

UK HEALTHCARE

# OnCall



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UK Gill Heart Institute continues to provide heart care unmatched in Kentucky through advances in medical and surgical treatments and state-of-the-art facilities.



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# Who benefits from excellent clinical documentation? We all do.

As you read this issue of OnCall, UK HealthCare has already transitioned to ICD-10 coding. Our sincere appreciation to you and all of the supporting teams of people who enabled us to reach that goal. That was certainly a mountain we had to climb.

With that transition behind us, there still remains a challenge: ensuring our clinical documentation is accurate, specific and timely.

To meet this challenge, we have launched a **Clinical Documentation Improvement** initiative. This initiative offers coaching and support to physicians and related medical providers for complete and accurate documentation. Medical record documentation is critical for good patient care and for accurately reflecting the complexity and value of the care you provide, as well as ensuring accurate risk adjustment of patient outcome measures.

Medical record documentation is critical for good patient care and for accurately reflecting the complexity and value of the care you provide, as well as ensuring accurate risk adjustment of patient outcome measures.

When we document well, we can expect a positive impact on reimbursements. But more than that, our patients and referring physicians benefit from improved communication, collaboration and efficiencies. As well, the data you enter becomes the foundation for all health care information exchange, including public rankings such as those issued by U.S. News & World Report, CMS Compare, Healthgrades and more.

To ensure we build it right, we need your active participation. The CDI Steering Committee includes many of your colleagues. Please let any one of us know if you have any questions, comments or concerns. We truly appreciate your support, commitment and input in this important initiative as we improve clinical documentation to support patient care, physician collaboration, reimbursement and an accurate record of the quality of care we deliver. **OC**



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# Neuroendocrine cancer program targets tumors that can be difficult to diagnose

The UK Markey Cancer Center is home to the region's first multidisciplinary program caring for patients with carcinoid and neuroendocrine tumors.

These uncommon tumors present some unique diagnostic and therapeutic challenges. Led by Lowell Anthony, MD, the neuroendocrine tumor team at the Markey Cancer Center collaborates with a team of surgical specialists, radiation oncologists, pathologists, and diagnostic and interventional radiologists to create a personalized treatment plan for each patient.



Lowell Anthony, MD

The combination of patient education, excellent patient care and innovative research results in better care for patients, improving both their prognosis and quality of life.

Neuroendocrine tumors originate from endocrine cells. They most commonly begin in the small intestine (carcinoid tumors), lung or pancreas, or in other parts of the GI tract such as appendix, stomach, colon or rectum. Although most neuroendocrine tumors grow slowly, there are some that are capable of rapid growth.

The most common site of origin of carcinoid tumors is the small intestine, a site that is not able to be visualized adequately by colonoscopy, upper GI endoscopy or conventional X-ray studies. This often results in late diagnosis or failure to identify the primary site.

However, at UK Markey Cancer Center, which has gastroenterology specialists trained in advanced endoscopic techniques, the small intestine can be visualized by double-balloon push enteroscopy and wireless capsule endoscopy.

At UK Markey Cancer Center, which has gastroenterology specialists trained in advanced endoscopic techniques, the small intestine can be visualized by double-balloon push enteroscopy and wireless capsule endoscopy.

Doctors can visualize the pancreas by endoscopic ultrasound (EUS). We also use the highest-resolution types of CT, MRI and PET scans; MIBG scan; Octreotide scan; and Ga-68 imaging to diagnose primary tumors and metastases.

The multidisciplinary carcinoid and neuroendocrine tumor team meets weekly to recommend optimal personalized care for patients with these rare tumors.

As a physician researcher, Dr. Anthony operates a robust research program at the Markey Cancer Center, including multiple clinical trials. His research efforts focus on finding treatments that are more effective and less toxic. **OC**

## Learn more

For more information about the Markey Cancer Center Carcinoid and Neuroendocrine Tumor Program, visit our website at [markey.uky.edu](http://markey.uky.edu).

# UK HealthCare earns prestigious Baby-Friendly USA® designation

UK HealthCare recently achieved the “gold standard” in mother-baby care

In June, UK HealthCare became Lexington's first Baby-Friendly USA® hospital, a prestigious acknowledgment of excellence in the care provided to newborn babies and their mothers. The designation is extremely difficult to earn and capped nearly two years of focused efforts by UK Birthing Center staff and leadership.



Baby-Friendly USA®

Baby-Friendly USA is a global initiative sponsored by the World Health Organization and the United Nations Children's Fund (UNICEF). The initiative encourages hospitals to provide breastfeeding mothers with the information, confidence, support and skills necessary to initiate and continue breastfeeding.

“Our staff is consistently focused on how to support new mothers and babies. The goal is to help mothers be successful in providing the best start for their babies.”

– Rebecca Collins, MD

UK HealthCare is the first academic medical center in Kentucky and the second hospital in the state to gain the Baby-Friendly USA accreditation, which is based on a hospital's adherence to the Ten Steps to Successful Breastfeeding, an initiative developed by a global team of health care professionals.

The Ten Steps include routine communication about a breastfeeding policy, informing mothers

about the benefits of breastfeeding, helping mothers initiate breastfeeding and in-room practice, keeping mothers in-room with their babies 24 hours a day, eliminating the use of artificial nipples or pacifiers for breastfeeding infants, and providing follow-up support after mother and baby are discharged from the hospital.

Gaye Whalen, RN, lactation consultant, helped with the effort to transition the UK Birthing Center to a Baby-Friendly USA facility. The stringent accreditation, which took two years and several on-site evaluations to obtain, required the entire staff to adopt a new mindset in how to approach maternal bonding and feeding.

Rebecca Collins, MD, pediatrics, applauded the collaborative effort of the departmental team in implementing the highest standards of maternal care and infant nutrition.

“Our staff is consistently focused on how to support new mothers and babies,” Collins said. “The goal is to help mothers be successful in providing the best start for their babies.”

Shelly Marino, UK HealthCare nursing operations administrator, said, “Although the process to become a Baby-Friendly hospital was challenging, mothers and their newborns are benefiting from it already.”

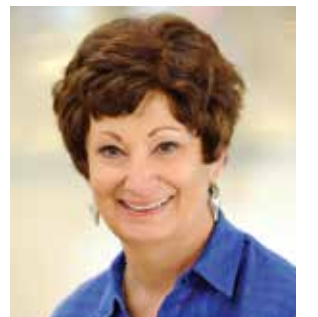
“It is a culture change we are proud of, and worked hard for,” Diana Frankenburger, UK HealthCare's childbirth education coordinator said. “We are committed to helping babies get the best possible start, while providing moms and families with all the support they need.” **OC**



Rebecca Collins, MD, Pediatrics



Diana Frankenburger, RNC-OB, BSN, CCE  
UK HealthCare Childbirth Education Coordinator



Shelly Marino, MHA, RN, CNPT, NE-BC  
Nursing Operations Administrator



Gaye Whalen, RN, Lactation Consultant

# UK physician's patient navigator program ensures follow-up hearing tests for infants

Early intervention and treatment essential to children with hearing loss

Children who are born with hearing loss face learning delays and disabilities. When their hearing problem goes untreated, their speech and language development, psychosocial interaction and educational progress are all negatively affected.

Early identification and intervention can prevent lifelong problems for these children, which is why UK HealthCare and hospitals throughout the United States do newborn hearing screenings to identify babies who are at risk for hearing loss. Those who do not pass the screening test receive referrals for definitive diagnostic testing.

Research shows that children who have hearing loss and live in rural regions such as Appalachia are at a higher risk for delayed diagnosis and treatment. The increased risk is caused by a number of factors, including limited education about congenital hearing loss, socioeconomic barriers and limited access to care.

## Patient navigators improve compliance

To improve parental compliance and follow-up after newborn hearing screening tests, Bush and his team have developed and implemented a patient navigator program, which is funded by a grant.

Patient navigators connect with families before they leave the hospital and educate them about the importance of follow-up diagnostic testing. Navigators also coordinate resources for patients who are at risk of slipping through the cracks.

"Many rural parents have limited resources," said Bush. "Their newborn may need follow-up visits with multiple specialties along with follow-up hearing testing. Chances are high that they may skip the hearing test because they may only have enough gas for one trip."

Patient navigators coordinate patient care and connect families with local resources to bridge this gap. They serve as a guide for parents who must navigate complex medical centers such as UK and help them understand the importance of evaluating their child's hearing with timely testing and treatment.

Three patient navigators are currently on staff. They consider their work an opportunity to be a link between the provider, the patient and community resources and to apply their research beyond the laboratory.

Bush, who divides his time between clinical duties and research, developed the patient navigator program in response



Matthew Bush, MD

## UK among first to study gaps in follow-up tests

"We are one of the first groups to investigate gaps in follow-up, diagnosis and treatment after the failed newborn hearing screen in urban and rural children," said Bush. "Rural children are significantly delayed in diagnostic testing, follow-up and treatment. Nearly all cases of pediatric hearing loss are treatable, and the sooner these children are identified, the better our treatment outcomes will be. If a child is born deaf and is identified quickly and receives a cochlear implant in a timely fashion, they can develop normal speech and attend a mainstream classroom by first grade without disability or difficulty. Once hearing loss is identified, there is a race against the clock to treat it appropriately. These children take great priority."

## Early intervention depends on screening for congenital hearing loss

Compared to other birth defects, hearing loss is relatively common, but identifying children who have congenital hearing loss is not always easy.

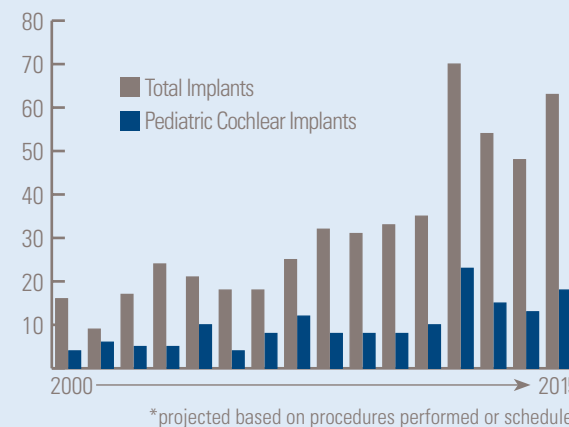
**4%** About 4 percent of all babies will fail the standardized newborn hearing screen offered in the hospital during their first few days of life; of that number, 4 percent will have hearing loss.

"We aren't able to identify hearing loss immediately in the newborn nursery as you might with metabolic disorders or external deformities," said Matthew Bush, MD, a physician with UK Otolaryngology – Head & Neck Surgery. "These babies will often look normal and may even interact as normal hearing newborns do." Parents and even providers may overlook underlying hearing loss and may not seek further care until there is a significant speech delay in a toddler. The language deficit and other issues caused by hearing loss can be completely prevented if children are treated early.

The good news is that more children with hearing loss are being identified and treated. For example, the number of children who have been identified with severe hearing loss and received cochlear implants has greatly increased in the last 15 years at UK HealthCare, from 2 in 2000 to just over 20 in 2015 (see figure below).

