National Cancer Institute designation has far-reaching effects

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Doctor to doctor, doctor to patient communication

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UK HealthCare OnCall is published twice a year for UK clinicians, alumni, adjunct faculty and affiliated physicians.

On the cover: A cluster of cells in a blood clot taken from a brain hemorrhage patient.
The cells are shown at 1000x magnification. By light microscopy, neuropathologist Peter Nelson, MD, PhD, thought some cells in the blood clot were suspicious for brain cancer but not enough tissue was present for a reliable diagnosis via traditional pathology. He contacted neuropathologist Craig Horbinski, MD, PhD, for additional molecular testing and interpretation. The image, fluorescence in situ hybridization (FISH), is from a molecular cytogenetic technique that localizes segments of DNA within tumor cells by using probes visible under a fluorescent microscope.

Blue objects in the FISH image are individual tumor nuclei. Green dots are markers for chromosome 7. There should only be two green signals per nucleus (one copy of chromosome 7 from each parent), but here there are three. Trisomy 7 is a common event in gliomas and helps the diagnosis. However, the most convincing finding was the numerous orange dots representing numerous copies of epidermal growth factor receptor (EGFR). EGFR is located on chromosome 7 and thus should have the same number of dots as the green. Yet, there are far more orange dots than green dots in each nucleus, signaling there has been an amplification of EGFR. EGFR is a powerful oncogene that is amplified in 40-50 percent of glioblastomas but not in lower-grade gliomas or any other disease in the brain. When EGFR is amplified in a brain lesion, it signifies a glioblastoma.

Glioblastomas are extremely aggressive cancers and are incurable. In this case, the patient expired four months after diagnosis. The patient’s doctors were able to render a definitive diagnosis quickly and spare the patient another surgery, giving him as much time as possible to get his affairs in order.

Image taken by FISH technician Steven Schwarze, PhD.
Rising to meet the challenge

Third-party endorsements are an indication our emphasis on quality is paying off

As Executive VP for Health Affairs Michael Karpf, MD, wrote in the 2013 UK HealthCare Annual Report, the need to provide high-quality advanced subspecialty care is “fundamental to our commitment to the Commonwealth.” We couldn’t agree more.

These third-party endorsements of our quality speak volumes; take pride in what they represent.

UK HealthCare is documenting improvements on all fronts: mortality, compliance with core measures, improved patient safety indicators (PSIs), and many other metrics. Added to our own observations, we have been fortunate to receive feedback on the quality of our programs from a variety of regulatory and standard-setting organizations.

These third-party endorsements of our quality speak volumes. As a member of the UK HealthCare clinical team, take pride in the accomplishments these designations, accreditations and credentials represent. You and your teams are making a measurable, substantial difference in the lives of our patients.

July – The UK Markey Cancer Center becomes one of only 68 NCI-designated centers in the nation, and the only one in Kentucky.

October – UK HealthCare is named a ‘Rising Star’ by the University HealthSystem Consortium (UHC) for significant improvements in patient safety, mortality, clinical effectiveness and equity of care.

November – UK HealthCare was named a ‘Top Performer on Key Quality Measures’ by The Joint Commission; recognized for exemplary performance in five areas – more areas than any other Kentucky hospital.

December – HHS recognized Chandler Hospital for reaching gold, silver and bronze levels of outreach for organ donation and registration.

January – 110 UK physicians were named to the annual Best Doctors in America ranking – more than any other health system in the state.

February – The Joint Commission designated us as achieving Comprehensive Stroke Center status, even after making the standards more rigorous.

These are only a few of the endorsements that could have been mentioned. If you have good news to share about what is going on in your corner of UK HealthCare, we’d like to hear from you.

Thank you for your dedication to providing excellent evidence-based medicine and ensuring that each patient of UK HealthCare receives the best we have to offer.

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UK HealthCare ahead of the game in preparing for ICD-10

Overhauled diagnosis/procedure codes take effect Oct. 1, 2014

Thanks to a strong planning effort and robust financial commitment from administrators, UK HealthCare is ahead of most of its peers in preparing for a conversion to a new set of diagnosis and procedure codes.

The change represents a major overhaul to the way doctors document the care they provide and how they submit claims for payment to insurers. UK HealthCare leaders have involved doctors in the planning process and will offer training in 2014 to make sure providers are prepared for and comfortable with the changes.

The United States is the last industrialized nation to make the switch to the 10th revision of the International Statistical Classification of Diseases and Related Health Problems, known as ICD-10. The U.S. Department of Health and Human Services initially set the ICD-10 implementation date for Oct. 1, 2013, but postponed it for one year after hearing concerns from health care providers that they could not update their systems in time.

Despite that delay, UK HealthCare continued its planning process, which began spring 2011 with the selection of PricewaterhouseCoopers LLP (PwC) as a consultant to help with an assessment of where the organization was and where it needed to focus its efforts to be ready for ICD-10. That decision to move forward has helped put UK HealthCare ahead of many others in health care, said Carol Steltenkamp, MD, chief medical information officer and co-chair of the physician documentation group that is part of UK’s ICD-10 steering committee.

“I think when you look at other organizations of our size, we’re ahead of the game from a national standpoint,” Steltenkamp said. “Some folks were continuing to hope the federal government would delay it again, but we acknowledged that wouldn’t happen; we were determined to act.”

Maria Toribio, a PwC health industries adviser who is working closely with UK HealthCare on ICD-10 implementation, confirmed that UK leads its peers.

“My colleagues are getting a lot of requests from organizations to just now perform assessments,” she said.

Doctors involved in planning from early stage

Physicians will be among the most impacted by the conversion to ICD-10, partly because the number of procedure and diagnosis codes is greatly expanding. For example, ICD-9, the system in use in the United States since 1979, has 13,000 diagnosis codes and 3,000 procedure codes. Under ICD-10, that increases to 68,000 diagnosis codes and 87,000 procedure codes.

The additional codes allow for much greater specificity in documenting the care patients receive. ICD-9 procedure codes are three or four characters long and use only numbers, while ICD-10 procedure codes are seven characters long and use both letters and numbers. Diagnosis codes are now three to five characters long and will extend up to seven characters under ICD-10.

“I think when you look at other organizations of our size, we’re ahead of the game from a national standpoint.”

– Carol Steltenkamp, MD

Ed Erway, UK HealthCare chief revenue officer and chairman of the ICD-10 executive steering committee, said UK plans to offer doctors Web-based training – targeted to begin early in 2014 – to help them understand how to document their care more thoroughly. That way, coders can review medical charts and do the coding for physicians.

“We’ll have a transition of taking the coding out of the physicians’ hands and putting it into the hands of coders,” Erway said. “The physician focus will be on the delivery of care and documentation of that care.”
Steltenkamp said that extra documentation is important because it will confirm the high level of care that patients receive at UK HealthCare. The Centers for Medicare and Medicaid Services will use that data to review quality metrics for health care organizations.

“We provide a lot of really impressive care here,” she said. “We are doing things others can’t. This will highlight that.”

The committees will continue meeting through the Oct. 1 implementation, Steltenkamp said, and physicians who have questions are welcome to participate.

Erway said UK HealthCare has invested in software that will monitor physician documentation and provide real-time feedback on how they can improve. Additional training will also be available, and the physician subgroups are identifying liaisons who can assist with training and answer questions from colleagues.

Ultimately, the conversion to ICD-10 is projected to be budget-neutral, and UK HealthCare leaders are not expecting an increase in reimbursement from Medicare or other insurers.

Ed Erway, UK HealthCare chief revenue officer and chairman of the ICD-10 executive steering committee, said preparation for conversion to the new coding system began by examining UK’s information technology systems to see which ones would be affected.

The total came to 71 systems.

Maria Toribio, a consultant from PricewaterhouseCoopers LLC who is working with UK HealthCare on its ICD-10 conversion, said those systems will receive at least six months of testing before the new codes go live on Oct. 1, 2014.

That puts UK HealthCare ahead of many of its peers nationwide, she said.

“One scary thing we are seeing is many organizations struggling through upgrading their IT systems,” Toribio said. “We have six months of really extensive testing planned here, and others are just not leaving themselves that window of opportunity.”
But the switch has required a significant investment. Combined with upgrades and testing to 71 information technology systems throughout the organization that will be affected by ICD-10 and other training initiatives, UK healthcare’s total investment in ICD-10 preparation totals $21 million.

“We have the backing of leadership who understand how important this is,” Erway said. “This is our revenue. This is the lifeblood. We know there are risks out there that we will have to address, but we are further ahead than the majority of others.”

### Examples of new codes

According to the American Medical Association, here are some examples of how the expanded ICD-10 codes will work.

**Diagnosis codes** will go from three to five characters to as many as seven characters. The number of diagnosis codes will expand from 13,000 to 68,000. New codes will look similar to this:

- S52: Fracture of forearm
- S52.5: Fracture of lower end of radius
- S52.52: Torus fracture of lower end of radius
- S52.521: Torus fracture of lower end of right radius
- S52.5sA: Torus fracture of lower end of right radius, initial encounter for closed fracture

The number of **procedure codes** will increase from 3,000 to 87,000. The codes will go from three or four characters – currently all numbers – to seven characters that can be letters or numbers. Procedure codes will be set up like this:

<table>
<thead>
<tr>
<th>Character</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Name of section</td>
<td>Body system</td>
<td>Root operation</td>
<td>Body part</td>
<td>Approach</td>
<td>Device</td>
<td>Qualifier</td>
</tr>
</tbody>
</table>

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“With the backing of leadership who understand how important this is,” Erway said. “This is our revenue. This is the lifeblood. We know there are risks out there that we will have to address, but we are further ahead than the majority of others.”

### More coders needed

National studies show that because of the increased specificity required by ICD-10 codes, medical coders will have an increased workload. Their productivity is estimated to fall as much as 50 percent.

UK HealthCare is implementing its electronic medical record to make electronic documentation easier, and the organization will also use computer-assisted coding to help pull information from medical charts into coding documents. That will help remediate some of the lost productivity, said Ed Erway, UK HealthCare’s chief revenue officer and chairman of the ICD-10 executive steering committee.

As a result, UK HealthCare, and most other health care providers, will need to hire more coders. Coders will also get extensive training, as will employees in patient access, patient financial services and other areas where staff should be aware of the new coding system.
by Kristy Deep, MD

“You walk into your patient’s room and say something such as: “Everything looks great, you are ready to go home.” The patient looks at you with dismay, saying, “But the other doctor was just here and said he wants to do more tests.”

These kinds of things happen. And they’re frustrating for any doctor. But the fact is they’re worse for the patient.

Even if they’re getting great clinical care, patients who experience a miscommunication like this will lose confidence in that care. We can communicate with each other perfectly 99 times, but it is that 100th time – the time there’s a miscue – that the patient will remember. A single mistake can make it look like we don’t know what we’re doing, and it affects the patient’s entire perception of their experience with us.

Hospitals, including UK HealthCare, measure the quality of care they provide in many ways – how often the right antibiotic is given to patients with pneumonia, how often there are complications, how often the patient is readmitted within 30 days of a hospital stay. Those are definitive numbers.

But some aspects of medical care can only be measured through the eyes of the patient – specifically the HCAHPS surveys returned by patients. It may not be 100 percent scientific, but it’s one of the best ways we can listen to our patients experience when they are under our care. On those surveys, patients are asked to rate the kind of communication they received from their caregivers in several ways.

UK HealthCare’s performance on these questions has been inconsistent. One month listening scores might be high, but scores for how well we explain things are lower than we’d like; the next month we do better on one thing and less well on another.

“This is not about patient satisfaction. It’s not about making patients happy. This is about the quality of care we provide patients, and these surveys are the way we get their feedback. We’re measuring some component of the quality of care that only they can tell us.”

It’s important to remember that this is not about patient satisfaction. It’s not about making patients happy. This is about the quality of care we provide patients, and these surveys are the way we get their feedback. We’re measuring some component of the quality of care that only they can tell us.

The day is coming when these kinds of scores will affect the bottom line. But most important, improving the way we communicate – ensuring that our patients understand their diagnosis, prognosis and treatment plan – is just the right thing to do. That is high-quality care.

Besides the specific communication-related questions, the surveys offer opportunity for comments. We get lots of great compliments, but we do sometimes hear that our doctors don’t talk to each other, that our patients get different stories from different doctors.

Clearly, communication among our doctors is an opportunity to improve. That’s why doctor-to-doctor communication is the focus of our first initiative.
Doctor to doctor communication

As part of UK HealthCare’s ongoing quality-improvement efforts, a committee of UK HealthCare physicians called the “DocCom” team has been created to make it easier for our physicians to communicate with one another, to make every patient’s care seamless. They’ve been looking into ways to reduce barriers to communication among physicians and setting some internal expectations for how communication among physicians occurs.

