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UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES • SPRING 2013

UAMS JOURNAL

THE QUEST FOR SMARTER MEDICINE

Leading the Way with Innovation

MESSAGE
from the Chancellor

Dear Readers,

Since you heard from us last fall, the American health care system, and our system in Arkansas in particular, has continued to be a changing landscape rife with uncertainty.

As we wrestle with whether to expand Medicaid, how to reform the provider payment system to improve efficiency and care coordination, and implementing the federally mandated insurance exchange, UAMS is not simply standing by but is leading as an engine of innovation.

As a university, UAMS is in the knowledge business. We are continually discovering new information about biomedical science, our community, our patients and ourselves; then incorporating these discoveries into improving the health and health care of Arkansans and our nation and world.

UAMS is not simply standing by but is leading as an engine of innovation.

Built around a centerpiece of engaged patients and families, and supported by a platform of efficient operations, we are working on initiatives that enhance our ability to fulfill all aspects of our mission. We seek to set the standard regarding current knowledge and its application to health, develop new knowledge relating to human health, and translate that into even better approaches.

Biomedical science is enabling us to increasingly understand disease processes at the molecular and genetic levels. This precision medicine requires new tools. We have developed bio depositories that store patient tissue samples with information at these molecular and genetic levels. We now have a data warehouse with protected clinical information on 1 million patients that enables us to understand how we provide care and outcomes of that care. And we have new bioinformatics expertise and tools to analyze this data to craft better approaches to health and disease.

Combined with our distance health infrastructure and the patient-centered medical homes envisioned by Arkansas' health system reform initiative, we begin to see an entirely new era of health care with access to personalized, precise care. This is a challenging time, but working together we can achieve better health for all. This is the reason for UAMS' existence.

Thank you for joining us in this quest.

Dan Rahn, M.D.
Chancellor, University of Arkansas for Medical Sciences

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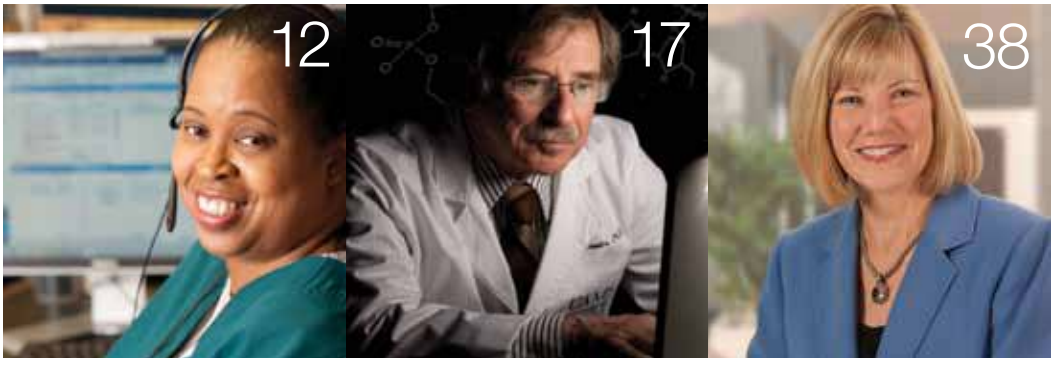

Health System Transformation

The Case for Positive Change in Health Care

By Elizabeth Caldwell

AS THE UNITED STATES continues to grapple with challenges in the way health care is provided and paid for, UAMS is leading as an engine for positive change.

Under the umbrella of translating science to better health, UAMS researchers, physicians and educators are working together in wide-ranging ways to contribute to solutions that lead to better health and more efficient delivery of health care at a lower cost.

"There are almost certainly going to be some fundamental changes in health care."

Payment reform is, and will continue to be for some time, the pre-eminent issue for the nation and Arkansas, UAMS Chancellor Dan Rahn, M.D., and other Arkansas health care leaders say.

Medical spending in the United States almost doubled in the last decade, reaching $2.6 trillion in 2010, according to the federal Centers for Medicare and Medicaid Services (CMS). In Arkansas, 25 percent of 19-64 year olds are without insurance, rising to 40 percent in some counties.

But tied to reining in health care costs is the need to better manage chronic conditions, which account for a large percentage of costs.

Challenges, too, are seen in how to handle the hundreds of thousands of patients who will be newly insured through the federal health care reform legislation known as the Patient Protection and Affordable Care Act. The Arkansas Legislature is wrestling with expansion of the Medicaid roles as allowed under that same Act. An innovative private option has been approved in principle by the U.S. Department of Health and Human Services.

Meanwhile, the Institute of Medicine reported last year that an estimated 30 percent of total health care costs are waste through unnecessary and redundant services, lost opportunities for care prevention, poor care coordination and fraud.

In short, Arkansas' — as well as the nation's — health care system is unsustainable. System redesign is essential, Rahn said.

"We are entering a time in which there are almost certainly going to be some fundamental changes in health care," Rahn said. "The primary drivers are financial, but they are enabled by advances in science and technology."

UAMS is addressing these core issues in many ways. In 2008, the state's only academic health center began implementing the model of care called the patient-centered medical home so a patient's primary care physician can better monitor chronic conditions while reducing costs.

In spring 2012, Arkansas was selected for the Comprehensive Primary Care Initiative that is paying providers to improve coordination of care.

And in fall 2012, the state began paying providers for "episodes of care" rather than the traditional "fee for service" as incentive to manage costs for treating five conditions – upper respiratory infections, total hip and knee replacements, congestive heart failure, attention deficit hyperactivity disorder and pregnancy.

In other advances, UAMS Medical Center this year began participating in the State Health Alliance for Records Exchange (SHARE), giving health care providers throughout the state secure access to electronic patient health information to

UAMS is an engine of innovation.

improve safety and reduce duplicate testing.

Interprofessional education, personalized medicine, patient-centered outcomes research and a pledge to ethical treatment of patients and their health information are other ways UAMS is involved in system redesign.

Wrapping it all together is a commitment to patient- and family-centered care, which is improving the way health care professionals interact and communicate with those they serve, resulting in shorter hospital stays and lower costs per visit.

"These are not isolated, separate, disconnected initiatives, but they all fit together to support our overall mission," Rahn said. ❖

Payment Reform

Episodes of Care to Replace Fee for Service

By Elizabeth Caldwell

IN THE NOT-TOO-DISTANT FUTURE, payments to health care providers in Arkansas will be based on overall quality of care rather than the number of office visits or procedures performed.

In fact, in UAMS clinics and those of other providers across the state, the traditional "fee for service" type of payment system has already been replaced in favor of one called "episodes of care" for nine medical conditions, with four more to be added in October.

It's a central piece of payment reform — an all-payer approach — that Arkansas health care leaders say is desperately needed to stem the tide of rising health care costs that threatens to bring the whole system crashing down.

The health care system consumes up to 18 to 20 percent of the nation's gross national product. Insurance costs for a family of four have risen from $6,300 in 2000 to $11,816 in 2010. In Arkansas, 25 percent of people ages 18-64 don't have insurance coverage. The state has the sixth-lowest median household income, meaning less discretionary income to spend on insurance.

The health care system consumes up to 18 to 20 percent of the nation's gross national product.

"The nation's health care system is at a tipping point and largely falling apart," said Joe Thompson, M.D., M.P.H., Arkansas surgeon general and director of the Arkansas Center for Health Improvement. "There's definitely not only a case for change, but an imperative to modify our delivery system."

Thompson, also a professor at UAMS, has been leading the charge for payment reform in Arkansas.

With the all-payer strategy, he said, all insurance companies as well as Medicare and Medicaid would reinforce improved quality and efficiency in the same financial way, providing incentives for high-quality, coordinated care and improved monitoring of chronic diseases at an appropriate cost.

This came out of the state's Health Care Payment Improvement Initiative that began in 2011. Arkansas Medicaid and private insurers Arkansas Blue Cross and Blue Shield and QualChoice collaborated to find ways to shift to a higher-quality and more cost-efficient system of care.

The partnership worked with hundreds of physicians, hospital executives, patients, families and others to design the new payment system. Arkansas is the first state to use this approach statewide and with both public and private payers. »


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One step in transforming the system is establishing payment thresholds for episodes of care for nine conditions that providers are given incentives to meet. The first five began in October 2012: upper respiratory infections, total hip and knee replacements, congestive heart failure, attention deficit hyperactivity disorder (ADHD) and pregnancy. The next four began in April: colonoscopy, cholecystectomy, tonsillectomy and oppositional defiant disorder (ODD).

To be added in October: coronary angioplasty/coronary artery bypass surgery, chronic obstructive pulmonary disease (COPD) exacerbation (sudden worsening)/asthma exacerbation (sudden worsening), neonatal care, and combination ODD/ADHD.

"We are seeing improved outcomes of care which, I think, will continue as we learn more about the improvement process."

The provider has an incentive to manage costs. If expenses go above the acceptable level of cost to treat the condition, the provider absorbs the loss. If expenses are below the acceptable level of cost, the provider shares in the savings. The goal is to expand the approach so that 80 percent of care is under the new payment structure within three to five years.

Yet that's not the most important part of payment reform, Thompson said. Two other components promise even more effective management of costs while providing better care.

It starts with the patient-centered medical home, a care model that personalizes a patient's care and health professionals work as a team to address chronic conditions.

In 2009, UAMS' Family Medical Center in Little Rock was the first in Arkansas recognized as a patient-centered medical home by the National Committee for Quality Assurance (NCQA). In 2012, six regional UAMS centers with a total of eight clinical practices also were recognized by the NCQA, as well as clinics in the UAMS Institute on Aging and Internal Medicine North. UAMS upgraded its software and hired additional staff to provide monitoring of patients with chronic conditions. It also developed the UAMS Center for Primary Care to assist clinics in providing excellent care to their patients.

The move is paying off by preventing hospitalizations, readmissions and long-term complications that are very costly, said Mark Mengel, UAMS vice chancellor for Regional Programs, who oversees the regional family medical centers.

Also in 2012, the federal Centers for Medicare and Medicaid Services (CMS) Innovation Center selected Arkansas as one of seven geographic markets in the country to participate in a major initiative to help physicians better care for patients with chronic diseases and complex illnesses.

Under the Comprehensive Primary Care Initiative (CPCI), Medicare pays participating providers an average of $20 per patient per month to improve coordination of care. Also, Medicaid, Arkansas Blue Cross and Blue Shield, QualChoice and Humana Medicare Advantage are contributing extra funds to providers for delivering preventive care, checking medications to prevent error, increased access to care and helping patients monitor their own chronic conditions.

"In the long term, this has more of an opportunity to reinforce the transformation we're trying to have our system undertake," Thompson said. "Better use of electronic records, better use of clinical workforce and enhanced quality over time."