"Hearing loss is often insidious and may be easy to overlook," said Bush. "This is why it is so imperative to screen. We must follow up with all children with abnormal screening tests and provide appropriate diagnostic testing to promptly diagnose and treat congenital hearing loss."

Total and Pediatric Cochlear Implants at UK



"Patient navigation is a proven and patient-supported method to address non-compliance, yet it is novel within hearing health care. We are working to make UK the model center for pediatric hearing healthcare patient navigation."

— Matthew Bush, MD, assistant professor of Otolaryngology – Head & Neck Surgery

to clinical research results and needs expressed by his patients. "Patient navigation is a proven and patient-supported method to address non-compliance, yet it is novel within hearing health care," he said. "We are working to make UK the model center for pediatric hearing health care patient navigation. We know that navigation has been used with great success in many other clinical areas."

Navigation will be offered not only to patients of UK HealthCare but to any baby in the state who is referred to UK for diagnostic testing.

"Anything we do here isn't meant to stay just here," said Bush. "We have to branch out to improve care for all patients and we feel strongly about implementing this widely."

**Online course bolsters provider knowledge, confidence**

For primary providers who work in rural areas, staying abreast of pediatric hearing loss identification and treatment can be difficult.

"Pediatric health care in rural communities involves a variety of disciplines, and many providers may lack expertise helping families through the hearing-loss diagnostic and treatment process," said Bush. "A provider may not run into congenital hearing loss cases very often. We want to provide primary care providers with tools to boost their confidence when educating patients about congenital hearing loss and initiating the next steps, thereby bridging that referral gap."

A free online education program for primary care providers designed by Bush was launched in January. It focuses on

"Anything we do here isn't meant to stay just here. We have to branch out to improve care for all patients and we feel strongly about implementing this widely."

Matthew Bush, MD, assistant professor of Otolaryngology – Head & Neck Surgery

congenital hearing loss, the importance of timely intervention and methods to improve hearing health care in rural communities. Available through CE Central, the program offers information on the physiology, pathology and impact of congenital hearing loss plus current research about disparities in rural hearing health care. Providers can earn CME credit and enroll in a learning community designed to provide accountability and support. They will also have direct access to Bush and his team through an online forum.

"Providers in the community have expressed feeling isolated and separated from experts in hearing health care. We want to break down those walls and bridge those gaps," said Bush. **OC**



Flavius D. Raslau, MD



Sarah Deraney, MD



Candice Adams, MHA, RT (R) (CT)

# UK radiology team reduces radiation risks for children

## New CT scan protocols lower radiation dose and improve image quality

When a child suffers a head injury or has other neurological symptoms that could indicate brain disease, a computed tomography (CT) scan is an essential tool for detecting abnormalities of the brain. A CT scan is similar to an X-ray, except the scan provides many cross-sectional image slices of a child's brain; this allows the radiologist to carefully examine every part of the brain. Because a CT scan uses radiation, a physician's goal is to get the best possible images of the brain while exposing the child to the lowest possible dose of radiation.

Flavius D. Raslau, MD, Sarah Deraney, MD, and Candice Adams, MHA, RT (R) (CT), have worked as a team to develop new pediatric head CT scan protocols that lower the radiation dose and give clear images without artifacts (i.e., misleading information on the scan such as blurring or streaking).

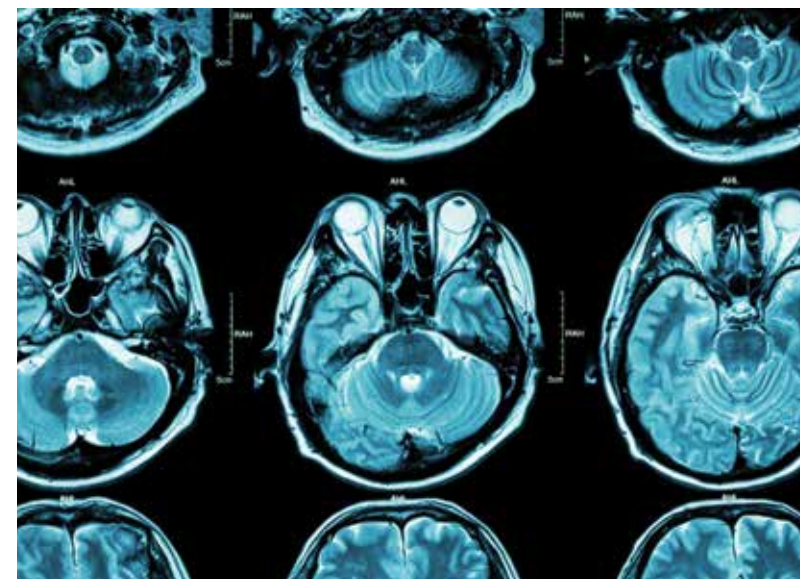
The radiology team took on the project, Deraney said, "because of the opportunity to improve the safety of imaging for young people. Also, in the academic setting, we have a unique opportunity to implement changes that can teach others newer or safer ways of doing things."

**Monitoring CT imaging practices**

Radiation exposure is unavoidable in most medical imaging, but physicians carefully balance risks and benefits before they order tests for patients. In addition to the efforts of local radiologists, several national organizations – including the American College of Radiology (ACR), the Image Gently Alliance and The Joint Commission – closely monitor imaging practices and develop ways to minimize such exposure.

"In the academic setting, we have a unique opportunity to implement changes that can teach others newer or safer ways of doing things."

— Sarah Deraney, MD



### Online Center for Hearing Health CME

"Bridging the Gaps in Community Hearing Health Care"

[www.cecentral.com/hearinghealth](http://www.cecentral.com/hearinghealth)  
3 hours CME credit

Providers who are interested in learning more about pediatric hearing are encouraged to enroll in this course through CE Central. By participating in the modules and the online e-learning community, they will earn three hours of continuing medical education credit. The group forum will provide peer support as well as interaction with Matthew Bush, MD, and his staff.

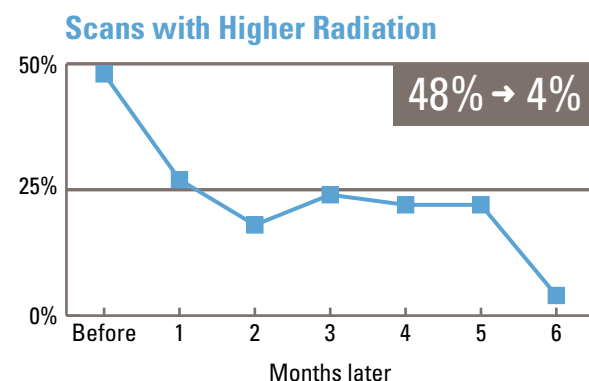


Figure 1. Reduction in radiation exposure over 6 months in children who received head CT scans in UK Chandler Hospital Emergency Department.<sup>2</sup>

As these new countermeasures were adopted and implemented in the UK Chandler Hospital Emergency Department, the percentage of pediatric head CT scans that used higher-than-necessary radiation was reduced from 48 percent to 4 percent.

For example, in July 2013, the ACR mandated that the radiation dose for a head CT scan of a 1-year-old child cannot exceed 35 mGy<sup>1</sup>; mGy is the standard unit for measuring the amount of radiation delivered to a patient. This radiation level is approximately 45 percent that of adult scans. The University of Kentucky had already implemented this guideline for infants, but the radiology team saw an opportunity to extend this practice to benefit even more children and proposed that the radiation limit include all pediatric patients, defined as patients younger than 18.

During one month in 2013, 61 children between the ages of 15 days and 17 years of age had head CT scans in the UK Chandler Hospital Emergency Department. All children younger than 11 years old received radiation doses lower than 35 mGy. Some of the older children received more radiation than the proposed limit, although the radiation dose they received was still well within the safe range. The radiology team found the root cause of the non-essential radiation exposure was that radiology technologists had been trained to use an adult CT scan protocol for children who weighed more than 110 pounds (50 kg).

#### Countermeasures reduce radiation

Two other factors were considered. First, poor image quality in the form of a “glow artifact” (excessively high attenuation just under the skull that partially obscures the periphery of the brain) could have led to an incorrect assumption that more radiation was needed for quality imaging. Second, the CT scanners were programmed with at least 20 pediatric protocol options, which unnecessarily complicated the technologist’s job and could have been a potential source of error.<sup>2</sup>

There are times when the higher radiation used in an adult CT scan protocol is necessary, such as when the torso of an overweight child must be imaged. But the head has little fatty tissue, so there is little need to use higher radiation in head scans for any child, even one who is overweight.

Raslau, Deraney and Adams developed and implemented a series of countermeasures that included training technologists to always use a pediatric head CT protocol for patients younger than 18, regardless of weight; adjusting scanner settings to eliminate the glow artifact<sup>3</sup>; and reducing the number of protocol choices from 20 to four.

As these new countermeasures were adopted and implemented in the UK Chandler Hospital Emergency Department, the percentage of pediatric head CT scans that used higher-than-necessary radiation dropped from 48 percent to 4 percent (Figure 1). Only one patient received the adult protocol and that was because the teenager appeared older than he was. His age was not known at the time of imaging.

Even with the reduction in radiation (Figure 2), images were clearer and easier to interpret because artifacts had been eliminated (Figure 3).<sup>2</sup> Because the countermeasures had such a positive effect, they were immediately implemented on all CT scanners across UK Chandler and Good Samaritan hospitals. Deraney’s poster presentation of this project won first place at the University of Kentucky’s first Department of Radiology Quality and Safety Forum.<sup>4</sup>

#### Collaboration is critical

The University of Kentucky is dedicated to improving patient care by systemically implementing quality and safety improvements. The CT Clinical Practice and Quality Improvement Subcommittee, co-chaired by Raslau and Halemane Ganesh, MD, and the Radiology Imaging Technology Committee, chaired by Jie Zhang, PhD, are focused on developing strategies that meet or exceed The Joint Commission’s standards. The new

standards include documenting the CT radiation dose in the patient’s clinical record and meeting the needs of pediatric patients through imaging protocols that take into account the patient’s size.<sup>5</sup>

The University of Kentucky had already implemented these practices before The Joint Commission’s requirements went into effect. UK has also joined the ACR’s Dose Index Registry program,<sup>7</sup> which documents and stores CT radiation doses for each patient so that imaging practices can be compared across institutions.

The radiology team is committed to collaboration and education. In February 2015, the Neuroradiology Division of the Radiology Department hosted a one-day Continuing Medical Education (CME) conference where Raslau discussed how to optimize pediatric techniques and mitigate image artifacts while reducing exposure and improving image quality.

