removed, the surgeon would have to wait until the patient was out of the operating room and stable and then take him to the MRI department for further imaging,” said Robin Guthrie, iMRI Service Coordinator at Children’s. If residual tumor was found, that often meant performing a second surgery.

With iMRI, however, the patient and his family are spared the trauma of additional surgery and the surgeon can determine with certainty whether the entire tumor—or how much of the tumor—has been removed. “That is the beauty of it: to have that answer before the patient ever leaves the operating room,” said Guthrie.

Jim Link agrees. “It is a good thing we waited for the iMRI because after they went in and did everything they wanted to do initially, they went back and looked at Zack one more time and saw another little piece of tumor that they elected to take out as a result of the iMRI,” he said. “When Dr. Hudgins came to speak with us after the surgery, he said that they had found and that it had been a 100 percent resection, you cannot believe the relief my wife and I felt. That sense of total relief is indescribable.”

Special Safety Issues

The iMRI unit at Children’s is housed in a docking bay between two specially outfitted and copper-shielded operating rooms at Children’s. The nearly 6-ton magnet is suspended on a tracking system on the ceiling and must keep moving in a designated path around the room to generate the magnetic field. Preparing for the scan involves moving any machinery or equipment that is not MRI-compatible into a spare room nearby and the Links had the support of friends and loved ones during and after the surgery. “If we had really wanted to use this technology earlier, we would have had to leave Atlanta. But when you are going through something traumatic like that as a family, you want to be surrounded by familiarity and people that you know,” said Link, who has three other children. “That the fact that the iMRI is at Children’s allowed our family to stay intact.”

How iMRI Works

As with conventional MR, iMRI works with a strong magnetic field, radio-frequency signals and advanced computer systems to create detailed pictures of the inside of the body. The main difference between the traditional procedure and iMRI is that MRI creates images of the site of surgery in a sterile environment during the surgery itself.

A typical case, an MRI coil is placed in the fixed device beneath the patient’s head prior to surgery. The surgeon then performs the surgery as usual. Once the surgeon has removed the tumor—the bone flap is still in and the skin is pulled back—a second coil is placed over draping on the patient’s head and the MRI machine is moved into the operating room via remote control along a track in the ceiling. The iMRI is a traditional MRI, the magnets moves over the patient rather than the patient having to go inside the magnet. This way, the patient is not disturbed and IV and breathing apparatus can be left in place. When the imaging is completed, the magnet is put back in the docking bay and the drapes are carefully removed from the patient’s head. Then, the operating room nurse is able to view the images and determine right then and there whether further surgery is needed.

 device approved, funded, installed and calibrated, he said he was willing to hold out for the state-of-the-art equipment—a 1.5 Tesla magnet that provides high-resolution imaging of the entire brain, including the blood vessels.

While the primary use of iMRI is to assist in the removal of brain tumors, Dr. Hudgins said it will also have other uses, including conducting research to find innovative ways to target and remove brain tumors and treating arachnoid cysts—e erosso -filled -sa cks that are located between the brain or spinal cord and the arachnoid membrane—problems related to the blood vessels.

The machine has already proven useful for a 7-year-old patient at Children’s with a cerebral arteriovenous malformation (AVM), a congenital disorder characterized by tangles of veins and arteries. The patient experienced bleeding into the brain and required surgery. While visually it appeared that the entire AVM had been removed, iMRI showed that part of it was left and, with some additional surgery, Dr. Hudgins was able to safely remove what remained.

Dr. Hudgins also uses iMRI routinely for quality control scans to check for blood clots that may have formed in the brain during surgery.

Keeping Families Together

When the Links scheduled Zack’s surgery with Dr. Hudgins last fall, they had no idea their son would be the first patient at Children’s to use the new procedure. Between May and the scheduled surgery date, Link explored other options. While the Roswell, Ga., couple could have opted to have the surgery done elsewhere, they were willing to wait so their son could have the surgery in Atlanta.