Five UAMS regional family medical centers — Fort Smith, Fayetteville, Jonesboro, Springdale, and Texarkana — are participating in the CPCI.

Mengel said the extra payments are helping them build the infrastructure needed to coordinate care. "We are seeing improved outcomes of care which, I think, will continue as we learn more about the improvement process."

In January, Wal-Mart Stores Inc. of Bentonville announced it is investing $670,000 in the Health Care Payment Improvement Initiative to assist with creation of public awareness materials and an annual statewide tracking report to assess the initiative's progress. Wal-Mart also is co-leading an employer advisory council to provide a venue for self-insured employers to provide input, feedback and ideally align with the statewide efforts. ❖

Primary Care Workforce

Expanding Capacity Improves Access

By Nate Hinkel

NOT EVERYONE who needs a primary care provider can readily find one in Arkansas.

Some live in a rural part of the state with no physician in their town. Or the few physicians there might already be overtaxed with the number of patients they care for. Even in Arkansas' more populated cities, the demand for health care is outstripping the available resources given the number of baby-boomer physicians who are at, or nearing, retirement.

According to the U.S. Department of Health and Human Services, more than half a million of Arkansas' 2.9 million people reside in areas with a shortage of primary care professionals.

UAMS, as the state's only academic medical center, has for several years been preparing to address this challenge in innovative ways. It includes recruiting minority students and faculty. It embraces participation in a new federal partnership to improve access to quality health care at lower cost. And it relies heavily on two educational programs UAMS is beginning this year that are expected to increase the number of providers by preparing physician assistants and advanced-degreed nurses. »

Watching classes taught via webcam at UAMS South Central in Pine Bluff are (from left) David Nguyen, M.D., LaTrisha Hall, D.O., pharmacy student Lindsey Akin, medical student Jordan Stanley, and pharmacy student Crystal Colclough.

Minority Participation

Since much of rural Arkansas is made up of minority residents, UAMS tries to target potential health care providers from those areas, said Billy Thomas, M.D., vice chancellor for diversity and inclusion.

The UAMS Center for Diversity Affairs offers several programs, matches and scholarships as incentive for highly trained health care professionals to return to work in rural parts of the state.

"The key is to expose, recruit and retain them in the health and research fields when they're young," Thomas said. "Mentoring programs have also shown some success. But getting out into rural parts of the state and getting them interested early, and then going back and helping their community will go far in the future of health care in this state."

"These new health care providers ... can immediately contribute at a very high level."

Federal Partnership

UAMS was chosen last year for the Comprehensive Primary Care Initiative. The Centers for Medicare and Medicaid are paying certain private care practices in eight states, including Arkansas, a monthly per-patient fee to provide enhanced, coordinated care. The intent is to create more provider involvement on the front end, resulting in better patient health and reduced use of health care resources.

Physicians and other providers may offer longer and more flexible hours, use electronic records, coordinate care with patients' other providers, and better engage patients and caregivers in managing their own care.

The initiative includes selected family medicine clinics within UAMS and its regional centers in Fayetteville, Fort Smith, Jonesboro, Springdale and Texarkana.

Training More Providers

The College of Health Professions is enrolling students in May in its 28-month physician assistant (PA) program, while the College of Nursing this fall will offer its first class for advanced practice nurses looking to earn a doctorate of nursing practice (D.N.P.)

Physician assistants and nurse practitioners conduct physical exams, order diagnostic tests, write prescriptions, diagnose disease and manage care of patients. Physician assistants work with supervision of a physician. Nurse practitioners in Arkansas work under a collaborative agreement with a physician to practice or write prescriptions.

"At this point, I think we are all familiar with the statistics and the fact that we have to do something to improve Arkansans' access to top-notch health care not only in the future, but right now," said Lorraine Frazier, Ph.D., R.N., dean of the UAMS College of Nursing. "The leadership at UAMS across the state is all on the same page in this exciting endeavor to meet those goals."

The new programs are a way to get more primary care providers to the communities where they are needed quickly and efficiently.

"It's simply not feasible for UAMS to produce enough primary care physicians to keep up with an aging population and new patients entering the system because of health care reform," said Patricia Kelly, Ph.D., chair of the Department of Physician Assistant Studies. "These new health care providers who are entering these programs can immediately contribute at a very high level and alleviate a lot of the stress on the system."

Adding Physician Assistants

The PA program at UAMS will have 26 students enrolled in the full-time program this year. In 2014, 30 more will enter the program, and in 2015, 34 new students will be admitted.

More than 4,000 square feet of space within the UAMS College of Health Professions has been renovated to accommodate the program. That

includes physical examination rooms, procedural laboratories, and classroom and meeting space.

While advanced practice nurses have been common in Arkansas since the 1970s, the physician assistant profession is less well known. Both professions require a master's degree that includes clinical rotations in primary care.

With about 150 practicing in Arkansas, the state ranks 49th nationally in the number of physician assistants. Until 2005, students had to leave the state to train, making it difficult to entice them back to Arkansas to work. With the second PA program in the state, UAMS aims to have a workforce that will remain here after graduating. Despite the unfamiliarity of the profession, Kelly said, the student interest has been overwhelming.

"There aren't a whole lot of role models out there right now for prospective students to see and say, 'Hey, I'd like to make a career out of that,'" Kelly said. "But just by word of mouth and partnerships throughout the state at other universities, we have had great response that will only snowball once the program is in full swing."

The program has won support through two philanthropic grants and a gift supporting a scholarship.

Last December, the Blue & You Foundation of Arkansas Blue Cross and Blue Shield awarded $117,000 to the PA program to raise awareness of the program among Arkansas physicians and prepare physicians to host PA students while they gain further clinical experience. A $20,000 grant was also awarded by the Verizon Foundation to develop curriculum materials on domestic violence awareness and prevention for students in the PA program. In December, the program received $2,500 from the Arkansas Medical, Dental, & Pharmaceutical Association Foundation to establish a scholarship in Physician Assistant Studies. The scholarship will be awarded to an outstanding student in the program's inaugural class.

"It is exciting to receive these grants and philanthropic gifts as they lend more momentum to the high-quality programs that we are hoping to build," Kelly said.

New Wave of Nursing

Last fall, the UAMS College of Nursing conducted a survey of working nurses to determine the interest level for pursuing the Doctor of Nursing Practice degree in Arkansas. More than 500 responded, with nearly 150 of them planning to enter a D.N.P. program.

With 26 students enrolled for the fall, the program will allow advanced practice nurses to further prepare in the delivery, management and care of patients.

"This is something we've been working on for nearly seven years and now have all of the faculty and curriculum ready to go," Frazier said. "We expect this program to immediately begin making an impact on the health care landscape across the state."

Nurses with a D.N.P. will be experts in translating the best evidence from rigorous research into clinical practice to improve the quality and cost of health care as well as patient outcomes, allowing them to provide the best care to more patients. The D.N.P. also prepares students in leadership and health care policy.

"That's perhaps the most exciting part," said Matthew V. Hadley, R.N., D.N.P., clinical assistant professor in the UAMS College of Nursing and coordinator of the D.N.P. program. "We expect that our D.N.P. graduates will immediately step into roles where they can impact change from a policy and leadership standpoint, which is an appropriate role for these UAMS graduates."

An added benefit of the program is that it will reach working students in every corner of the state via its online capabilities and through UAMS Regional Programs.

"Students don't have to come to Little Rock for school and get situated," Frazier said. "The D.N.P. program will allow the students to continue working where they are as a nurse practitioner while earning the D.N.P. and then put those new skills to use in those parts of the state where it's needed most." ❖

Patient-Centered Medical Home

Connecting Patients With Providers

By Elizabeth Caldwell

"IT'S LIKE HAVING A QUARTERBACK on your team who is in charge of your care."

That's how Arkansas Surgeon General Joe Thompson, M.D., M.P.H., describes the patient-centered medical home model that UAMS is helping usher into the mainstream of health care in the state.

And he expects the new model for ensuring patients receive high-quality, coordinated and cost-effective care to bring about results as vital as any NFL championship playoff.

"Before, when you had an acute need, you had various health care providers taking care of you, but no quarterback," said Thompson, also director of the Arkansas Center for Health Improvement and a professor at UAMS. "Now there is a quarterback assigned and fiscally accountable for the outcomes."

Strong contact with patients is at the heart of the medical home.

The new model is essential to reforming how health care is provided and paid for, Thompson said. With Medicare and Medicaid costs rising faster than inflation, the medical home is expected to slow that rate by helping patients manage chronic conditions to avoid more hospitalizations and expensive treatments.

"I think it's a great concept that is really connecting patients with providers," said Daniel Knight, M.D., chair of the Department of Family and Preventive Medicine in the UAMS College of Medicine.

UAMS' Family Medical Center in 2009 was the first in Arkansas recognized by the National Committee for Quality Assurance (NCQA) as a patient-centered medical home.

Care managers are a big part of the process, following up to ensure a patient gets needed prescriptions upon discharge from the hospital and is following care instructions, for example.

Knight said the new method is showing results at the Family Medical Center, with hospital readmissions reduced from 21 percent to 14 percent in 2012.

Last year, the NCQA gave patient-centered medical home recognition to eight UAMS regional family medical centers: one each in El Dorado, Fayetteville, Fort Smith, Jonesboro, Springdale and Texarkana, and two in Pine Bluff.

Mark Mengel, UAMS vice chancellor for Regional Programs, said results in the regional centers are encouraging as well. Patient outcomes improved nearly 7 percent in 2012. He expects improvement to continue, especially with the next phase of teaching self-management of chronic conditions, such as diabetes. That will take health coaches, case management and time for behavioral change, he said.