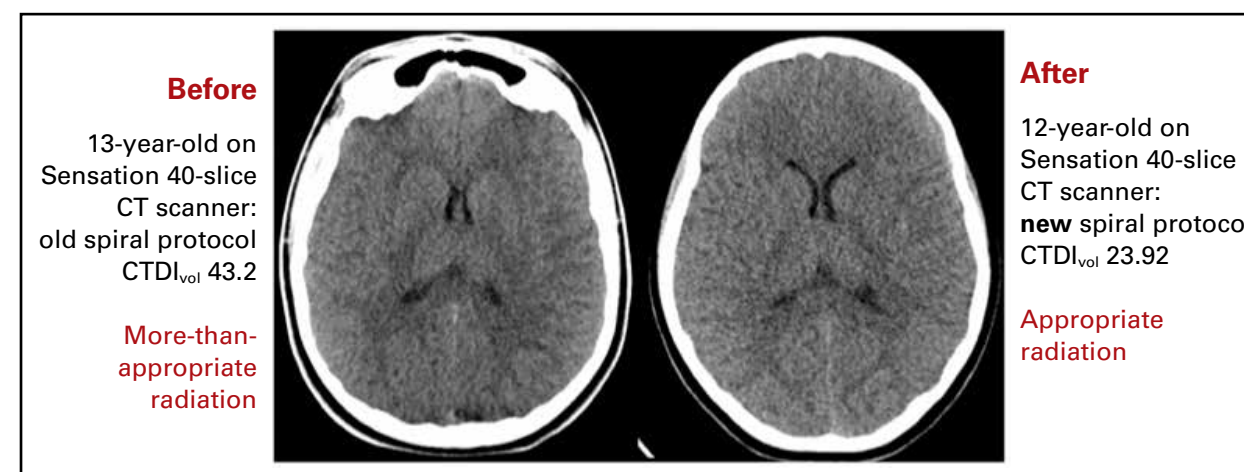


Figure 2. Radiation dose (measured as CTDIvol) was cut in half after age replaced weight as the criterion for using the pediatric scan protocol.<sup>2</sup>

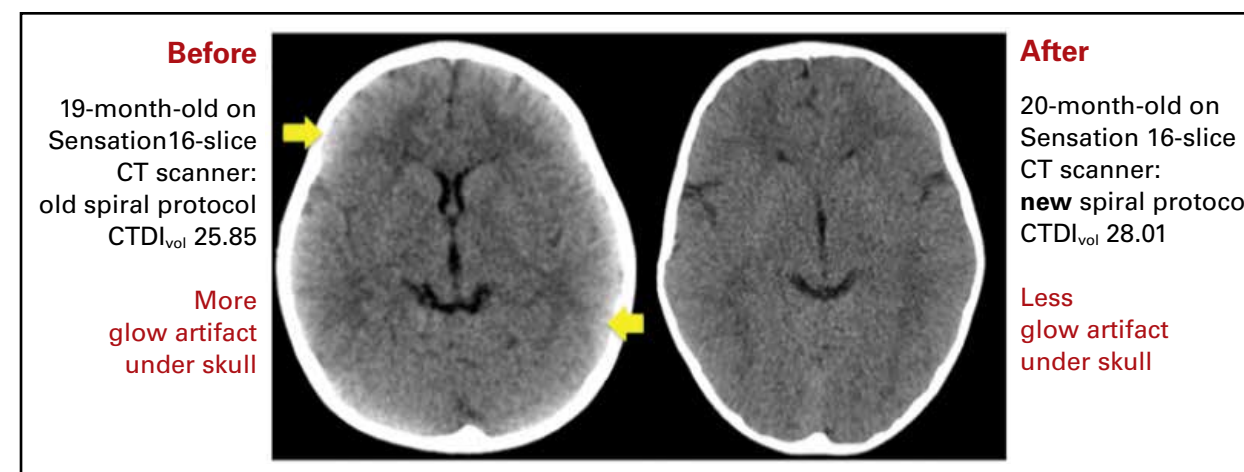


Figure 3. The “glow artifact” under the skull (yellow arrows) was nearly eliminated after CT scanning parameters were adjusted.<sup>2</sup>

### Turning theory into practice

“Medical imaging is, in many ways, central to modern medicine, and radiologists are centrally positioned in the advancement and application of medical imaging,” said Raslau. “Radiologists turn the theory into practice. We are uniquely trained with a practical understanding of scanner technology and protocol design, we routinely examine image quality and radiation exposure, and we foster collaborative relationships with technologists, physicists and vendor specialists. It is a critical role that I find very fulfilling.”

UK Radiology is committed to reducing radiation exposure in children. In addition to following The Joint Commission’s recommendations for training in Image Gently® and Image Wisely® radiation dose reduction techniques, Adams explained that she feels the close connection between the UK CT technologists and members of the radiology physician team help support a safe and positive environment for our patients.

The partnership among Raslau, Deraney and Adams has improved imaging practices and led to practical applications and changes that benefit many children. By designing this quality and safety project, implementing the findings as real-world improvements in imaging protocols and publishing their experiences, the radiology team hopes that other institutions will be inspired to review their own imaging practices in children. [OC](#)

### Contact us

To discuss specific radiation-reduction protocols and CT scanner specifications, please contact Flavius Raslau, MD, at [flavius.raslau@uky.edu](mailto:flavius.raslau@uky.edu). If you are a physician who would like more educational information for your patients about CT scanning, please download UK HealthCare’s CT Scans 101: Be an Informed Consumer at [ukhealthcare.uky.edu/publications/healthsmart/CT-scans-101](http://ukhealthcare.uky.edu/publications/healthsmart/CT-scans-101) or call UK • MDs at **859-257-5522** and ask for 25, 50 or 100 printed copies of the publication.

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# Stimulating change

Using deep brain stimulation and innovative treatment plans, UK’s Brain Restoration Center offers novel approach to patient care

A simple question drives Craig van Horne’s work: *What can we do to make things better for our patients?* Van Horne is a UK neurosurgeon whose work largely focuses on treating patients with Parkinson’s disease.

Medications are used to address the debilitating motor symptoms associated with Parkinson’s – tremors, rigidity and slow movement – but over time those medications lose their effectiveness. When that happens, the next step is often a neurosurgical procedure called deep brain stimulation (DBS).

DBS has become a standard of care for patients with advanced Parkinson’s disease. During a two-step procedure, electrodes are placed deep in the patient’s brain. When stimulated with a mild electrical current, the electrodes interrupt the nerve signals that cause tremors and other motor symptoms. The result is a better quality of life for patients, although the procedure does not cure or slow the progression of the disease.

While DBS can allow patients to live a more normal lifestyle, several aspects of the procedure often cause patient anxiety.

His patients’ discomfort brought van Horne back to his original question.

“What else can we do to alter the course of the illness?” he asked. “How can we take the things we’re doing already and do them better? How can we do it more efficiently? How can we make it better for our patients?”

He took a major step in patient care by helping establish the Brain Restoration Center at Kentucky Neuroscience Institute (KNI). The center’s multidisciplinary team of researchers, surgeons and clinicians aims to not only help patients find relief from movement disorder symptoms but also to pursue innovative treatments and procedures that could possibly slow or reverse the disease’s progression.

From performing a modified version of DBS that emphasizes patient comfort to conducting a first-of-its-kind clinical trial focused on slowing the progression of Parkinson’s disease, experts at KNI hope their collaborative efforts can make UK HealthCare a destination uniquely equipped to treat neurological disorders.

### Changing the standard

Since the 1990s, DBS has been used to treat the symptoms of movement disorders, including Parkinson’s, dystonia and essential tremor.

Typically, the surgery is performed in two stages, a few days apart. During the first stage, the surgeon facilitates an opening in the patient’s skull and places an electrode – a tiny insulated wire – in the brain. To ensure the electrodes are placed in the correct area, patients are given only a local anesthetic and are kept awake so they can give the surgeon feedback.

“What else can we do to alter the course of the illness? How can we take the things we’re doing already and do them better? How can we make it better for our patients?”

– Craig van Horne, associate professor of neurosurgery in the UK College of Medicine and a neurosurgeon at UK HealthCare

During the second stage, a few days after the first procedure, patients go under general anesthesia so that a pulse generator – similar to a pacemaker – can be implanted below their collarbone. Extension wires connect the pulse generator with the electrodes in the brain.

Even though patients are given local anesthesia to limit pain and sedatives to reduce anxiety during the first stage, many still reported being nervous before the procedure and uncomfortable during it. van Horne's patients' uneasiness made him question whether there was a better way to perform the surgery.

"A number of patients who have had the procedure done that way say, 'Oh, I remember the whole thing, and I was uncomfortable,'" van Horne said. "We thought, 'If there's a better way to do this, can we make it so the patient doesn't have to go through that?'"

A small change has made a big improvement. van Horne simply reversed the order in which the two stages are performed. During this "reversed-stage" DBS, the pulse generator is implanted first, and while the patient is still under general anesthesia, the surgeon also drills the holes in the skull. This allows patients to be asleep for the most uncomfortable aspects of DBS.

Van Horne pioneered reversed-stage DBS in 2004 while he was working in Boston, and he has continued to perform the procedure at UK since he arrived here in 2011. As a result, UK HealthCare is one of only a few medical centers in the country that regularly offers reversed-stage DBS.

More than 130 patients have undergone reversed-stage DBS under van Horne's care, and he says the outcomes have been positive. The procedure offers peace of mind and is a more viable option for patients.

But the improvements haven't stopped. Another recent advancement allows van Horne to perform both stages of DBS when patients are under general anesthesia. The procedure is called "asleep DBS."

"We have patients who undergo asleep DBS because they wouldn't tolerate the awake phase at all," van Horne said. "Whether they have anxiety or they're 82 years old and their Parkinson's makes them pretty fragile – they're uncomfortable. At a lot of centers, their age cutoff is 70 or 75. Beyond that,

you don't get your surgery. Here, we really think these patients could benefit from the procedure, so we'll do the asleep DBS and treat them to the best of our ability. We've been very pleased with our results."

UK's DBS program is a leader nationally, and the team at the Brain Restoration Center has not stopped pursuing treatment improvements and breakthroughs.

The team's ultimate goal, van Horne said, is to go beyond treating the symptoms and find a way to stop or reverse the progress of the disease.

"The idea was, especially for patients with Parkinson's, we can do the stimulation, but we're not curing their illness," he said. "It's another treatment, but it doesn't get them any further with their disease. It certainly helps with quality of life, so I'm a proponent of it. But what else can we do?"

#### Addressing the disease

To answer that question, the team at the Brain Restoration Center – including van Horne and Greg Gerhardt, PhD, professor and scientific director of the Brain Restoration Center – launched a first-of-its-kind clinical study aimed at stopping or reversing the degenerative effects of Parkinson's.

The study combines the established DBS treatment with a graft of a patient's own peripheral nerve. Peripheral nerves – nerves outside the brain and spinal cord – have regenerative qualities that nerves in the brain do not have. The team hopes to leverage those regenerative effects within the brain, potentially halting or reversing nerve damage caused by the disease.

The study is the first to combine DBS with peripheral nerve transplantation, van Horne said, and gives patients the best of both treatment worlds.

"DBS is in some ways a standard of care for patients in that stage of their illness, but why not combine it with something else?" he said. "The nice part about that is these patients are getting this experimental treatment but they get a standard-of-care therapy at the same time."

The nerve is transplanted at the same time as the DBS surgery, so patients do not have to undergo additional procedures. To test the effect of the nerve graft, researchers can simply turn off the pulse generator implanted during DBS and evaluate the patient's symptoms at a baseline level, van Horne said.



Co-directors Craig van Horne, MD, (left) and Greg Gerhardt, PhD, helped establish the Brain Restoration Center to help patients with movement disorders.