“When it comes right down to it, the care we provide and the teams we build around our patients are most dependent upon communication,” said DocCom member Andrew Bernard, MD, medical director for acute care surgery, trauma and surgical critical care. “This initiative is about reinforcing those connections and making them happen more often and with less effort.”

There are safety issues as well. Considering the complexity of some of our patients and the number of specialists involved, communication is crucial. Again, one mistake can affect that patient’s care.

“We must enhance doctor to doctor communication to ensure that our hand-offs, or transitions of care, are seamless for our patients,” said Bernard Boulanger, MD, chief medical officer for UK HealthCare, who also serves on the DocCom team. “Managing patients, especially those with complex chronic conditions, across the continuum of care requires the timely sharing of information between care providers.”

If you look at everything through the eyes of the patient – if you’re a patient who experiences a miscommunication – you will conclude that we don’t know what we’re doing, and you won’t know who to trust, who’s right.

Good communication has the opposite effect. “Patients and families are most comfortable and confident in their care when they know that ‘all those specialists are talking to each other,’” said Joseph Iocono, MD, chief of pediatric surgery and DocCom member.

“Considering the complexity of some of our patients and the number of specialists involved, communication is crucial.”

– Andrew Bernard, MD

DocCom committee members

Andrew Bernard, MD
Philip Bernard, MD
Bernard Boulanger, MD
Cletus Carvalho, MD
Michael Daily, MD
Kristy Deep, MD
Justin Fraser, MD
Brian Hawkins, MD
Joseph Iocono, MD
Jessica Lee, MD
John M. O’Brien, MD
Wade Rankin, MD
Rosalind Ritchie-Dabney, MD
Elizabeth Seelbach, MD
Stephen Strup, MD
Frederick Ueland, MD
“Also, over time, repeat physician interactions build relationships and trust that cross disciplines. Even when the opinions about care differ, patients see how these are necessary at times to deliver optimal care and enhance both care and patient satisfaction,” Iocono added.

“A lot of times on rounds you’ll see this semicircle of people standing around talking at the patient. Instead, we really need to use our physical presence to establish a connection – to touch their arm or shake their hand.”

Doctor to patient communication

The second initiative on the communication agenda is improving interactions between doctors and patients. The idea here is the same: To look at the experience through the patient’s eyes and determine what the patient needs to get from each encounter with the physician. While the content of any interaction with a patient or family may vary, the way we enter and exit that room creates a lasting impact.

The plan comes with a mnemonic device, “IN and OUT.” Whether you love or hate mnemonics, the tool itself is a good one.

It starts with health care workers introducing themselves. Hospital patients encounter a dizzying array of people during their stay, and it’s crucial that they understand the role each person plays in their care.

Introduce yourself and role in care. So it’s not just about coming into the room and saying, “Hi, I’m Dr. So-and-so.” It’s taking a moment to explain who you are to them: “I’m Dr. So-and-so and I’m your heart surgeon, or I’m your GI specialist or I’m the resident on the medicine team.”

Name the patient and make eye contact. The next step is to address the patient by name and make a connection. Using the patient’s name not only confirms the patient’s identity but also shows that you know and care about them as an individual. There’s a lot of research about the effect of getting down on the patient’s level and being eye to eye. If it’s not possible to sit in the space available, simply squatting or bending down so that you are eye level with the patient can help them feel like an equal partner in the conversation.

A lot of times on rounds you’ll see this semicircle of people standing around talking at the patient. Instead, we really need to use our physical presence to establish a connection – to touch their arm or shake their hand.

Offer to answer questions. As we are wrapping up our time with the patient, we need to offer to answer their questions.

People are notoriously intimidated by doctors. The question most people tend to ask – “Do you have any questions?” – may actually make things worse. “What questions do you have?” implies it’s assumed you have questions, it’s normal to have questions, so what are yours?

Use plain language. While talking with patients, it’s also important to use plain language. A good rule is to use words the patient would use. Many of us do well in avoiding super-medical jargon, but we also use big words and complex sentence structure that many of our patients might not understand. If
the patient wouldn’t say the word in conversation, then we need to “translate.” We need to speak the language that the patient speaks. Talk the talk of the patient.

Everybody understands simple words, no matter how educated they are. And short, direct sentences can keep messages clearer. In fact, some of the health literacy data shows that even people with high health literacy, people who are highly educated, prefer plain language. They are not offended by it. They realize you’re not talking down to them, you’re just making sure they understand.

Is there anything else I can do for you?

When it comes time to leave the room, the techniques come into play once again. We want every single health care worker, or janitor or dietary person, to end every encounter with, “Is there anything else I can do for you?”

It’s important for physicians to realize that this isn’t about scripting. You can still be yourself. But this process makes sure that we are meeting our patients’ needs – knowing who their doctors are, knowing that we care about them as a person, and ensuring they understand their health. That sends the message about the culture of patient-centeredness, that we want to make sure you as the patient have your needs met.

Our goal is to set this expectation and “hardwire” this behavior so it happens with every doctor, every patient, every time. That’s when our patients – all of our patients – will have complete confidence and trust in the excellent clinical care that we provide.

Plain Language

**Clinic example**

**Typical:**
Your DEXA scan showed osteoporosis which means you could be at risk for a fragility fracture. See – your t score is -3.2, and 2.5 is the cut off. There are drugs called bisphosphonates – like Actonel and Fosamax – that should reduce your risk especially if taken with calcium and vitamin D.

**Plain language:**
Your bone density test showed brittle bones. This is called osteoporosis.
This could make you break a bone in your hip or back.
There is a medicine that can help strengthen your bones. I’d like to start you on that.

**Hospital example**

**Typical:**
Unfortunately, you have staph osteomyelitis, which means bacteria invaded the bone. The IV vanc should take care of it and we’ll monitor your CBCs and ESRs weekly – those are markers of inflammation – to ensure there is a good treatment response then convert to PO. Sound good?

**Plain language:**
You have a bone infection caused by a kind of bacteria.
You will need to be on an IV antibiotic – in the vein – for many weeks.
I will do blood tests to make sure that the infection is getting better.
Then you will need to take antibiotic pills. Now, what questions do you have for me?
News traveled quickly and was widespread July 2013 when the Markey Cancer Center earned the National Cancer Institute’s (NCI) Cancer Center designation, making it the only NCI-designated cancer center in Kentucky. The significance of that achievement and the subsequent reverberations hold great promise not only for today’s treatment of cancer patients but also for new discoveries in technology, therapeutics and treatment protocols.

Only 68 of the top cancer centers in the nation have achieved NCI cancer center designation; to earn this designation Markey Cancer Center had to pass a rigorous review process. Preparation for that review was lengthy and required a great deal of diligent teamwork to enhance many of Markey’s programs, research and recruiting, according to Mark Evers, MD, UK Markey Cancer Center director.

“Earning NCI designation is a distinction that signifies national excellence in clinical care and cancer research,” said Evers. “It is the ultimate recognition for an academic cancer center and signifies that we have achieved the highest standard in the industry. It is an honor that was made possible only by years of collaboration and collective efforts of our outstanding researchers, clinicians and staff members.”

Designation has its benefits

As a result of the designation, patients now have access to new drugs, treatment options and clinical trials offered only at NCI centers. Markey Cancer Center is able to apply for federal research grants available only to NCI-designated cancer centers, with the potential to bring millions in additional funding to the area. Additionally, the NCI designation allows Markey to communicate and collaborate on new advances in cancer care with other NCI-designated cancer centers across the country.
The NCi designation is especially significant for referring physicians who send their patients to the Markey Cancer Center for treatment, particularly those patients with complex cancers or those with co-morbid conditions in addition to the cancer.

“Physicians can refer their patients to Markey with a great deal of confidence, knowing that this designation puts us in the top 3-4 percent of all cancer centers in the country and that their patients can get first-class care without leaving the state,” said Evers. (See annual volume chart above.)

Laying the groundwork

Evers noted that he was first attracted to the Markey Cancer Center because of its outstanding reputation as a top-notch clinical care institution with a focus on research, community outreach and education – the perfect foundation for setting its sights on achieving cancer center designation. Nonetheless, significant effort was expended over a period of more than three years to build the infrastructure and facilities needed to attract top talent from across the nation as well as to expand research funding and broaden the scope of research in preparation for the NCi review.

“A major aspect was having the facilities to attract leading researchers to Kentucky,” said Evers. “We received significant philanthropic support from the institution, UK HealthCare and various philanthropic resources across the state, which allowed us to invest about $30 million to create a world-class basic research space in the University of Kentucky BioPharm Complex. The new research space opened at the end of 2011, paving the way for attracting new researchers and enhanced funding.”

A part of UK HealthCare for more than 20 years, Vivek M. Rangnekar, PhD, said, “These are exciting times for Markey Cancer Center, and in particular a great time to be a researcher with the institution.” Rangnekar, associate director of translational research and co-leader, cancer cell biology and signaling research program, credits Markey Cancer Center leadership for building the momentum and teamwork that helped make the NCi designation possible.

“I think a lot of credit for this achievement goes to Evers,” said Rangnekar. “He has been the driving force, the one who has built the excitement and momentum and created a collaborative mindset among our faculty. Teamwork cannot be discounted, but you must give credit to the conductor.”
According to Evers, the Markey Cancer Center team works diligently to ensure patient needs and the patient experience remain at the forefront. Researchers and clinicians have worked together to assemble and perfect collaborative, cancer-type focused teams to ensure delivery of the highest quality patient care possible.

“I am very proud of our incredibly dedicated and caring staff. Patients who come here with a particular cancer like colorectal or breast cancer benefit tremendously from our collaborative care approach,” said Evers.

“Clinicians, researchers and other appropriate team members such as nutritionists, social workers and navigators meet as a team to discuss the individual needs of the patient, the best treatment options and clinical trial possibilities,” he said. “The team members are all focused on that particular cancer type and are the very best experts for mapping a care and treatment plan tailored to the patient’s individual needs.”

“The cancer center designation is so much more than just a reassurance that we are on the right track; it has already opened the door for greater collaboration with researchers and cancer centers across the nation.”  
— Vivek M. Rangnekar, PhD

Building on a robust academic center

Markey Cancer Center leaders have taken advantage of campus strengths to build the cross-disciplinary, intracollaborative research programs that are the hallmark of NCI-designated cancer centers. For example, the Markey Cancer Center Cancer Prevention and Control Program, in which groundbreaking work has been done in the areas of culturally relevant behavioral and screening studies in Appalachian Kentucky, has program members from the UK colleges of Public Health, Nursing, Medicine, and Communication & Information.

Similarly, the Drug Discovery, Delivery and Translational Therapeutics Program is an integrated cooperative effort among prominent oncologists and basic researchers from the colleges of Medicine, Pharmacy and Engineering. The value of this transdisciplinary approach is demonstrated by the fact that over the last five years Markey investigators in this program have developed six concepts, compounds or devices that have entered Phase I, II or III clinical trials.

Markey Cancer Center also successfully competed to obtain one of only six NCI-funded Cancer Nanotechnology Training Centers, which includes investigators from the colleges of Engineering, Pharmacy, Arts & Sciences, and Medicine and builds upon existing strengths in biomaterials/nanotechnology, pharmaceutical design, chemistry and basic science investigation.

Research has already been enhanced by the NCI designation, according to Rangnekar. “The cancer center designation is so much more than just a reassurance that we are on the right track,” he said. “It has already opened the door for greater collaboration with researchers and cancer centers across the nation, and we are receiving applications from leading investigators who are now interested in coming to Markey Cancer Center.

“Working collaboratively with other cancer centers, other scientists and physicians increases the depth and breadth of our research and ultimately benefits our patients,” said Rangnekar.

Within a month of receiving the NCI cancer center designation, Markey Cancer Center announced the addition of four new faculty members who study the role that metabolism plays in cancer. Teresa Fan, PhD, Andrew Lane, PhD, Richard Higashi, PhD, and Hunter Moseley, PhD, brought more than $17 million over five years in current federal funding and are developing a research center at UK.
The researchers are establishing a UK Center for Environmental & System Biochemistry, in partnership with Markey, with their laboratories located on the fifth floor of UK’s BioPharm Complex, which is already home to other innovative cancer researchers.

Fan, Lane, Higashi, and Moseley utilize state-of-the-art instrumentation to understand – by tracking atoms – how various conditions or environmental exposures disrupt normal metabolism and how abnormal metabolism contributes to the development and/or spread of cancer.