“We were very comfortable with Dr. Hudgins, Dr. Janas, and the entire team of physicians and Dr. Hudgins is very well known for being thorough,” said Link. “So November 2, 2007, we admitted our son and they wheeled him away and about six and a half hours later, he came back to us and they had removed the tumor in its entirety.”

Zack was able to recover, thanks to his family nearby and the Links had the support of friends and loved ones during and after the surgery. “If we had really wanted to use this technology earlier, we would have had to leave Atlanta. But when you are going through something traumatic like that as a family, you want to be surrounded by familiarity and people that you know,” said Link, who has three other children. “The fact that the iMRI is at Children’s allowed our family to stay intact.”

Roger J. Hudgins, M.D., is Chief Medical Officer of Neurosciences at Children’s Healthcare of Atlanta and Chief of Pediatric Neurosurgery at Emory University School of Medicine.
SPLIT LIVER TRANSPLANTS WITH THE USE OF A NEW ELECTROSURGICAL DEVICE BOOST THE ODDS FOR PEDIATRIC LIVER PATIENTS
The liver’s miraculous ability to regenerate makes this procedure possible. When a lobe of an adult liver is placed into an infant and protected by a Gore-Tex® fabric mesh, it gradually shrinks until it fits into the child’s abdominal cavity. As the child grows, the liver keeps pace.

In Jasmine’s case, Dr. Heffron added yet another technological advance. He used the new Habib™ electrosurgical device, which has four metal rods and uses radiofrequency to ablate the liver’s many blood vessels that are severed during a resection. Designed by Nagy Habib, a professor of hepatobiliary surgery at Imperial College and Hammersmith Hospital in London, the device stems the blood loss that occurs during liver transplant surgery.

Jasmine’s surgery was shorter than regular liver transplant procedures—just four and a half hours compared to the usual six. And she had very little blood loss, which can be a serious complication of liver transplant surgery.

Splitting the liver using the Habib device is just one more innovation in the quickly evolving field of liver transplantation. “Liver transplantation is getting better and better for children,” said Dr. Heffron, one of the world’s leading liver transplant surgeons. “We are hopeful that we will soon advance to the point where nobody in the United States will die while on the transplant list.”

Expanding the Transplant Pool

When Dr. Heffron was a surgical resident in the 1980s, children born with biliary atresia were almost certain to die waiting for a liver transplant. So were young children with other liver disorders. There simply were not enough pediatric livers available for transplantation. Pediatric liver donors were most likely to be adolescents and their livers too large for a newborn, often ended up in adults.

Dr. Heffron was a member of the first surgical team in North America to perform a pediatric split liver transplant, a technique that has greatly increased the chances for children to obtain a liver. By removing the left lateral lobe of a donor liver, Dr. Heffron can use the liver from a donor weighing as much as 100 kilograms for a child who is just 10 kilograms. The complication rate of the procedure is similar to that of whole liver transplantation.

In 1989, Dr. Heffron was one of the primary surgeons working with liver transplant pioneer Christophe Broelsch to establish the first successful living donor liver transplant program, which the split liver technique made possible. A twenty-one-month-old girl born with biliary atresia, received a piece of her mother’s liver. Sixteen years later, she graduated from high school, where she had played sports, danced ballet and performed in the marching band. Since then, Dr. Heffron has performed more than 140 living donor transplants. At Children’s, where he arrived in 1996, he performed the first pediatric split liver transplant in Georgia. He transplanted a partial liver into a 10-day-old baby—the world’s youngest surviving liver transplant patient. The boy is now 7 years old.

Dr. Heffron uses the new electrosurgical device, which has four metal rods and uses radiofrequency to ablate the liver’s many blood vessels that are severed during a resection.

The jaundice in tiny Jasmine’s eyes was a constant reminder to Jackie Williams of the devastating liver condition that could kill her 13-month-old daughter. Jasmine was born with biliary atresia, a blockage or absence of functioning bile ducts that prevented her liver from excreting bilirubin.