*"At a lot of centers, their age cutoff is 70 or 75. Beyond that, you don't get your surgery. Here, we really think these patients could benefit from the procedure, so we'll do the asleep DBS and treat them to the best of our ability. We've been very pleased with our results."*

*– Craig van Horne, associate professor of neurosurgery in the UK College of Medicine and a neurosurgeon at UK HealthCare*

Gerhardt, who assists van Horne during the nerve graft portion of the surgery, said if the nerve transplant is successful, Parkinson's patients might be able to receive that treatment long before their Parkinson's requires DBS.

"What we really want to do, if this works, is to put in the nerve graft before DBS is needed," he said when the clinical trial was announced. "First we have to show the world and the FDA that this is a safe way to produce a therapy that is disease-altering."

#### Looking forward

In the year since the clinical trial began, researchers have finished enrollment, and there have been no adverse safety effects from the surgical procedure, according to van Horne. While it's too early to call the trial a success, van Horne is encouraged by the initial results.

"We actually have some patients who have had a really good response, that are already a year out from the procedure," he said. "If we really are making a difference with this, then that's really worth something."

Van Horne thinks this multimodal approach to treating Parkinson's disease is best. Too often, he said, researchers and physicians look for one answer to clinical problems and



“What we really want to do, if this works, is to put in the nerve graft before DBS is needed. First we have to show the world and the FDA that this is a safe way to produce a therapy that is disease-altering.”

— Greg Gerhardt, PhD, professor of anatomy and neurobiology and director of the UK Brain Restoration Center

diagnoses, but because Parkinson's causes are unknown, no one knows which one treatment option will best address the disease. Until it is known, van Horne believes that a multipronged approach, such as DBS with nerve graft transplantation, is a step in the right direction.

“We can't target the thing that is causing Parkinson's because we don't know what's causing it,” he said. “I believe in what we're doing with peripheral nerve cells, but it doesn't mean it's the right answer – nobody knows. The only way we're going to find out is by trying these different things. I think that this type of approach, using it with DBS, should be a kind of new standard, if you will. That way, people get the therapy to help with their symptoms, and they're trying something else. It just seems like a reasonable way to go.”

This line of thinking defines the overall mission of KNI – experts in basic science, translational science, clinical science and surgery who combine their knowledge to better address the challenges of treating neurological disorders.

Much like Parkinson's, other brain disorders don't have a single treatment that works best, but researchers at the UK Brain Restoration Center are collaborating to make progress wherever possible. For example, the group is looking at extending DBS and nerve transplantation to other neurological disorders including dystonia, Huntington's disease, epilepsy, memory loss and even depression.

“We don't know what we're going to find, and the only way we're going to learn more is by doing,” van Horne said. “Let's just see what we can do to make some advancement, re-evaluate the information and come up with a better attempt next time. That's kind of the spirit of our program.”

Ultimately, pursuing novel procedures and innovative treatment plans is all about providing the best possible care for patients.

“What really makes our program run is the patients,” he said. “Our patients and their families – they're willing to try these things for the right reasons. They're pleasant, they're enthusiastic and they're supportive. They're a great group.” **OC**

# LVADs have wider use for patients with advanced heart failure

Gill Heart Institute team seeks candidates for LVAD implants

Because of advances made in recent years, left ventricle assist devices (LVADs) are being used to help more heart patients. Now, instead of being used only as a bridge for patients who are awaiting a heart transplant, LVADs are improving the quality of life for patients with congestive heart failure and are sometimes becoming an alternative to a heart transplant.

“It is not as good, not as perfect as the left ventricle, but it gives people a decent quality of life.”

— Maya Guglin, MD, medical director, VAD program, Gill Heart Institute



role of the left ventricle by taking blood from the apex of the left ventricle and pumping it into the aorta.

“It is not as good, not as perfect as the left ventricle, but it gives people a decent quality of life,” said Maya Guglin, MD, medical director, VAD program, Gill Heart Institute.

## LVADs improve quality of life

More than 5 million people in the United States suffer from congestive heart failure. In Kentucky, heart failure is a common final pathway for many of the 12,000 people who die each year from cardiovascular disease.

Medications are available to treat congestive heart failure, and special pacemakers can help some patients. But when these and other measures fail, there are only two options: a heart transplant or an LVAD.

“LVAD helps patients who were considered hopeless, who were unable to walk from their bedroom to the kitchen due to fatigue and shortness of breath,” said Guglin. “It is a chance for them to be active again.”

## Bridge to transplant or lasting solution

The LVAD has long been a bridge for patients until they can receive a new heart.

“We know they need a heart transplant, and we are willing to get it for them, but they have to wait because a donor heart

These assistive devices, which consist of an internal pump, an external power source and a driveline that connects the two, have become more versatile as they have gotten smaller and quieter. Early on, only people with large chests could get an LVAD; now, because LVADs are so much smaller, even women and children are candidates for LVAD implantation.

Although there are several models of the LVAD pump, each operates on the same principle: The pump fulfills the biological



From left to right: Dr. Navin Rajagopalan; Dr. Maya Guglin; Candice Falls, NP; Amanda Hart, RN; Sarah Branam, RN; Thomas Tribble, SPC; Tammy Halcomb, SRNA.

“We want to see patients with advanced heart failure. Even if their own physician thinks they are too advanced – kidney damage, liver damage and they’re not candidates for anything – we want to take a look.”

— Maya Guglin, MD, medical director, VAD program, Gill Heart Institute



The LVAD pump (model shown here) is advancing the quality of life for those with congestive heart failure.

is not available. We give them a temporary solution, a prosthetic device – an LVAD,” Guglin said.

The vast difference between the number of people who are candidates for a heart transplant (250,000), and the number of transplants performed each year (about 2,500) makes it clear why LVADs have become a successful alternative to a heart transplant.

“We have some patients who have been supported on LVAD for three or four years, and they are quite happy with their lifestyle,” Guglin said.

UK HealthCare is performing about 30 LVAD procedures each year. Among LVAD recipients at Gill are business owners, a football coach, hunters, computer specialists, parents and grandparents.

#### How referring physicians can help

UK HealthCare physicians Guglin and Navin Rajagopalan, MD, are the only doctors in Kentucky who are certified to treat advanced heart failure and follow patients with LVADs. They and their multidisciplinary team rely on physicians to refer patients who have advanced heart failure and could benefit from an LVAD.

“We want to see patients with advanced heart failure,” Guglin said. “Even if their own physician thinks they are too advanced – kidney damage, liver damage and they’re not candidates for anything – we want to take a look.

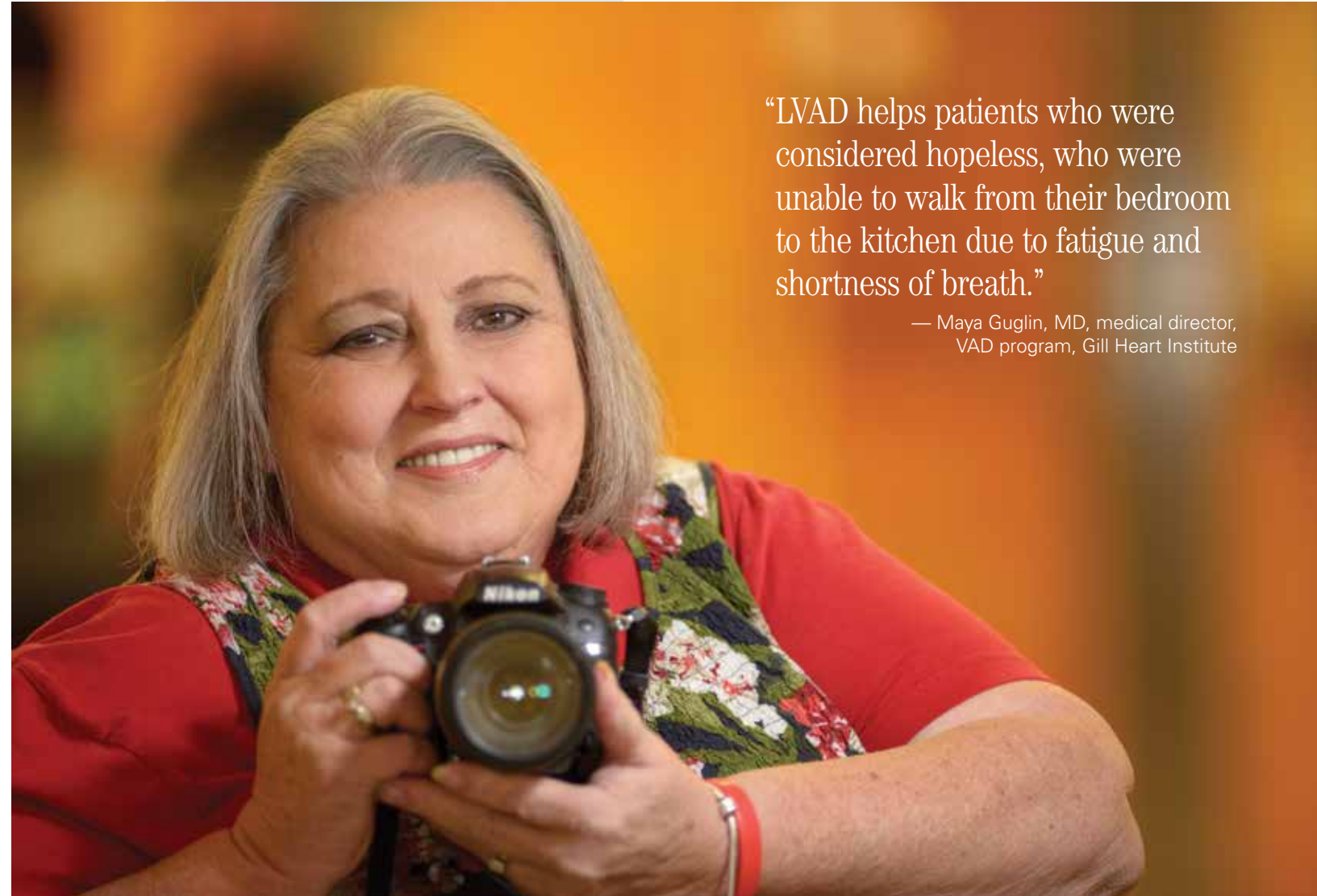
“We won’t be able to help all of them but we will try our best,” Guglin said. “We have time to invest in these patients.” **OC**

## LVAD patients need a support system

LVAD patients will need a little help as they adjust to life with an assistive device. For the first few weeks, someone will have to help them change the battery that powers the LVAD pump and the dressing on their incision. Because LVAD patients are not allowed to drive for several weeks, they will need rides to and from doctors’ appointments.



Jude Hamilton (above) and Karen Taylor Blackburn (below) are both LVAD recipients who are leading active lives.



“LVAD helps patients who were considered hopeless, who were unable to walk from their bedroom to the kitchen due to fatigue and shortness of breath.”