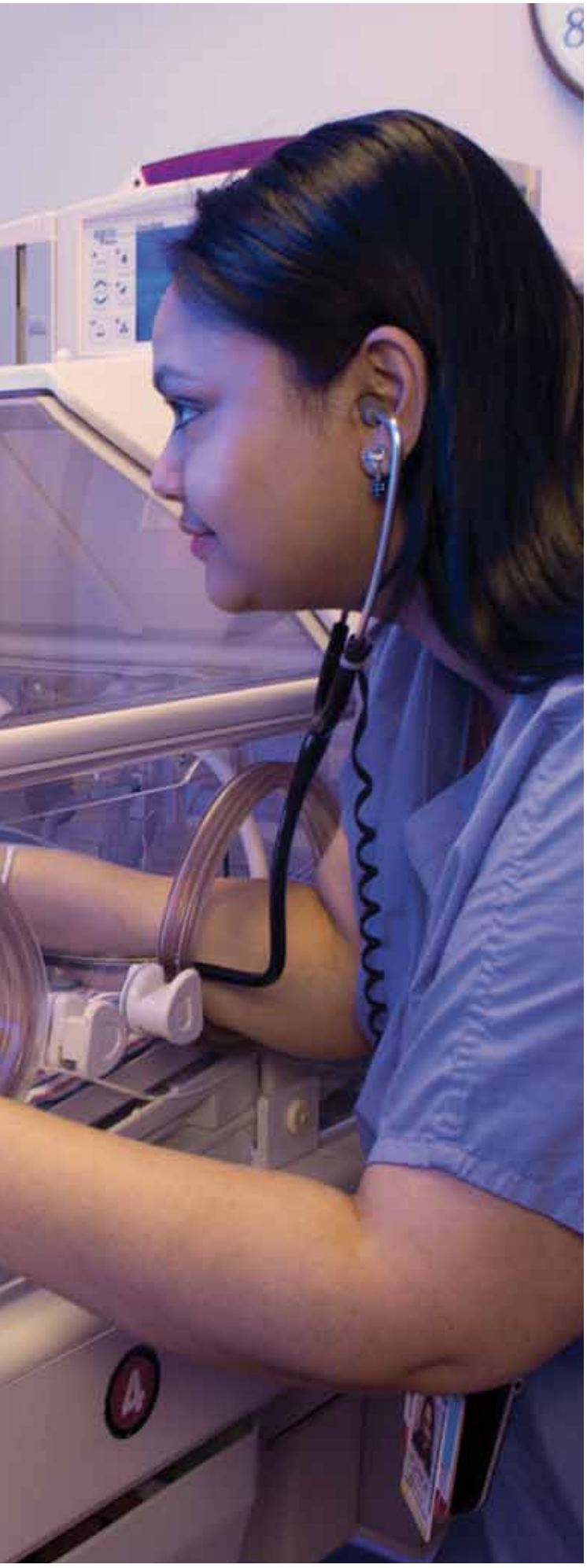
Strategic contact with patients is at the heart of the medical home. But it also emphasizes information technology upgrades, training the provider workforce to act as a team, and financial incentives to providers for meeting patient needs.

UAMS spent $6 million to hire additional personnel and purchase information technology to better integrate patient care at the regional centers. New software was used to create a disease registry and to standardize data entry for electronic health records.

Mengel and Knight said that paper records, make it difficult to track progress over time for conditions such as chronic obstructive pulmonary disease or high blood pressure. The electronic health records system can alert the provider if a patient misses a follow-up appointment or a referral to a specialist. It can alert the provider to check, for instance, on whether all patients with a certain condition have followed preventive measures.

"It helps us watch things and make sure they don't fall through the cracks," Knight said. ❖

Nettie Garrett, L.P.N., is a nurse care manager at UAMS South Central in Pine Bluff.



Vijeta Shukla, M.D., includes Ginger and Scott Broadway in decisions about the care of their son, Noah.

Patient- and Family-Centered Care

Engaging Patients and Their Families in Health Care Decisions

By Susan Van Dusen

Julia Moretz

INSPIRED BY HER LATE SON'S BATTLE with congenital heart disease, Julie Moretz of Augusta, Ga., has devoted her life to promoting the ideals of patient- and family-centered care across the country.

Now, the nationally known advocate for engaging patients and their families in health care decisions is bringing that passion to UAMS, beginning in May as its first-ever associate vice chancellor for patient- and family-centered care.

"As the parent of an ill child, I didn't know the rules of a hospital and was often too shy to speak up. From that experience, I found my voice and began working to create a culture where it's OK for patients and family members to be vocal about their own health care needs," Moretz said.

In Augusta, she moved up the ranks from hospital volunteer to director of Family Services Development at the Medical College of Georgia, which is one of the first model programs for the movement. From there, Moretz served as director of special projects at the Institute for Patient- and Family-Centered Care in Bethesda, Md. »

"Our goal is nothing short of transforming the way we include patients and families as full partners in their care."

Core Concepts of Patient- and Family-Centered Care:

RESPECT AND DIGNITY.
Health care practitioners listen to and honor patient and family perspectives and choices. Patient and family knowledge, values, beliefs and cultural backgrounds are incorporated into the planning and delivery of care.

INFORMATION SHARING.
Health care practitioners communicate and share complete and unbiased information with patients and families in ways that are affirming and useful. Patients and families receive timely, complete, and accurate information in order to effectively participate in care and decision-making.

PARTICIPATION.
Patients and families are encouraged and supported in participating in care and decision-making at the level they choose.

COLLABORATION.
Patients and families are also included on an institution-wide basis. Health care leaders collaborate with patients and families in policy and program development, implementation, and evaluation; in health care facility design; and in professional education, as well as in the delivery of care.

--Institute for Patient- And Family-Centered Care

"I am certain that Julie will bring a renewed energy to this initiative that will help us move forward in innovative and exciting ways."

"I have never met anyone more passionate about patient- and family- centered care than Julie. Her real-life experience gives her a unique and powerful perspective on this issue. We are honored to have her take the lead in this crucial endeavor at UAMS. Our goal is nothing short of transforming the way we include patients and families as full partners in their care," said Chancellor Dan Rahn, M.D.

Moretz' move to UAMS comes at a time when the university is poised to make great strides in the area of patient- and family-centered care.

"UAMS is at the crux of a watershed moment. Chancellor Dan Rahn truly understands the value of patient- and family-centered care and is committed to becoming a national leader in this area. The staff members are enthusiastic and ready to create a culture shift that will make true partners of patients, families and health care providers," she said.

The impetus of patient- and family-centered care took hold at UAMS in 2011 when John Shock, M.D., founding director of the UAMS Harvey and Bernice Jones Eye Institute, presented the concept to campus leaders. Shock was appointed to lead the effort, which is spawning improvements in the way health care professionals interact and communicate with those they serve.

In May, Shock will hand the baton to Moretz.

"This is the perfect time for a transition," Shock said. "Our program is up and running, and we recently welcomed Dr. Roxane Townsend as our new hospital CEO. I am certain that Julie will bring a renewed energy to this initiative that will help us move forward in innovative and exciting ways."

In addition to working with clinical staff in both inpatient and outpatient settings, Moretz will work with academic affairs and college deans as they educate future health care professionals about the importance of incorporating patient- and family-centered care in their practice.

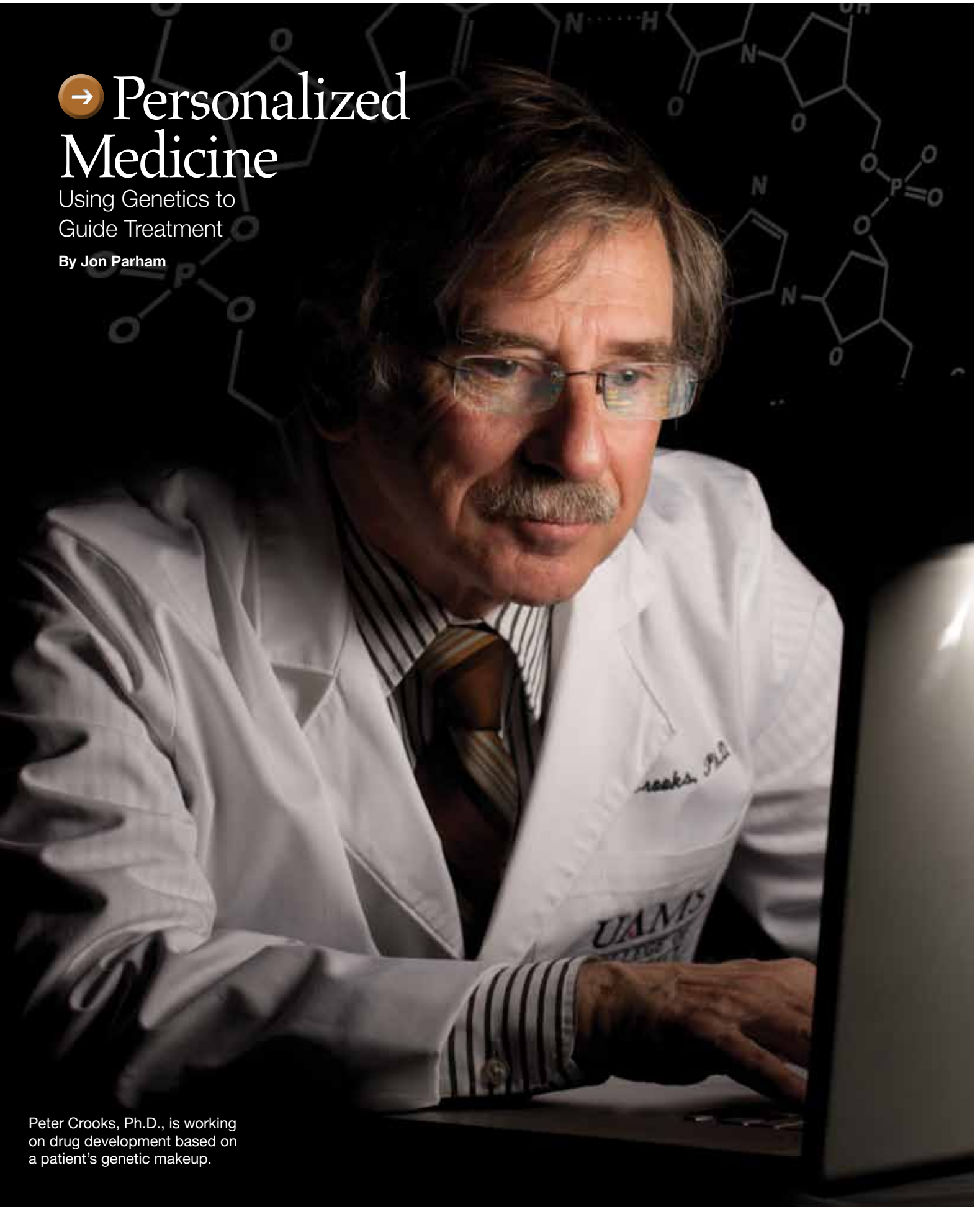
A leadership team of UAMS faculty and staff meets weekly to reinforce and continue development of the program, while councils of patients and family members meet regularly to discuss and make recommendations on potential improvements to patient services. The councils are located at UAMS' hospital, Winthrop P. Rockefeller Cancer Institute, primary care clinics, neonatal intensive care unit and Donald W. Reynolds Institute on Aging.

Among the benefits of patient- and family-centered care are shorter hospital stays, lower costs per visit, increased patient compliance, decreased adverse events, higher employee retention rates, reduced operating costs and decreased malpractice claims. ❖

Personalized Medicine

Using Genetics to Guide Treatment

By Jon Parham



Peter Crooks, Ph.D., is working on drug development based on a patient's genetic makeup.