“It is the hardest thing not to be able to do anything for your child when they are hurting,” said Williams, 26, who moved from San Diego to Atlanta with her husband and 6-year-old son a few months after Jasmine was diagnosed.

Then just two weeks before Christmas in 2007, a new liver was located for Jasmine. But it was from an adult—which made the organ far too big for Jasmine. But Jasmine’s surgeon at Children’s Healthcare of Atlanta, Thomas Heffron, M.D., Director of the Children’s Pediatric and Living Related Liver Transplantation program, had an answer. He was the first surgeon in Georgia in 1997 to perform a pediatric split liver transplant, a procedure in which one donor liver is bisected and transplanted into two patients.
Biliary atresia: This is the leading reason for liver transplantation in children. Children develop progressive scattering of the bile ducts which means they cannot excrete bilirubin. After birth, the baby’s jaundice does not subside, as it does in healthy newborns.

When a child is 2 weeks old—and definitely by the time he or she is 2 months old—pediatricians should screen for biliary atresia by looking for signs of continued jaundice and asking parents about the color of the stool and urine. An abnormally light-colored stool or urine that leaves a noticeable yellow stain in the diaper should prompt further investigation, explained hepatologist and Medical Director of the Children’s Liver Transplant program. African-and prolonged jaundice may be taken seriously.

Early intervention is critical. Babies may respond to a Kasai hepatopancreatico- tony, in which new bileary drainage is formed out of part of the intestine. However, biliary atresia must be identified by the time the child is 2 months old for this to have the best chance of success.

Fulfiman (or Acute) hepatic failure: An otherwise healthy child may develop acute liver failure due to an infectious disease. Often the cause of fulminant liver disease is not known. Medication toxicity also can lead to acute liver failure. The child may initially have flu-like symptoms such as fever, abdominal pain and diarrhea. The development of jaundice is frequently the first clue of a liver problem. Later, disorientation or confusion can develop. The patient may then suffer a rapid decline, which will include spontaneous bleeding and cerebral edema and death.

The most important indicator of acute liver failure may be the PT/PTT (prothrombin time and partial thromboplastin time) tests, explained Dr. Romero. “Any abnormality should be taken seriously and lead to immediate referral,” he said. “Without liver transplantation, acute liver failure leads to death in most cases.”

For more information:
American Liver Foundation: www.liverfoundation.org
Children’s Healthcare of Atlanta Pediatric Liver Transplant program: www.choa.org/default.aspx?id=696

Its previous size within a few weeks. No living donors for patients at Children’s have died following this procedure.

“We are trying to expand the donor pool so kids can get transplants earlier,” explained Todd Pillen, PA-C, manager of the Children’s Liver Transplant program. As children wait for an available liver, they become sicker and weaker. But with split liver transplants, “you are saving two lives with one liver,” he said.

The split liver technique has led to remarkable outcomes. In the past 10 years, no child on the transplant list at Children’s has died of chronic end-stage liver disease while waiting for a liver transplant. For more than 10 years, Children’s has had a 100 percent three-year survival rate for living donors and a 92 percent one-year survival rate for pediatric liver transplants. Dr. Heffron also performs transplants in patients with incompatible blood types—with a 94 percent survival rate after one year.

Monitoring for Life
On Wednesday afternoons, children and their parents file into Children’s sixth-floor exam rooms to see the liver specialty team. The walls are adorned with butterflies—symbols of the metamorphoses these children have made in their lives before and after transplantation.

They need careful monitoring of their liver enzymes, bilirubin, immunosuppressants, kidney function and vital signs. A fever above 101.5 degrees could be a sign of a viral infection. Of particular concern is cytomegalovirus (CMV), which normally is dormant in healthy people but can lead to pneumonia in immunocompromised patients.