— Maya Guglin, MD, medical director, VAD program, Gill Heart Institute

# UK HealthCare offers vast expertise, long history using Gamma Knife® Radiosurgery

Instrument treats variety of ailments non-invasively



Thomas Pittman, MD



Michael Sanders, MS



William St. Clair, MD, PhD

Since Gamma Knife radiosurgery's beginnings 28 years ago, UK HealthCare has been at the forefront of this non-invasive surgery. In 1991, when UK HealthCare installed its first Gamma Knife instrument, it was only the fifth in the United States. UK HealthCare has since upgraded the machine twice, and the current version, in operation since 2009, is the most automated, accurate and time-efficient yet.

Since 1991, practitioners at UK HealthCare have completed about 4,000 Gamma Knife radiosurgery procedures; more than 150 were performed in 2014. As Gamma Knife radiosurgery technology has evolved, it has become a widely accepted treatment, an FDA-approved technology covered by all major insurance companies.

UK HealthCare's long history with this advanced health care technique is complemented by the extensive experience of the treatment team that uses and researches Gamma Knife radiosurgery. William St. Clair, MD, and Thomas Pittman, MD, co-directors of the Gamma Knife program, have been involved with Gamma Knife radiosurgery for the past 15 years. Physicist Michael Sanders, MS, has been with the

University of Kentucky and the Gamma Knife program since its inception in 1991.

The team's experience enables them to program the software and treat patients more efficiently, which in turn allows patients to return to their normal routines as quickly as possible.

Since 1991, practitioners at UK HealthCare have completed about 4,000 Gamma Knife radiosurgery procedures; more than 150 were performed in 2014.

Having Gamma Knife radiosurgery one day and returning to normal activities the next day has become the norm for patients who have certain types of brain cancers and neurological conditions, thanks to the non-invasive nature of Gamma Knife.

## Defining Gamma Knife radiosurgery

Gamma Knife radiosurgery is a form of radiation therapy used specifically in the brain to treat a variety of conditions including tumors, facial pain and vascular abnormalities. It uses 192 beams of radiation that enter the brain from different directions and converge precisely on one target. The individual beams do not disrupt the brain tissue they pass through, but together the beams deliver a therapeutic dose of radiation to the location where they meet. Radiation causes breakage in both strands of DNA in the affected cells, preventing cell division, which causes the tumor to either arrest in size or shrink as cells die and are not replaced. Fast-growing tumors, such as metastatic tumors, will shrink within a few months. Slow-growing tumors, usually non-cancerous in nature, take longer to shrink.

The individual beams do not disrupt the brain tissue they pass through, but together the beams deliver a therapeutic dose of radiation to the location where they meet.

Gamma Knife radiosurgery can be used to treat tumors or targets that are an average of five centimeters or less in diameter. The procedure causes minimal side effects compared to other types of radiation therapy. Unlike traditional surgery, there is usually no risk of infection or bleeding, no hospital stay and a much faster recovery time.

## Conditions treated with Gamma Knife at UK

Gamma Knife radiosurgery is ideal for treating a variety of vascular, pain and tumorous conditions:

*Arteriovenous malformations* are abnormal clusters of arteries and veins in the brain that can sometimes disrupt the normal blood flow in the brain. It is thought that people are born with arteriovenous malformations but it doesn't become symptomatic until they are 20 to 30

years old. Gamma Knife radiosurgery will cause a buildup of fibrotic tissue that slowly destroys the arteriovenous malformation over a few years.

*Trigeminal neuralgia* is a pain disorder of one or both of the trigeminal nerves on either side of the face. Gamma Knife radiosurgery can leave the motor fibers intact while targeting and destroying the pain fibers of the nerve. Results are achieved in a few months.

*Acoustic neuroma* is a benign tumor on the vestibulocochlear nerve that can cause hearing loss, dizziness, balance problems and ringing in the ears. Gamma Knife radiosurgery can target the tumor while sparing the nerve, and the tumor will shrink over several years.

*Pituitary adenomas* are tumors that develop from the pituitary gland. These tumors are benign; however, they can lead to hormone-balance disruption and visual decline because of their anatomic location. Gamma Knife radiosurgery can be used following surgery to treat any residual tumor.

## Research on Gamma Knife radiosurgery at UK HealthCare

UK HealthCare currently has one clinical trial open to patients with brain metastasis. The trial, open through the National Cancer Institute, is titled "Phase III Trial of Post-Surgical Stereotactic Radiosurgery (SRS) Compared with Whole Brain Radiotherapy (WBRT) for Resected Metastatic Brain Disease."

It is not known whether stereotactic radiosurgery, such as Gamma Knife, is more effective than whole-brain radiation therapy in treating any residual tumor after surgery. This clinical trial compares the two treatment approaches in patients after surgical resection of brain metastases. Physicians who have patients who are interested in participating in this or other clinical trials should visit [markey.uky.edu](http://markey.uky.edu) and click on the header "Clinical Trials."

*Glomus tumors* are benign conditions that often develop at the base of the skull, frequently in the area of the jugular foramen. These tumors can affect the ears, upper neck, base of the skull, and adjacent blood vessels and nerves. Gamma Knife radiosurgery can be used either alone or following surgery to treat any residual tumor.

*Metastatic tumors* from other primary sites (lung cancer, for example) that are not easily accessible by surgery are the most common conditions treated with the Gamma Knife at UK HealthCare. Gamma Knife radiosurgery damages the tumor cells, interrupting their division and causing the cells to die so the tumor will shrink over a matter of months.

*Brain tumors* that are residual or recurrent after surgery can also be targeted with Gamma Knife radiosurgery to complement and enhance the effect of surgery and improve a patient's outcome.

### Benefits of Gamma Knife radiosurgery

Gamma Knife radiosurgery has many benefits compared to traditional brain surgery. It is a non-invasive technique, which makes it an attractive alternative for patients who do not want to undergo traditional surgery or who are not suitable candidates for an operation due to age or other health risk factors. Its non-invasive nature eliminates the risk of complications associated with traditional surgery, such as infection and bleeding. The most common side effect, a headache, is caused not by the treatment but by the stabilizing head frame that patients wear during the procedure.

Unlike traditional surgery, there is usually no risk of infection or bleeding, no hospital stay and a much faster recovery time.

Gamma Knife radiosurgery also has advantages compared to other types of radiation therapy. Gamma Knife targets a specific treatment area, compared to whole-brain radiation. The result is fewer patient side effects, particularly related to fatigue, learning and memory. Compared to other targeted radiosurgery technologies, Gamma Knife is more precise, with accuracy at a fraction of a millimeter.

## The newest Gamma Knife machine at UK HealthCare, the Perfexion, has many improvements and benefits.

Another benefit of Gamma Knife radiosurgery is simply that patients like it. They can resume their normal activities the day after treatment. As computing power and radiologic image acquisition have improved, the time required for Gamma Knife radiosurgery has decreased to about five hours from check-in to discharge. Though timing will depend on the size and complexity of a patient's lesion, eliminating an overnight hospital stay effectively reduces time and expense.

### Benefits of the new Gamma Knife Perfexion system

The newest Gamma Knife instrument at UK HealthCare, the Perfexion, has many improvements and benefits. The Perfexion system is more automated and has improved software. Those advances, coupled with the vast experience of the UK HealthCare staff, have reduced the time it takes to plan and map treatment protocols and conduct treatments.

The range and accuracy of treatment has also improved with the newest Gamma Knife. Targets for the Gamma Knife can now extend as far as the second cervical vertebra. In the past, if multiple tumors or other targets were far apart in the brain, patients would be taken out of the instrument to readjust their head frame, then they would be returned to the machine for a second treatment session. If the combined procedure was too time-consuming, patients would sometimes return for a second day of treatment. Now, however, up to five disparate lesions can be treated on the same day without removing the patient from the instrument or head frame. These patients experience the same success rates.

Incredible accuracy has always been an advantage of Gamma Knife radiosurgery, but the latest instrument is accurate to 0.5 millimeter. The improved accuracy allows the team to treat more delicate areas of the brain, and patients have fewer off-target effects.

### Considerations for Gamma Knife radiosurgery

Gamma Knife technology requires a patient to lie still for an extended period of time, so it is generally used in adults. In addition, the conditions treated by Gamma Knife radiosurgery are diagnosed overwhelmingly in adults. But with general anesthesia, Gamma Knife radiosurgery can also be used on children or uncooperative adults.

Gamma Knife radiosurgery is an adjunct to traditional surgery, not a replacement for it. In cases beyond the conditions listed on the previous page, traditional surgery is still often the better treatment option.

In addition to Gamma Knife radiosurgery effectively treating a variety of conditions including trigeminal neuralgia, acoustic neuroma and metastatic tumors, it can be used after ineffective surgical treatment for some of these conditions. UK HealthCare frequently sees such referrals. [OC](#)

## Gamma Knife® Team

### Neurosurgery:

Thomas Pittman, MD  
Justin Frazier, MD

### Radiation Medicine:

William St. Clair, MD, PhD  
Jonathan Feddock, MD  
Ronald McGarry, MD, PhD  
Marc Randall, MD, FACR

### Head and Neck:

Matthew Bush, MD

### Physicists:

Michael Sanders, MS  
Janelle Molloy, PhD, FAAPM  
Dennis Cheek, PhD

# 8th Floor of Chandler Pavilion A dedicated to the needs of cardiovascular patients



Nurse work stations just outside all patient rooms allow nurses to closely monitor patients without repeatedly disturbing them.

When Floor 8 of UK Albert B. Chandler Hospital's new pavilion opened in December 2014, it marked another step in UK HealthCare's mission to provide patients with the latest advances in heart care in an environment carefully designed to promote healing.

Known as the Cardiovascular Services floor, Floor 8 has two units: a 32-bed Cardiovascular and Thoracic Intensive Care Unit (CVT-ICU) that is one of the largest of its kind in the nation, and a 32-bed unit for telemetry and progressive care.

Patients with the most complex cardiovascular conditions are treated in the CVT-ICU, and as they improve and become

stable, they are moved to the nearby telemetry and progressive care unit. There, patients are cared for by telemetry nurses who are trained to monitor heart patients and assist in the transition out of the hospital and on the path to wellness.

Dedicating an entire floor to patients with heart problems allows UK's team of doctors, nurses and other care providers to easily communicate and share knowledge and resources. Patients benefit from an experienced team that provides around-the-clock care specifically focused on heart disease.



Michael Sekela, MD



Like all of the rooms in Pavilion A, those on Floor 8 are nearly 300 square feet, and each has a window to let in natural light.

"The Gill Heart Institute and UK have evolved into a culture of activity and caring," said Michael Sekela, MD, UK Gill Heart Institute surgical director.

## Designed with patient care in mind

Patient care was of utmost importance in the design of the floor. Employees gave their input on ways the floor could be laid out to best serve patients.



Susan Smyth, MD

"The floor is designed to provide an uplifting and healing environment," said Susan Smyth, MD, medical director of the UK Gill Heart Institute. "Doctors, nurses and staff all helped define the best ways to serve our patients on every level."

A goal was to place as many needed services on Floor 8 as possible to prevent patients from being moved around to different areas of the hospital.

For example, patients on Floor 8 begin their cardiac rehab program on the floor.

"Our staff is dedicated to moving and walking patients every day," said Sekela. "The body has to move to help the heart recover."

"The floor is designed to provide an uplifting and healing environment."