**Affiliate network still growing**

Cancer patients no longer have to drive to Lexington or out of state to receive the latest, most up-to-date cancer treatments. The Markey Cancer Center Affiliate Network is a group of health care facilities that provide high-quality cancer services and programs in their communities with the support and guidance of the UK Markey Cancer Center. *(See list of affiliated hospitals.)*

“Our outreach focus was an important component for achieving the NCI designation and will continue to be central to our mission going forward,” said Evers. “Through our affiliate network, we work with primary care or referring physicians to coordinate cancer care in the patient’s home community whenever possible. We work with doctors, nurses, pharmacists and other medical staff in the community, providing training, consultation and collaborative patient care as well as providing patients with access to clinical trials.”

"Community physicians can refer their patients to our Markey affiliate partners for care and follow up with the assurance those facilities have met our rigorous standards...."  
– Cheri Tolle, MAEd, CHES

“The affiliate partnership is valuable to the mission of both UK and the Markey Cancer Center in providing high-quality cancer care throughout the region,” added Cheri Tolle, MAEd, CHES, administrative director of the Markey Cancer Center Affiliate Network. “We began with three affiliates in 2006 and now are up to nine.”

According to Evers, a number of other hospitals and bigger hospital chains have contacted Markey since the NCI designation was announced to express interest in either becoming part of the research network or becoming an affiliate, bolstering his expectations for the affiliate network to continue to grow and broaden its reach.

Markey Cancer Center works with its affiliates to provide professional training for cancer team members and other services, such as support in meeting performance standards for accreditation by the Commission on Cancer.
“When a new affiliate joins our network, we often begin by conducting a comprehensive needs assessment to determine how we can best support their service delivery in the community,” said Tolle. “We then work collaboratively to map a plan for building on strengths and supporting any desired improvements.”

The Markey Cancer Center Affiliate Nurse Training Program has trained more than 100 nurses across the Commonwealth to become certified in chemotherapy and biotherapy so that they can provide chemotherapy in a patient’s home community at one of the affiliate facilities. During the training, nurses receive classroom instruction from a certified trainer at Markey Cancer Center and observe procedures at the chemotherapy infusion center in Lexington.

“Community physicians can refer their patients to our Markey affiliate partners for care and follow up with the assurance those facilities have met our rigorous standards for providing quality care,” said Tolle.

“In most cases, patients don’t have to leave the comfort of their own community to receive quality cancer care,” said Evers. “Patients may come to Markey for surgery, but then we can work with physicians in the community so they can get chemotherapy treatment close to home.”

Markey Cancer Center also has a partnership with the American Cancer Society’s Hope Lodge, located on the perimeter of the UK campus, for patients who require outpatient treatment at the Markey center in Lexington. Transportation is provided between the cancer center and Hope Lodge. In many cases, other American Cancer Society resources are also extremely helpful to patients in navigating their cancer journey and tapping community-based services to provide assistance for both patients and family members.

Pressing the advantage

While 2013 was a landmark year for the institution, the Markey Cancer Center team is in no way resting on the laurels of the most recent success. Work is already underway to achieve the ‘comprehensive cancer center’ designation with the next NCI renewal review in five years. Only 41 cancer centers in the nation currently hold that distinction.

“It is important to have a goal set in front of us,” said Evers. “For the past three years it was to achieve the cancer center designation. Now we are all about the comprehensive designation.”

“A key component to achieving the comprehensive designation is to have an extensive outreach program that combines education, screening and prevention,” said Evers. “The Markey Cancer Center has been doing that for two decades because of the needs in our Appalachian populations. We already have a lot of cancer prevention and control programs ongoing. It will be another great foundation for us to build on.”
UK gynecologic oncology provides a full spectrum of cancer care for women, including recommendations for diagnosis, the best method of surgical management for all gynecologic cancers, and comprehensive postoperative treatment planning with chemotherapy and specialized radiation therapy. The division’s providers also perform complex pelvic surgical procedures on noncancer patients.

As part of the UK Markey Cancer Center – the only cancer center in Kentucky designated by the National Cancer Institute – the gynecologic oncology division prides itself on excellence in patient care, education, and clinical trials. Every patient is valued and treated with honesty and respect by a personal, caring staff. Treatment plans are customized to the individual, and the division’s patient satisfaction scores are consistently ranked at the top among the nation’s comparable academic medical centers (above 95th percentile). In addition, the distinguished faculty is regularly recognized on the list of America’s Best Doctors™.

“There are few moments in life as alarming and important as when someone is diagnosed with cancer,” said Frederick R. Ueland, MD, division director. “We want every woman to know that our mission is to provide exceptional, compassionate and personalized care for all gynecologic malignancies, while providing the most sophisticated medical care available today.”

**Points of emphasis**

Some of the services offered by gynecologic oncology include:

**Ovarian cancer screening**

This research program has provided free ovarian cancer screening since 1987, now with sites in Lexington, Elizabethtown, Somerset, Prestonsburg, Maysville, Paducah and Greenup. More than 80 malignancies have been detected with ultrasound screening. John R. van Nagell, MD, is the director.

**Ovarian tumor evaluation**

The team leads the nation in clinical and research expertise in the ultrasound evaluation of ovarian tumors using transvaginal sonography and the Kentucky Morphology Index system. Ueland also was the principal investigator for the OVA1 trial, which gained international recognition and FDA-clearance as
the first blood test used in the preoperative evaluation of an ovarian tumor.

**Clinical trials**
A wide variety of clinical trial opportunities are available through the NCI-designated Markey Cancer Center, including phase 1, 2 and 3 trials. NCI-sponsored, national collaborative, investigator-initiated and industry-sponsored trials are all represented.

**Ovarian cancer treatment**
Most ovarian cancers still present at an advanced stage, but improved survival can be achieved with radical surgery, a comprehensive chemotherapy plan and selective radiotherapy. Intraperitoneal and dose-dense chemotherapy, as well as biological agents, all are available as treatment options. As a result, ovarian cancer survival rates at UK HealthCare exceed the national average and far exceed outcomes recorded for the commonwealth of Kentucky. UK treats cancers of the ovary, uterus, fallopian tube, peritoneum, vulva, vagina and cervix. Ueland is the medical director for all outpatient chemotherapy at UK Markey Cancer Center.

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**Robotics & minimally invasive surgery**
Minimally invasive procedures are offered for most gynecologic malignancies with the exception of many advanced cancers. Advanced robotic platforms assist the surgeon in the operative treatment of many cancer and advanced noncancer gynecological operations. **Christopher P. DeSimone, MD**, and **Rachel Ware Miller, MD**, are both highly qualified robotic surgeons. DeSimone is the medical director of robotic surgery at UK HealthCare. Additionally, Ueland serves as the medical director of all gynecologic surgery.

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**Second opinions for all gynecologic malignancies**
The Gynecologic Oncology team is available for second opinions regarding treatment for all gynecologic malignancies. This consultation may be for the patient requesting additional information about her disease or treatment, a referring oncologist who seeks recommendations for continued treatment at another facility, or a request to actively assist in the future care.

**Scheduling appointments**
Referring providers can call the division directly to schedule an appointment with the following physicians:
- Frederick R. Ueland, MD, **859-257-1613**
- John R. van Nagell Jr., MD, **859-323-5553**
- Christopher P. DeSimone, MD, **859-257-3428**
- Rachel Ware Miller, MD, **859-323-2169**

For more information about the gynecologic oncology team of specialists, please visit ukhealthcare.uky.edu/OBGYN/Services/Health/Oncology/.

**Ovarian Cancer Screening Program**
Screening appointments can be scheduled at **859-323-4687**. The screening program is described at ukhealthcare.uky.edu/ OBGYN/Services/Health/Cancer-screening.

**Gynecologic oncology clinical trials**
From the Markey Cancer Center website, click on Search Clinical Trials, and select “Gynecologic Cancer” to see a list of open trials. Click on the trial number for the protocol summary and other details (ukhealthcare.uky.edu/markey/Researchers/ClinicalTrials/Find-a-Clinical-Trial).
Across the University of Kentucky campus, researchers are engaged in what is called translational science — the process of turning a basic science discovery into new therapies and applications for patients. From the Center for Clinical and Translational Science to individual investigators pioneering new therapies and technologies, the UK research community abounds with examples of translational science in action.

As a research-oriented academic medical center, UK is well-positioned and committed to support this “bench to bedside” science to improve care and outcomes for patients at UK and beyond. Such institutional commitment to and investment in translational science is critical in making real and timely biomedical advances.

According to the National Institutes of Health (NIH), it can take more than a decade for a scientific finding in a lab to be advanced through preclinical and clinical studies to develop a new treatment, device or diagnostic method. The NIH identifies several common barriers in translational science, including a shortage of qualified clinical and translational investigators and mentors, research silos based on disease- and function-specific institutional organization, regulatory burdens, and low levels of patient participation in studies.

In recent years there has been an increased emphasis, at both federal and institutional levels, on addressing these challenges to accelerate the pace of translational science. In 2006, the NIH invested $500 million in the Clinical and Translational Science Awards (CTSA) program to help institutions increase the quality and pace of translational research. The program also aims to train upcoming generations of investigators, foster interdisciplinary collaboration and team science, engage communities in research, and support networking tools for sharing data.

In 2011, [UK] received a $20 million CTSA from the NIH, the largest research funding award ever received at UK.

UK Center for Clinical and Translational Science

In 2006, the University of Kentucky established its own hub for translational research, the Center for Clinical and Translational Science (CCTS), which represents the university’s interdisciplinary effort and focused investment in the translational research enterprise. In 2011, CCTS received a $20 million CTSA from the NIH, the largest research funding award ever received at UK. UK is the only CTSA-designated institution in Kentucky, and one of only 62 CTSA institutions nationwide.
The cCtS does not focus on any one particular disease or condition, but rather serves as a catalyst to improve the research environment and infrastructure throughout the campus and across the biomedical research spectrum. cCtS intentionally facilitates collaboration and directly involves more than 240 individuals from 16 UK colleges; offices of the President, Provost, Executive Vice President for Health Affairs and Vice President of Research; and all components of UK HealthCare. There is specific emphasis on addressing health disparities in the Appalachian region.

A platform for discovery and translation

“The cCtS represents a platform for discovery and translation, and when the cCtS is doing its job well, everyone benefits and research at many levels will advance,” said Philip A. Kern, MD, cCtS director and director of the Barnstable Brown Kentucky Diabetes and Obesity Center.

The cCtS operates in a multitude of capacities to improve translational research at UK. A competitive pilot funding program supports investigators in innovative interventions and early stage and collaborative research. To date, cCtS has funded 90 pilot grants totaling $2.2 million.

In addition to funding, pilot projects benefit from a robust support infrastructure through the duration of their projects, including interdisciplinary in-take meetings and face-to-face progress reporting, in order to anticipate challenges and connect investigators with appropriate resources and expertise to keep their projects on track. And there's a significant return on investment: Since the inception of the pilot program in 2007, 12 of the pilot projects received NIH research awards that brought an additional $14 million of research funding to UK.

Investment in the next generation of research

Beyond the pilot program, cCtS invests in the next generation of translational research through its Training, Education and Mentoring (TEAM) offerings. Career counseling, research staff development, career development resources, and certificate and degree programs support professional students, residents, fellows and faculty who are engaged in clinical and translational research.

Another critical role of cCtS is providing expert consultation and core services to support investigators across campus, not just those who have received pilot funding. These support services aim to address the common barriers of translational research by aggregating resources and expertise in a central hub. The cCtS core services include biomedical informatics; a biospecimens core; biostatistics, epidemiology and research design; clinical services; community engagement, drug discovery and development; medical device and diagnostics development; regulatory support and research ethics; participant recruitment support; risk-related behaviors and substance abuse; training, education and mentoring; and tracking and evaluation.

“By providing the infrastructure and core services essential for the execution of and training in clinical and translational science, cCtS has established the academic home for the discipline of clinical investigation and translational science at UK,” said Kern.

The cCtS also collaborates with other academic medical institutions through the Clinical and Translational Science Awards Consortium, in particular to address the health and well-being of underserved populations in Kentucky, Appalachia, and across the country. The engine for this work is the
CCTS pilot funding

The Center for Clinical and Translational Science (CCTS) has funded 56 pilot grants totaling $1.95 million. And there’s a significant return on investment: Since the inception of the pilot program in 2007, 11 of the pilot projects have received further NIH research awards that brought an additional $6.9 million of research funding to UK.