The transplant patients will remain on immunosuppressant drugs throughout their lives but the greatest risk of rejection is in the first months after transplant. At Children’s, approximately one out of 100 livers is lost to rejection.

“ ‘There has been an improvement in survival and side effect profiles with new medicines,’ said Rene Romero Jr., M.D., hepatologist and Medical Director of the Children’s Liver Transplant program. Using a combination of immunosuppressants can lessen side effects and avoid renal toxicity, he said.

Approximately 35 children with acute liver failure or chronic liver disease receive transplants at Children’s each year, many of them traveling many miles to visit the specialty team. After their discharge, they will return weekly and then monthly for medical monitoring as they heal and adjust to immunosuppressants. Eventually, those visits will become yearly checkups. In addition to medical services, the transplant center provides emotional and family support, nutritional guidance, guidance about financial and insurance issues, support groups and social activities.

In one exam room at Children’s, a nurse drew blood from the PIC line of a 9-year-old Codie, who was born prematurely and with duodenal atresia. He had a liver transplant for liver problems related to his prematurity. The blood test showed that his bilirubin was elevated—more than three times higher than normal—which is a possible sign of bile duct structure. Codie was scheduled for a percutaneous cholangiogram—a dye study of his bile ducts—and possible biliary stent placement. His father, John Willis, who took Codie in as a foster parent and then adopted him, has seen Codie battle far worse odds. “It has been an uphill battle since he came into the world,” he said. “I call him a miracle baby.”

Barely four feet tall and weighing just 47 pounds, Codie looks several years younger than his age. But that is common for liver transplant patients, whose growth has been stunted because of their years with low liver function.

Children who receive their liver transplant during their first year of life have a good chance of attaining a normal growth pattern. Meanwhile, in a room down the hall, Jasmine Williams sat on her mother’s lap and played contentedly with a butterfly. She will never forget the transformation she saw in Jasmine even in the recovery room. “Her eyes were so clear and bright,” said Rene Romero Jr., M.D., Director of the Children’s Healthcare of Atlanta Pediatric and Living Related Liver Transplantation program, and Associate Professor of Surgery at Emory University School of Medicine. He serves as the Carlos and Marquette Mason Chair for Liver Transplantation at Emory and Children’s.

“Jasmine was diagnosed, her mother was about to begin nursing school. Now, she wants to become a pediatric nurse. She will never forget the transformation she saw in Jasmine even in the recovery room. ‘Her eyes were so clear and bright when she woke up,’ she said. ‘I had not seen her eyes that clear since the day she was born.’”

Thomas Heffron, M.D., is Director of the Children’s Healthcare of Atlanta Pediatric and Living Related Liver Transplantation program, and Associate Professor of Surgery at Emory University School of Medicine. He serves as the Carlos and Marquette Mason Chair for Liver Transplantation at Emory and Children’s.

Rene Romero Jr., M.D., is Medical Director of the Children’s Healthcare of Atlanta Liver Transplant program and Assistant Professor of Pediatric Gastroenterology at Emory University School of Medicine.

Todd Pillen, PA-C, is Manager of the Children’s Healthcare of Atlanta Liver Transplant program.

To retain CME credit for the articles you have read in this publication, go to www.choa.org/cme and click on the module.
Many pediatric and adolescent cancers today have a 75 percent to 80 percent cure rate. But a sobering reality is that some of the long-term side effects of pediatric cancer treatment can be almost as debilitating as the cancer itself. Aggressive treatments can have far-reaching and sometimes lifelong adverse impacts on young patients, which troubled Lillian R. Meacham, M.D., in 1991 when she began to study the late effects of cancer therapy. Today, Dr. Meacham is the Medical Director of the Cancer Survivor program at the Aflac Cancer Center and Blood Disorders Service of Children’s Healthcare of Atlanta. Established in 2001 with Dr. Meacham as its sole physician, the program today boasts a staff of nine who work to help improve the quality of life for nearly 1,000 childhood and adolescent cancer survivors.