— Susan Smyth, MD, medical director of the UK Gill Heart Institute

## Treatments offered to heart patients on Floor 8

Patients on Floor 8 of UK Chandler Hospital receive a full range of inpatient heart care, including:

- Emergency treatment for heart attacks.
- Treatment for cardiac arrest, including therapeutic hypothermia, a procedure that cools the body to prevent brain damage from occurring when the heart restarts and blood flow returns to the brain.
- Treatment for heart failure.
- Extracorporeal membrane oxygenation (ECMO), which provides critical oxygen to a patient's blood when a failing heart or lungs cannot do the job.
- Heart transplants, including heart and kidney transplants and the state's only program for combined heart and lung transplants.
- Medical and surgical treatments for valve disease. Treatment includes the minimally invasive transcatheter aortic valve replacement (TAVR), which uses a catheter to implant a new valve.
- Catheter-based treatments for dangerous blood clots in the lungs and veins.
- Catheter-based and surgical treatments for atrial fibrillation, an irregular heartbeat that can lead to blood clots, stroke, heart failure and other complications.
- Advanced cardiac imaging.
- Postoperative care for heart and cardiothoracic surgery.

“Our staff is dedicated to moving and walking patients every day. The body has to move to help the heart recover.”

— Michael Sekela, MD, UK Gill Heart Institute surgical director

*Staff input was incorporated into the design of Floor 8. Centralized work areas offer easy access to patient rooms.*



For further convenience, important diagnostic testing and other equipment is located on Floor 8, which helps minimize wait times for testing. If patients need an echocardiogram, for example, they can have that test done near their hospital room.

A nurse's work station is right outside the door of each patient room, which keeps nurses closer to patients' bedsides and increases the time spent on patient care.

#### A healing environment

The details of the patient rooms on Floor 8 also contribute to comfort and healing. They are all private, and like all patient rooms in Pavilion A at UK Chandler Hospital, each is nearly 300 square feet in size. Room layouts are nearly identical, making it easy and efficient for medical and support staff to operate equipment and find supplies as they move from room to room.

For family and visitors, each room has a built-in sleeper sofa and a work desk. Wireless access to the Internet is provided. Large windows in each room supply natural light, a critical aspect of healing.

“There is room for patients, family members and caregivers to work together,” Sekela said. “Not only that, but every room has a view. It is a dramatic psychological advantage to see the outside world when you're sick.”

The healing environment continues throughout the floor. Keeneland Race Course and Maker's Mark have generously supported UK HealthCare and the UK Gill Heart Institute by providing art and other furnishings. Bright, airy waiting rooms feature equine-themed artwork and are comfortably furnished to provide a welcoming environment for visitors. **OC**

## About the UK Gill Heart Institute

Floor 8, the Cardiovascular Services floor at UK Chandler Hospital, is part of the UK Gill Heart Institute, established in 1997. Today, the institute provides a level of service in cardiovascular treatment and care unmatched in Kentucky. Nine Gill doctors were named to the prestigious Best Doctors in America® 2014 list, including seven in cardiovascular disease and two in vascular surgery.

In addition to Floor 8, the Gill Heart Institute outpatient cardiology clinic is located in the Linda and Jack Gill Building, adjacent to the main hospital. Patients come to the clinic for consultations and follow-up appointments. The clinic also houses facilities to conduct tests for patients who do not need to be admitted to the hospital.

#### Outpatient services at the clinic include:

- Echocardiograms, which use sound waves to evaluate the heart's chamber and valves.
- Stress tests, which are administered while a patient walks on a treadmill or is given medication to monitor the heart during exercise.
- Holter monitors, which are worn by a patient for 24 to 48 hours to record heartbeats that the doctor then reviews and evaluates.
- Cardiac catheterizations.
- Electrophysiology studies, where catheters are placed inside the heart to study its electrical system.
- CT, MRI and other advanced cardiovascular imaging and technology.



*With an entire floor dedicated to patients with heart problems, the team of doctors, nurses and staff at UK's Gill Heart Institute can better communicate for the best care.*

# Taking a new approach to adolescent health in Kentucky

“My outlook from the start was, we can change the state. I knew it wouldn’t take much to change Kentucky if we did things the right way.”

— Hatim Omar, chief of the Division of Adolescent Medicine

When Hatim Omar, MD, came to Lexington in 1998, he knew he faced a tough assignment. Omar’s job was to create UK HealthCare’s Adolescent Medicine program, a tough task given that Kentucky teens were worse off than those almost anywhere else in the country. High rates of obesity, suicide, pregnancy and drug use plagued the Commonwealth’s adolescent population.



Hatim Omar, MD

But instead of seeing the statistics as an insurmountable challenge, Omar saw an opportunity.

“My outlook from the start was, we can change the state,” said Omar, now chief of the Division of Adolescent Medicine. “I knew it wouldn’t take much to change Kentucky if we did things the right way.”

The right way meant tackling adolescent health through direct patient care, governmental advocacy and community outreach. The three-pronged approach has worked. The Adolescent Care Clinic that Omar created now sees more than

10,000 patients each year. In the 17 years since he started the program, adolescent health outcomes have improved in many counties, according to Omar. For example, Adolescent Medicine began a clinic located at Lincoln County High School in 2007. As a result, suicide attempts of young people, 10-24 years of age, have decreased from 83 to 49 (per 100,000), a 40 percent drop (see chart on page 27). Suicide attempt hospitalization rates for the whole of Kentucky remained relatively the same.

### Patient care is primary

The main thrust of UK’s Adolescent Medicine program is direct patient care. Omar, along with Elizabeth Johnson, LCSW, leads a multidisciplinary team of health care providers that aims to make the clinic a one-stop shop for adolescent health. The team consists of seven physicians, nurse practitioners, a physician assistant, seven mental health providers, three social workers, a nutritionist, and 10 nursing and clerical staff.

One way the clinic serves the needs of teens is by working with the demands of their schedule. Appointments are available until 9 p.m. Monday through Thursday, which helps prevent students from missing school and parents from missing work.

Instead of scheduling an initial appointment with a primary care provider and follow-ups with subspecialists, Adolescent Care Clinic patients schedule one appointment at which all of their symptoms are addressed. Each patient is screened for a variety of health concerns and given information about many topics, including nutrition, exercise, depression, sexual health and drug use.

“Say you have a 15-year-old girl with acne, menstruation concerns, and she’s overweight and upset,” Omar said. “Normally, she’d go to her primary care doctor, then she’d see a dermatologist, a gynecologist, a psychologist and a psychiatrist. She misses five days of school, her parents miss five days of work, and each health care provider is treating one symptom. In one visit, we can do what all the others do. We treat the

“We want physicians to be aware – if you have a teenager with any kind of problem, it’s probably a good idea for them to come here. It’s our job to figure out what’s really going on and how to best treat it.”

— Hatim Omar, MD, chief of the Division of Adolescent Medicine

Medical students, residents and students from nursing and social work all rotate in adolescent medicine to become better future providers in caring for teens.

disease, not the symptom.”

Adolescent Medicine has also become a valuable resource for referring physicians. Diagnosing teenagers can be a difficult challenge for many primary care providers. Too often, symptoms that bring an

adolescent to the doctor – such as fatigue or headaches – might be signs of a more significant underlying problem. Omar’s team is trained to figure out what those problems are and how best to treat them.

“We want physicians to be aware – if you have a teenager with any kind of problem, it’s probably a good idea for them to come here,” he said. “It’s our job to figure out what’s really going on and how to best treat it.”

### Positive change through government advocacy

Away from the clinic, Omar and his team have worked with governmental agencies to help improve adolescent health in Kentucky. Through collaboration with legislators, the Kentucky Department for Public Health, the Kentucky Department for Behavioral Health, Developmental and Intellectual Disabilities and the Commission for Children with Special Health Care Needs, progress has been made in areas such as suicide prevention and pregnancy prevention, according to Omar.

“It’s not always easy working with city and state governments, but over the years I think we’ve managed to accomplish a lot,” Omar said. “We’ve worked together to figure out what can be done for the youth in Kentucky. It’s a matter of finding out who will listen to our cause and then working with these people to help them better understand what we are doing.”

### Community involvement is key

In addition to working with governmental agencies, Omar has made it a priority to bring health information resources directly to communities. He and his team travel to Kentucky schools, giving parents, students, teachers and counselors information that can help them identify health issues before they become

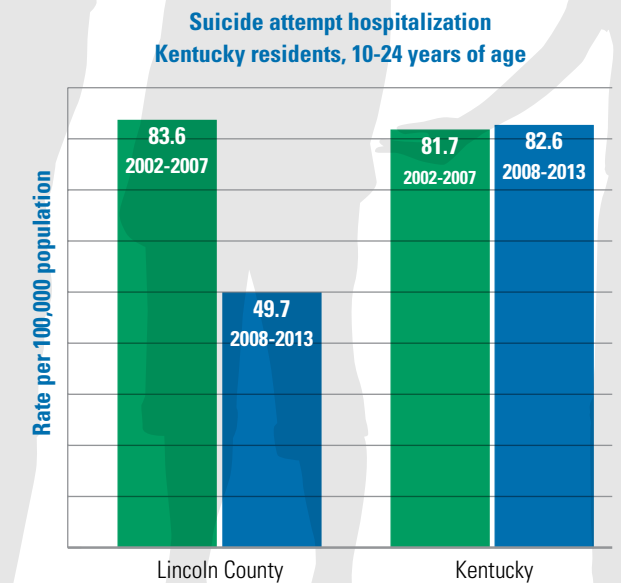
major concerns. The Adolescent Medicine team also attends community events and hosts health boot camps for parents at the beginning of the school year.

Providing these preventive interventions, Omar said, is as important as treating teens in the clinic.

“My approach is to prepare people for prevention and not wait until something happens,” he said. “Take teen suicide for example. We need to teach parents to notice when there is something wrong with their kid or if their child is acting different. That way we can address issues before an adolescent gets to the point of attempting suicide.”

Perhaps the Adolescent Medicine team’s biggest accomplishment is the trust it has built with teenagers across the state. From fitting patients into a tight clinic schedule whenever they need to be seen, to answering emails in the middle of the night, Omar believes the key to seeing real change in adolescent health is simply being there for those who need help most.

“Teenagers feel like we are here for them all the time,” Omar said. “I get hundreds of emails a day from teens because this is their lifeline. Someone emailed me last night and said, ‘I know it’s 2 a.m. and you’re sleeping, but I know you care and just writing this email has made a difference.’” **OC**



# With the addition of TAVR, Gill Heart Institute offers most experienced transcatheter valve program in the region

Minimally invasive procedure uses catheter to replace diseased aortic heart valves

Whether it's the latest cell phone, a curved high-definition television or a car that drives itself, technology continues to make grand leaps in advancement. That is especially true at the UK Gill Heart Institute, where a recent innovation in Gill's transcatheter heart valve program is benefiting many patients.

Since the first balloon aortic valvuloplasty was performed at UK HealthCare in 1984, UK physicians have expanded the range of catheter-based repair to mitral, pulmonic and prosthetic valve diseases.

“With previous patients we didn't have valve sizes to meet their needs. We used to just have two valve sizes to offer; now we have up to four different sizes.”