Pilots are funded across medical specialties and even include co-investigators from other Clinical and Translational Science Awards (CTSA) institutions. Below is a sample of some of the funded projects:

- A circulating biomarker of age-related macular degeneration – Jayakrishna Ambati MD, PhD, Ophthalmology
- Mechanisms and treatment of skeletal muscle weakness in acute lung injury – Leigh Ann Callahan, MD, Pulmonary, Critical Care and Sleep Medicine
- Aortic wall distensibility in the growth and rupture of abdominal aortic aneurysm – Brandon Fornwalt, MD, PhD, Pediatrics/Pediatric Cardiology
- Training to improve inhibitory control to reduce cocacine use – William Stoops, PhD, Behavioral Science
- Evaluation of the sphingosine -1-phosphate receptor expression on bone marrow and mobilized peripheral blood cells – Ahmed Abdel-Latif, MD, PhD, Internal Medicine
- A computer-aided automatic analysis and assessment of morphological characteristics of muscle fibers – Lin Yang, PhD, Biomedical Informatics
- Detection and treatment of liver cancer stem cells in hepatocellular carcinoma – Roberto Gedaly, MD, Surgery/Transplant
- A study on the serum and brain markers of inflammation in Alzheimer’s disease – Donna Wilcock, PhD, Sanders-Brown Center on Aging
- Feasibility of implementing an HIV vaccine initiative among high-risk drug users in Appalachia – Jennifer Havens, MPA, PhD, Behavioral Science
- Preventing conduct disorder: Valuing parent and provider perspectives in Appalachia – Christina Studts, PhD, Behavioral Science
- Effects of transvertebral direct current stimulation in humans – Lumy Sawaki, PhD, Spinal Cord and Brain Injury Research Center (SCoBIRC), Neurology
- A pilot study to evaluate the safety and feasibility of implanting autologous peripheral nerve grafts into the substantia nigra of subjects with Parkinson’s – Craig van Horne, MD, PhD, Neurosurgery
- Behavioral effects of tiagabine and cannabis – Josh Lile, PhD, Behavioral Science, Human Laboratory
- Clean indoor air partnership; perceived risk, and marketing of electronic cigarettes and smoke-free laws – Ellen Hahn, RN, PhD, FAAN, Nursing

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Appalachian Translational Research Network, which includes as institutional partners The Ohio State University, Ohio University, Marshall University, University of Cincinnati, West Virginia University and the University of Pikeville.

From animal studies to the ICU

Individual investigators also lead the way in translational research at UK. An example of this is the current remarkable work of Gerald S. Supinski, MD, and his team. In addition to directing the CCTS KL2 Scholars program for upcoming researchers, he is a practicing specialist in pulmonary, critical care and sleep medicine and also conducts basic science research through animal studies. It is a rare combination, since there aren’t many pulmonologists with strong backgrounds in both basic and translational science.

“ar are the only people in the United States who can do the mixture of things that we do to study patients,” he said.

With decades of research experience observing the relationship between infection and muscle weakness in animals, Supinski became interested in the common challenges of weaning patients off of mechanical ventilators. Even after being treated for all underlying medical issues, many patients cannot be weaned from the ventilator in a timely manner and in some cases, not at all. Based on his extensive background studying infection and muscle weakness in animals, he suspected a similar dynamic might be to blame for the complications (and often failure) in weaning patients off of ventilators.

“I first did a study on infected animals 10 or 15 years ago. Their diaphragms were shot. We’re still running the animal studies. And then we go into the intensive care unit doing human research work, and guess what; it was the same as in the animals,” he said.

“The average person in the ICU has lost 80 percent of their strength. With some of them it was much lower. There were people who had lost 95 percent of their strength. . . . I was not prepared for my results.”

– Gerald S. Supinski, MD

In a recent pilot study, Supinski translated these lab findings with animals into a novel application for humans. He and his team measured strength in Medical Intensive Care Unit (MICU) patients to examine the degree, causes and consequences of diaphragm weakness. He assessed 60 people who were on mechanical ventilators, measuring the strength of their diaphragms using a magnetic twitch technique.
“We found that the average person in the ICU has lost 80 percent of their strength,” he said. “With some of them it was much lower. There were people who had lost 95 percent of their strength. I had thought they were weak, but I was not prepared for my results.”

He was further surprised by the implications of such weakness. “I wasn’t even looking for this,” he said. “I thought weakness would make it difficult for patients to wean off the ventilator, so I looked to see if it was prolonging time on the ventilator, and by how much. Halfway through the study I realized that muscle weakness wasn’t just prolonging time on the ventilator, but the weak patients were dying. It was worse than I possibly imagined.”

Inversely, he observed that patients with strong diaphragm twitch scores could be weaned from the ventilators. The stronger the patient, the more quickly they could be weaned and sent home.

As he found in his animal studies, there was also a clear correlation between infection and diaphragm strength in ventilated patients. If a patient was infected, the average diaphragm strength was 5 (on a scale of 30). If not infected, the score was 13, still low but a positive indicator for the ability to be weaned from the ventilator.

Supinski also examined whether or not the clinicians knew how weak the patients were. “On average, they thought that people were far stronger than they really were. They don’t realize that they can’t get patients off the vent because they’re weak,” he said.
“We had 50-70 percent improvements in strength in one week with these two drugs.”

– Gerald S. Supinski, MD

In an effort to treat the underlying weakness that prevents or slows a patient from being weaned from a ventilator, Supinski’s study also investigated what drugs might help to strengthen the patients. He used a double-blind design to test two drugs, hydroxymethylbutyrate (HMB) and eicosapentaenoic acid (EPA), for their effectiveness in improving diaphragm strength in ventilated patients in the MICU. It was his experience with basic science that led him to test HMB specifically.

“I had tested it in animal studies – I chose it from some basic science studies. I didn’t know at the time that this was what weightlifters use.”

The pilot study yielded very encouraging results. “In the placebo group, their strength got worse. In the EPA group, their strength went up. In the HMB group, their strength went up even more. We had 50-70 percent improvements in strength in one week with these two drugs,” Supinski explained.

“The pilot study also demonstrated that increased diaphragm strength can reduce the amount of time a patient is on a ventilator. The placebo group took, on average, 17 days to come off the ventilator. The HMB group took four or five days. The EPA group was in between, coming off in about eight to 10 days. So there was a huge reduction in duration on the ventilator.”

His ongoing basic science studies with animals allow a deeper level of understanding about the role of these agents in treating the weakness, information that he then uses to refine his human studies.

“In animal studies, we can take samples of the muscles and look at what pathways are being inhibited by these drugs. And it turns out that the HMB blocks specific pathways, and the EPA blocks a different set of pathways,” said Leigh Ann Callahan, MD, who conducts research with Supinski.

Supinski and his team continue to test more drugs in animal studies, looking for additional agents that can improve not only muscle strength but also muscle size and endurance.

“We’re hoping that down the road, we’ll have a cocktail of compounds that will target all these different derangements in muscles. But even this initial study could make a huge difference in how people are taken care of in ICUs across the county,” said Callahan.

Leveraging the combination of basic and translational science, Supinski was recently awarded a grant from the NIH Heart, Lung and Blood Institute to continue his research on the relationship between infection, muscle strength and the ability to wean patients off of a ventilator.

“If we’re right, we could cut ICU length of stays in half across the country. That would save hundreds of millions of dollars a year,” said Supinski. “And I think this would save thousands of lives a year. They won’t be pulling the plug just because someone can’t get off the vent.”

Translating genetic discoveries in cancer prognosis and treatments

Craig Horbinski, MD, PhD, director of both the UK Molecular Diagnostics Program and the Markey Cancer Center Biospecimen and Tissue Procurement Shared Resource Facility, similarly understands the human impact of translational research. His work focuses on optimizing the use of genetic biomarkers to aid in the diagnosis and prognostication of brain cancers.

“For the longest time we’ve been looking at and diagnosing tumors strictly based on what’s under the microscope – what it looks like on a slide,” he said. “But we’re now learning that

there are a lot of genetic alterations that actually turn out to be more accurate in predicting how a patient is going to do."

Over the past decade, scientists determined that even if brain cancers look identical under a microscope, they might have drastically different genetic profiles that lead to drastically different patient outcomes. Some genetic mutations are more favorable than others, meaning that the patient is going to have a much longer life expectancy. Identifying these mutations and understanding how they impact patient morbidity helps the oncologist understand that patient’s prognosis and, therefore, which treatment plan is best suited.

"As it stands now, the main utility is to more accurately prognose a patient, which is no small thing," he said. “There’s still a range of survival expectancy, but this at least narrows it down a little bit. At the very least, it gives the clinician better information to answer the question of ‘Doc, how much longer do I have to live?’ Just having a more accurate diagnosis and prognosis is itself a therapy.”

In some instances, identification of genetic mutations in brain cancers can also be translated into more targeted treatments. For example, some genetic profiles respond better to certain types of chemotherapy, while others are more sensitive to radiation therapy.

“As of now, though, there’s no magic bullet. We’re not quite at the point with brain cancer to have a specific, targeted drug aimed at a given mutation. But we are getting there. We’re making progress,” he said.

Horbinski focuses specifically on one seemingly protective genetic

“At the very least, it gives the clinician better information to answer the question of ‘Doc, how much longer do I have to live?’” — Craig Horbinski, MD, PhD

Craig Horbinski is one of only about 10 young neuropathologists in the U.S advancing the use of molecular testing.
mutation, the isocitrate dehydrogenase (IDh) mutation that is extremely important in accurately prognosing patients with brain cancers.

“We study why that mutation is so favorable,” he said.

Patients with and without the mutation in grade IV glioblastoma brain cancer have markedly different outcomes. “If patients have this mutation, they have an average life expectancy of about three years. If they don’t have the mutation, even if the tumor looks exactly the same under the microscope, they have an average expectancy of only 12-15 months.”

In grade III astrocytomas, this mutation is even more favorable, with an average survival of five years compared to 15 months if they do not have the mutation.

An antibody specific to the altered gene product (protein), which accounts for 90 percent of the IDh mutations, can be used in histological staining techniques to quickly identify this mutation in a brain tumor under a microscope. The stain was developed in Germany and UK was one of the first pathology labs in the United States to implement it on a routine clinical basis.

“It’s rapid, it’s inexpensive, you can turn it around in a day, and it’s really reliable. If the stain test is positive, you don’t have to follow up with genetic sequencing,” he said.

If the test is negative, the patient could still have a mutation that can be identified through genetic sequencing of the tumor. On this front, Horbinski is translating his research into developing a new tool for pathologists to address such situations. Working with the bioinformatics team, he is developing a website to help pathologists predict when it is worthwhile to follow an immunonegative case with genetic sequencing. The website will be free for use worldwide.

“This will allow pathologists to quickly triage cases based on whether it’s worthwhile to sequence them or not,” he said.

Horbinski recognizes UK’s commitment to translational science, specifically in his field. “It’s collaborative,” he said. “I think the translational research opportunities are great, especially for me as a junior faculty member because there aren’t a lot of other brain tumor researchers here.”

For example, he sometimes collaborates with other cancer researchers to see if genetic mutations that are clinically significant in non-brain cancers might also play a role in brain cancers.

“A long time ago, one of my mentors told me that every gene, every protein that’s found to be important in other types of cancers should be studied in gliomas,” he said. “From that end, everyone here has been very supportive.”

Of course, the ultimate goal is to improve patient care, and Horbinski is hopeful that the discoveries of basic science can continue to be translated into improvements in diagnosis and treatment.

“At the end of my career, I want to be able to look through my microscope, see a glioblastoma, and say, ‘Remember when that was a death sentence?’”

For more information about translational research at UK, including pilot funding, core support services, and career development resources, please visit the Center for Clinical and Translational Research webpages at www.ccts.uky.edu.
Region’s most innovative CT surgery program poised for the future

Tremendous growth, advances

Cardiothoracic surgery at the UK Gill Heart Institute experienced tremendous growth and advancement in 2013 – more than doubling the number of adult cardiac cases performed – thanks to the addition of four new faculty members, two midlevel professionals and other support staff. The division’s robust research program currently has 25 sponsored and investigator-sponsored research projects underway. And, an innovative, integrated six-year residency training program has been introduced, matching its first resident last year.

“I believe that key to our success is the faculty and staff’s unwavering focus in three key areas,” said Sibu P. Saha, MD, professor of surgery and chief of cardiothoracic surgery. “Our team is wholly committed to delivering the highest quality clinical and surgical care possible, to the development and implementation of new techniques and technologies in cardiac and thoracic surgery, and to the education and training of outstanding future surgeons.”

Sekela and Wright have consistently introduced new technology to established cardiac procedures to reduce surgical complications and improve outcomes.