Centered on Solutions
The Aflac Cancer Center’s cancer survivor team neither diagnoses nor treats cancer. Instead, it works with oncologists to diagnose late effects as early as possible. If survivors show adverse health conditions, the cancer survivor team facilitates getting those late effects of cancer therapy addressed by appropriate specialists. “Cancer survivor healthcare is a new and growing field of medicine,” said Ann C. Mertens, Ph.D., a childhood cancer epidemiologist who leads the cancer survivor program’s research efforts. “People diagnosed with cancer are living longer, regardless of the age they were at diagnosis or their disease type. Consequently, treatment programs have evolved in the last five to 10 years to include a longer-term scope of research. We realized that we needed to start looking at the entire life span of the pediatric cancer survivor to fully understand the late effects of cancer therapy including infertility, cardiovascular disease and second malignancies.

“Our cancer therapeutic modalities, which resulted in leaps in cancer cure rates, were so aggressive that the process became, ‘cure, but at what physical cost to the patient?’ ”

The team developed what it believes to be a vital tool to assist pediatricians and their young cancer survivors: the Survivor Healthcare Plan (SHP). Once children have been off cancer therapy for two years, they are referred to the Aflac Cancer Center survivor program, where their post-therapy health plans are created to guide them for the rest of their lives. The information culled from that tracking effort is recorded in the patient’s SHP.
A recent study published in the health outcome.

"If you have a learning disability as a result of cancer treatment," Dr. Meacham said, "we can prevent joblessness and its economic implications and clinical experience is fed back into clinical trials to help develop cancer treatment strategies that optimize cure and minimize late effects.

"The data collected in long-term follow-up programs like ours cycles back into OCO [Children's Oncology Group] cooperative efforts and clinical trials," Dr. Mertens said. "What we are doing affects people who are only now being diagnosed, so clinician scientists can modify protocols to keep their likelihood of survival high and keep their quality of life high as well. It is a nice circle."

Lillian R. Meacham, M.D., is the Kathelen V. Amos Children's Chair for Cancer Survivorship and Medical Director of the Cancer Survivor program at the Aflac Cancer Center and Blood Disorders Service of the Children's Hospital of Atlanta and Professor of Pediatrics at Emory University School of Medicine.

Ann C. Mertens, Ph.D., is Director of Clinical Research at the Aflac Cancer Center and Blood Disorders Service of Children's Healthcare of Atlanta and Professor of Pediatrics at Emory University School of Medicine.

www.georgiacancer.org
The Georgia Cancer Coalition Web site offers information about clinical trials, treatment, access, research and education initiatives in the field of cancer research.

www.choa.org/cancersurvivorship

www.georgiacancer.org/pdfs/Cancer-Surv-Prog-Child-Tee.pdf
This page offers a directory of cancer survivorship programs and resources nationwide. Information includes the type of treatment, mission and contact information for each center listed.

www.nccn.org/patients/patient_gls.asp
The National Comprehensive Cancer Network/American Cancer Society (NCCN/ACS) Treatment Guidelines for Patients help people with cancer make informed decisions. Through a partnership with the American Cancer Society, the NCCN translates NCCN Clinical Practice Guidelines in Oncology™ for all of the major cancers and supportive care issues into easy-to-understand patient versions, available in both English and Spanish.

Learn more about the Children's Oncology Group at www.curesearch.org.