— Vicky Turner, APRN, nursing director/valve coordinator

## Heart valve team equipped with the latest tools

Led by interventional cardiologist John Gurley, MD, UK's heart valve team includes cardiologists, cardiac surgeons, advanced imaging specialists, cardiac anesthesiologists, nurse practitioners and care coordinators.

“Our program provides expert diagnosis and treatment by cardiologists and surgeons and encompasses a large outpatient and inpatient service that treats all forms of valvular heart disease, both before and after repair,” Gurley said. “Based on the most recent cardiovascular research, our experts employ the latest tools and techniques for diagnosis and repair of diseased heart valves, and we offer new and less-invasive therapies for valvular disease.”

## Using TAVR to reduce risks

Advanced age, frailty or other medical conditions can make the risk of conventional aortic valve replacement surgery prohibitively high. These patients may benefit from TAVR, which allows Gill's heart valve team to replace a diseased aortic heart valve without open-chest surgery.

The heart valve team conducts a comprehensive evaluation before making any treatment recommendation. When valve replacement is necessary, the team decides whether surgery

or TAVR is the better option. The team chooses TAVR when the risks of traditional surgery outweigh the benefits.

For those patients who are good candidates, TAVR can provide relief from the debilitating symptoms associated with aortic valve stenosis.

## Catheter puts artificial valve in place

With TAVR, a balloon-expandable heart valve is inserted through a small incision in the groin. The valve is advanced through the arteries until it reaches the heart. If the arteries to the legs are obstructed, TAVR can be performed through an incision between the ribs. TAVR patients are usually awake within an hour after the procedure.

“Based on the most recent cardiovascular research, our experts employ the latest tools and techniques for diagnosis and repair of diseased heart valves, and we offer new and less-invasive therapies for valvular disease.”

— John Gurley, MD, interventional cardiologist

The TAVR valve opens and closes to regulate the flow of blood, just as a normal, healthy valve would. The artificial valve is made of a bovine (cow) heart valve that is stitched inside an expandable stainless steel scaffold or stent.

During the TAVR procedure, the new valve is crimped to the approximate diameter of a pencil and placed on a catheter. A small incision is made in the groin, and the catheter is fed through the femoral artery to the heart, much like an angioplasty procedure. Once the catheter is in the heart chamber, the new valve is positioned directly inside the diseased aortic valve. The catheter balloon is inflated to secure the valve in place and the TAVR valve begins to work immediately.

It might sound straightforward, but from initial consultation and pre-op evaluation to procedure, the heart valve team puts in 30 to 40 hours of work to plan a TAVR procedure. What makes the UK transcatheter heart valve program unique, said Turner, “is the multidisciplinary approach we take for patients. I see the benefit patients get out of it. We have good interaction; we have to have that from each other to make it work.” **OC**

## Other options for aortic valve replacement

Valve replacement is not always necessary for patients with aortic stenosis. Many patients can be helped with medication adjustments, coronary stents or other treatments. To help patients make the right decision, UK's team of specialists evaluates several factors, including:

- The benefits and risks of each type of treatment.
- Patient age and medical history.
- Specific valve condition.
- Lifestyle needs and goals.

## Strengths of UK Gill Heart Institute's transcatheter heart valve (TAVR) program

- Personalized care that incorporates the latest practice guidelines while respecting a patient's needs and preferences.
- A multidisciplinary heart valve team brings together cardiologists, surgeons, imaging experts and other specialists.
- Procedures performed in the most modern and best-equipped hybrid operating facilities in the region, which allows greater accuracy in surgical procedures and can reduce recovery time, the risk of post-operative complications and the need for treatment in the ICU.
- The most experienced and complete transcatheter valve program in the region.
- A commitment to innovation in valvular heart disease, which makes the latest transcatheter techniques and minimally invasive surgical procedures available to patients.
- A commitment to excellence that leads to superior results and high levels of patient satisfaction.



John Gurley, MD

## TAVR becomes newest transcatheter option

In 2012, transcatheter aortic valve replacement (TAVR) was added to the list of minimally invasive heart valve procedures offered at the Gill Heart Institute. The addition of TAVR is important because aortic stenosis is the most common valvular heart disease in developed countries. With the addition of TAVR, the UK Gill Heart Institute continues to offer the most complete and most experienced transcatheter valve program in the region.

In the past two years, UK's heart valve team has performed 71 TAVR procedures. Now another recent advancement makes TAVR a viable option for even more patients.

“With previous patients we didn't have valve sizes to meet their needs. We used

to just have two valve sizes to offer; now we have up to four different sizes,” said Vicky Turner, APRN, nursing director/valve coordinator.



Vicky Turner, APRN



# Neonatal ICU treats growing number of drug-addicted babies

Use of heroin, similar drugs fuels increase

The neonatal intensive care unit (NICU) at UK HealthCare has seen more babies being born with an addiction to heroin and other drugs in recent years. Peter Giannone, MD, chief of neonatology and vice chair of pediatric research, Kentucky Children's Hospital, calls the significant rise in the number of drug-addicted babies born in Central and Eastern Kentucky and southern Ohio "a new epidemic for us."



Peter Giannone, MD

"When cocaine was the drug of choice, women would be at risk to miscarry," said Giannone. "Now that the drug of choice is heroin, women are delivering full-term babies who are addicted. This is one of the top states in the country for addicted babies."

Babies who are addicted to heroin and other drugs may have a low birth weight due to placenta insufficiency. "They can be term and look perfectly healthy, but

the problem is they are withdrawing from heroin or whatever the mom was on," Giannone said. "A baby can actually die from withdrawal, so we have to be very careful."

"Now that the drug of choice is heroin, women are delivering full-term babies who are addicted. This is one of the top states in the country for addicted babies."

— Peter Giannone, MD, chief of neonatology and vice chair of pediatric research, Kentucky Children's Hospital



## Delay in clamping umbilical cord decreases brain bleeds

Peter Giannone, MD, is studying the effects that a slight delay in clamping the umbilical cord can have on extremely low birth-weight babies.

"We have found in our preliminary studies that if we wait 45 seconds before clamping the cord after extremely low birth-weight babies are born, it decreases intraventricular hemorrhage [brain bleeds]. The babies are tiny, so 45 seconds is significant," said Giannone, chief of the Division of Neonatology and vice chair of Pediatric Research at Kentucky Children's Hospital.

Giannone's work is funded by a \$3 million Research Project Grant (RO1) through the National Institutes of Health. He brought the grant with him when he came to UK HealthCare from The Ohio State University.

"My theory is the extra blood volume keeps their blood pressure much more stable; [if] they don't have as much blood pressure fluctuation, they don't bleed," Giannone said. "Premature babies don't have the capabilities of monitoring their own blood pressure so they have alterations in blood flow to the brain; they have a very fragile capillary network in the brain and that causes leaks and brain bleeds."

"We are really proud of our outcome data. It has really improved in the last two years in infection control, mortality and the prevention of chronic lung disease."

— Peter Giannone, MD, chief of neonatology and vice chair of pediatric research, Kentucky Children's Hospital



"Because we have to put babies back on drugs [morphine] after they are born to wean them off, they stay (in the NICU) several weeks," Giannone said. "We have this influx of babies who are staying for anywhere from 10 to 30 days."

Volunteers are enlisted to hold and comfort the babies to help wean them from their drug addiction. "The way we wean [them off] the drug is [by] the nursing scoring sheet and how fussy the baby is," Giannone said. "The more you hold the baby the less fussy they are, so we are hoping to get them off the drug sooner."

The increase in addicted babies has brought a need for more volunteers. "We have expanded the programs and services we give these babies – music therapy and physical therapy – and we've increased our volunteers who hold the babies," Giannone said.

### NICU treats high-risk infants

Treating drug-addicted babies is only one of the services at UK HealthCare's NICU. The 66-bed unit provides Level III and intermediate care for newborns.

Approximately 40 percent of birthing mothers at UK HealthCare are considered high-risk; 20 percent of their infants are low birth weight and admitted to the NICU. At-risk babies are also transported to the UK NICU from hospitals in Eastern and Central Kentucky.

Luckily, the NICU is equipped with state-of-the-art technology to give every at-risk newborn the best possible care.

No matter how ill its patients, the NICU's outcomes are exceptional. "We have some of the best outcomes in the country when it comes to infection control – by far," Giannone said. "Our risk-adjusted mortality data is stellar. We are really proud of our outcome data. It has really improved in the last two years in infection control, mortality and the prevention of chronic lung disease."

Improvements are tied to the neonatology team's efforts to take what they learn from one patient and apply it to the next.

"When the next patient occupies a bed spot, we have hopefully learned something from the previous baby and we can improve their care," Giannone said. "That is our mantra, our goal." **OC**

## Clinic provides follow-up care for former NICU patients

Individualized approach helps prevent developmental delays

Children who spend time in a neonatal intensive care unit (NICU) or are born prematurely often need special care after they leave the hospital. The Kentucky Children's Hospital NICU Graduate Clinic provides specialized medical and developmental follow-up care for those children until they reach age 3.

The clinic serves babies who were cared for in the NICU and children who were born prematurely and are at risk for developmental problems.

Being born preterm or very sick puts babies at increased risk for developmental problems. When developmental delays are identified early, specialized services can be provided to help babies reach their full potential.

During a developmental follow-up, each child is evaluated by a multidisciplinary team that may include a physician, nurse, dietitian, physical therapist, speech-language pathologist, clinical psychologist and social worker. The follow-ups are highly individualized, with a complete medical history taken and a physical examination completed at most visits.

Specific developmental testing varies with a child's needs and adjusted age, which takes into account his or her premature birth. For example, a 6-month-old baby who was born three months prematurely has an adjusted age of 3 months.

At an adjusted age of 3 months, some babies undergo developmental screening. Formal developmental testing is also usually done at adjusted ages 6 months, 12 months and 24 months.

The medical follow-up provided at the NICU Graduate Clinic is primarily focused on problems associated with high-risk deliveries or NICU stays. This care is intended to complement, not replace, services provided by a child's primary care provider.