CT surgical expertise expanded

Renowned CT surgeon Michael Sekela, MD, returned to the UK faculty and staff last year, the place where he first pioneered advanced heart surgeries and transplants in the early 1990s. According to Saha, Sekela brings with him a wealth of technical skills and unparalleled expertise in cardiovascular surgeries, particularly for highly complex procedures on patients who have undergone open-heart surgeries in the past.

Joining Sekela is another highly skilled CT surgeon, Theodore S. Wright, MD, the region’s leading expert on atrial fibrillation surgery – the MAZE operation. The MAZE procedure is a surgical alternative for when medication therapies are ineffective in treating atrial fibrillation patients. The minimally invasive procedure requires just two half-inch and a larger three-inch incision on each side of the chest. One opening is...
for a tiny video camera and light. The surgeon does the entire procedure while viewing the beating heart on a video screen; the heart-lung machine is not required.

During the procedure, a clamp-like wand is used to create radio waves to heat precise lines of heart tissue. With the device, the surgeon encircles a ring of tissue on the left atrium, just below where the pulmonary veins join in, and zaps them with radio waves. The resulting scar tissue creates a barrier against electrical signals from the pulmonary veins.

In addition to the MAZE procedure, Wright performs minimally invasive robotic heart surgery and cardiac-valvular procedures.

Early adopters of robotic surgical techniques, Sekela and Wright have consistently introduced new technology to established cardiac procedures to reduce surgical complications and improve outcomes.

The expanded general thoracic surgery practice at UK now treats all patients with lung and esophageal cancer and other challenging thoracic problems as part of a multidisciplinary team dedicated to tailoring a treatment plan to each specific patient.

**Thoracic surgery strengthened**

Two new thoracic surgeons who focus on noncardiac thoracic surgery joined the division in 2013. Jeremiah Martin, MD, has returned to practice and teach in the division. A native of Ireland, he received his medical degree from, and is a Fellow of, Ireland’s Royal College of Surgeons. Martin trained as a surgical resident at Yale-New Haven Hospital and completed fellowships in thoracic surgery at the University of Kentucky and Duke University where he gained experience with the latest techniques being offered to lung and esophageal surgery patients.

Angela Mahan, MD, likewise a product of the UK CT surgery residency program, began practicing at UK last year. Mahan received medical training at the University of Louisville and completed residency training at the University of Colorado in Denver followed by a fellowship in CT surgery at UK.

Martin and Mahan approach general thoracic surgery with the use of minimally invasive techniques wherever possible. Using two or three small incisions, it is possible to perform many of the operations for lung and esophageal cancer using a small video camera and specialized instruments. “Avoiding larger incisions, and in particular avoiding the need to spread the ribs, allows patients to enjoy a shorter hospital stay, quicker return to normal activity, and decreased pain compared to traditional approaches,” said Martin.

In addition, Martin is able to offer the DaVinci® surgical system as an option for surgical treatment, which in some cases can further reduce the impact on the patient while offering enhanced vision and ergonomics for the surgeon.
The expanded general thoracic surgery practice at UK now treats all patients with lung and esophageal cancer and other challenging thoracic problems as part of a multidisciplinary team dedicated to tailoring a treatment plan to each specific patient. Both new physicians work closely with the research teams at the Markey Cancer Center, and, in conjunction with the other surgeons who offer a team approach, are actively involved in development of novel clinical trials and continued efforts to bring the latest treatments to UK’s patients.

Integrated thoracic oncology

The Integrated Thoracic Oncology Program was conceived 15 years ago when UK physicians and researchers asked themselves how they could better manage patients with lung cancer. They wanted to increase participation in clinical trials and in general raise the bar on getting patients into a higher level of care as quickly as possible, according to Timothy W. Mullett, MD, professor of surgery and director of residency education programs.

“We realized that independent practicing physicians – even when working well together – often have difficulty navigating a patient through a series of appointments from primary care to pulmonologist to surgeon and perhaps subsequently to an appointment with a medical oncologist,” said Mullett. “That serial approach to caring for a patient with lung or esophageal cancer takes time and is often very frustrating for the patient.”

According to Mullett, UK has created an integrated care model that applies a multidisciplinary approach to the problem. The collaborative care model includes a conference where a multidisciplinary team reviews patient cases and a clinic where pulmonologists, surgeons and oncologists are all located in close proximity to enhance continuity of care. Ashish P. Maskey, MD, an interventional pulmonologist, also works with the team and helps get many diagnostic procedures done in a timely manner.

The model has been very successful and clearly patients and referring physicians are the real winners. “Referral sources may not necessarily send a patient to a particular physician but instead make the referral to our program,” said Mullett. “It is as simple as one phone call to our program coordinator, who has years of experience.”

The program coordinator knows, based on the patient’s diagnosis, pathology and other clinical information, exactly where to plug the patient into the program. The first appointment might be with the surgeon, or perhaps surgery has already been performed and the patient needs to enter our program with an oncologist, Mullet said.

The integrated program now has six surgeons in CT surgery that see patients with lung cancer, and the UK Markey Cancer Center has added additional medical oncology and radiation medicine physicians to meet growing patient needs.

“If we are able to accomplish what was demonstrated in the national lung screening trial . . . we could have the most significant reduction in mortality from lung cancer we have ever seen.”

– Timothy W. Mullett, MD

Mullett is also part of the Markey Cancer Center team working with Louisville’s Norton Cancer Institute to develop a program to provide CT scans as a means of early lung cancer screenings. Because lung cancer is often not caught until the cancer is in an advanced stage, early screenings would be key to greatly improving survival rates. Mullet also directs the Kentucky Clinical Trials Network, a statewide organization of physician practices engaged in lung cancer research. Enhancing lung cancer screening in Kentucky is a current priority of that program.

“If we are able to accomplish what was demonstrated in the national lung screening trial, a study of about 53,000 patients, then we could have the most significant reduction in mortality from lung cancer we have ever seen,” said Mullet. “The study, which was completed in 2010 and reported in 2011, looked at patients prospectively, getting screening CT scans on those at highest risk of lung cancer and finding the disease at an earlier stage.”

Critics of lung cancer CT screenings cite the high rate of false positives that can lead to unnecessary and possibly risky biopsy
or surgeries. And so, according to Mullett, it is important to apply lung cancer screenings in a thoughtful and programmatic way.

“If you screen the right group of patients with an appropriate protocol, using an educated radiologist who knows how to read a screening CT scan, get the patients referred to a program that has the appropriate algorithms to get the patient followed up, biopsy the right ones, watch the right ones and operate when appropriate, you can reduce mortality by 20 percent,” said Mullett. “A high-risk patient would be 55-74 years old with 30 pack years of smoking who quit less than 15 years ago or hasn’t quit.”

New approach to valve disease

UK opened one of the country’s largest hybrid operating rooms in 2012, the first of its kind in the region, where doctors perform both open heart and catheter-based procedures guided by fluoroscopy and ultrasound. The hybrid OR suite is optimal for collaborative procedures between interventional cardiologists and CT surgeons for the many challenging, high-risk cases referred.

UK is one of a select number of sites in the United States to offer the new minimally invasive procedure called transcatheter aortic valve replacement (TAVR). TAVR is the latest addition to UK’s comprehensive catheter-based structural heart program, which began offering balloon valvuloplasty in 1985, and an excellent example of the types of procedures performed in the hybrid OR.

The procedure is used for patients with severe, symptomatic aortic stenosis who are not candidates for traditional open-heart surgery. CT surgeon Hassan Reda, MD, works collaboratively with interventional cardiologist John Gurley, MD, as well as with other members of a multidisciplinary team to perform the TAVR procedure.

During TAVR, a prosthetic valve is implanted within the diseased aortic valve using a catheter. Once in place, a balloon is inflated to open the valve. Almost immediately, the new valve starts working in place of the diseased valve, resulting in improved blood flow.

“The valve program typifies UK’s state-of-the-art approach to cardiovascular care, combining new hybrid operating facilities, a major cardiovascular imaging center and a multidisciplinary staff,” said John Gurley, MD, an interventional cardiologist who often works with the CT Surgery team. “The goal is to provide the most appropriate care possible, tailored to our individual patients but based on the latest evidence and technology.”

Newest, evidence-based options for the sickest patients

The only full-service transplant center serving Central and Eastern Kentucky, the UK Transplant Center is at the forefront of clinical technology in heart failure care, heart and lung transplant, and ventricular assist device (VAD) services. The Transplant Center, under the direction of nationally recognized transplant surgeon, Charles W. Hoopes, MD, has performed more than 270 heart transplants in 20 years. The lung transplant program has given more than 175 patients a second chance through the gift of transplantation in the last decade.

UK was the first health care provider in the state to implant Syncardia’s Total Artificial Heart™ and UK’s transplant program has also performed combined heart-kidney transplants. It is the only combined heart-lung transplant program in the Commonwealth.

UK is one of the few centers in the U.S. to offer ambulatory extracorporeal membrane oxygenation (ECMO) utilizing a double-lumen cannula. ECMO uses a device that provides cardiac and/or pulmonary support to patients whose heart and/or lungs are so severely damaged they can no longer function without assistance. Surgery Chair
Joseph B. Zwischenberger, MD, and director of the Artificial Organ Laboratory Donfang Wang, MD, PhD, received FDA approval of a bi-caval double lumen catheter inserted to perform ECMO.

Hoopes is focused on the advances in ECMO technology to bridge patients for lung transplantation. He places patients on veno-venous ECMO and rehabilitates patients awaiting transplant. Research done by Hoopes and others shows that by reconditioning patients prior to surgery, there is less risk of complications after transplant, as well as an improvement in their overall outcome.

Outreach locations

The Gill Heart Institute provides comprehensive cardiology services, diagnostic assessment and therapeutic strategies in more than a dozen outreach locations. Since 2011, CT surgeon Edward Setser, MD, has performed a variety of cardiothoracic operations at Hazard ARH Medical Center, including coronary bypass surgery, heart valve surgery and thoracotomies.

Appalachian Heart Center physicians, the largest cardiology practice in the region, have joined the Gill Heart practice in Hazard. Through a new agreement, UK and ARH now jointly manage cardiovascular services at Hazard and five other ARH locations with Setser serving as director.

And a partnership with Norton Healthcare allows patients in need of cardiac transplantation or ventricular assist devices to have their initial evaluation close to home.

Contact us

To refer to or consult with a CT or thoracic surgeon at UK, call UK•MDs at 800-888-5533 or go online to ukhealthcare.uky.edu/professionals/providers to access more information for referring providers.

Center of Excellence

UK HealthCare has been designated a center of excellence, receiving the Excellence in Life Support Award from the Extracorporeal Life Support Organization. UK is one of only five medical centers in the U.S. to receive a triple designation for its comprehensive ECMO treatment of neonatal, pediatric and adult patient populations.
Paving the way for tomorrow’s cardiothoracic surgeons
Focused integrated residency among nation’s first

For more than 40 years, Cardiothoracic Surgery at the University of Kentucky has been cultivating and training the next generation of cardiothoracic (cT) surgeons. Building on a long tradition of excellence, an exceptional faculty and the strengths of the broader institution, the CT surgery division introduced a new integrated six-year residency program in 2013 into which residents enter directly from medical school. UK is among the first 20 programs nationwide to move in this progressive direction.

Since 2004, only 72% of the thoracic surgery training slots in the U.S. could be filled; yet data predicts a 46% increase in demand for thoracic surgeons by the year 2025 as a result of population increases and aging.

“We are very pleased to be able to offer this unique and innovative cT surgery residency program at the University of Kentucky,” said Sibu Saha, MD, MBA, chief of cardiothoracic surgery and professor of surgery. “Dr. [Timothy] Mullett and other faculty members have demonstrated tremendous leadership and vision, working collaboratively with other departments in the university to craft a curriculum that will no doubt produce outstanding, skilled surgeons of the future.”

Shortcomings of the “5+2” model
In the traditional CT residency program described by Timothy W. Mullett, MD, professor of surgery and director of residency education programs, students with an interest in surgery would complete general surgery training for five to seven years, and then those with an interest in heart and lung surgery would complete a focused two- to three-year fellowship in cardiothoracic surgery.

In this traditional “5+2” years training model – where a five-year residency in general surgery is required to enter two years of fellowship in cT surgery – students have a great deal more exposure to other surgical specialties during general surgery training. As a result, nationwide trends indicate the number and quality of applicants for CT surgery are declining.

According to a recent article in Medical Education Online, studies show a 4.4 percent decrease in the number of applications for thoracic surgery training slots from 1994 to 2002 in the United States. From 2004, it worsened with fewer applications than the number of training slots and a fill rate of 72 percent.