USING A PATIENT'S GENETIC MAKEUP to find the best medical treatment may still seem like science fiction, but UAMS is already practicing personalized medicine and making plans to increase its commitment.

In the UAMS Myeloma Institute for Research and Therapy, a series of genetic markers in multiple myeloma tumors form a sort of fingerprint for the disease, pointing clinicians toward a personalized treatment plan for each patient. While at the UAMS Psychiatric Research Institute, genetic information can indicate which anti-depression medication will work better with a particular patient.

At the UAMS Psychiatric Research Institute, genetic information can indicate which anti-depression medication will work better with a particular patient.

What is being called the UAMS Center for Innovation in Precision Medicine is beginning to take shape to organize UAMS efforts toward personalized medicine. This confluence of science and medicine, alternately called genomic or precision medicine, has its roots in the growing understanding of how a person's genetic code can influence disease and treatment response.

"Across UAMS, we have groups working to assemble pieces of a center — but we're still trying to identify the resources we need," said G. Richard Smith, M.D., director of the UAMS Psychiatric Research Institute. "We need to do it now. For our patients we need to do this so we can assure them of the most effective care."

As the state's only academic health sciences center — combining patient care, education and research — UAMS is the only place in the state positioned to build on the opportunities of personalized medicine, Smith said. And with a mission to engage in activities that improve health and health care in Arkansas, it's an imperative.

New Tools, New Treatments

The UAMS Myeloma Institute has long been at the forefront of identifying the genetic fingerprint of multiple myeloma. It was the Myeloma Institute that first identified different sub-types of multiple myeloma, a cancer of the blood's plasma, based on the genetic makeup of the cancer cells.

Breast Cancer Vaccine Begins Clinical Trial

Thomas Kieber-Emmons, Ph.D.

Developing a breast cancer vaccine to prevent recurrence — what **Thomas Kieber-Emmons, Ph.D.**, calls his "life's work" — is coming to fruition.

The Phase 1 clinical trial of the novel vaccine, developed by Kieber-Emmons at the UAMS Winthrop P. Rockefeller Cancer Institute, is showing promising results.

"The Phase 1 trial is to demonstrate the safety and tolerability of the drug using a small group of participants," he said. The participants are selected by Kieber-Emmons' fellow researcher and UAMS medical oncologist Laura Hutchins, M.D., and must meet a strict set of criteria to qualify.

The women receive five injections of the vaccine during a 23-week span. So far, none have experienced adverse reactions. "We are optimistic about the results in our trial participants," he said.

After the Phase 1 trial is complete and shown to meet the safety and tolerability requirements, a Phase 2 trial will begin to examine the quality of the immune response in humans. This trial will include a larger number of women who were previously treated for breast cancer but are now disease free.

Kieber-Emmons is professor of pathology in the UAMS College of Medicine and holder of the Josetta Wilkins Chair of Breast Cancer Research.

--- Susan Van Dusen

Analyzing the genetic markers in myeloma cells, patterns emerged indicating a "low-risk" version of the disease and one that was "high-risk," proving resistant to standard treatments. In 2009, the institute began what was believed to be the first clinical trials that based a patient's treatment plan on the genetic makeup of the cancer cells.

"We continue to be encouraged by the results we are seeing that indicate that customized treatment based on gene expression profiling leads to increased survival rates," said Bart Barlogie, M.D., Ph.D., Myeloma Institute director.

Saad Usmani, M.D., director of developmental therapeutics in the Myeloma Institute, said now more than ever, myeloma clinical researchers understand the specific cellular pathways involved in development of the more potent type of multiple myeloma.

"We take the disease signature and find targets for drugs — blocking the cellular pathways that shut off the cancer's growth and push it toward cell death," he said.

Partly enabling the advances at the Myeloma Institute are new tools such as recently acquired gene sequencing equipment that allows researchers to better study the molecular basis of cancer development. The sequencer details the sequence of genes in samples of malignant plasma cells. The results are compared to what is known of the human genome to look for genetic clues about myeloma development.

"We're in an exciting era, as there are about 30 new medications coming for treatment of myeloma that are based on tumor genetics and how each patient might respond differently to a specific treatment," Usmani said.

Not even 20 years ago, the median survival rate for a multiple myeloma patient was less than two years. Today median survival is around 10 years — with some patients surviving 20-plus years since diagnosis. That success is in large part due to the power and increased understanding of genomic medicine, Barlogie said.»

Analyzing the genetic markers in myeloma cells, patterns emerged indicating a "low-risk" version of the disease and one that was "high-risk," proving resistant to standard treatments.

Potential HPV Vaccine Targets Cervical Lesions

Mayumi Nakagawa, M.D., Ph.D.

What began as research of a new wart treatment at UAMS has led **Mayumi Nakagawa, M.D., Ph.D.**, to a potential breakthrough HPV vaccine.

If eventually approved, the vaccine would be the first for women who have developed precancerous cervical lesions from exposure to HPV (human papillomavirus), which is passed through sexual contact.

"It's very exciting because it will extend the number of women who can be helped, especially those in areas of the world where there's no HPV screening," Nakagawa said.

Women who have HPV-induced precancerous cervical lesions are most at risk for cervical cancer, the second-most common cancer among women worldwide. In the United States, 12,340 new cases of invasive cervical cancer will be diagnosed and about 4,030 women will die from cervical cancer in 2013, the American Cancer Society estimates.

A key breakthrough came with the discovery that Candida, a naturally occurring yeast in the body, had an anti-HPV effect.

Nakagawa is now recruiting women with HPV for her phase I clinical trial of the vaccine. The trial will involve 54 women who receive the vaccine, currently being recruited and enrolled by clinical research coordinators at the UAMS Translational Research Institute (TRI).

--- David Robinson

Absolutely. No Question.

Mood disorders initially seem to have the most applicability to genomic medicine in the mental health area, Smith said. Most anti-depressant medications are processed in the liver, but they are not processed the same by all patients.

For a year, Jeffrey Clothier, M.D., medical director of the Psychiatric Research Institute, has been using genetic testing to guide treatment for patients diagnosed with depression. Patients referred to his program have failed multiple treatments with different types of anti-depression medications.

The UAMS Center for Innovation in Precision Medicine is beginning to take shape.

Examining specific genes related to drug response can show which patients metabolize medications more quickly, which can impact dosing strategies. The genetic results also may point to patients more prone to side effects from certain medications.

"It's another tool that tells us which medications might work better with a particular patient and which medications we need to avoid due to potential side effects," he said. "I am absolutely encouraged by what we've been able to do."

Why a Center?

Each of UAMS' many centers and institutes bring together research, academic and patient care resources to focus on a certain cause. From cancer (the Winthrop P. Rockefeller Cancer Institute) to vision (the Jones Eye Institute) to geriatrics (the Reynolds Institute on Aging), each has been able to attract nationally known researchers and clinicians as well as grant funding that has led to scientific advances and new medical treatments.

"We know from experience UAMS can develop institutes or centers that can bring together expertise that can make a difference in our patients' lives," Smith said. "I know we can do the same thing in genomic medicine."

Planning has started for the UAMS Center for Innovation in Precision Medicine. Architects will soon begin drawing up designs for a major

A Medication to Beat Meth Addiction


Michael Owens, Ph.D.

A team of researchers at UAMS and InterveXion Therapeutics, a UAMS BioVentures incubator client company, is developing a medication that could help people beat their addiction to one of society's most destructive illicit drugs: methamphetamine.

Led by **Michael Owens, Ph.D.**, **Brooks Gentry, M.D.**, and **Misty Stevens, Ph.D., M.B.A.**, the team has been buoyed by results of the first human safety study of the medication using healthy adults who do not use methamphetamine. The next phase will involve testing the drug in methamphetamine users.


Brooks Gentry, M.D.

The medication is expected to significantly reduce or prevent the euphoric rush that drug users crave by keeping methamphetamine in the bloodstream and out of the brain, where the drug exerts its most powerful effects. Assuming it receives FDA approval, the methamphetamine antibody will be given as an integral part of a methamphetamine user's complete treatment program, which consists of counseling and possibly other medications to reduce craving.


Misty Stevens, Ph.D., M.B.A.

The team's work with antibodies has received national attention, including from the New York Times and Wall Street Journal. InterveXion has licensed the technology for anti-methamphetamine antibody products from UAMS and is working closely with the university during product development.

--- David Robinson

renovation of the molecular pathology laboratory, which will house many of the diagnostic and analytical tools needed.

"The Department of Pathology will serve as a hub of the operation since testing and precision diagnostics drive the practice of personalized medicine," said Jennifer Hunt, M.D., chair of the Department of Pathology in the UAMS College of Medicine. "Such a center will capitalize on our growing expertise to operate the equipment, interpret complex testing results and utilize results to treat patients."

The lab would be a centralized campuswide resource for the genomic medicine initiative. Then each department, institute or program could recruit or assign faculty to the project based on their interests and need.

Genetic tests can already identify risk for various types of cancer. As understanding of the human genome increases, more advanced testing promises to find new targets for treatment or disease prevention.

Peter Crooks, Ph.D., chair of the Pharmaceutical Sciences Department in the UAMS College of Pharmacy, is one of those working to develop new pharmaceutical weapons for hitting those targets.

"In our drug discovery research, the more we study the cells from individual patients we look at, the more idea we can get as to whether a new drug will be effective in 80 percent or 20 percent of the overall patient population," Crooks said. "Then we can focus on developing the drug candidates with the most potential to be therapeutically effective."

A team approach to personalized medicine is critical, Crooks said. It's not just the basic scientists analyzing the proteins and cells in the lab but also the clinicians who see patients and develop treatment plans.

It's not just the bioinformatics experts using powerful computing technology to look for clues within the genetic code; it's also the toxicologist to ensure a new medication doesn't have unintended side effects.

Commercial applications may boost the science. The UAMS BioVentures biomedical business incubator has a track record of taking scientific advances from UAMS researchers to the global marketplace in a way that helps medicine and economic development in the state.

Several companies that began around drug discoveries are among the 50 startups aided by BioVentures since its inception. Crooks said having access to the business expertise and resources of BioVentures could be another positive for drug development in the area of personalized medicine.

"It's good to have such a facility available for faculty members to help them decide when the time is right to think about commercializing a discovery," he said.

Drug development is a long and expensive process, Crooks said. The promise of personalized medicine could help spur faster access to new discoveries, but it will likely require pharmaceutical companies finding a way to make precision medicine a profitable business when a new drug discovery only works in a subset of a patient population.