Look for the following key terms in this publication:

- Adult survivors
- Childhood, adolescent and young adult survivors
- Cancer survivorship
- Late effects
- Survivorship

www.choa.org/cancersurvivorship
The Children's Healthcare of Atlanta Cancer Survivorship Web site offers information about different types of cancer and their treatments, educational resources and more.

www.childrensoncologygroup.org
A resource for pediatricians, this Web site offers physicians an array of resources including long-term follow-up guidelines, a directory of services for late effects diagnosis and treatment and more.

www.survivorshipguidelines.org
For physicians, this Web site offers the Children's Oncology Group's Long-Term Follow-Up Guidelines for Survivors of Childhood, Adolescent and Young Adult Cancers.

www.curesearch.org
The Children's Oncology Group's Web site for parents, siblings, teachers and others affected by childhood cancer. This site includes information about different types of cancer and their treatments, educational resources and more.

www.canceradvocacy.org
The National Coalition for Cancer Survivors is a survivor-led Web site that offers resources and acts as an advocate for cancer survivors and their families.

www.google.com
Search engine for internet research.

www.webmd.com
Health-related Web site for general information.

www.cancer.gov
Web site for the National Cancer Institute. The site offers general information on cancer and how the public can participate in cancer research.

www.cancer.org
Web site for the American Cancer Society. The site offers information on cancer, treatment options, help and more.

www.cancer.net
Web site for the National Comprehensive Cancer Network. The site offers information on cancer and its treatment options, including surgery, chemotherapy, radiation and more.

www.nationalcancer.org
Web site for the National Cancer Institute. The site offers information on cancer prevention, detection, treatment and more.

www.cancer.org/index.asp
Web site for the American Cancer Society. The site offers information on cancer, treatment options, help and more.

www.webmd.com
Health-related Web site for general information.
EDITORS VIEWPOINT

By Daniel Salinas, M.D.

Pediatricians Can Play a Big Role in Helping Patients and Families Cope With Life’s Little Disasters

When disaster strikes, pediatricians and other healthcare providers move into action. Tornadoes, hurricanes, earthquakes, pandemics, acts of terrorism—these dire moments inspire acts of medical heroism.

But every day, pediatricians see individual families facing their own, more private disasters. Parents lose their jobs, divorce or learn that their child has a potentially fatal disease. They discover that their teenager is smoking cigarettes or binge-drinking or abusing illegal drugs. Are we doing all we should to help families cope with these trials?

In the modern era of managed care, physicians are not reimbursed for taking extra time to talk with their patients beyond the issue at hand. Pediatricians are even more often running from room to room, trying to make sure that the basic care needs of their patients are being met. Unless they take the time to ask, pediatricians may never know that ever since a patient’s parents separated, that child has been uncommunicative, often retreating to his room and avoiding his friends.

Although we continue to ask important questions required to properly treat our patients, it is too easy to blame managed care for our modern failure to show enough concern for our patients’ exigencies. But perhaps what is most vexing is the lack of reimbursement, but rather a narrowing view of a physician’s role in society. Our job goes beyond listening to heart and lung sounds and treating asthma or some other childhood ailment. We are a vital link for families. We are a vital link for families. We are a vital link for families.

Communication Resources:
The Institute for Family-Centered Care is a nonprofit organization that promotes collaborative relationships between patients and their families and physicians, including better communication: www.familycenteredcare.org

The National Center for Medical Home Initiatives for Children with Special Needs provides information about creating a medical home, including tool-kits: www.medicalhomeinfo.org

The Institute for Family-Centered Care is a non-profit organization that promotes collaborative relationships between patients and their families and physicians, including better communication: www.familycenteredcare.org

Pediatricians Can Play Role in Tobacco Prevention

Cigarette smoking is the leading preventable cause of death in the United States. Although it is difficult to spend extra time with patients and their parents in our busy pediatric practices, it is as important as ever to educate children and their parents and caregivers about the available tools to prevent and quit tobacco use. Varada Divgi, M.D., a pediatric pulmonologist and consulting physician at Children’s Healthcare of Atlanta—and a certified tobacco treatment specialist from the Mayo Clinic College of Medicine—offers best practices to communicate negative effects and possible solutions to this increasingly alarming condition in just minutes at each and every physician visit.

Q: Why is tobacco prevention so important for children?
A: Every year, secondhand smoke exposure is responsible for 150,000 to 300,000 new cases of bronchitis and pneumonia in children less than 18 months old, resulting in 7,500 to 15,000 hospitalizations (CDC Fast Facts, September 2006).