On the other hand, data predicts a 46 percent increase in demand in the U.S. for thoracic surgeons by the year 2025 as a result of population increases and aging. The CT Surgery faculty determined a change was needed to ensure UK’s CT surgery residency program continues to recruit the best and brightest students to the specialty.

Six-year integrated model of training
In 2000, the American Board of Thoracic Surgery (ABTS) and the ACGME Residency Review Committee for Thoracic Surgery approved the development of six-year integrated cardiothoracic surgery residency programs in which an individual matches directly out of medical school for a stand-alone cardiothoracic program.

“The traditional track of training has been in play for decades,” said Mullett. “Students who are interested in surgery will be in
general surgical training for at least five years but as long as seven years with research and other extended training. Then, those students who come out on the other side of that gauntlet with an interest in CT surgery must complete a minimum of another two years CT surgery residency, sometimes three years with specialized training in a particular aspect of CT surgery such as robotics or transplantation.

“So to become a board-certified CT surgeon, the resident will have invested anywhere from seven to 10 years in training,” said Mullett. “But from the time a student completes medical school, through their general surgical residency, they are presented with a great many tempting, exciting opportunities along the way.”

According to Mullett, students may not have a great deal of exposure to CT surgery in a general surgery residency and perhaps no exposure at all to something so specialized as transplantation, so they tend to migrate towards other surgical specialties. As a result, the University of Kentucky and CT residency programs across the country may not have been capturing the most competitive students for the specialty.

“For the traditional track, we would only have that 24- to 36-month window to train a CT surgeon, and certainly there was a time when that amount of training was adequate,” said Mullett. “But when you look at the spectrum of what CT surgery represents today, it is neonatal, congenital, sometimes in utero surgery. It includes adults with thoracic problems like lung cancer, esophageal cancer and other complex diseases of the chest; adult cardiac surgery including coronary disease, valve disease and new techniques in correcting valve disease; heart and lung transplantation and robotics and a vast array of minimally invasive procedures often performed in hybrid operating rooms. That is a great deal to fit into a relatively short training period.”

Over 15 months, UK faculty and leaders put together a program unique to UK that builds on the strength of the institution. Accredited by ACGME in 2012, UK’s Integrated Six-Year Cardiothoracic Surgery Residency Program (I-6) allows the medical school graduate who has an interest in CT surgery to enter his or her residency directly from medical school and complete the training in cardiothoracic surgery in six years. Students still receive instruction in general surgery, but even in the first year, residents are training in CT surgery.

The program is divided into three introductory years and then culminates with an in-depth, hands-on operative experience in adult cardiac and thoracic surgery and transplantation (see program curriculum chart). The program has been specifically designed to offer the resident in-depth exposure to cardiac and thoracic care, as well as to those fields that are relevant to cardiothoracic surgery. During the first three years of training, time has been allotted so the resident experiences rotations such as endoscopy, trauma, cardiology and cardiac imaging. Completion of the program will lead to certification by the American Board of Thoracic Surgery.
## Integrated Six-Year Cardiothoracic Surgery Residency Program

**University of Kentucky**

<table>
<thead>
<tr>
<th>Month</th>
<th>PGY*1</th>
<th>PGY2</th>
<th>PGY3</th>
<th>PGY4</th>
<th>PGY5</th>
<th>PGY6</th>
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<tr>
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<td>Pulmonary Consults</td>
<td>Cardiac Cath/Echo (3 weeks)</td>
<td>Cardiac</td>
<td>Thoracic</td>
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<td>CT</td>
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<td>Thoracic/Elective</td>
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<td>Pediatric Surgery</td>
<td>Morehead</td>
<td>Thoracic</td>
<td>Thoracic</td>
<td>Thoracic/Elective</td>
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<tr>
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<td>Surgery Oncology</td>
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<td>Simulation (2 weeks)</td>
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<tr>
<td>5</td>
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<td>CT Anesthesia/Airway</td>
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<td>12</td>
<td>CT</td>
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### A great match

UK Cardiothoracic Surgery matched its first resident to the I-6 program in 2013, a year when many traditional CT surgery residency programs went unmatched. **Michael Bolanos, MD,** transferred to UK from a general surgery residency at Duke University.

“I essentially had to start over with my training as a Post-Graduate Year 1 (PGY1) resident at UK, so I am considered an intern again,” said Bolanos. “But I’ve always known I wanted to specialize in CT surgery, so the opportunity to have greater exposure to my chosen field early in the residency (first year residents have three months in CT surgery) and to learn from such an impressive faculty was a great opportunity.”

“UK’s I-6 program is unique in that you get exposure to other areas like cardiology, anesthesia, pulmonology and perfusion. The cardiology program here is especially strong, and the cardiology and CT surgery physicians work very collaboratively.”

— Michael Bolanos, MD, first-year CT surgery resident
Bolanos believes the training he will receive at UK will be more well-rounded with respect to other integrated CT programs he considered. “Even with starting over, I will complete my CT surgery training in a shorter amount of time than the traditional track,” he said. “And this way I can focus my time and energy on my interest area.”

Bolanos was attracted to the I-6 program at UK because it was unique to other programs he considered. “UK’s I-6 program is unique,” he said, “in that you get exposure to other areas like cardiology, anesthesia, pulmonology and profusion. The cardiology program here is especially strong, and the cardiology and CT surgery physicians work very collaboratively. Patient care is grounded in evidence-based medicine and the cutting-edge imaging available here was particularly impressive, compared to other institutions.”

The complexity of cardiothoracic surgery today mandates a multidisciplinary team approach, involving primary care physicians, cardiologists, pulmonologists, anesthesiologists, intensivists, radiologists, pathologists, cardiac perfusionists and others. UK faculty expect the increased exposure CT surgery residents will have to interrelated specialties during their training will result in an even more collaborative clinical environment, said Mullet.

“We anticipate residents who work collaboratively with various specialties during residency will find it easier to work with those attendings once they are in surgery,” said Mullett.

Likewise, as technology continues to evolve, it will be imperative for the next generation of CT surgeons to have mastered not only conventional open and surgical treatments, but also less-invasive techniques such as percutaneous devices, robotic technology and thoracoscopic tools in order to provide patients with this widest array of treatment choices.

Bolanos reported being “blown away” by the simulation lab at the University of Kentucky. “Simulation labs at other institutions were impressive, but none rivaled the simulation lab here,” he said. “It is four to five times larger than any other I’ve seen. The DaVinci robot is here, and it is a place where I can learn and perfect surgical techniques.”

In 2011 the Accreditation Council for Graduate Medical Education (ACGME) instituted new standards for the number of duty hours medical residents can work. Residents are now limited to an average 80 on-duty hours per week over a four-week period, and in some cases this can limit trainees’ exposure to hands-on surgery, said Bolanos. The simulation lab is an important tool for honing surgical skills and is available to residents during off-duty hours. “It alleviates some of the pressure when you have to miss a surgery because you’ve hit the 80-hour mark,” he said.

Simulation training in the laboratory is designed to help residents understand how the robot works, glean basic understanding of different techniques, and help students build muscle memory for those techniques before they are in the operating room.

“For program year 2014, we had over 110 applicants for the integrated program. . . .a lot of good students simply didn’t previously know that CT surgery was even an option for them.”

– Timothy Mullett, MD
Applications are up...way up

Enthusiasm for the new curriculum has been robust. The CT division would normally have had 15-20 applicants for its traditional two- to three-year fellowship in CT surgery. Most of the applicants would be interviewed and a fellow would be selected, said Mullet.

“For program year 2014, we had over 110 applicants for the integrated program and we will interview about 45 of those before making a selection,” he said. “I think that validates the theory that a lot of good students simply didn’t previously know that CT surgery was even an option for them.”

The University of Kentucky has established objective criteria for the application and selection process to ensure it is attracting the best students − board scores, availability to meet with faculty for an interview, strong letters of recommendation, outstanding references, and published work are all taken into consideration. Applications have been received from all over the U.S. and even international sources.

The Integrated six-year program will accept one resident per year and will eventually replace UK’s traditional cardiothoracic surgery fellows program, which is preceded by a general surgery residency. The traditional training track will eventually be phased out, but in the near-term the number of residents in CT surgery will expand while both residency programs are in place. The American Board of Thoracic Surgery is recommending that all CT residency programs run an integrated program by 2020.

Poised to compete

“We are ready to jump head to head with other top programs in the country to recruit the best and brightest,” said Mullett. “Unlike many programs, we can offer a cardiac program that has experienced significant growth this past year with the addition of two new cardiac surgeons, nearly doubling cardiac volume in less than 12 months.”

Mullett also cited a substantial expansion in the types of surgical techniques performed at the Gill Heart Institute, the expansion of the general thoracic practice with three dedicated general thoracic surgeons and three others who practice thoracic as well as vascular surgery, and two transplant surgeons who also have growing practices.

“Our rapidly growing patient population,” Mullett added, “the complexity of disease we are treating, the quality and commitment of our faculty, combined with state-of-the-art technology and facilities, enable us to offer our residents exposure to the full spectrum of diseases a CT surgeon needs to be able to take care of and the training needed to produce highly skilled surgeons.”

How to apply to the Integrated Six-year Cardiothoracic Surgery Residency Program

Students completing medical school who are interested in the Integrated Six-year Cardiothoracic Surgery Residency Program at the University of Kentucky should utilize the ERAS (Electronic Residency Application Service) database. All applicants must be graduates from an LCME (Liaison Committee on Medical Education)- or an ECFMG (Educational Commission for Foreign Medical Graduates)-accredited medical institution.

Selection to the program is done through the National Resident Matching Program. Interested candidates are asked to submit:

• Candidate’s curriculum vitae
• Three letters of recommendation
• Copies of ABSITE and board scores
• Completed universal application

Qualified applicants will be invited for an interview.

For more information regarding the I-6 Program at UK, please contact Hannah Pagan, residency program coordinator, or Timothy Mullett, MD, residency program director, at 859-323-5057 or hannah.pagan@uky.edu.

“We can offer a cardiac program that has experienced significant growth this past year with the addition of two new cardiac surgeons, nearly doubling cardiac volume in less than 12 months.”

– Timothy Mullett, MD
Dr. Randy Schell’s lecture preparation today doesn’t look much different than it has throughout the course of his more than 20-year career as an anesthesia resident educator. He gathers his notes, flips open his laptop and pulls up his latest PowerPoint presentation. He clears his throat and readies his voice. When he looks up from his notes, however, he doesn’t see a lecture hall full of anesthesia residents staring back at him. Instead, he’s alone in his office, his computer screen serving as his one and only audience member.

“This is a flipped classroom, preinteractive session podcast,” he says, a microphone on his computer capturing his voice. “Physics of anesthesia, the machine and breathing system. Welcome.”

Schell continues, explaining the topics covered in his slideshow, much as he would if he were lecturing to a live audience. As he goes, software on his computer picks up the audio from his voice and video from his computer screen. When he’s finished about 20 minutes later, he has a podcast version of his lecture, ready to be downloaded by UK Anesthesiology’s nearly 50 residents.

From podcasts to mobile apps, from mini iPads to wiki websites, technology is helping Anesthesiology create a more active learning experience for residents and educators alike.

Schell’s podcast presentation is part of a new teaching initiative called the flipped classroom. It’s just one of the ways he and his fellow anesthesia educators are using technology to assist in resident education and training at UK. From podcasts...
to mobile apps, and from mini iPads to wiki websites, Schell says technology is helping his department create a more active learning experience for residents and educators alike.

“Resident didactic education hasn’t changed a whole lot in many years. The person who’s considered knowledgeable in a specific area stands up at the front of the classroom in front of a lot of learners and for an hour talks while you take notes,” said Schell, a professor of anesthesiology, surgery and pediatrics. “This is what has been called the ‘sage on the stage’ approach to didactic education.

“We’re always asking, ‘What’s the best way to create deep understanding of a topic, and what’s the most efficient way to get that information to our learners?’ By optimally using technology to create an active learning experience, we’re facilitating a deeper understanding for our residents, allowing them to transfer that knowledge not just to a test next week but into years of practice of clinical work.”

‘Taking us to the next level’

Anesthesiology’s shift toward a technology-infused curriculum began around about the same time Schell began reassessing his own effectiveness as an instructor. Feedback for his lessons was positive, and resident outcomes on measures like the anesthesiology specialty in-training and board examinations were above national averages. Still, Schell felt like he needed to refine his methods as an instructor.

So, in 2007, he went back to school himself, earning a master’s degree in academic medicine from the University of Southern California.