Academic medical centers could help spur a new paradigm in drug development, he said, where personalized medicine is a more promising venture for researchers, patients and pharmaceutical companies.

"We are poised and ready to take off," Hunt said of UAMS plans for advancing genomic medicine in the state. "Establishing the center will give us a place where everybody will be working toward the same goal — using advanced technology and clinical expertise to give patients optimal care."❖

It's not just the basic scientists analyzing the proteins and cells in the lab but also the clinicians who see patients and develop treatment plans.

Interprofessional Education

Teamwork is the key to patient-centered care

By Nate Hinkel

INSIDE A NEWLY REFURBISHED community health center near campus, UAMS students are honing their skills as critical members of the next generation of health care teams that are changing the way care is delivered.

Future pharmacists, speech pathologists, dental hygienists, nurses and other UAMS students across all areas of campus are working side by side providing wellness services to a community in need.

"This generation of students is committed to serving the community."

At the same time, they are practicing effective teamwork and team-based care. That requires moving beyond profession-specific educational efforts to engage students of different professions in interactive learning with each other.

"Being able to work effectively as a member of clinical teams while still a student is a fundamental part of that learning," said Jeanne Heard, M.D., Ph.D., vice chancellor for academic affairs at UAMS. "New approaches to health care, such as the 'medical home' and 'patient- and family-centered care' concepts, are required to achieve better outcomes in primary care, especially for high-risk chronically ill and other at-risk populations. Improved interprofessional teamwork and team-based care play core roles in these approaches."

With the goal of creating this seamless integration of health professions, all areas — from classroom to simulation, to clinic to practice — are coming together to help UAMS forge into the future as a team.

Center of Learning

When a historic brick building adorning the corner of 12th and Center streets in midtown Little Rock was donated by alumni to the UAMS College of Pharmacy last year, visions of an interprofessional student-led health and wellness center were set in motion.

Lanita White, Pharm.D., was hired as director to lead the 12th Street Health and Wellness Center toward a more inclusive approach to health care.

"In a relatively short amount of time, we had the makings of a true all-inclusive effort to get this center up and running," White said. "We had people donating chairs and supplies from one part of campus, and others coming in to paint walls from another part of campus ... and that was just to get the building ready to serve the community."

The interprofessional center that opened in January includes services by students and faculty across the UAMS colleges of Pharmacy, Medicine, Public Health, Nursing, Health Professions and the Graduate School. The center will be run by students and provide preventive health care, particularly heart health, as well as consultations and screenings for chronic health conditions and information for healthy living.

Since its opening, the UAMS 12th Street »

(From left) pharmacy student Katie Beth Lewis, medical student Hunter Henry and nursing student Allison Morrow work together to diagnose and treat a manikin used to simulate an ill patient.

Health and Wellness Center has added a dentistry component with dental hygiene students and speech, and audiology services with speech pathology and audiology students. More services are in the works, with aims of one day becoming a full-fledged clinic.

"It's exciting because our students are getting out in the community. They're volunteering and giving their knowledge freely," she said. "This generation of students is committed to serving the community and promoting health and wellness."

And that, said UAMS Chancellor Dan Rahn, M.D., is the cornerstone of interprofessional education.

"This effort signifies everything that UAMS is about," said Rahn. "It brings together students and faculty from across campus and offers it directly where it's needed most in the community. Our mission at UAMS is to make a difference in the delivery of health care to Arkansans, and this new center is an innovative bridge that enables us to do that."

"It's exciting because our students are getting out in the community."

Leading the Team

Last summer, UAMS hired experienced academic administrator Diane Skinner, Ed.D., M.P.H., to be director of interprofessional education and lead this new effort to develop educational experiences and programs that promote collaboration across health care disciplines.

Skinner works in partnership with students and faculty from across campus and provides leadership in needs assessment, implementation, and evaluation of interprofessional activities.

"It all starts with the faculty and what we've found is that the students are very open to interactive and experiential learning in IPE," she said.

Skinner is helping design a course that is planned to be required of all first-year students that will lay the groundwork for interprofessional education. Students will learn about each others' professions and the skills needed for effective collaboration on health and health care disparities.

Skinner said others are writing grants to support interprofessional education within their areas. The Department of Geriatrics has submitted a grant, "Geriatrics-Focused Interprofessional Training in the Patient Centered Medical Home Model," to the Donald W. Reynolds Foundation.

The UAMS Clinical Skills and Simulation Center is planning a "Sim Wars" event to reinforce interprofessional teamwork.

"Case scenarios will require a team of students from different health care professions to successfully solve the cases," Skinner said. "Several teams will compete to solve these cases and put their interprofessional skills to the test."

The competition is in front of a live audience that will vote on the winners.

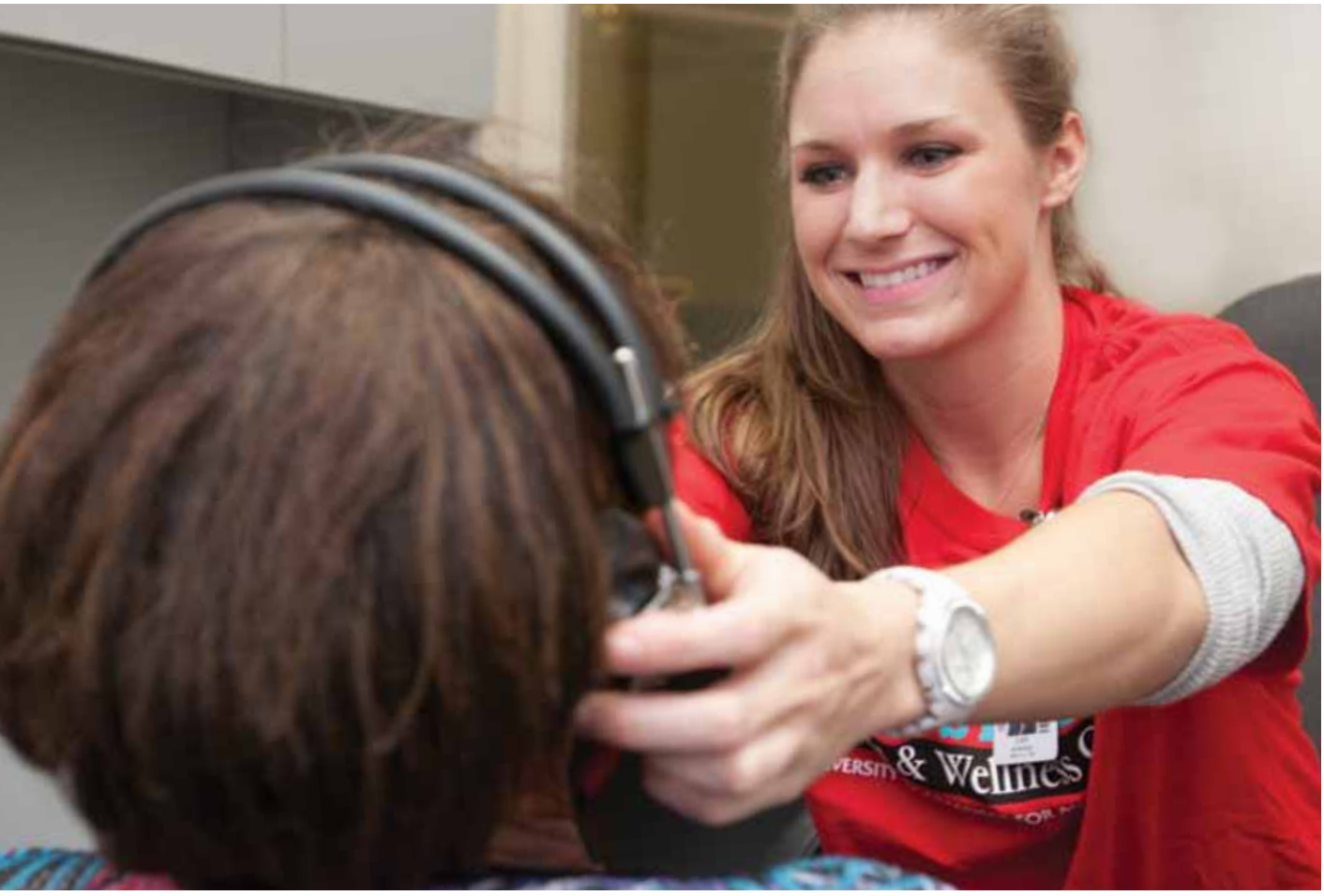
An integral piece to any implementation, said Skinner, is to look at other schools that are successfully doing this. The University of Washington's Brenda Zierler, Ph.D., R.N., co-director of the Center for Health Science Interprofessional Education, Research and Practice, is considered a national leader. In May, she will share with UAMS her experience at the Seattle-based institution that has been interprofessionally educating students for nearly 15 years.

Skinner and UAMS College of Pharmacy Dean Stephanie F. Gardner, Pharm.D., Ed.D., traveled to the Medical University of South Carolina in January to observe their Interprofessional Day involving nearly all first- and second- year students and to learn more about their interprofessional course taken by nearly all first-year students.

Bring it Back

The trip came after Gardner was named an American Council on Education (ACE) Fellow for academic year 2012-13.

The prestigious ACE Fellows Program, established in 1965, is designed to strengthen



Loni Briley, a second-year doctor of audiology student, screens a patient at the UAMS 12th Street Health and Wellness Center.