Reports such as the Ambulatory Pediatric Association Policy on Tobacco Use and Health estimates that each day more than 4,000 people under 18 try their first cigarette. The survey also says that about 90 percent of smokers begin tobacco use before the age of 20. 50 percent of smokers begin tobacco use before the age of 14 and 25 percent begin their smoking habit by age 12.

According to the American Heart Association, about 59 percent of American children ages 4 to 11 are exposed to secondhand smoke at home.

Q: What treatment options are recommended? A: Tobacco dependence is a chronic condition that often requires repeated intervention. Treating tobacco use as the sixth vital sign and measuring it in the same way as the other five vital signs is a good way for pediatricians to provide at least minimal treatment during each office visit. This helps identify the tobacco-use status of individual patients and provides a basis by which to monitor them during follow-up visits.

Other effective treatments for tobacco dependence now exist, including antismoking medications, the “5 A’s” (Ask, Advise, Assess, Assist and Arrange) for the tobacco user who is willing to quit and the “5 R’s” with motivational intervention (Relevance, Risks, Rewards, Roadblocks and Repetition) for the tobacco user who is unwilling to quit. For the user who has recently quit, the Relapse Prevention Program is a helpful tool. The “Quick Reference Guide for Clinicians: Treating Tobacco Use and Dependence” —a summary of strategies from the Clinical Practice Guideline (USPHS, October 2000)—offers guidelines for pediatricians to provide appropriate treatment for tobacco users.

Varada Divgi, M.D., is a pediatric pulmonologist and consulting physician at Children’s Healthcare of Atlanta.
INSPIRING NEWSPAPER ARTICLE PROMPTS MULTI-MILLION DOLLAR DONATION

Generous Gift to Hospital to Impact Children's Healthcare of Atlanta

By David E. Hall, M.D.

A 9-Year-Old Girl with Elevated Liver Enzymes

A 9-year-old girl was seen by her pediatrician for occasional abdominal pain and fatigue, which had developed over two to three months. Her pain seemed worse after meals. She had increasingly missed her favorite foods. She subsequently had gained weight since the beginning of elementary school and spent hours every day sitting and watching TV.

Upon examination, her weight was greater than the 99th percentile and height was more than the 98th percentile for her age. Her body mass index (BMI) was well above the 97th percentile. Her liver was a palpable two centimeters below the right costal margin. Her examination was otherwise normal.

Her pediatrician ordered lab tests that showed elevated ALT and AST of 202 U/L, respectively. Alkaline, lactic, and nucleoside synthase enzymes were normal. Her CIR was normal.

For further evaluation, the patient was referred to Miriam Vos, M.D., pediatric gastroenterologist and hepatologist at Emory University.

She ordered an abdominal ultrasound that showed increased echogenicity in the liver, which can be a sign of increased fat.

Tests for alpha-1 antitrypsin deficiency, hepatitus B and C, and autoimmune hepatitis were negative. Autoimmune hepatitis serology (antinuclear antibody, anti-smooth-muscle antibody and anti-liver-kidney microsomal antibody) were negative.

Dr. Vos performed a liver biopsy, which showed macro and mild lobular inflammation consistent with nonalcoholic steatohepatitis (NASH), the more severe form of nonalcoholic fatty liver disease (NAFLD).