“The teacher no longer is the ‘sage on the stage’ but rather becomes a ‘guide by the side’ of the active learner.”

— Randy Schell, MD

“Going back to school allowed me to question the things I always thought were best in education and to rediscover what others out there think is best, based on evidence,” said Schell. “And using technology was a portion of that. I really wanted to help move us as a group of educators to the next level. And the next level I saw involved moving beyond passive learning to more active learning methodology and using technology to assist education. The teacher no longer is the ‘sage on the stage’ but rather becomes a ‘guide by the side’ of the active learner.”

Armed with his renewed educational insight, Schell joined forces with educational specialist Amy DiLorenzo, MA, to implement changes within UK Anesthesiology. The two worked together to develop increased flexibility and options for learning, to increase active learning during face-to-face didactic sessions and an “anytime, anywhere” educational philosophy with the tech-savvy, active learner in mind.

Technology-assisted education

Even before Schell earned his master’s in education, UK Anesthesiology was dabbling in technology-assisted education. It started with podcast versions of the department’s didactic lectures, which take place at 6 a.m. on Monday mornings.
While the early start time is necessary given the residents’ and faculty’s busy schedules, Schell acknowledged the “crack-of-dawn” lecture isn’t entirely conducive to everyone’s learning style. So the faculty started recording the lectures and posting them online for residents to download.

“The residents immediately loved it,” DiLorenzo said. “Even if they were present at the lecture, if they wanted to go back and review a topic, they had a virtual library where they could go and listen to the information again. And for people who were out of town or on call, they could still access those materials and not miss out.”

Anesthesiology chairman, Edwin Bowe, MD, has been both a strong supporter and early adopter of innovative educational methods in resident education. He believes podcasts are a useful way to promote active learning throughout the curriculum.

“The use of podcasts provides the learner with access to the content ‘on demand,’” he said. “Active involvement is essential for the learning process.”

Brandon Gish, MD, a second-year anesthesiology resident, said the podcast lectures allow him to maximize time he would otherwise spend doing something else.

“I’ve found that if I watch a podcast while I run on the treadmill or listen while I mow the grass, I can be doubly efficient,” he said. “Without these technological options, this extra learning would have been missed.”

Podcasts were just the beginning. True to their active learning focus, Schell and DiLorenzo began adding self-assessment tools to both the live lectures and podcasts. During the lectures, Schell built in question slides that residents responded to via an electronic clicker. The method not only allows residents to gauge how well they understand the material, but also gives faculty an opportunity in real time to see whether the information is sinking in.

Self-assessment questions also are given at the end of the podcast version, allowing those who can’t attend the lecture an opportunity to check their knowledge, too.

“As the library of podcast lectures grew, Schell and DiLorenzo figured the department needed an online hub for its education efforts. With the help of Chris Hayes, Anesthesiology IT director, the group created a Web-based educational environment. Whether at home or on the go, residents can access the website and have the entire curriculum at their fingertips.

Included in the website are not only links to the department’s more than 700 podcasts, but also archived PowerPoint presentations, handouts, links to supplemental information and wiki Web pages that allow for community conversation and discussion about given topics and materials. The goal, Schell said, is to create a comprehensive learning environment that makes the transfer of information efficient and effective.

To increase that efficiency, the department provides each resident an iPad Mini for educational use. The devices come installed with a department app, allowing residents to access the departmental educational materials directly from their home screen.
Flipping the classroom

While the robust departmental website and new iPads represent technological tweaks to the education curriculum, the dynamics of faculty-resident interaction have undergone changes, too. Most notably, Schell and DiLorenzo have begun the implementation of flipped classroom instruction as one method of encouraging active learning.

In the flipped classroom, faculty and residents use face-to-face class time to discuss concepts, problems, cases, or review topics that are unclear and engage in activities rather than learn new information. Prior to the in-person classroom time, instructors upload short podcasts containing the basic information about the week’s topic, which residents watch before the class.

Schell said the shift to the flipped classroom model appears to be working. Residents are more engaged while in class and the understanding appears to be deeper.

“They’re watching these 15-minute podcasts beforehand so that they have the knowledge they need to interact in a meaningful way to take information and use it in different contexts.”

Gish believes spending classroom time to expand on foundational knowledge presented in podcasts is a much better way to achieve long-term knowledge.

“The podcasts give the learner information in a concise and organized manner, and then the next day in the classroom those concepts are further clarified with questions and scenarios that help consolidate this new information,” he said. “I find that with the flipped classroom I am more apt to remember concepts when I am faced with them in the operating room.”

According to Schell, the flipped classroom model requires more effort on the part of faculty to develop both a concise podcast of foundational information and an interactive classroom component.

“Doing these short, 15- to 20-minute podcast lectures, it really encourages you as an educator to identify what is important and then provide that to the residents,” he said. “That is of huge value to the learner. Technology gives us a way to disseminate knowledge in the most efficient and effective way possible.”

<table>
<thead>
<tr>
<th>Old school</th>
<th>vs.</th>
<th>New school</th>
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<tbody>
<tr>
<td>Teacher is a &quot;sage on the stage&quot; and focus is on the teacher.</td>
<td>Teacher becomes a &quot;guide by the side&quot; and focus is on the learner.</td>
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<tr>
<td>Didactic lectures at 6 a.m. require residents to attend, take notes, review afterward.</td>
<td>Didactic lectures now recorded and posted online for residents who are unable to attend and for those who wish to review material again later.</td>
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<tr>
<td>Lecture material presented by faculty in straight-forward manner, enabling passive and possibly superficial learning.</td>
<td>Lectures now include interactive questions utilizing clickers that allow residents to test knowledge as it’s presented. Gives faculty opportunity to gauge how well residents understand the material.</td>
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<tr>
<td>Classroom sessions emphasize presenting new information rather than discussion or case studies that emphasize utilization of knowledge and deep learning.</td>
<td>Flipped classroom sessions encourage discussions, questions, collaboration and real-life application of knowledge.</td>
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</table>
The Physician Payments Sunshine Act requires manufacturers of drugs, medical devices and biologicals that participate in U.S. federal health care programs to report certain payments and items of value given to physicians and teaching hospitals. There is a long list of what is and is not required to be reported. The Centers for Medicare & Medicaid Services (CMS) lists 14 categories of payments, such as consulting fees, grants, research, honoraria, travel and charitable contributions. If a physician requests that payment be made indirectly to another physician or third party, that payment must be reported, too. The payment type will be noted, as well (e.g., cash, stock, ownership interest, in-kind items/service, etc.).

What doesn’t count? The following don’t have to be reported under the Sunshine Act:

- CME credit and courses
- Conference buffet meals and drinks if available to everyone
- Patient product samples
- Patient educational materials
- Medical devices loaned for short-term testing
- Charity care items
- Payment for services rendered in legal actions
- Anything under $10 (unless in aggregate it amounts to $100 or more for the year).

Manufacturers, not physicians, are responsible for submitting reports to CMS. Physicians should review the information when available since it’s the physician’s name and reputation at stake.

Key dates for the Sunshine Act

Important dates related to the Sunshine Act:

Aug. 1 – Dec. 31, 2013
Manufacturers were required to begin collecting and tracking payment, transfer and ownership information. Thereafter, they are required to report for each full calendar year.

Jan. 1, 2014
CMS launched the physician portal that allows physicians to sign up to receive notice when their individual consolidated report is available for review. This portal also allows physicians to contact manufacturers/group purchasing organizations (GPOs) if they want to dispute the accuracy of a report.

March 31, 2014
Manufacturers/GPOs will report the data for 2013 to CMS.

June 2014
CMS is expected to provide physicians access to an individualized, consolidated version of all manufacturers/GPO reports for the prior calendar year. Physicians may access the consolidated reports via an online website portal maintained by CMS and will be able to seek correction or modification by contacting the manufacturer/GPO through the portal.

Sept. 30, 2014
CMS will release most of the data on a public website.

For more information
To read more about the anesthesia residency program at the University of Kentucky, visit www.wildcatanesthesia.com or contact Randy Schell at 859-323-5956 or randall.schell@uky.edu.
One afternoon late last fall, a visitor in jeans and a black baseball cap sat at a piano in the Barnstable Brown Atrium Lobby of UK Albert B. Chandler Hospital, improvising on a slow, meditative piece of music. Apparently, he had just finished visiting an ailing loved one and was waiting for the rest of his family to join him. His left hand provided a steady, almost reassuring bass line that grounded the lighter, more reflective melody. The music seemed to express a kind of introspective questioning, a common experience in a hospital setting.

After the visitor left, Vincent Sorrell, MD, sat down at the same piano to take a break from the rigors of a long work day. He began with a medley of contemporary songs, leading off with the melody, “It’s a little bit funny, this feeling inside…” from Elton John’s composition, “Your Song.”

A young woman dressed in blue scrubs leaned back into a cushioned chair and stared off into space. Another employee, a cardiology fellow, stopped and listened in amazement to his mentor— he had never heard him play piano.

“That’s my boss,” he said, as he took a picture of Sorrell on his iPhone. Eventually, Sorrell moved effortlessly into some ragtime jazz. Perhaps he chose this more up-tempo piece for the three children who were waiting not-so-patiently with their mother for a ride. It had been a long day and hopefully, the music helped lighten their mood.

After Sorrell left, a man waiting nearby for his wife commented upon the doctor’s music: “It speaks to the heart.”

According to Jackie Hamilton, director of the UK Arts in Healthcare program, the piano is an integral part of the healing presence of music and art at Chandler Hospital. The piano has been there since Pavilion A opened in May 2011. “Many people stop and play,” she said. “It’s available to all.”

Among the pianists are other UK HealthCare professionals like Sorrell who want to take a break from their work or medical practice with practice of another kind.

Scottie Day, MD, and Ed Younce, a patient coordinator in nuclear medicine, take advantage of the piano’s presence on a regular basis. Paul Bachner, MD, played several times for
Pavilion A’s opening ceremonies and also during the holidays last December. Biochemical engineer Moriel Vandsburger, PhD, recently accepted a position with UK HealthCare in Physiology’s Cardiovascular Research Center. Once he finishes remodeling his new home in Lexington, he said, he’ll enjoy playing piano at Pavilion A as well.

The choice – music or medicine?

We’ve all heard those musician jokes, right? Like the one about a boy who approaches his father and says, “Dad, I’m going to be a musician when I grow up.” His father says, “Son, you can’t have it both ways.” The suggestion is that pursuing a career in music is impractical; parents are often the ones to point this out.

The decision finally rests with the one whose life it is, and for most of our five health care professionals, choosing between music and medicine for their livelihoods was not easy. Fortunately, there was a third choice – one in which the gifts of both could be given and received. While all chose medicine as a career path, each found a way for music – playing piano in particular – to be a meaningful part of his life.

Paul Bachner, MD
Professor of Pathology and Laboratory Medicine

Both music and medicine are ‘demanding practices,’ taking discipline to master them.

All five health care professionals report that practicing piano was often a “chore” and “watching the clock” a common occurrence as they first learned to play the piano at the age of 5 or 6. Often there was a mother close by, either teaching or making sure practice happened.

Paul Bachner remembers waiting until his mother left the room to move the clock hands forward. It wasn’t until she was in her 80s that he confessed this practice. She laughed and said, “What you didn’t know was that when you were looking the other way, I moved the clock hands back!”

On track to become a concert pianist, Bachner attended the High School of Music and Art in New York City – the school after which the movie Fame was modeled. He also majored in music in college. He gave concerts, accompanied violinists, and practiced up to 10-12 hours a day.

But then, he reached a crossroads – one that many budding musicians face. “If you want to be a soloist, you either make it big or you teach at a university,” he said. “I wasn’t as good as I needed to be. My scales and arpeggios were good. My octaves were terrible!” Going into medicine was an easy choice. As a young boy, one of Bachner’s favorite books was The Microbe Hunters, an intriguing foreshadowing of his future career focus in pathology.

Bachner sees both music and medicine as “demanding practices,” taking discipline to master them. “It’s a mindset,” he said. “When I finally decided to switch from music to medical school, it wasn’t as much of a change in my life as it was for many of my classmates.”

Whereas most of his colleagues talked about the “relaxing” aspect of piano playing, Bachner said that for him, “it’s not relaxing at all. It’s stimulating...exciting.”

Now, Bachner practices a couple of times a week and often for two hours a day on weekends. Among his favorite composers to play are Mozart, Bach, Schubert, Debussy, Ravel, Bartok, Prokofiev, and Shostakovich.