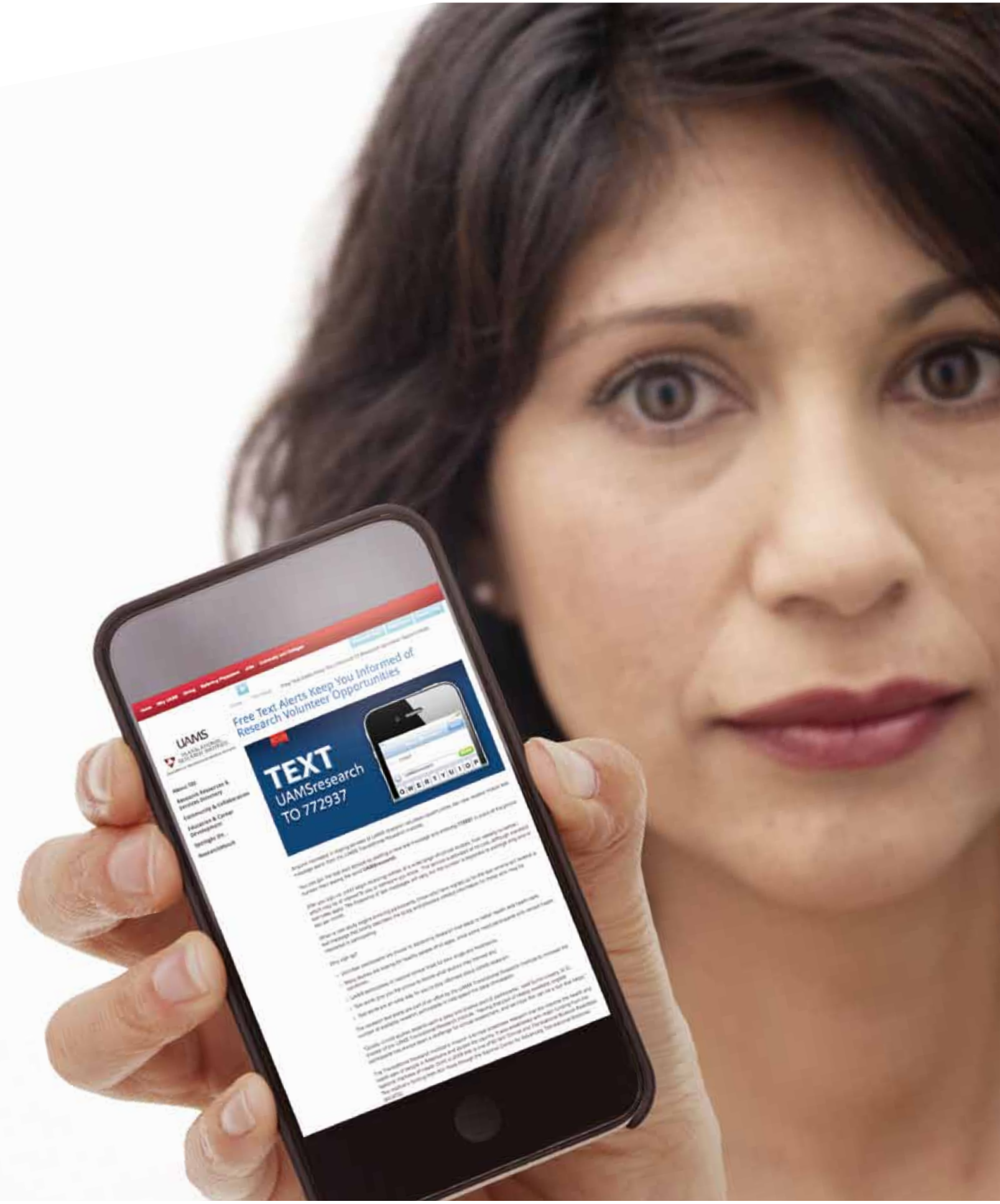
institutions and leadership in American higher education by identifying and preparing promising senior faculty and administrators for responsible positions in college and university administration. ACE Fellows visit other campuses and work closely with a president at another institution and bring those experiences back to implement them on their own campus. Gardner was selected for the elite group of 57 Fellows who were nominated by the presidents or chancellors of their institutions.

Gardner chose to go to Charleston, S.C., to see a flourishing interprofessional program firsthand at the Medical University of South Carolina.

"Faculty members there have been willing to share materials and experiences that have worked with their students. This will be invaluable as we plan our interprofessional curriculum," Gardner said. "I focused on identifying best practices and am now working with Dr. Heard and the deans in each college to foster the further development of interprofessional education at UAMS."

Gardner said others in leadership at UAMS are supportive and receptive to her experience, and she's eager to get to work.

"It works, and I'm excited to see it work here at UAMS," Gardner said. "It all starts with the students, and their enthusiasm is contagious. I am optimistic that with the success of the 12th Street Center and other initiatives in the works that we can establish a top-notch interprofessional education program." ❖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Patient-Centered Outcomes Research

Researchers Partner With People in the Real World

By David Robinson

UAMS' GREER SULLIVAN, M.D., a veteran mental health services researcher and co-director of the UAMS Translational Research Institute, learned years ago that the success or failure of community-based research hinges on strong relationships with community partners.

For example, Sullivan said, "If doing a study about depression in rural African-American populations, you have to learn from the point of view of that community. We learned that you can't use the word depression or you will not be able to engage people. Instead, you need to focus on wellness."

Sullivan is among a growing number of UAMS researchers whose work involves community engagement, in which community members are included in planning the research right from the beginning of a project. This patient-centered outcomes research falls under the umbrella of translational research and is promoted at UAMS by the Translational Research Institute.

"Community engagement, patient-centered outcomes research, and translational research are redefining our scientific approaches," said Lisa Jackson, J.D., R.N., executive director of the Translational Research Institute. "As a result, we've been given some exciting opportunities to include patients and communities as partners in health improvement across all demographics."

Leaders

UAMS officially joined other leaders in the new research movement in 2009 when it received a nearly $20 million National Institutes of Health (NIH) Clinical and Translational Science Award (CTSA). The NIH award supports the work of the UAMS Translational Research Institute, which is among 60 similarly funded institutions in the United States.

The institute is directed by Curtis Lowery, M.D., also chair of the Department of Obstetrics and Gynecology in the UAMS College of Medicine. Lowery, along with Sullivan, is also co-principal investigator for the CTSA. The institute supports research with the greatest potential to be "translated" into new knowledge and treatments that benefit health and health care, and it is working to speed the pace and efficiency of all research at UAMS.

The institute has also greatly expanded opportunities for another form of patient-centered outcomes research: comparative effectiveness research. By helping establish the Enterprise Data Warehouse, the institute has provided researchers the de-identified electronic medical records of nearly 1 million UAMS patients. The institute also purchased access to the LifeLink Health Plan Claims Database, which has medical and pharmaceutical data from more than 61 million patients across the United States.

Comparative effectiveness researchers at UAMS are excited because the data now allows them to compare drugs, medical devices, tests, surgeries and ways to deliver health care.

"The databases we have now can help us answer questions that you wouldn't have dreamed about a few years ago," said Mick Tilford, Ph.D., who co-directs the institute's Comparative Effectiveness Research Component with Bradley Martin, Ph.D., Pharm.D.

Chancellor's Priority

Engaging patients and communities as valued partners is a priority for UAMS Chancellor Dan »

The Future of Research

Patient-centered outcomes research (PCOR) represents a new and dramatic change in the way researchers are approaching the nation's health and health care issues. It compares different medical treatments and interventions to help physicians and patients determine the best strategies for each patient's unique circumstances.

Leading this change is the national Patient-Centered Outcomes Research Institute (PCORI), which was established by the 2010 Patient Protection and Affordable Care Act.

PCOR answers patient-centered questions such as:

- ☑ Given my personal characteristics, conditions and preferences, what should I expect will happen to me?
- ☑ What are my options and what are the potential benefits and harms of those options? PCOR takes into account an individual's preferences and needs, and incorporates a variety of settings and diversity of participants to address individual differences and barriers to implementing interventions or communicating new health knowledge. Patients, communities and other stakeholders are at the table from the earliest stages to help guide research planning and implementation. This differs from the traditional top-down, one-size-fits-all approach to research and patient care.

Examples of patient-centered outcomes research include:

- ☑ Comparing interventions designed to reduce health disparities
- ☑ Comparing approaches aimed at improving health care systems and the efficiency of care
- ☑ Comparing medical treatments to determine what works best for specific patients under their unique circumstances
- ☑ Comparing approaches to communicate and disseminate information that will help improve patient outcomes

--- David Robinson

Rahn, M.D., who would like to establish an Office of Community and Translational Research. Sullivan will lead the strategic planning for this office.

"Dr. Rahn would like to see what's happening here on campus have more of an impact across the state," Sullivan said. "We are partnering with people in the real world to find interventions that really work."

Jackson also noted that by involving real people from the beginning of the research process, researchers are more likely to design studies that can succeed.

"Finding the participants needed for research is a major issue nationally, and many promising studies fail as a result," Jackson said.

The Translational Research Institute is exploring novel ways to get more people to participate in research. It promotes ResearchMatch.com, an online registry that connects volunteers with researchers. So far, nearly 700 Arkansans have signed up. More than 150 people have signed up for the institute's free mobile texting service, which provides text alerts about new research projects that are recruiting participants. In addition, the institute is establishing a registry of UAMS patients who wish to be contacted about research opportunities.

Through its Community Engagement Component, the institute is creating sustainable partnerships, such as with the Clinton School of Public Service and the Tri-County Rural Health Network. The institute also meets regularly with its Community Advisory Board, made up of people who represent their communities, not academia.

"We don't think in the same way that people

think in the real world," Sullivan said. "We are not experts in a given community. We need the expertise of community members."

PCORI First

Sullivan last year became the first UAMS researcher to receive a national Patient-Centered Outcomes Research Institute (PCORI) pilot award, which she is using to study the mental health needs of rural African-Americans. The $640,000 award was made possible by building on community partnerships in the Delta that were established over many years by researchers in the UAMS Fay W. Boozman College of Public Health, especially Kate Stewart, M.D., M.P.H.

Sullivan and her colleagues, Geoff Curran, Ph.D., and Ann Cheney, Ph.D., are partnering with the Tri-County Rural Health Network, which is working closely with UAMS researchers on other projects as well. She designed her study based on input from the leadership of the Tri-County Rural Health Network, Naomi Cottoms and Mary Olson, a doctor of ministry. Stewart, who leads the College of Public Health's Office of Community-Based Public Health, has collaborated with the Delta organization on multiple projects and facilitated development of the partnership.

Positioned for Success

An inventory done by the Community Engagement Component of the Translational Research Institute found nearly 50 UAMS researchers with funded community engagement projects. The research emanates from across campus, but major contributors include the College of Public Health, Family Medicine, the Psychiatric Research Institute, and Arkansas Children's Hospital Research Institute (ACHRI).

Sullivan, as co-director of the Community Engagement component, arranged meetings of the community engagement researchers to learn their needs. As a result, the institute established an equipment library for the researchers to assist in their work.

"If we work together across UAMS we should be well positioned to make a difference," Sullivan said. ❖

"Patient-centered outcomes research is a revolutionary new way of thinking about research."

Devastating Losses Inspire Camden Resident

Charles Moore

Charles Moore lost his wife, then a daughter, to heart failure. Such painful events have led the 65-year-old Camden man to help UAMS researchers connect with Arkansas communities lacking access to the latest medical advances.