You can add NALFD to the list of problems associated with the increasing rate of obesity in the United States, along with Type 2 diabetes, hypertension, heart disease, sleep apnea, and even cancer. The first condition was described in obese children in 1983. 4 NALFD is now the most common liver disease in children in the United States, although the exact prevalence of NALFD is unknown. A study in San Diego of autopsies of children age 10 to 15 years who died from unnatural causes found an alarming prevalence of 9.6 percent. 5 Children with NALFD may complain of abdominal pain or be asymptomatic. In Dr. Vos’ clinic, the most common presentation is an asymptomatic overweight child with mildly elevated ALT or AST or one who is inadvertently found to have steatosis in the liver on imaging ordered for another reason. Patients may have hepatomegaly, although this can be subtle and easily missed. Many have a hyperinsulinemia, a common finding in patients with hyperinsulinemia, due to insulin resistance. NALFD is most often diagnosed in teens and preteens, however, it has been reported in children as young as the age of 7. Genetic predisposition plays a role in acquiring the condition. Although NALFD is seen primarily in overweight patients, most overweight patients do not develop the condition. Boys are more commonly affected than girls and Hispanic and African-Americans are at the highest risk for NALFD, followed by Caucasians. African-Americans are less commonly affected.

Unfortunately, short of a liver biopsy, there is no definitive test for NALFD. Most but not all children will have elevated transaminases but the sensitivity is poor (around 64 percent). It is certainly possible to have NALFD with normal liver-function tests. An abdominal ultrasound usually will reveal an enlarged, echogenic liver but it has a reported sensitivity of the percent to 94 percent and specificity of 75 percent to 63 percent. There is little information on the use of CT in diagnosis and it is typically avoided due to radiation exposure. MRI appears to be more accurate than ultrasound in evaluating the degree of liver fat and MRI spectroscopy also has been used, however, the sensitivity and specificity of these techniques have not yet been ironed out. Dr. Vos and her colleagues at Emory University are in the process of validating a new rapid MRI technique for children that will be able to measure fat in less than 15 minutes without sedation.

Researchers still are evaluating the natural history of NALFD. Long-term studies do not yet exist. More than half the biopsies from children show fibrosis and progression to cirrhosis has been reported.

Since most patients with NALFD have insulin resistance, studies are underway regarding treatment with insulin-sensitizing agents and antioxidant therapy such as vitamin E, as well as other drugs. Researchers also are studying the effects of various dietary factors.

There is evidence that exercise and reduction in the BMI can lead to improvement in NALFD. Dr. Vos advises patients to participate in at least one hour a day of physical activity and to follow a dietary regimen. She recommends that families develop and practice healthy habits in the household such as eating breakfast every day, consuming at least five servings of fruits and vegetables per day, restricting daily television to two hours or less, minimizing sweetened beverages and preparing as many healthy meals as possible.

Greater incidence of obesity. I find this condition alarming. It is unhealthy to be overweight.
The Children’s Healthcare of Atlanta Board of Trustees recently designated $430 million toward pediatric research to help Children’s realize long-range pediatric research goals, which were set forth as part of its 10-year vision for the institution. Annually, income generated from this Board-designated fund will be invested in pediatric research and the remainder will be restricted for future growth of the pediatric research program. Though this amount is historic, Children’s predicts that more than three times the spending amount available from the $430 million will be needed in the next 10 years.

To maximize its pediatric research efforts, Children’s is conducting a nationwide search for a Chief Research Officer. Children’s also is enhancing its close partnerships with some of Georgia’s top academic and research institutions, such as Emory University, Georgia Institute of Technology and Morehouse School of Medicine.

Children’s and Emory have worked together to build the Emory Department of Pediatrics and the Emory-Children’s Center, which provides specialty and general pediatric care for a wide range of hospitals and clinics in the Atlanta region. In conjunction with Emory and Georgia Tech, Children’s launched the Center for Pediatric Outcomes and Quality (CPOQ) as part of the Health Systems Institute at Georgia Tech. The goal of this collaborative research endeavor is to apply science, engineering, technology and clinical expertise to improve health for children.

Partnerships such as these demonstrate a strategic move closer to building a world-class pediatric research engine in Georgia. By designating funds toward these long-term research goals, Children’s is creating new relationships and strengthening existing ones between pediatric facilities and research entities across the United States and thus continuing to generate and improve methodologies and techniques for finding cures and caring for children.