His wife is very tolerant, he said. “People think, isn’t it wonderful that you have this music in your house? But sometimes I’m practicing the same few bars over and over again. That’s the thing with the piano. You never perfect anything. You can always do it better.”

Ed Younce
Patient Coordinator, Nuclear Medicine

“Music is a huge part of all our lives. It fills the space.”

Even if a musician is successful at making music his or her career, the life can be tough. Ed Younce’s mother toured the world for a few years as a concert pianist, but the experience was so difficult for her marriage and family, she finally quit touring and focused on teaching instead. Because of this earlier experience, Younce said, both parents discouraged him from
making music a career, something he now wishes he would have tried.

Still, he has managed to find a way to incorporate music into his life. In addition to owning a DJ business with his partner, Younce sometimes plays for weddings. He particularly enjoys playing in the Barnstable Brown Atrium Lobby. Among his favorite pieces are “Swan Lake” by Tchaikovsky and “My Way” by Frank Sinatra, in addition to Christmas and patriotic music.

“I don’t like to be on a stage or show off. I don’t even care for applause,” he said. “I just want people to come, sit down and enjoy themselves. I like being part of the ambiance.”

That ambiance is exactly what Younce helps create during the holidays when he plays for the “Lunch and Listen” series sponsored by UK Arts in Healthcare. One Wednesday last December, for instance, Younce played a selection of Christmas carols while visitors, employees and medical students sat down with their lunches, chatted with each other and relaxed around the piano.

Among the carols was an unexpected medley of “Jingle Bells” and “My Old Kentucky Home.” The two songs just happened to show up on the piano side by side, he said, so he joined them together. The effect? A deep feeling of nostalgia that along with the rest of his music that day helped transform the large atrium lobby into a living room and the people there into something like family.

Speaking of hospital patients and their visitors, Younce said, “The piano music provides them with some warmth and comfort, a kind of ‘home away from home.’” He recalled a woman whose husband was receiving treatment at UK Markey Cancer Center. She’d come to the atrium lobby to hear Younce play every Wednesday. “It seemed to help relieve her from all that she and her husband were going through and restore her spirits,” he said.

“Music is a huge part of all our lives. It fills the space.”

Scottie B. Day, MD
Assistant Professor of Pediatrics, Director of Pediatric Transport and Outreach

“For just that one moment when you’re playing, you’re offering people a respite.”

Music certainly has been a huge part of Scottie Day’s life for as long as he can remember, beginning with his childhood growing up in Eastern Kentucky. He remembers his parents paying $5 a lesson, which he took at a little, rural church.

When Day graduated from high school, he had two opportunities open to him. One was to go to college majoring in pre-med; the other was to attend Belmont University School of Music in Nashville. The decision was fairly straightforward. As much as he loved music, Day had always wanted to be a doctor. He knew that music could be a complement to his career. In fact, music helped pay his way through college and some of medical school at UK.

While Day was an undergraduate student in 1996, he started playing the piano in the lobby of Markey Cancer Center whenever he could. After his residency in Indianapolis and a fellowship at Cincinnati Children’s Hospital, Day returned to Lexington in July 2011 to join UK Pediatrics. He now plays piano in the Barnstable Brown Atrium Lobby several times a year.
Day enjoys playing contemporary Christian, rock ‘n’ roll, country, and even a little “rock-a-billy.” Sometimes, he’s joined by his son, Dalton, 8, who brings his drum pad and drum with him. Day also enjoys playing traditional Christmas carols during the holidays; particularly when the staff from Pediatrics comes down to sing along. This activity, he said, not only provides enjoyment to patients and their families but is also good for team bonding.

“There’s so much more to this work than just being a doctor,” he said. “For just that one moment when you’re playing, you’re offering people a respite from whatever’s happening to them or someone they love in the hospital. You might even be helping them recall a happier time.”

One of Day’s favorite sayings is: “The value of a life is determined by how much of it you give away.” Music and medicine are two of the ways he gives. “If God gave it to you, use it,” he said.

**Moriel Vandsburger, PhD**
*Biomedical Engineer, UK Physiology*

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Perhaps in an attempt to delay that moment when a choice would need to be made between music and medicine, Moriel Vandsburger tried to do something few others would even consider. He majored in both classical performance and biomedical engineering at the University of California, San Diego. The two disciplines were so rigorous that he wound up practicing piano between one and three in the morning, he said. After two years of this, he knew he simply could not sustain it, so he chose to focus on engineering, which he thought would probably pay better in the end.

The decision not to pursue music as a career was a loss, he said, but also a gain. “When I stopped performing, it became a lot more fun.”

Vandsburger, 30, was married a little over a year ago. He believes his piano prowess may have contributed to getting his wife’s attention. “I’m pretty sure it was one of the things that won her over in the beginning,” he said.

**Vincent Sorrell, MD**
*Director of Cardiovascular Imaging, Professor of Medicine*

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Like many of his UK HealthCare, piano-playing cohorts, Vandsburger has witnessed the relaxing, healing properties of music in both himself and others. In graduate school, he acquired an old upright piano with a “huge” sound that had been converted from a player piano once used in a brothel. “That piano got me through graduate school,” he said. Apparently, he wasn’t the only one. A lot of his friends would come over to study at his place, hanging out with their computers, while he practiced.

Now, in his professional life, Vandsburger develops magnetic resonance imaging technology for detection of molecular changes in the diseased heart. He believes his years of practicing piano contributed to his success as a biomedical engineer. Both practices, he affirmed, are highly analytical and depend upon an ability to recognize patterns.

The piano also taught him the need to “do things slowly and repeatedly to get it right.” Sometimes on the piano, he would sit and play the same six measures for over an hour and a half. This is similar to debugging a code. “You can spend hours debugging just a couple of lines of code to figure out what you did wrong,” he said. Doing something “well enough” is not acceptable in music or in engineering, he added. “Everything we do is very complex. We need to take it a step at a time.”

Like the others, Vincent Sorrell sees piano playing as a complement to his career, inextricably interwoven into his life. When he was being recruited for his present position at UK HealthCare, his friends joked that they put a piano in the Barnstable Brown Atrium Lobby right outside of the entrance to the Gill Heart Institute to entice him.

All joking aside, Sorrell often takes a break from his duties to head over to the lobby to play, if only for a few minutes. He finds it relaxing, he said, but he also sees music as another way to connect with people. “Many times I wind up playing for employees and I’ll take requests,” he said. “The police, housekeeping, security guards –
they all know me.” Once in awhile, a guy named Bill who is legally blind will come into the lobby when Sorrell is playing, and they’ll play a duet together.

When there are children present, Sorrell said, he often plays something upbeat and jovial, while other times, the mood might call for something more reflective, perhaps when there are family members visiting a loved one.

“I try to match the music with the mood of the people around me,” he said. “The art of performing is a lot like the art of medicine,” Sorrell said. “They both begin with listening.” Both practices require the delivery of a clear message, he added, uniquely shaped in order to be heard.

True to his desire to play to his audience, Sorrell’s repertoire is varied. Some of his favorite classical composers are Chopin, Beethoven and Franz Liszt, while he also enjoys playing medleys of popular music and ragtime jazz.

Sorrell never considered pursuing music as a career, partly because his parents didn’t encourage it, he said. Now he’s in the position as a parent himself to support his daughter, Zoe, in her musical passion as a senior at Oberlin Conservatory of Music studying flute; he couldn’t be prouder.

When Zoe was in high school, Sorrell and his wife traveled all over the world with her, including to the Macy’s Day Parade, the Fiesta Bowl and the 2008 Beijing Olympics where she had the honor of playing in a number of preceremony events including one performed on the Great Wall of China. Sorrell understands why parents might discourage their children from pursuing a life of music, but after watching his daughter flourish in her talent and ambition, he holds a different perspective.

“If the talent, passion, determination and discipline are all there, why not?” Not that music is an easy path, he added. The repertoire a professional/classical musician needs to maintain is mindboggling.

“Unlike my daughter, I never have to play,” he said. “I took the easier route.”

The choice to play life as a medley

Sometimes life seems to give you a choice between two loves, in this case, music and medicine. If you “play” it right, as our five UK HealthCare professionals have done, you can enjoy both – one as a career, the other as a vocation. After hearing each man’s journey, it’s clear that relegating piano playing to what might be considered a secondary role has not minimized its value for any of them. In fact, as several have mentioned, when they chose to make music a vocation, it became more enjoyable.

Music and medicine is not an either-or choice, after all, but rather more like a medley of intertwined passions that support each other. Bachner points to the discipline and mind-set necessary for each endeavor; Vandsburger, to how each develops one’s ability for pattern recognition and analysis. All spoke of how music offers a respite from the stresses of work, and how both engage healing in unique ways.

For all five UK HealthCare professionals, regardless of their musical background, playing the piano is a gift they both give and receive, one that adds vibrancy to their lives while also providing a kind of sanctuary to those privileged enough to listen. DC
Ethical behavior foundation of UK HealthCare

Compliance office ensures high standards

Employee ethics form the cornerstone of any health care organization’s reputation. But employees are human, and therefore fallible. When they stray from the “high road,” the Office of Corporate Compliance (OCC) is there to put things right. The OCC maintains UK HealthCare’s good name by ensuring that its personnel invariably act with integrity, adhering to internal and external guidelines. UK HealthCare’s Corporate Compliance Program (soon celebrating its 16th anniversary) confirms our unswerving commitment to honest and fair conduct to our patients, referring physicians, the community at large, employees, faculty, and staff—as well as government and other payers. The OCC exemplifies that commitment through its vigilance in preventing and identifying unethical conduct.

The Office of Corporate Compliance maintains UK HealthCare’s good name by ensuring that its personnel invariably act with integrity, adhering to internal and external guidelines.

That effort isn’t limited to the OCC. All UK HealthCare physicians and staff members are honor-bound to report any behavior they believe to be inappropriate. There is never a penalty for voicing such a concern when done in good faith. In fact, it’s failing to report suspected misconduct that can result in negative action.

Potential areas of concern include:
- Patient care
- Patient referrals and referral sources
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- Operational, business and financial integrity
- Soliciting, receiving, providing or offering illegal compensation
- Conflicts of interest, duty of loyalty and duty of care
- False statements, claims and representations
- Research and scientific integrity
- Coding and billing practices
- Confidentiality of medical information
- Responding to governmental officials and regulatory agencies
- Abuse of controlled substances
- Drug and device misuse
- Theft or embezzlement

If a UK HealthCare physician or staff member is not comfortable reporting suspected misconduct or making compliance-related inquiries to a supervisor, he or she can contact the compliance officer at 859-323-8002 or the Comply-Line at 1-877-898-6072. The Comply-Line is a toll-free phone reporting service operated by an independent contractor hired by UK HealthCare. The Comply-Line is available 24 hours a day, seven days a week. Comply-Line reports, as well as those made directly to the compliance officer, can be made anonymously.
Dressing for success

Standardized dress projects professionalism, reassuring patients and visitors alike

In July 2013, UK HealthCare implemented standard dress for frontline employees — non-clinical staff members who regularly greet and interact with patients and their families.

The goal is for staff to present a polished, professional appearance that inspires confidence among patients and their families, helping them to instantly recognize staff members who can answer questions or provide directions.

“Initial impressions are vital to our success, and the continued focus on our patients, our mission and our purpose will help everyone understand and cope with these changes,” said Ann Smith, chief administrative officer for UK HealthCare hospitals, when the new policy was first introduced.

Standard dress does not mean a uniform — looks can vary among staff members. But all are wearing a combination of blue, black and white, with a UK HealthCare logo on the chosen apparel’s front right side.

“Standard dress helps convey to our patients the great patient-centeredness exhibited daily by our staff.”

— Marcus Randall, MD

Fitting fairs held last spring helped staff members choose the items they would need. New clothing options were added recently to allow the employees more choice in the cost and quality of the items they choose to wear.

“Each day I can see how helpful standard dress has been to the patients and visitors,” said Marcus Randall, MD, chief of ambulatory services. “They seem more comfortable walking up to a person wearing standard dress and ask for assistance. And standard dress helps convey to our patients the great patient-centeredness exhibited daily by our staff.”
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UK HealthCare named a Rising Star and a national leader in Quality.

UK HealthCare has earned the University HealthSystem Consortium (UHC) Rising Star Award and now ranks 12th among more than 100 of the nation’s leading university hospitals for overall quality of patient care.

The Rising Star Award recognizes hospitals that have shown a deep commitment to quality and improvement. And thanks to the dedication and hard work of UK HealthCare physicians and staff, UK’s quality ranking made the highest jump among Rising Star winners in UHC history.

For more information about UK HealthCare quality, visit ukhealthcare.uky.edu/quality.