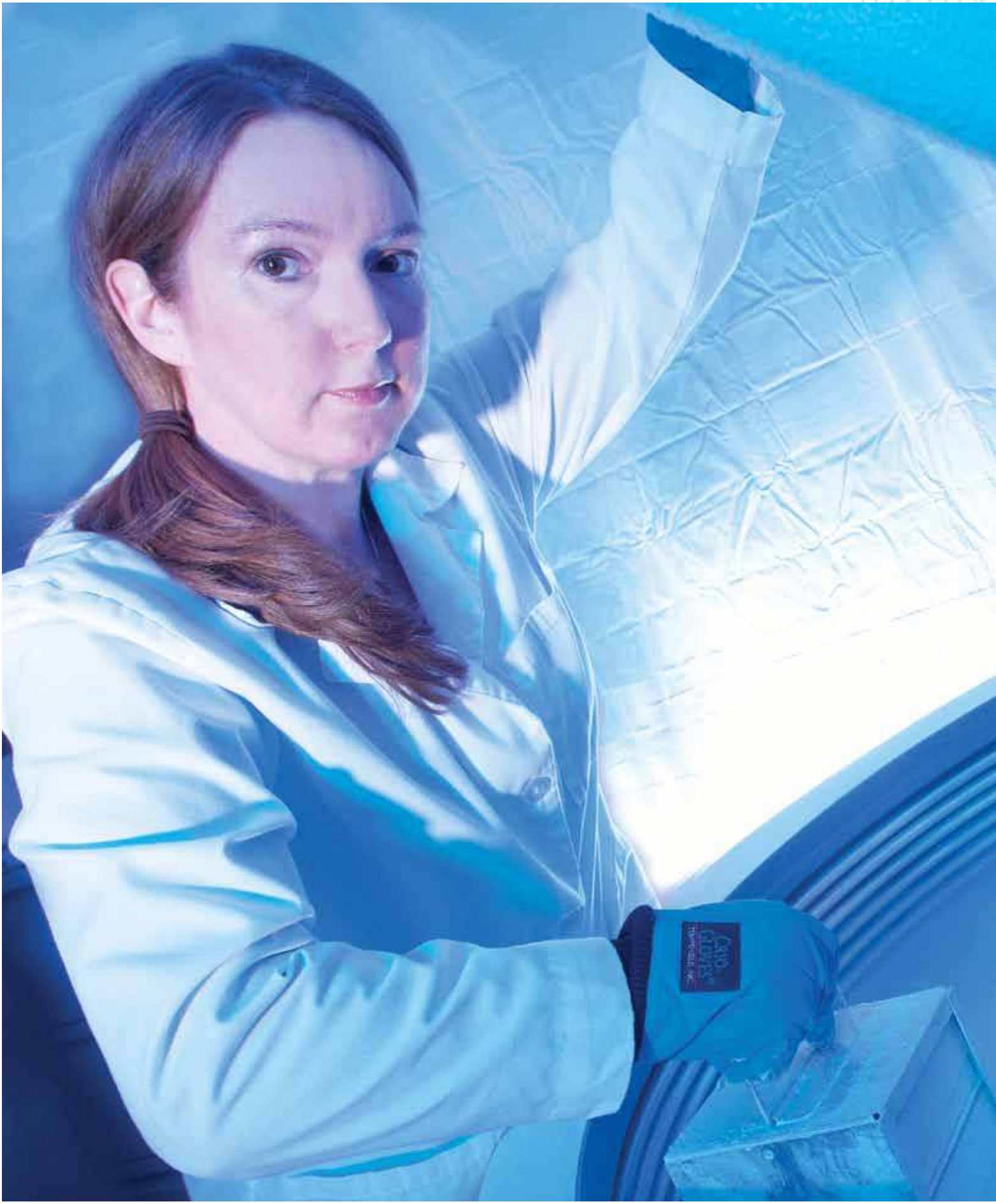
There are many other families like his, he said, affected by serious medical conditions but lacking the knowledge, access or wherewithal to address them.

The disease that took Moore's wife and daughter, cardiomyopathy, was also diagnosed in his son and another daughter. While his son has a less severe case, his daughter must live with the aid of a pacemaker and a defibrillator. Both are now enrolled in a cardiomyopathy research study. "I was naïve, I guess," Moore said of his reaction when he learned his wife had the disease. "I use that experience to do what I'm doing today, to help other people not do the same thing that we did."

He joined the UAMS Translational Research Institute Community Advisory Board last year after learning about its mission, which is to foster lasting partnerships that will help UAMS address health disparities among communities that are at risk for poor health outcomes. He said he is inspired by the committed, innovative ways in which UAMS is engaging communities across the state.

"I love what UAMS is doing — reaching out to help, to change some things," he said. "UAMS can help our communities, and I want to help them do that."

--- David Robinson



Leah Hennings, D.V.M., oversees the human biospecimen respository at UAMS.

Medical Research Ethics

Patients as Partners in Medical Research

By Susan Van Dusen

PATIENTS ARE INTEGRAL PARTNERS with UAMS in the advancement of new knowledge in health and health care.

By permitting UAMS to bank their tissues and other physical specimens, patients contribute to the development of new discoveries that can be brought to bear on them and their families.

Medical ethics has never been more important as research institutions such as UAMS seek to enhance their relationships with patients.

As director of the UAMS Tissue Procurement Facility, Leah Hennings, D.V.M., oversees the human biospecimen repository, which has been in place for eight years. It serves as a collection, processing and storage facility for tissue from many types of malignant tumors, as well as benign brain tumors, urine and blood.

"The process of educating patients and gaining their consent is done prior to their surgical procedure," Hennings said. If the patient agrees to consider a tissue donation, a member of the Tissue Procurement Facility staff sits with the patient and »

Medical ethics has never been more important as research institutions such as UAMS seek to enhance their relationships with patients.

family members, if present, to explain the process, answer questions and complete the necessary paperwork.

It's a long way from how many medical institutions used to interact with patients. Take the story of Henrietta Lacks, publicized in the best-selling book "The Immortal Life of Henrietta Lacks" by Rebecca Skloot.

Born in Virginia in 1920, Lacks was only 31 years old when cervical cancer claimed her life. Although she has been dead for more than 60 years, her "immortal" cells have influenced research and major medical breakthroughs in ways no one could have predicted.

HeLa cells, as they became known, were instrumental in the development of the polio vaccine, in vitro fertilization and commonly used cancer drugs. However, Lacks never consented for her cells to be used in research, and it was 20 years after her death when her family discovered the truth about her unknowing contribution to science.

The complex story of Lacks' cells illustrates an important era in medical research history during which people — particularly vulnerable populations such as children, the poor and the disabled — were used in medical research against their will or without their knowledge.

"Until the mid-20th century, we were in an era where physicians and researchers were so focused on the good goals and ends of research that they lost sight of how it was affecting people. Now the tide has turned and we are in an era where we strive to protect and respect human subjects and their privacy," said D. Micah Hester, Ph.D., chief of the Division of Medical Humanities at UAMS.

This respect is played out every day at UAMS when patients are consulted about the possibility of becoming participants in medical research.

"There is a process called informed consent during which a patient is educated about the risks and benefits of participation so they can make an informed decision," Hennings said.

It's made clear to patients that no extra tissue will be removed during surgery and that their samples will be identified only by a number, not by their personal information.

Registered nurse practitioner Mindy Gibbons, clinical research nurse for the Tissue Procurement Facility, said most patients "recognize the value of research to the future of medicine."

While almost all tissues samples taken at UAMS are used in research programs at the university, it is possible for them to be used elsewhere, aiding in research across the country. ❖

Enterprise Data Warehouse

Data Repository Improves Health Care Quality

By Ben Boulden

NEARLY 1 MILLION PATIENT RECORDS are at the fingertips of UAMS researchers and clinicians to use for everything from tracking patient medication response to cutting costs in the clinic.

The data repository known as the UAMS Enterprise Data Warehouse makes available de-identified inpatient, outpatient, lab and registration records while abiding by the federal patient privacy law known as HIPAA, the Health Insurance Portability and Accountability Act.

A strong data warehouse is essential to ongoing health system redesign that is improving the efficiency and quality of health care delivery, said William Hogan, M.D., chief of the Division of Biomedical Informatics in the College of Medicine.

Hogan oversees the enterprise, which is a collaborative effort between UAMS' Division of Biomedical Informatics, Translational Research Institute and Information Technology Services. It is housed and staffed under Information Technology.

Online since fall 2011, the warehouse began with 500,000 patient records. A year later it had grown to nearly 1 million, including the recent addition of records from UAMS' regional family medical centers in Jonesboro, Springdale, El Dorado, Fort Smith, Pine Bluff and Texarkana.

College of Medicine Dean Debra H. Fiser, M.D., is an enthusiastic proponent of the enterprise and its capability to advance understanding of many chronic conditions that disproportionately affect Arkansans, such as obesity, hypertension and diabetes.

"We really want to make the most of this resource, so we're doing everything we can to support its development and to help our researchers understand its capabilities and how to access data," Fiser said.

Robert Price, Ph.D., director of research and practice improvement for UAMS Regional Programs, is looking forward to the ways in which the data warehouse will be able to advance health care at UAMS' regional medical centers.

"The new system gives us the information better, more reliably, more often and puts it in one place so we can begin to improve the efficiency of our management as well as the quality of our patient care," he said. "We can look at these data any point in time. It's going to upgrade the quality of everything we do."

A strong data warehouse is essential to ongoing health system redesign.

Previously, Price and his staff had to pull information from two systems and re-enter it. It was like that for every regional center. Now, that information is consolidated, easier to use and updated more regularly through the data warehouse.

Because the regional family medical centers are primary care providers, their research is directed at patient care rather than basic science. They will be able to more closely monitor the performance of the health care providers at the centers.

"We're doing whatever we can to improve chronic care and that mission is going to stay the same," Price said. "We're developing research activities directed at that."

Irfan Chaudhry, data warehouse project manager, said it is also helping with core measures,

Ann Riggs, M.D., vaccinates a patient for pneumonia. The UAMS data warehouse was used to determine whether all patients older than 65 had received such vaccinations.

financial planning and staffing. For example, the » UAMS Winthrop P. Rockefeller Cancer Institute is using it to better identify patient outcomes over time. It's also using the database to make sure existing patients aren't rebranded as new patients should they get referred to another Cancer Institute physician.

The system allows tracking of patients and the number of tests ordered for them per physician. It can identify whether the institute is being reimbursed for certain services. It can save money by identifying whether a patient is being given a drug that's not yet approved by an insurer.

The enterprise was used to identify whether all patients older than 65 were being vaccinated for pneumonia, as required, Chaudhry said.

With major database acquisitions now behind it, Hogan is looking at incorporating smaller but significant departmental databases like the ones for radiology and pathology. The university's tumor registry was recently added.

He said pent-up demand drove an early spike in use at the outset, followed by slower but steady growth. As researchers become more familiar with the possibilities, it's likely to take off again. In less than a year, researchers had made more than 1,000 queries of the database, including many quality reports, and created 21 data sets.