## NICU/NICU Graduate Program Physician Team

### Elie G. Abu Jawdeh, MD

*Specialty:* Neonatology  
*Clinical Interests:* Care of extremely low birth-weight infants, neonatal apnea, neonatal pulmonology, neonatology

### Susana Arriagada-Alvarado, MD

*Specialty:* Neonatology  
*Clinical Interests:* Neonatology

### Henrietta Bada-Ellzey, MD, MPH

*Specialty:* Neonatology  
*Clinical Interests:* Developmental follow-up, neonatal abstinence syndrome, neonatal-perinatal medicine, newborn brain disorders, perinatal addictions

### Hubert O. Ballard, MD

*Specialty:* Neonatology  
*Clinical Interests:* Bronchopulmonary dysplasia, neonatal-perinatal medicine, neonatology, pediatrics

### Prasad Bhandary, MD

*Specialties:* Neonatology, NICU Graduate Program  
*Clinical Interests:* Care of extremely low birth-weight infants, neonatal anemia

### M. Douglas Cunningham, MD

*Specialty:* Neonatology  
*Clinical Interests:* Neonatal pulmonology, neonatal-perinatal medicine, neonatology, pediatrics

### Sumit G. Dang, MD

*Specialty:* Neonatology  
*Clinical Interests:* Neonatal resuscitation program, probiotic supplementation in preterm infants, simulation labs for improving resident training

### Nirmala S. Desai, MD

*Specialty:* Neonatology  
*Clinical Interests:* Medical bioethics, neonatal nutrition, neonatal-perinatal medicine, neonatology

### Peter J. Giannone Jr., MD

*Specialty:* Neonatology  
*Clinical Interests:* Care of the extremely low birth-weight infant, intraventricular hemorrhage, necrotizing enterocolitis

### Mina Hanna, MD

*Specialties:* Neonatology, NICU Graduate Program  
*Clinical Interests:* Neonatal-perinatal medicine, neonatology

### Murali M. Palla, MD

*Specialty:* Neonatology  
*Clinical Interests:* Developmental follow-up, neonatal neurology

### Aparna Patra, MD

*Specialty:* Neonatology  
*Clinical Interests:* Bronchopulmonary dysplasia, resident and fellow education in difficult conversations and bioethics, ventilator management in extremely low birth-weight babies

### Lori A. Shook, MD

*Specialty:* Neonatology  
*Clinical Interests:* Follow-up and developmental outcome of NICU graduates, infant development, neonatal-perinatal medicine, neonatology

### Thitinart Sithisarn, MD

*Specialties:* Neonatology, NICU Graduate Program  
*Clinical Interests:* Brain development, neonatal-perinatal medicine, neonatology, prenatal brain exposure

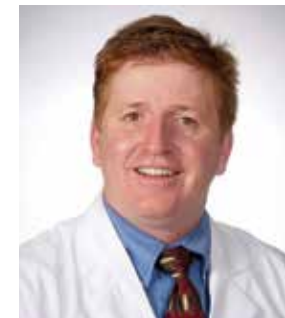
# Introducing My UKHealthCare

## An online portal for our patients

UK HealthCare is now offering My UKHealthCare, an online portal for our patients.

My UKHealthCare allows our patients to:

- Request prescription renewals.
- Request appointments.
- View lab and radiology results and office visit summaries.
- Get health maintenance reminders.
- View immunization records.
- View hospital discharge instructions.
- Send a secure electronic message to their care team.



Philip Bernard, MD

The portal is an Allscripts FollowMyHealth (FMH) product chosen for its functionality and its compatibility with our other EHR systems.

"Patient portals benefit both patients and health care providers by increasing efficiency and productivity," said Carol Steltenkamp, MD, UK chief medical information officer and executive director of the Kentucky Regional Extension Center. "Patients gain 24/7 access to their own medical records, and providers gain a powerful tool that further extends their ability to communicate. I expect this sharing of information will create better teamwork between patient and provider and produce better quality care."



Carol Steltenkamp, MD

The portal launched with limited functionality in June 2014 to our inpatients and to all outpatients visiting clinics that are active on our EHR. As part of our efforts to meet federal Meaningful Use (MU) expectations, enormous efforts have been taking place to educate our patients about the advantages and convenience of using the portal.

"One piece of functionality built into the FMH product is the ability to share physician notes," said Philip Bernard, MD,

UK director of physician IT services. "Patients are very interested in seeing their records. Understandably, physicians are cautious about sharing notes that are written for medical providers with the background to understand them.



"Some centers have begun the process of releasing outpatient physician notes," Bernard added. "We hope to learn from others as we balance the volume of information that could be released versus the amount of information that is useful to patient outcomes. We will be deliberate and collaborative as we explore this new functionality."

"I expect this sharing of information will create better teamwork between patient and provider and produce better quality care."

— Carol Steltenkamp, MD

Initial response to the portal was somewhat tentative, but ongoing education efforts and word of mouth by early adopters have made it a success.

My UKHealthCare is available to all adult patients of clinics using SCM or AEHR electronic health records. (This will be available in all clinics by mid-2016 when AEHR implementation is complete.) Proxy accounts are available to parents and legal guardians of dependent adults and minors, although federal and state laws protecting the privacy of adolescents means no new medical information is sent to the portal after the patient's 12th birthday and functionality is limited. Once patients turn 18, they can apply for their own fully functional portal account.

There's also a convenient app that patients can install on their smartphones or other devices for easy mobile access. [OC](#)

*A local guide (far left) took five Lexington hikers to Kilimanjaro in 2007. From left: Rick Fern, MD; Terry Clark, MD; Dan Kenady, MD; Ralph Miller, MD; and Barry Little, MD.*



# Conquering Kilimanjaro

## Four UK HealthCare professionals conquer the climb

**F**our UK HealthCare staff and faculty members who successfully climbed Mount Kilimanjaro in Tanzania each had their own reasons for tackling the world's tallest freestanding mountain. But whether the motivation was a physical challenge or a bucket list item, the climb to the top of the 19,341-foot peak – the highest mountain in Africa – was an unforgettable experience for this group of medical specialists.

Daniel Kenady, MD, Surgical Oncology, and retired endocrinologist Ralph Miller, MD, traveled as fellow team members to Kilimanjaro in 2007. Seven years later, in July 2014, Ed Erway, retired from EVPHA Revenue Management, traveled to the peak with friend Tom Ress. Kimberly Northrip, MD, Pediatrics, and her sister, Rachel Dennis, climbed the East African summit in September of that same year.

They were among thousands of climbing devotees who flock to the mountain each year to attempt an ascent. According to Mount Kilimanjaro National Park, some 52,000 people attempted the climb in 2013, with 41 percent reaching Uhuru Point, the actual summit.

“Kili,” as the mountain is known, has called to climbers since the first recorded summit hike in 1889. But the journey does not come without its perils. The dangers of this mountain, which comprises three volcanic cones, encompass more than just exhaustion. Kibo, the highest volcanic cone, is dormant but has gas-emitting fumaroles in its crater that cause collapses and landslides. High elevations, low temperatures and strong winds also make the climb difficult and dangerous. The high altitude causes cerebral or pulmonary edema in some, and the medication used to alleviate the problem has side effects that make the journey difficult. Ten to 15 climbers die each year from altitude sickness, hypothermia, falls or other medical problems. More than half turn back at some point during their five- to nine-day journey.

With this in mind, the UK staff and faculty members prepared for the grueling physical and mental feat in different ways. Kenady and Miller trained by running. Erway took daily hikes, backpacked and climbed stairs for an hour to 90 minutes a couple of times a week. Northrip exercised for at least 90 minutes a day for months.

All trained for months, even years, in preparation, but even their rigorous workouts did not prepare them for some of the challenges they would face. Kenady's and Miller's luggage was lost by the airline, and so when they arrived in Nairobi, Kenya, the pair had to find and rent more supplies. Other problems the four hikers faced included frozen drinking water, drained camera batteries and malfunctioning outerwear.

They also dealt with physical issues: extreme fatigue, vertigo, headaches, elevated heart rates and dropping blood oxygen levels. Being part of a team effort was key to making the journey, the climbers said. Team members provided physical and emotional support throughout the climb.

When guides told Miller and his team that they would be climbing to the summit in the dark, beginning at midnight, Miller was surprised. The scree (crushed volcanic rock) was hard to walk on during the day and even more difficult at night. A headlight helped the climbers see; each focused on the boots of the person ahead of them to keep from stumbling.

When they reached the summit and saw the breathtaking sunrise, they appreciated the timing of their journey. “Reaching summit was a real high,” Kenady said. “The clouds below kept us from seeing much but the light reflecting off them gave an interesting effect.”


The route to the summit takes climbers through five rapidly changing ecosystems: rainforest, cultivated land, moorland, alpine desert and arctic summit. According to scientists, 80 percent of the snow caps have disappeared since 1912, and it is possible the peak will be ice-free in the next 20 years. When Miller and Kenady compared their photos from 2007 to those



*Kim Northrip, MD, and her sister Rachel Dennis joined a team of hikers from the United Kingdom and New Zealand on their Kili climb.*

taken on last year's hikes by Erway and Northrip, the changes in the mountain were apparent. The “Kili” climbers have seen something that may soon disappear.

After their impressive climbs, what lies ahead for these four? Not surprisingly, each has a new goal: a bicycle trip through Cuba, a hike through Iceland, an adventure in China. “Maybe hiking the Pacific Crest Trail when [I'm] retired!” Kenady said. One thing is for sure, these world travelers refuse to back down from a challenge.

If you would like information on climbing Mount Kilimanjaro, email Ed Erway [ed.erway@uky.edu](mailto:ed.erway@uky.edu), Daniel Kenady [dekena0@uky.edu](mailto:dekena0@uky.edu), Ralph Miller [ralphenglishmiller@gmail.com](mailto:ralphenglishmiller@gmail.com) or Kimberly Northrip [knorthrip@uky.edu](mailto:knorthrip@uky.edu). 

*From left to right: Daniel Kenady, MD; Ed Erway; Kimberly Northrip, MD; and Ralph Miller, MD.*





# UK HealthCare opens outpatient and primary care facility in the Turfland area

The former Dillard's location at Turfland Mall on Harrodsburg Road has been renovated for the consolidation and relocation of some of UK HealthCare's outpatient clinics.

In the newly remodeled building, clinical services occupy all 85,000 square feet of the first floor. The new facility is easy to access from most parts of Lexington, offers plenty of free surface parking and is all on ground level – no stairs to climb!



Marc Randall, MD

UK Family & Community Medicine, which formerly saw patients at the Kentucky Clinic building on the UK campus and at Kentucky Clinic South on Harrodsburg Road, has been consolidated at the Turfland location and was recently awarded the highest level of designation (Level III) as a Patient-Centered Medical Home.

Other clinics and services at Turfland include:

- UK Sports Rehabilitation and UK Sports Medicine (formerly on Perimeter Drive)
- Occupational Medicine
- Travel Medicine
- Dentistry
- Eye Center (coming soon)

Pharmacy, lab and radiology services are also conveniently located on-site.

The most recent service to make Turfland home is UK Oral Health. An expert practitioner team made up of UK College of Dentistry faculty offers comprehensive oral health and dental services at this location.

"This great location, with free parking and a wide variety of available services, offers a convenient option for our patients, making it easier for them to get the primary care they need," said Marc Randall, MD, chief of ambulatory services at UK HealthCare. "The project will also help revitalize the Turfland area by breathing new life into a large vacant building." **OC**



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## Comprehensive treatment options for patients with heart failure



Maya Guglin, MD



Navin Rajagopalan, MD

Patients at UK HealthCare have access to the latest advances in medical therapy, surgical options and mechanical circulatory support. Additionally, UK Albert B. Chandler Hospital has received an advanced certification in ventricular assist device (VAD).

**To refer a patient for mechanical circulatory support evaluation,** please call **UK•MDs** at **800-888-5533** and ask to speak with **Maya Guglin, MD,** or **Navin Rajagopalan, MD.**

**To refer a patient for a heart transplant evaluation,** please call **800-456-5287** and **select option 1.**

**For urgent physician consultation or inpatient transfer,** please call **UK•MDs** at **800-888-5533** and **ask to speak with the on-call heart failure cardiologist.**

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