The Translational Research Institute is offering incentives to use the enterprise. A project that provides pilot grant funding of up to $35,000 for research projects that use the data warehouse is directed by Mike Owens, Ph.D., a professor in the College of Medicine Department of Pharmacology and Toxicology, and Sudhir Shah, M.D., a professor and director of the Division of Nephrology in the College of Medicine's Department of Internal Medicine.

"The data warehouse is enabling meaningful new research that will make a difference for Arkansans," Fiser said. ❖

Powerful Mechanism Speeds Research

Amy Hester

Amy Hester almost shed tears of joy when she saw the search results from the UAMS Enterprise Data Warehouse. "I literally almost cried when I saw the data set," Hester, associate administrator for patient care at UAMS, said. "I was so pleased. I knew how much time that saved me in my research. It's a very powerful mechanism for being able to get data that's highly reliable and valid. There are many aspects of the research process that were improved because I was able to use the data warehouse to do it."

She and fellow researcher **Dees Davis, R.N.**, developed a model to forecast which patients are likely to have a fall so that health care providers could intervene early and prevent falls from happening.

To see if the predictive model was working, and before the data warehouse was online, Hester spent about 800 hours going through almost 2,000 patient records to extract the information she needed to test the model.

Dees Davis, R.N.

Doing the same thing with the data warehouse was lightning fast by comparison and did not require the use of protected health information from the data warehouse. Hester's complete statistical analysis and output took 30 hours — less than 4 percent of the time it took her to just do the research before.

The data warehouse's capability also will allow her to better and more frequently monitor the performance of the model in the future. Using the fall prediction model has been instrumental in reducing fall accidents by 11 percent and reducing the injury rate by 60 percent.

"The data warehouse greatly reduces the time it takes to get from the workbench to the bedside," Hester said. "That's really the goal, and it's working."

--- Ben Boulden

Electronic Health Records

Unified System Provides Single Platform

By Ben Boulden

WITHIN JUST A FEW MONTHS, UAMS patients will be able to make appointments with their doctors by actually seeing physician schedules and picking open slots. They also will be able to log on and look at their own medical records.

In another year, patients with Internet connections and webcams will be able to participate in "e-visits" with a UAMS physician.

Making all this possible and more is a new electronic health records system called UConnect that UAMS is in the process of implementing.

It's expected to improve patient care and provide better outcomes.

UAMS has had an electronic health record system for several years, but it hasn't had the unified record system UConnect is providing, said David Miller, UAMS chief information officer.

"That is huge for the patient side of this," Miller said. "It combines all the medical, billing, pharmaceutical and other information associated with an individual in one electronic record."

The new system is not one simply of convenience. Besides collecting and cataloguing patients' health records, it's expected to improve patient care and provide better outcomes with managing chronic diseases such as diabetes or congestive heart failure.

Coupled with the new health care model called the patient-centered medical home, the system allows primary care providers access to a patient's medical records all in one place. This permits the provider to increase monitoring of chronic conditions with the aim to keep the patient healthier and prevent expensive emergency room visits and hospitalizations.

Patient safety will also be improved by reducing the possibility of medication errors. With UConnect, a bar code system will match a medication to the patient. Without that match, the medication will not be administered.

"The big issue is patients often have medical records in different computer systems. With UConnect, when you show up here in a clinic I know you've been in the hospital, and I know they've recorded your drug allergies there. We have a single platform from which to work," Miller said.

A single platform will make it even easier to track a patient as that patient moves from primary care physician to specialist. That tracking will make it easier to avoid things such as redundant lab tests.

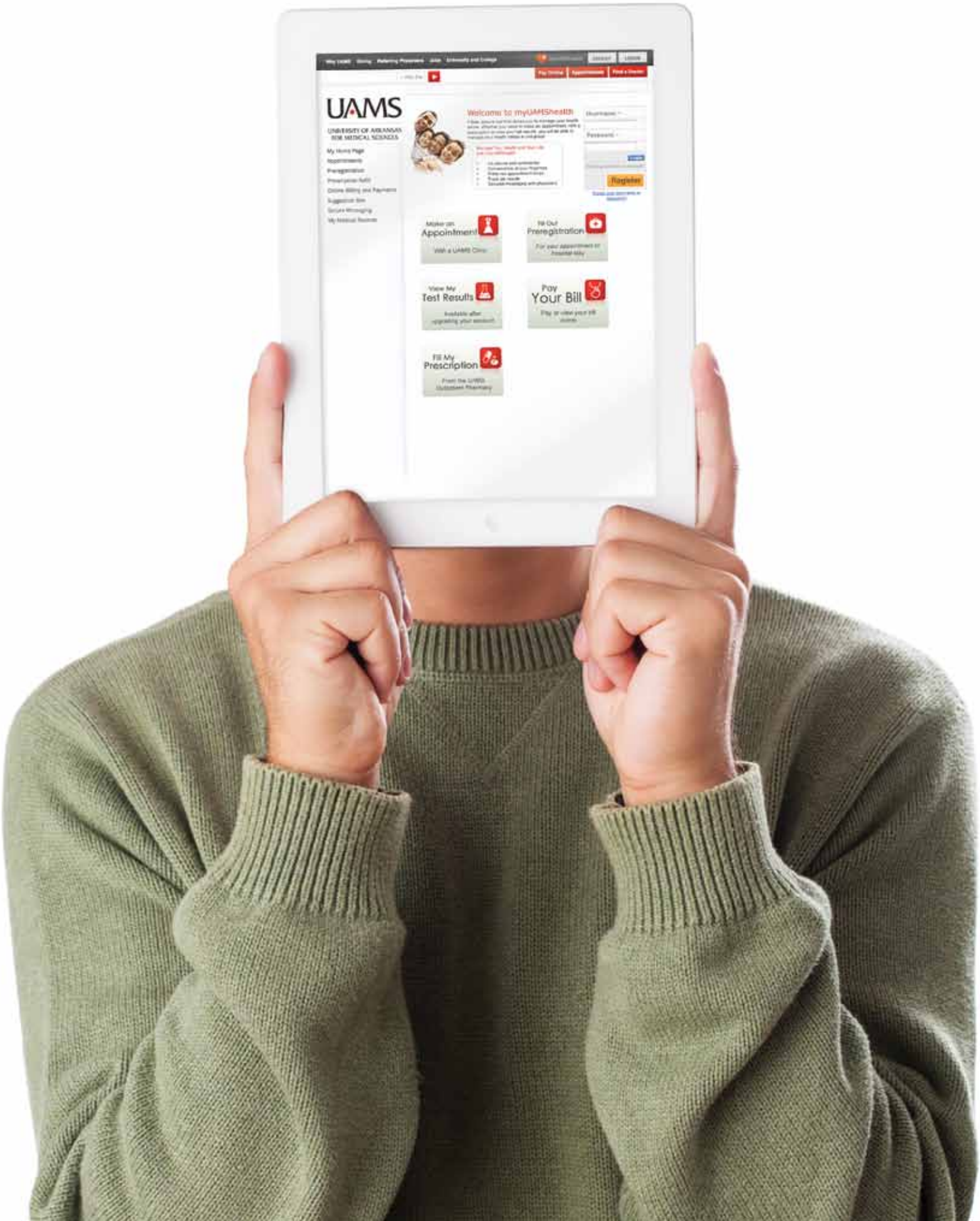
UConnect uses software and technology from a company known as Epic Systems. Components of the system will go live for UAMS clinics in August. By March 2014, all clinics and the hospital will be live on all components. The total project cost is about $100 million.

Patients interacting with the new system will use an Epic application called MyChart. Epic comes with a variety of tools to prompt both patients and providers about tests and ways to managing chronic diseases. A reporting function can help guide providers in medical interventions and show them how well they are working.

The transition to UConnect requires a few hardware upgrades, but the biggest challenge to implementation is training.

"Between now and March 2014, we have to train about 5,000 people," Miller said. "There are a lot of logistics to doing that."

Training will consist of an online component, then classroom instruction and finally, hands-on experience in the UAMS Simulation Center. Use of the center allows the class time to be reduced from four hours to two. ❖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UAMS Medical Center's New CEO

Townsend to Focus on Quality Patient Experience

By Jon Parham

THOUGH SHE'S SPENT ONLY A FEW MONTHS as head of UAMS Medical Center, Roxane A. Townsend, M.D.'s 30 years' experience in health care has shown her that UAMS is poised to thrive.

By continuing to focus on a quality patient experience, UAMS will be able to work through the impending changes in the American health care system, she said.

The medical center's new chief executive officer brings a unique perspective to the job, having worked as a nurse and physician before moving into hospital administration.

"UAMS already offers so much and is known across the state, region and nation for excellence in many of its clinical programs, so there is a strong foundation on which to build," said Townsend. "We must make sure we have a patient experience that makes patients want to make us their medical home — and not just come here for a particular program."

"We need to have a trusting relationship with every patient."

Townsend took the reins Feb. 1 of the hospital and its network of clinics and specialists. In addition to hospital CEO, she serves as UAMS vice chancellor for clinical programs. She previously served as assistant vice president for health systems at Louisiana State University (LSU) in Baton Rouge. In that role, she worked with the system's 10 hospitals and their clinics in the development of operational strategies and system-wide policies.

To Townsend, "patient experience" is not just about medical outcome but includes a commitment to patient- and family-centered care. The patient must be able to trust that the care they receive is the best and most appropriate.

In the future, a quality patient experience may include stronger affiliations with physicians and hospitals around the state.

It will certainly include improved electronic medical records systems and networks for sharing information so that when patients are referred to UAMS they will not face the potential for duplicate tests. UAMS recently became part of the State Health Alliance for Records Exchange (SHARE) network that affords health care providers throughout the state with secure, real-time access to electronic patient health information.

"A strong, secure electronic health information exchange across providers builds trust and satisfaction for patients and is more cost-effective for providers," Townsend said.

The goal is creating a seamless network for patients to receive the best care.

"What we don't want to do, though, is disrupt the primary care relationship between a patient and his or her local doctor," she said. "We want them to feel comfortable that when they refer a patient to UAMS, and that patient returns to his primary care physician, we will be able to provide them a full understanding on what we did and why so they will be able to continue care."

Another evolving element is transitioning from fee-for-service to bundled payments for an entire episode of care. That care could include pre-care and post-care services, such as rehabilitation or hospice, so will require teamwork and coordination among various providers.

"Health care is still expensive and we must manage patient expectations," she said. "We need to have a trusting relationship with every patient so they will understand why a procedure may or may not be necessary."

Townsend is confident. "We can be a leader in patient- and family-centered care — bringing together our resources and coordinating with other care providers to create a strong, integrated health system in Arkansas." ❖

UAMS Medical Center CEO
Roxane Townsend, M.D.

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